



- **11 Yorkville Partners Inc.**

**Phase Two Environmental Site Assessment
Update**

Type of Document
Final Report

Project Name
Phase Two Environmental Site Assessment Update
11 Yorkville Avenue, Toronto, Ontario

Project Number
MRK-00242474-A0

EXP Services Inc.
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Markham, Ontario L3T 0A8
Canada

Date Submitted
February 28, 2019

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February 28, 2019

Legal Notification

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SUMMARY SHEET

11 Yorkville Avenue, Toronto, Ontario

1. Site and Adjacent Land Conditions

Land Use	Mixed Commercial and Residential Use
Dates of Soil Sampling	November 5 to 29, 2018
Dates of Ground Water Sampling	November 7, 9, 14, 26 and 30, 2018 December 11, 2018
Number of Test Holes Drilled	13
Number of Monitoring Wells Installed	13
Type of OVM Meter	GasTec pump with 133LL tubes to detect tetrachloroethylene (PCE) RKI Eagle 2 Mini RAE® Lite PID
Adjacent Land Use (current)	North – Mixed Residential/Parkland/Commercial/Community Use South – Commercial Use East – Mixed Residential/Commercial Use West – Commercial Use
Aquifer Usage in 100 metre Radius	No

2. Site Soil Conditions

Stratigraphy	Approximate Depth (m)	Comments
Sand	3.7	Brown to grey sand, wet.
Silty clay	10.0	Grey silty clay, moist.
Sandy silt	>19.8	Grey sandy silt, moist.

3. Ground Water

Depth (metres below ground surface (mbgs))	TH101S – 0.411 mbgs (basement) TH101D – 17.61 mbgs (basement) TH102 – 0.336 mbgs (basement) TH103 – 3.109 mbgs (ground floor) TH104 – 3.862 mbgs (ground floor) TH105I – 7.87 mbgs (ground floor) TH105D – 20.01 mbgs (ground floor) TH106S – dry TH106D – 16.34 mbgs (underground parking garage) TH107 – 4.589 mbgs (underground parking garage) TH108 – 1.080 mbgs (underground parking garage) TH109S – 4.460 mbgs (underground parking garage) TH109D – 15.38 mbgs (underground parking garage)
Screened Interval of Monitoring Well(s)	TH101S – 0.6 to 3.7 mbgs (basement) TH101D – 16.8 to 19.8 mbgs (basement) TH102 – 0.6 to 3.7 mbgs (basement) TH103 – 1.2 to 4.3 mbgs (ground floor) TH104 – 1.2 to 4.3 mbgs (ground floor) TH105I – 7.0 to 10.1 mbgs (ground floor) TH105D – 19.8 to 22.9 mbgs (ground floor) TH106S – 0.6 to 3.7 mbgs (underground parking garage) TH106D – 16.2 to 19.2 mbgs (underground parking garage) TH107 – 1.5 to 4.6 mbgs (underground parking garage) TH108 – 1.5 to 4.6 mbgs (underground parking garage) TH109S – 1.5 to 4.6 mbgs (underground parking garage) TH109D – 16.8 to 19.8 mbgs (underground parking garage)
Inferred Ground Water Flow Direction	Southwest
Liquid Petroleum Detected	No

4. Selected Soil and Ground Water Standards

Ontario Regulation (O. Reg.) 153/04 Table 3 Standards (residential/parkland/institutional property use and medium to fine textured soils) are appropriate for this site.

5. Analytical Results (Samples exceeding O. Reg. 153/04 Table 3 Standards)

Location	Medium	Depth (mbgs)	Parameters
TH101S	Soil	0 to 0.6 †	Volatile organic compounds (VOCs): Tetrachloroethylene (PCE) and trichloroethylene (TCE)
	Ground Water	0.6 to 3.7 †	VOCs: cis-1,2-Dichloroethylene, PCE, trans-1,2-Dichloroethylene, TCE, and vinyl chloride
TH103	Soil	0.0 to 0.6 *	Metals and Other Regulated Parameters (ORPs): Cadmium and electrical conductivity (EC)
TH104	Soil	0.3 to 0.9 *	ORPs: EC
TH106S	Soil	0.0 to 0.6 †	ORPs: EC and sodium adsorption ratio (SAR)
		1.2 to 1.8 †	ORPs: EC
TH107	Soil	0.0 to 0.6 †	Polycyclic aromatic hydrocarbons (PAHs): - Benzo(a)pyrene and fluoranthene ORPs: - SAR
TH108	Soil	0.0 to 0.6 †	ORPs: EC and SAR
		0.6 to 1.2 †	ORPs: EC and SAR

NOTE: * Indicates sampling interval measured from ground floor. † Indicates sampling interval measured from basement or underground parking garage concrete floor surface.

Executive Summary

The executive summary is a brief synopsis of the report and should not be read in lieu of reading the report in its entirety. EXP Services Inc. (EXP) was retained by 11 Yorkville Partners Inc. to conduct a Phase Two Environmental Site Assessment (ESA) Update for 11 Yorkville Avenue, which encompasses the properties municipally addressed as 11 to 21 Yorkville Avenue in Toronto, Ontario, the “site”. The site has an area of approximately 0.29 hectares (0.72 acres).

A Phase One ESA was conducted by EXP (2018_a) to identify the presence of potentially contaminating activities (PCAs) within 250 metres of the site boundaries. The potential for each PCA to result in an area of potential environmental concern (APEC) was evaluated based on their proximity to the site and on their location relative to the inferred southerly ground water flow direction; twelve APECs were identified. In addition, a Phase II ESA completed by Pinchin Ltd. in 2016 identified ground water impacted with tetrachloroethylene (PCE), a volatile organic compound (VOC), beneath the site building at 21 Yorkville Avenue.

A Phase Two ESA was conducted by EXP (2018_b) to evaluate the quality of fill material at the site and to install ground water monitoring wells within accessible areas to provide additional information regarding the extent of VOC-impacted ground water previously identified beneath 21 Yorkville Avenue. The Phase Two ESA included the advancement of four test holes (TH1 to TH4), all of which were completed as ground water monitoring wells. Test hole TH4 was advanced at the nearby 16 Cumberland Street, which does not form part of the revised Phase Two property. Ground water sampling was conducted at all previously installed and newly installed monitoring wells. Soil samples were analyzed for the potential contaminants of concern (pCOCs) including petroleum hydrocarbon (PHC) fractions F1 to F4, polycyclic aromatic hydrocarbons (PAHs), VOCs, metals, hydride-forming metals, and other regulated parameters (ORPs). Ground water samples were analyzed for pCOCs including PHC fractions F1 to F4 and VOCs. The O. Reg. 153/04 Table 3 Standards for a residential/parkland/institutional property use and medium to fine textured soil (Table 3 Standards) were deemed appropriate for evaluating conditions at the site.

Surficial soil samples collected from three of the four sampling locations were found to exceed the Table 3 Standards for various PAHs, lead, and/or sodium adsorption ratio (SAR). Deeper soil samples analyzed for vertical delineation purposes suggest that these impacts were confined to the fill material. All soil samples analyzed for PHCs and VOCs were within Table 3 Standards. Ground water samples exceeded the Table 3 Standards for VOC parameters in six locations: samples collected in four locations (MW01, MW02, TH2, and TH3) exceeded the Table 3 Standard for PCE, and the sample collected from monitoring well MW04 exceeded the Table 3 Standard for vinyl chloride. The ground water samples were within the Table 3 Standards for PHC fractions F1 to F4. Based on the findings of the Phase Two ESA, additional characterization of soil and ground water impacts was recommended.

This Phase Two ESA Update was conducted concurrent with the Hydrogeological Investigation (report provided separately). The objective of the Phase Two ESA Update was to determine the

extent of soil and ground water impacts identified by the Phase Two ESA (EXP, 2018_b). Specialized interior drilling equipment was used to advance test holes in four locations within the underground parking garage at 11 Yorkville Avenue (TH106 to TH109), two locations within the basement at 21 Yorkville Avenue (TH101 and TH102), and three locations within the ground floor at 21 Yorkville Avenue (TH103 to TH105). All the test holes were completed as monitoring wells; clustered pairs were installed in four locations (TH101S/TH101D, TH105I/TH105D, TH106S/TH106D, and TH109S/TH109D).

Surficial soil samples collected from five of the nine soil sampling locations were found to exceed the Table 3 Standards for PAHs, cadmium, electrical conductivity (EC), and/or SAR. Deeper soil samples analyzed for vertical delineation purposes suggest that these impacts were confined to within 1.5 metres below the floor slab beneath the site buildings. In one location (TH101S), located in the basement of 21 Yorkville Avenue, the soil sample collected immediately beneath the floor slab exceeded the Table 3 Standards for PCE and TCE. All soil samples analyzed for PHC fractions F1 to F4 were within Table 3 Standards.

The ground water sample collected from monitoring well TH101S, screened from 0.6 to 3.7 metres below the basement floor slab at 21 Yorkville Avenue, exceeded the Table 3 Standards for various VOC parameters. The deeper ground water sample collected from monitoring well TH101D, screened from 16.8 to 19.8 metres below the basement floor slab, was within the Table 3 Standards for VOCs. Ground water samples collected from all other locations were within the Table 3 Standards for PHC fractions F1 to F4 and VOCs.

Based on the findings of the Phase Two ESA and the Phase Two ESA Update, remediation and/or risk assessment will be required to address the soil and ground water impacts before a Record of Site Condition (RSC) can be filed for the site.

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1. Introduction

EXP Services Inc. (EXP) was retained by 11 Yorkville Partners Inc. to conduct a Phase Two Environmental Site Assessment (ESA) Update for 11 Yorkville Avenue, which encompasses the properties municipally addressed as 11 to 21 Yorkville Avenue (odd numbers only) in Toronto, Ontario. For the purpose of this report, the terms “site” and “Phase Two property” refer collectively to the properties with the municipal addresses referenced above.

The site is intended to be redeveloped with a high-rise residential condominium with commercial use at grade. The objective of this Phase Two ESA Update is to support the filing of a Record of Site Condition (RSC) under Ontario Regulation (O. Reg.) 153/04.

A Phase One ESA was conducted by EXP (2018_a) to identify the presence of potentially contaminating activities (PCAs) within 250 metres of the site boundaries. The potential for each PCA to result in an area of potential environmental concern (APEC) was evaluated based on their proximity to the site and on their location relative to the inferred southerly ground water flow direction; twelve APECs were identified. In addition, a Phase II ESA completed by Pinchin Ltd. in 2016 identified ground water impacted with tetrachloroethylene (PCE), a volatile organic compound (VOC), beneath the site building at 21 Yorkville Avenue.

A Phase Two ESA was conducted by EXP (2018_b) to evaluate the quality of fill material at the site and to install ground water monitoring wells within accessible areas to provide additional information regarding the extent of VOC-impacted ground water previously identified beneath 21 Yorkville Avenue. The Phase Two ESA included the advancement of four test holes (TH1 to TH4), all of which were completed as ground water monitoring wells. Test hole TH4 was advanced at the nearby property 16 Cumberland Street, which is not intended to be included as part of the RSC submission for the site. Therefore, data collected from this test hole location were excluded from this report. The Phase Two ESA identified VOC-impacted ground water at five locations across the site; additional characterization of soil and ground water quality was recommended.

The Phase Two ESA Update was conducted concurrent with the Hydrogeological Investigation (report provided separately) using specialized interior drilling equipment. The primary objective of the Phase Two ESA Update was to determine the extent of VOC-impacted ground water beneath the footprint of the existing site buildings. Additional characterization of soil and ground water quality across the site was also conducted.

The Phase Two ESA Update was conducted in accordance with O. Reg. 153/04 and in accordance with generally accepted professional practices. Subject to this standard of care, EXP makes no express or implied warranties regarding its services and no third-party beneficiaries are intended. Our limitations and use of report are outlined in Appendix A. Tables and Figures referenced throughout the report are provided at the beginning of the Appendices.

1.1 Site Description

The Phase Two property is bounded by Yorkville Avenue to the north, a public laneway to the south and east, and 27 Yorkville Avenue to the west. The site location is shown on Figure 1. The site measures approximately 0.29 hectares (0.72 acres) in area.

A topographic survey plan of the site was completed by WSP Geomatics Ontario Limited (WSP) and is provided in Appendix B.

1.2 Property Ownership

The Phase Two property is owned by 11 Yorkville Partners Inc. The legal description and property identification number (PIN) for each municipal address encompassed by the Phase Two property are provided in the table below.

Table 1.2: Phase Two Property Summary

Legal Description	PIN
11 Yorkville Avenue: Lots 7 to 9, Plan 355 except Part 1, 64R15426	21197-0142 (LT)
17 Yorkville Avenue: Part of Lots 10 and 11, Plan 355 designated as Part 1, 66R21719	21197-0324 (LT)
19 Yorkville Avenue: Part of Lot 11, Plan 355 designated as Part 2, 63R3495	21197-0140 (LT)
21 Yorkville Avenue: Lot 12, Part of Lot 13, Plan 355 as in CA257819	21197-0139 (LT)

EXP was retained to conduct the Phase Two ESA Update by Kristy Shortall of 11 Yorkville Partners Inc.

1.3 Current and Proposed Future Uses

At the time of the investigation, the site was primarily occupied for mixed commercial and residential use. The site is intended to be redeveloped with a high-rise residential condominium with commercial use at grade. An RSC will be required to support this transition to a more sensitive land use.

1.4 Applicable Site Condition Standard

This site is not considered to be potentially sensitive for the following reasons: there are no areas of natural or scientific interest (ANSIs) on or within 30 metres of the site boundaries, bedrock is present at a depth greater than 2.0 metres below ground surface (mbgs), and the pH for soil samples tested was between 5 and 9. The absence of potable water use in the vicinity of the site, grain size analysis, and current field observations concerning soil texture support the

use of Table 3 Generic Site Condition Standards for a residential/parkland/institutional land use with medium to fine textured soil (Table 3 Standards).

2. Background Information

2.1 Physical Setting

2.1.1 Topography, Geology and Hydrology

The site is located in the physiographic region known as the Iroquois Plain (Chapman and Putnam, 1984). The native surficial soils in this region are predominantly composed of older glacial ice deposits, typically silty clay to silt till (Chapman and Putnam, 1984). According to the *Quaternary Geology of Toronto and Surrounding Area* map, surficial soil in this region is characterized by shallow water deposits of sand and silty sand and deeper water deposits of silt and clay (Sharpe, 1980).

The geology observed beneath the underground parking garage at 11 Yorkville Avenue and beneath the basement at 21 Yorkville Avenue was generally a thin layer of sand over silty clay to a depth of approximately 7 metres below the floor slab. The silty clay was underlain by silty sand/sandy silt to a depth greater than 19.8 metres below the floor slab.

According to the map *Quaternary Geology of Toronto and Surrounding Area*, the bedrock elevation of the site is at approximately 80 metres above sea level (masl) (Sharpe, 1980). In the *Preliminary Geo-Environmental Investigation* conducted by MCR in 2016, shale bedrock was encountered at 38 mbgs.

According to the Ontario Geological Survey map of the area, the underlying geology comprises the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member, and Eastview Member. Bedrock at the site consists of Upper Ordovician shale, limestone, siltstone, and dolostone (Ontario Geological Survey, 1991).

The topography in the vicinity of the site is relatively flat. Regionally, land slopes south towards Lake Ontario.

Table 1 summarizes the environmental setting and site characteristics. The hydraulic conductivity was calculated in two monitoring well locations as part of the Preliminary Hydrogeological Investigation (EXP, 2018_c). Using the average hydraulic conductivity of 3.44×10^{-7} cm/s measured by EXP, a gradient of 0.02 m/m, and 20% for effective porosity, Darcy's Law calculations were made to determine the potential ground water flow velocity at the site, as shown in Table 2. The ground water flow velocity was calculated to be approximately 1.08×10^{-2} metres (1 centimetre) per year in the silty sand to sandy silt.

2.1.2 Water Bodies and Areas of Natural Significance

There are no water bodies on the site. The nearest surface water body is the Don River, located approximately 2 kilometres east of the site. The Don River flows south to Lake Ontario.

Based on the Ministry of Natural Resources and Forestry's "Make a Map: Natural Heritage Areas" the site is not located within 30 metres of any of the following:

- An area reserved or set apart as a provincial park or conservation reserve under the Provincial Parks and Conservation Reserves Act, 2006;
- An area of natural and scientific interest (life science or earth science) identified by the Ministry of Natural Resources and Forestry as having provincial significance;
- A wetland identified by the Ministry of Natural Resources and Forestry as having provincial significance;
- An area designated as an escarpment natural area or an escarpment protection area by the Niagara Escarpment Plan under the Niagara Escarpment Planning and Development Act;
- An area identified by the Ministry of Natural Resources and Forestry as significant habitat of a threatened or endangered species;
- An area which is habitat of a species that is classified under section 7 of the Endangered Species Act, 2007 as a threatened or endangered species;
- Property within an area designated as a natural core area or natural linkage area within the area to which the Oak Ridges Moraine Conservation Plan under the Oak Ridges Moraine Conservation Act, 2001 applies; and,
- An area set apart as a wilderness area under the Wilderness Areas Act.

The site is not located within 30 metres of a "natural heritage system", "special policy area", or "environmentally significant area" according to Maps 9, 10, and 12, respectively, of the *City of Toronto Official Plan* (2015).

2.2 Past Investigations

A summary of environmental reports that were reviewed by EXP is provided below.

Table 2.2: Previous Reports Summary

Date	Report Title	Prepared For	Prepared By	Findings
June 1, 2006	<i>Phase I Environmental Site Assessment Update – Draft, 11 Yorkville Avenue, Toronto, Ontario</i>	Cromwell Management Inc.	Jacques Whitford Limited Linda Bennett, B.Sc.	The Phase I ESA Update was conducted for due diligence purposes in support of the planned re-financing of the site with Sun Life Financial. The purpose of the update was to comment on the current condition of the site in relation to a previous assessment conducted in 2001. The 2001 report was not provided to EXP for review.

Date	Report Title	Prepared For	Prepared By	Findings
			Jason Dobbie, Senior Reviewer	At the time of the Phase I ESA, the site was occupied by a 10-storey commercial/residential building with associated parking areas to the south of the building. An underground parking garage was located under the entire property, except for a three-metre-wide strip located along the northern property boundary. Based on the historical information reviewed, the site had been occupied by the existing site building since the mid-to-late 1950s. From the mid-to-late 1880s until the mid-to-late 1950s, the site was occupied by residential dwellings. No historical activities which would be considered sources of potential environmental concern were identified through the review of available historical records. Except for new tenants in the site building and the construction of a condominium building and associated park to the north of the site (formerly a parking lot and a commercial building), no changes were observed since the previous Phase I ESA was completed in 2001. Suspected mould growth was observed on several ceiling tiles in the basement of the building and on drywall surfaces in the interior of the fire pump room. It was recommended that a mould survey be conducted within the basement mechanical rooms.
February 13, 2015	<i>Phase One Environmental Site Assessment, 11 Yorkville Avenue, Toronto, Ontario</i>	Bazis Inc.	SPL Consultants Limited (SPL) Shawna-Marie Perry, B.Sc. Tijana Medencevic, B.A. (Env.) David Lewis, P.Eng.	A Phase One ESA was requested for due diligence purposes prior to a potential property transaction. At the time of the assessment, the site was occupied by a 10-storey, mid-rise building. The main floor and second floor were occupied by commercial tenants while the upper floors were occupied for residential use. There was one level of underground parking. The first developed use of the property, based on a review of city directories, is believed to be residential use beginning in the 1890s. Based on the information gathered as part of this assessment, it was determined that there are PCAs associated with the current and historical use of the Phase One property and adjacent properties. PCAs included: The presence of an aboveground storage tank (AST) on the site, used for fuel storage for the backup generator;

Date	Report Title	Prepared For	Prepared By	Findings
				- The potential for the importation of fill material of unknown quality to the site; - The potential for electrical conductivity (EC) and sodium adsorption ratio (SAR) impacts to exist in soil adjacent to the roadway and laneway; - The presence of ASTs and USTs, both current and historical, at the east adjacent property and at neighbouring properties to the north; - The historical operation of dry cleaning equipment on an east neighbouring property, at two southwest neighbouring properties, and at west and northwest neighbouring properties; and, - Historical commercial autobody shops located at neighbouring properties. Potential contaminants of concern (pCOCs) associated with these PCAs were noted to include petroleum hydrocarbons (PHCs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), and metals and inorganics. A Phase Two ESA was warranted to evaluate the environmental quality of the soil and ground water at the site. It was noted that an RSC cannot be filed based solely on the findings of the Phase One ESA.
February 13, 2015	<i>Phase One Environmental Site Assessment, 17 Yorkville Avenue, Toronto, Ontario</i>	Bazis Inc.	SPL Shawna-Marie Perry, B.Sc. Tijana Medencevic, B.A. (Env.) David Lewis, P.Eng.	A Phase One ESA was requested for due diligence purposes prior to a potential property transaction. At the time of the assessment, the Phase One property was occupied by a three-storey building with commercial and residential tenants. The first developed use of the property, based on a review of city directories, is believed to be residential use beginning in the 1890s. Based on the information gathered as part of this assessment, it was determined that there are PCAs associated with the current and historical use of the Phase One property and adjacent properties. PCAs included: - The potential for the importation of fill material of unknown quality to the site; - The potential for EC and SAR impacts to exist in soil adjacent to the roadway and laneway;

Date	Report Title	Prepared For	Prepared By	Findings
				- The presence of ASTs and USTs, both current and historical, at the east adjacent property and at neighbouring properties to the north; - The historical operation of dry cleaning equipment at an east neighbouring property, at two southwest neighbouring properties, and at west and northwest neighbouring properties; and, - Historical commercial autobody shops located at neighbouring properties. The pCOCs associated with these PCAs were noted to include PHCs, VOCs, PAHs, and metals and inorganics. A Phase Two ESA was warranted to evaluate the environmental quality of soil and ground water at the site. It was noted that an RSC could not be filed based solely on the findings of the Phase One ESA.
February 13, 2015	<i>Environmental Soil and Groundwater Investigation, 11 & 17 Yorkville Avenue, Toronto, Ontario</i>	Bazis Inc.	SPL Shawna-Marie Perry, B.Sc. Tijana Medencevic, B.A. (Env.) David Lewis, P.Eng.	An Environmental Soil and Groundwater Investigation was undertaken to better understand site conditions prior to a potential property transaction. As the access to the site was restricted, sufficient coverage with boreholes and/or monitoring wells to support an O. Reg. 153/04 compliant Phase Two ESA could not be completed. PCAs identified in the Phase One ESA included importation of fill material, de-icing activities, storage of gasoline and associated products in USTs (off-site) and the historical operation of dry cleaning equipment (where chemicals are used) on the east and west adjoining properties. The pCOCs as a result of these activities were considered to include PHCs, VOCs, PAHs, and metals and inorganics including EC and SAR. A total of four boreholes (BH15-1, BH15-2, BH15-3S and BH15-3D) were advanced to depths between 5.5 and 22 mbgs. At one location in the north portion of the parking garage (BH15-1), refusal was encountered due to a second layer of concrete. The other three boreholes were completed as monitoring wells. Soil analytical results were compared to the O.Reg. 153/04 Table 3 Standards for a residential/ parkland/institutional property use. SPL noted that the observed grain size of the soil was a mixture of

Date	Report Title	Prepared For	Prepared By	Findings
				coarse and fine textured; for the assessment, soil was considered coarse textured. Soil samples were collected from two of the boreholes (BH15-2 and BH15-3D) and submitted to the laboratory for analysis of PHCs, VOCs, PAHs, and metals and inorganics including EC and SAR. Soil samples were found to be within the O. Reg. 153/04 Table 3 Standards for the parameters analyzed. EXP noted that the soil samples analyzed for EC and SAR were collected relatively deep (from 3.1 to 3.7 mbgs in both locations) and would not be representative of shallow soil. Similarly, the soil samples analyzed for VOCs were also collected quite deep, from 6.1 to 6.7 mbgs at BH15-2 and from 21.3 to 21.9 mbgs at BH15-3. The rationale for the depth of the VOC samples was to provide "vertical delineation"; additional information to support this rationale was not provided. Ground water samples were collected from two monitoring wells (BH15-3 and BH15-3S) and submitted to the laboratory for analysis of PHCs, VOCs, PAHs, and metals and inorganics. Ground water samples were found to be within the O. Reg. 153/04 Table 3 Standards for the parameters analyzed. SPL noted that elevated concentrations of PCE, toluene, and xylene, within an order of magnitude of the Standards, were detected in both monitoring wells. It is possible that a source of VOCs is present in the vicinity of the site and that the concentration of VOCs in ground water may increase closer to the source location. There is the potential for VOC concentrations in ground water to exceed the O. Reg. 153/04 Table 3 Standards in areas that were inaccessible at the time of drilling. A Phase Two ESA, conducted in accordance with O. Reg. 153/04, and remedial activities (if applicable) would be required to support the filing of an RSC for the site.
February 17, 2015	<i>Designated Substances and Hazardous Materials Survey, 11 Yorkville</i>	Bazis Inc.	SPL Glenn Wood, Ph.D., CIH, ROH	A Designated Substances and Hazardous Materials Survey was conducted for due diligence purposes prior to a potential property transaction. A summary of the findings is as follows:

Date	Report Title	Prepared For	Prepared By	Findings
	<i>Avenue, Toronto, Ontario</i>			• None of the homogeneous building material samples collected and submitted for laboratory analysis were identified as asbestos-containing; • Detectable concentrations of lead were identified in five of the seven paint samples submitted for laboratory analysis; • Although no samples were analyzed for mercury, mercury is suspected to be present in liquid-filled reservoirs in thermostats, as a gas in fluorescent light tubes, and as a bactericide or stabilizer in paints and caulking; • Crystalline silica was assumed to be present in brick, concrete, asphalt cement, and mortar; • Significant water damage was observed within the northern rooms in the basement. Visible mould growth was not observed, however, it is expected to be present on all porous materials (i.e. drywall) near the source of water intrusion; and, • Visible mould growth was observed in the vacant unit on the west side of the first floor. It was noted that destructive testing was not conducted at the time of the site investigation. Based on the reported date of building construction, asbestos-containing materials may be present within inaccessible wall and ceiling cavities throughout the building. It was recommended that further investigation be conducted prior to renovation/demolition. It was recommended that special precautions be taken when disturbing any concrete or painted surfaces, given the presence of silica, lead and potentially arsenic. The presence of mercury within assembled units is not considered a hazard provided that the assembled units remain sealed and intact. Contractors should be warned of the presence of mould and every precaution should be taken to prevent airborne exposure to workers.
November 18, 2015	<i>Phase I Environmental Site Assessment, 21-25 Yorkville Avenue, Toronto, Ontario</i>	Stikeman Elliott LLP	Golder Associates Ltd. (Golder) Valentina Ulloa, B.Sc. David Smyth, P.Geo., QPESA	The Phase I ESA was conducted in advance of a potential property transaction. The site was comprised of a rectangular-shaped parcel of land, approximately 824 m² in area. At the time of the assessment, the site was owned by 173458 Canada Inc. and was developed with a four-storey building (one storey is partially below grade). The building was primarily occupied by Marvel Beauty School; Rest Nest Float Club (a spa)

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				occupied a portion of the first floor. The basement was vacant but was formerly occupied by The School of Makeup Art. The original site building was reportedly constructed in the late 1800s; however, an insurance report indicated that the site building was constructed in 1960. The most recent renovation was reportedly in 1989 when the site building was expanded 10 metres to the north and the third floor was added. Based on a review of city directories, former occupants of the site include Townsend's Livery from 1920 to 1940; Swayze Trailer & Body Works, Machine Repairs Unlimited, and Table Manufacturing in the 1950s; and, Ontario Automobile Co. Ltd. from 1955 until the 1960s. In addition, the site and adjacent building to the west (27 to 29 Yorkville Avenue) were occupied by Parker's Dye Works & Cleaners from 1965 until 1980. Fire insurance plans show two 2,273 L (500 gallon) storage tanks on the north side of the site when it was occupied by Townsend Livery (FIP dated 1943) and Parkers Dye Works & Cleaners Ltd. (FIP dated 1965). Based on the EcoLog ERIS report, these two tanks contained gasoline and were installed in 1919 and 1927. The unknown historical chemical management practices associated with the cleaners and fuel management at the site were identified as sources of potential environmental concern. Toronto Fire Station No. 312, located approximately 15 metres north of the site at 34 Yorkville Avenue, was listed as having one active, single-walled UST, installed in 1990 with a capacity of 2,273 L. Based on the location and proximity to the site, the presence of this active UST was identified as a source of potential environmental concern for the site. Aspen Cleaners was formerly located at 852 Yonge Street, located approximately 90 metres northeast of the site on the northwest corner of Yonge Street and Yorkville Avenue. Aspen Cleaners was registered as a generator of halogenated solvents from 1986 to 1998. Based on proximity to the site and the generation of wastes over 12 years, the presence of a former dry cleaning facility was

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				identified as a source of potential environmental concern for the site. Based on the findings of the Phase I ESA, further assessment of soil and ground water quality was recommended.
January 21, 2016	<i>Phase II Environmental Site Assessment, 21-25 Yorkville Avenue, Toronto, Ontario</i>	KingSett Capital	Pinchin Ltd. (Pinchin) Brittany Bertrand, B.Eng., EIT Robert Tossell, M.Sc., P.Geo. (Limited)	The objective of the Phase II ESA was to address sources of potential environmental concern identified by the Phase I ESA (Golder, 2015) prior to a potential real estate transaction. The Phase II ESA included the advancement of five boreholes, all of which were completed as ground water monitoring wells. The boreholes were advanced to a maximum depth of 6.1 metres below the floor slab. Stratigraphy generally consisted of fine-grained, moist, brown sand to a depth of approximately 1.0 metre beneath the basement floor slab. The sand was underlain by moist, grey clay with trace silt that extended to the maximum borehole completion depth. The depth to the ground water table ranged from 0.439 metres at monitoring well MW04 to 5.325 metres at monitoring well MW01. Select "worst-case" soil samples were submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, PAHs, and metals. Ground water samples collected from the newly installed wells were submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, and metals. The O. Reg. 153/04 Table 3 Standards for an industrial/commercial/community land use and medium to fine textured soil were applied to the site for this report. The soil samples submitted for analysis of PHC fractions F1 to F4, VOCs, PAHs, and/or metals were within the Table 3 Standards. Ground water samples were submitted from monitoring wells MW01, MW02, and MW04; monitoring wells MW03 and MW05 were dry at the time of sampling. The samples collected from monitoring wells MW01 and MW02 had concentrations of one or more VOC parameters that exceeded the Table 3 Standards. The ground water samples submitted for analysis of PHC fractions F1 to F4 and metals were within the Table 3 Standards.

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				Based on the findings of the Phase II ESA, VOC-impacted ground water was identified on the south portion of the site. It was understood that the site was intended to be part of a potential redevelopment. Pinchin recommended that additional assessment and/or remediation work be completed at the time of the planned redevelopment.
January 26, 2016	<i>Sub Slab Vapour Assessment, 21 to 25 Yorkville Avenue, Toronto, Ontario</i>	KingSett Capital	Pinchin Kathryn Matheson, M.Env.Sc. Stephanie James, B.Sc. John Goodin, M.Sc., C.Chem., QPRA	A soil vapour assessment was conducted to assess the potential for chlorinated VOCs within the subsurface to impact indoor air within the site building. The soil vapour assessment was intended to satisfy the client's due diligence requirements prior to the potential acquisition of the site. Three sub-slab vapour pins were installed below the concrete slab in the basement of the site building. The sub-slab vapour samples were collected from the newly installed pins, following leak-testing and purging, for laboratory analysis of PCE and its degradation products. Indoor air concentrations were estimated from the measured sub-slab vapour concentrations by applying the MECP default attenuation factor of 0.004 for an industrial/commercial property use. Based on the soil vapour assessment, the estimated indoor air concentrations of all parameters analyzed were below the MECP's Health-Based Indoor Air Criteria for a commercial/industrial property use. No further assessment work was recommended.
March 4, 2016	<i>Preliminary Geo-Environmental Investigation, 19 Yorkville Avenue, Toronto, Ontario</i>	Bazis International Inc.	McClymont and Rak Engineers, Inc. (MCR) Jeremy Bobro, M.Sc.	The preliminary geo-environmental assessment was conducted for due diligence purposes. At the time of the investigation, the site was occupied by a five-storey commercial office building with one basement level under the north portion of the site. One borehole (BH1) was advanced in the rear parking area behind the building; the borehole was completed as a monitoring well. The borehole was advanced to a depth of 38.15 mbgs and terminated in weathered shale bedrock. Two soil samples and one ground water sample were collected and submitted for analysis of PHC fractions F1 to F4, VOCs, PAHs, polychlorinated

Date	Report Title	Prepared For	Prepared By	Findings
				biphenyls (PCBs), and metals and inorganic parameters. The Table 3 Standards for a residential/parkland/institutional land use and coarse-textured soil were applied to the site for the purposes of this report. The surficial soil sample (BH1-SS1) was found to exceed the Table 3 Standards for various PAH parameters. The deeper soil sample submitted from the upper native soil was within the Table 3 Standards for all parameters analyzed. Ground water quality was within the Table 3 Standards for all parameters analyzed. One ground water sample was also submitted for laboratory analysis of the suite of parameters provided in the <i>Toronto Municipal Code, Chapter 681, Sewers By-law</i>. The sample exceeded both the storm and sanitary sewer criteria for one or more of the following parameters: total suspended solids (TSS), various metals, total PAHs, and nonylphenol. A Phase One ESA, a Phase Two ESA including additional sampling and analysis, and a remediation program in accordance with O. Reg. 153/04 would be required before an RSC could be filed for the property.
February 26, 2018	<i>Phase One Environmental Site Assessment, 11 Yorkville Avenue, Toronto, Ontario</i>	11 Yorkville Partners Inc.	EXP Services Inc. Leah Whittaker, B.Sc. Carla Reynolds, P.Biol., P. Geo. (Limited), QP_{ESA}	The objective of the Phase One ESA was to support the filing of an RSC in accordance with O. Reg. 153/04. PCAs were identified based on a review of the FIPs, chain of title, EcoLog ERIS report, municipal directory search, aerial photographs, and on the site reconnaissance. The potential for each PCA to result in an APEC was evaluated based on its proximity to the site and on its location relative to the inferred southerly ground water flow direction. PCAs at properties located upgradient to the north, or immediately cross-gradient to the east and west of the site were considered to result in an APEC at the site. Six PCAs (S1 to S6), considered to contribute to APECs, were identified on the Phase One property: • S1, S2, S3 – Gasoline and Associated Products Storage in Fixed Tanks; • S4 – Commercial Autobody Shops;

Date	Report Title	Prepared For	Prepared By	Findings
				• S5 – Importation of Fill Material of Unknown Quality; and, • S6 – Operation of Dry Cleaning Equipment (where chemicals are used). Sixteen PCAs (S7 to S22), considered to contribute to APECs, were identified at surrounding properties within the Phase One Study Area: • S7 – Chemical manufacturing, processing and bulk storage; • S8 – Commercial Autobody Shops; • S9 to S13 – Operation of Dry Cleaning Equipment (where chemicals are used). • S14 – Commercial Autobody Shops; • S15 to S21 – Gasoline and Associated Products Storage in Fixed Tanks; and, • S22 – Operation of Dry Cleaning Equipment (where chemicals are used). Twelve APECs were identified. In accordance with O. Reg. 153/04, a Phase Two ESA must be completed to evaluate soil and ground water quality within the APECs before an RSC can be filed for the site.
February 26, 2018	<i>Phase Two Environmental Site Assessment, 11 Yorkville Avenue, Toronto, Ontario</i>	11 Yorkville Partners Inc.	EXP Services Inc. Leah Whittaker, B.Sc. Carla Reynolds, P.Biol., P. Geo. (Limited), QP _{ESA}	A Phase Two ESA was initiated to evaluate soil and ground water quality within the APECs identified by the Phase One ESA. However, given that the site buildings and the underground parking garage at 11 Yorkville Avenue occupied the majority of the footprint of the site, access for drilling equipment was limited. Therefore, the objective of the Phase Two ESA was limited to evaluating the quality of fill material and to installing ground water monitoring wells within accessible areas to provide additional characterization of the horizontal and vertical extent of VOC-impacted ground water previously identified beneath 21 Yorkville Avenue. The Table 3 Standards for a residential/parkland/institutional property use and medium to fine textured soil were applied to the site for the purposes of this report. The Phase Two ESA included the advancement of four test holes (TH1 to TH4), all of which were completed as ground water monitoring wells. Ground water samples were also collected from all previously installed monitoring wells, installed by others. Soil samples were analyzed for the pCOCs including PHC fractions F1 to F4, PAHs, VOCs,

Date	Report Title	Prepared For	Prepared By	Findings
				metals, hydride-forming metals, and other regulated parameters (ORPs). Ground water samples were analyzed for pCOCs including PHC fractions F1 to F4 and VOCs. Surficial soil samples collected from three of the four sampling locations were found to exceed the Table 3 Standards for various PAHs, lead, and/or sodium adsorption ratio (SAR). Deeper soil samples analyzed for vertical delineation purposes suggest that these impacts were confined to the fill material. All soil samples analyzed for PHCs and VOCs were within Table 3 Standards. Ground water samples collected from four locations (MW01, MW02, TH2, and TH3) exceeded the Table 3 Standard for PCE, one ground water sample (TH4) exceeded the Table 3 Standard for trichloroethylene (TCE), and one ground water sample exceeded the Table 3 Standard for vinyl chloride. The ground water samples were within the Table 3 Standards for PHC fractions F1 to F4. It was noted that additional characterization of soil and ground water impacts within each APEC would be required following building demolition before an RSC can be filed for the site. The extent of all impacts identified in soil and ground water must be fully delineated, both vertically and horizontally. Soil and ground water in exceedance of the Table 3 Standards must be remediated and/or risk assessed to support the filing of an RSC.

The analytical results from the previous environmental reports were compared to the Table 3 Standards for a residential/parkland/institutional property use and medium to fine textured soil. Any exceedances are captured in the Phase Two Conceptual Site Model (CSM), discussed in Section 5.9.

The objective of the current Phase Two ESA Update is to provide additional characterization of soil and ground water quality beneath the footprint of the existing site buildings. The field work was completed concurrent with the drilling for the Hydrogeological Investigation (report provided separately), using specialized interior drilling equipment.

3. Scope of Investigation

3.1 Overview of Site Investigation

The investigation included the following activities:

- Preparation of a site-specific Health and Safety Plan;
- Requesting, obtaining, and reviewing public utility locates prior to the Phase Two investigation field work;
- Retaining a subcontractor to locate on-site private utility locates prior to the Phase Two investigation field work;
- Inspecting soil and ground water conditions by advancing 13 test holes across the site, and installing ground water monitors in all of the test holes;
- Field screening of all recovered soil samples for the presence of environmental impact (i.e. organic vapours, chemical staining, or odours);
- Submitting selected soil samples for laboratory analysis of the potential contaminants of concern (pCOCs);
- Monitoring and measuring ground water levels in the monitoring wells to determine ground water elevations and ground water flow direction;
- Submitting ground water samples from each of the newly installed monitoring wells for laboratory analysis of the pCOCs;
- Conducting soil and ground water sampling in accordance with the MECP *Guidance on Sampling and Analytical Methods for Use at Contaminated Site in Ontario*, dated December 1996;
- Following Standard Operating Procedures (SOPs), and Quality Assurance and Quality Control (QA/QC) measures to ensure defined quality standards were met;
- Determining the appropriate Site Condition Standards (SCS) in accordance with O. Reg. 153/04 and comparing the results of the soil and ground water analyses to these Standards; and,
- Documenting the results of the investigation.

EXP has confirmed neither the completeness nor the accuracy of any of the records that were obtained or of any of the statements made by others.

EXP personnel who conducted assessment work for this project included Carla Reynolds (QP_{ESA}), Leah Whittaker, Andrea Fernandes, and Harry Nandakumar. An outline of their qualifications is provided in Appendix C.

3.2 Media Investigated

Soil samples were collected from nine locations across the site and analyzed for the pCOCs including PHC fractions F1 to F4, VOCs, PAHs, metals, hydride-forming metals, and/or other regulated parameters (ORPs). Ground water samples were collected from nine locations across the site and analyzed for PHC fractions F1 to F4 and VOCs. Clustered monitoring wells were

installed in four locations, with a second deeper monitoring well installed to support the objective of the concurrent Hydrogeological Investigation. In these four locations, a ground water sample was also collected from the deep monitoring well and submitted for laboratory analysis of VOCs.

No sediment was present at the Phase Two property.

3.3 Phase One Conceptual Site Model

Following a review of the historical documentation, previous investigations, and site reconnaissance during the Phase One ESA, it is possible to formulate an initial CSM. The CSM is a simplification of reality, which aims to provide a description and assessment of any areas where a PCA on or potentially affecting the Phase One property has occurred, and any pCOCs.

A CSM was developed based on the findings of the Phase One investigation, completed in accordance with O. Reg. 153/04 (EXP, 2018_a).

Six PCAs (S1 to S6), considered to contribute to APECs, were identified on the Phase One property:

- S1, S2, S3 – (28) Gasoline and Associated Products Storage in Fixed Tanks;
- S4 – (10) Commercial Autobody Shops;
- S5 – (30) Importation of Fill Material of Unknown Quality; and,
- S6 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).

Sixteen PCAs (S7 to S22), considered to contribute to APECs, were identified within the Phase One Study Area:

- S7 – (8) Chemical manufacturing, processing and bulk storage;
- S8 – (10) Commercial Autobody Shops;
- S9 to S13 – (37) Operation of Dry Cleaning Equipment (where chemicals are used);
- S14 – (10) Commercial Autobody Shops;
- S15 to S21 – (28) Gasoline and Associated Products Storage in Fixed Tanks; and,
- S22 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).

The number presented in brackets beside each PCA is associated with the PCA number in Table 2, Schedule D of O. Reg. 153/04.

All other PCAs identified within the Phase One Study Area (S23 through S64) are considered *de minimis*, and do not contribute to an APEC on-site. Based on the inferred southerly ground water flow direction, PCAs S23 through S64 are located downgradient of the site, or cross-gradient and sufficiently distant from the site, that the risks associated with these potential sources are considered *de minimis*.

All PCAs, considered to contribute to an APEC, are summarized in Table 3.3.

Table 3.3: Areas of Potential Environmental Concern

Table 1: Areas of Potential Environmental Concern					
Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on RSC Property	Potentially Contaminating Activity ¹	Location of PCA (on-site or off-site)	Contaminants of potential concern	Media potentially impacted (ground water, soil and/or sediment)
A1	East central portion of the site	S1: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs BTEX	Soil and ground water
A2		S2: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site		
B1	Northwest portion of the site	S3: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs BTEX	Soil and ground water
B2		S4: (10) Commercial Autobody Shops	On-site	PHCs VOCs including BTEX PAHs Metals	Soil
				PHCs VOCs including BTEX	Ground Water
C	Central portion of site, north of public laneway	S5: (30) Importation of Fill Material of Unknown Quality	On-site	PAHs Metals As, Sb, Se B-HWS, Hg, CN-EC SAR	Soil
D1	Western portion of the site	S6: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	On-site	VOCs	Soil and ground water
D2		S7: (8) Chemical Manufacturing, Processing, and Bulk Storage	On-site	PHCs VOCs PAHs Metals As, Sb, Se B-HWS, Hg, CN-	Soil
				PHCs VOCs	Ground Water
E	Central portion of site, north of public laneway	S8: (10) Commercial Autobody Shops	Off-site	PHCs VOCs including BTEX	Ground water

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on RSC Property	Potentially Contaminating Activity ¹	Location of PCA (on-site or off-site)	Contaminants of potential concern	Media potentially impacted (ground water, soil and/or sediment)
F1	Eastern portion of the site	S9: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site	VOCs	Ground water
		S10: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site		
		S11: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site		
		S12: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site		
		S13: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site		
F2		S14: (10) Commercial Autobody Shops	Off-site	PHCs VOCs including BTEX	
G	Northern portion of the site	S15: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site	PHCs BTEX	Ground Water
		S16: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S17: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S18: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S19: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S20: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on RSC Property	Potentially Contaminating Activity ¹	Location of PCA (on-site or off-site)	Contaminants of potential concern	Media potentially impacted (ground water, soil and/or sediment)
		S21: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
H	Western portion of the site	S22: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site	VOCs	Ground water

¹ The number presented in brackets is the PCA number listed in Table 2, Schedule D of O. Reg. 153/04.

PHCs = petroleum hydrocarbons

PAHs = polycyclic aromatic hydrocarbons

BTEX = benzene, toluene, ethylbenzene, xylenes

VOCs = volatile organic compounds

As, Se, Sb = arsenic, selenium, antimony

Hg = mercury

CN⁻ = free cyanide

CrVI = hexavalent chromium

HWS-B = hot water-soluble boron

EC and SAR = electrical conductivity and sodium adsorption ratio

APEC A1 - S1: (28) Gasoline and Associated Products Storage in Fixed Tanks – A double-wall, steel AST with a capacity of 935 litres was observed in the basement of 11 Yorkville Avenue. The AST contains diesel for the operation of the back-up generator.

APEC A2 – S2: (28) Gasoline and Associated Products Storage in Fixed Tanks – A historical tank was registered at 11 Yorkville Avenue with a permit dated 1920. The tank was associated with a public garage, located on the south portion of the property. The contents of the tank were not specified.

APEC B1 – S3: (28) Gasoline and Associated Products Storage in Fixed Tanks – Two gasoline USTs, each with a capacity of approximately 2,273 litres, were shown to be located in the roadway immediately north of 21 to 25 Yorkville Avenue on FIPs dated 1939, 1943, and 1965. In municipal directories dated 1905, 1915, 1925 and 1935 and on FIPs dated 1939 and 1943, 21 to 25 Yorkville Avenue was shown to be occupied by “Townsend Livery Limited”, a garage.

APEC B2 – S4: (10) Commercial Autobody Shops – In the 1940s, 21 Yorkville Avenue was occupied by “Swayze Trailer and Body Works”, an autobody shop.

APEC C – S5: (30) Importation of Fill Material of Unknown Quality – The potential for fill material of unknown quality to exist on the site, to the north of the public laneway, was identified based on borehole logs provided as part of previous investigations. According to the borehole logs provided by SPL as part of the *Environmental Soil & Groundwater Investigation* report (2015_a), a layer of silty sand to sand fill up to 2.4 metres thick was encountered beneath the ground

surface. This fill layer was noted to contain trace clay and trace brick fragments. Based on the borehole log provided as part of the *Preliminary Geo-Environmental Investigation* report conducted by MCR (2016), a 1.5-metre-thick layer of sand and gravel fill with trace brick, coal, asphalt, and concrete pieces was encountered beneath the asphalt.

APEC D1 – S6: (37) Operation of Dry Cleaning Equipment (where chemicals are used) – In the 1965 FIP, 21 and 25 Yorkville Avenue (along with the adjacent 27 Yorkville Avenue) are occupied by “Parkers Dye Works and Cleaners Ltd” for cleaning, dying and pressing.

APEC D2 – S7: (8) Chemical Manufacturing, Processing and Bulk Storage – In the 1965 FIP, 26 and 28 Cumberland Street are shown to be occupied by a chemical manufacturer. In the 1957 and 1972 municipal directories, 26 and 28 Cumberland Street are listed as being occupied by Dodge Chemical Co. Ltd.

APEC E – S8: (10) Commercial Autobody Shops – In the 1925 municipal directory, 26 and 28 Cumberland Street are shown to be occupied by “Crown Jas, garage”. In the 1939 and 1943 FIPs, 26 and 28 Cumberland Street are shown to be occupied by “Sussex Auto Body”. In the 1957 and 1972 municipal directories, 22 Cumberland Street was listed as being occupied by Toronto Auto Collision Repairs.

APEC F1 – S9 to S13: (37) Operation of Dry Cleaning Equipment (where chemicals are used) – Based on the findings of the records review, historical dry cleaning operations were identified at 860 Yonge Street (per 1939 and 1943 FIP), 852 Yonge Street (EcoLog ERIS report), 9 Yorkville Avenue (1995 and 2002 municipal directories), 846 Yonge Street (1957 municipal directory), and 807 to 809 Yonge Street (1935, 1945, and 1972 municipal directories).

APEC F2 – S14: (10) Commercial Autobody Shops – According to the 1945 and 1957 municipal directories, 5 Yorkville Avenue was historically occupied by Bayside Body and Fender Repairs, an autobody shop.

APEC G – S15 to S21: (28) Gasoline and Associated Products Storage in Fixed Tanks – Based on the findings of the records review, historical USTs were identified at 34 Yorkville Avenue (EcoLog ERIS report) and 890 Yonge Street (EcoLog ERIS report). Historical service stations with USTs were identified at 34 to 38 Yorkville Avenue (1939 and 1943 FIPs; 1945 to 1995 municipal directories), 880 Yonge Street/1 Davenport Road (1939, 1943, and 1965 FIPs; 1945 and 1957 municipal directories), 745 Church Street/835 Yonge Street (EcoLog ERIS report), 837 Yonge Street (1965 FIP), and 32 Davenport Road (1939 and 1943 FIP; EcoLog ERIS report).

APEC H – S22: (37) Operation of Dry Cleaning Equipment (where chemicals are used) – According to the 1935 municipal directory and the 1939 FIP, 40 Yorkville Avenue was historically occupied by Ford Cleaners Limited.

The locations of the PCAs are shown on Figure 2A. The locations of the APECs are shown on Figure 2B.

3.4 Deviations from Sampling and Analysis Plan

The sampling and analysis plan is outlined in Section 4 of this report and is provided in Appendix D.

Monitoring wells TH106S and TH107 remained dry when checked on January 14, 2019, over seven weeks following installation. No ground water samples were collected from these monitoring wells. There were no other deviations from the sampling and analysis plan.

3.5 Impediments

There was no denial of access to any areas of the Phase Two property during the Phase Two ESA. However, given the configuration of the current building footprints, physical access was restricted.

4. Investigative Method

4.1 General

EXP performed the Phase Two ESA Update following the requirements of O. Reg. 153/04, *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MECP, 1996), and in accordance with generally accepted professional practices.

EXP followed SOPs and QA/QC measures to ensure defined quality standards were met; there were no deviations from the associated SOPs.

4.2 Drilling and Excavating

The drilling investigation was conducted from November 5 to 29, 2018. Pontil Drilling (Pontil) was contracted by EXP to advance the test holes using specialized interior drilling equipment. Test holes were advanced in four locations within the underground parking garage at 11 Yorkville Avenue (TH106 to TH109), in two locations within the basement at 21 Yorkville Avenue (TH101 and TH102), and in three locations within the ground floor at 21 Yorkville Avenue (TH103 to TH105). All the test holes were completed as monitoring wells; clustered pairs were installed in four locations (TH101S/TH101D, TH105I/TH105D, TH106S/TH106D, and TH109S/TH109D).

Test holes within the underground parking garage at 11 Yorkville Avenue were advanced using a track-mounted K40 drill rig equipped with a split spoon sampling system. Test holes within 21 Yorkville Avenue were advanced using a portable Hilti electric drill equipped with a split spoon sampling system.

The locations of the test holes are shown in Figure 3.

4.3 Soil: Sampling

Proper field sampling procedures as documented in *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MECP, 1996), including decontamination of sampling equipment, were followed to minimize the potential for cross-contamination.

Soil samples were collected as the drilling progressed and were examined for geologic information and for physical evidence of chemical impact. Worst-case soil samples were selected from each test hole for laboratory analysis of the pCOCs. The soil samples selected for laboratory analysis were immediately placed into laboratory prepared glass jars, labelled, and stored in a cooler with ice at less than 10°C. A deeper soil sample was collected, preserved, and submitted for analysis for vertical delineation purposes if the worst-case soil sample was found to exceed the Table 3 Standards for any of the parameters analyzed. Field duplicate soil samples were collected for QA/QC purposes and are discussed further in Section 4.12.

The geology observed beneath the underground parking garage at 11 Yorkville Avenue and beneath the basement at 21 Yorkville Avenue was generally a thin layer of sand over silty clay to a depth of approximately 7 metres below the floor slab. The silty clay was underlain by silty sand/sandy silt to a depth greater than 19.8 metres below the floor slab. No petroleum staining was observed in any of the soil samples. No liquid petroleum was observed.

The test hole logs are provided in Appendix E.

4.4 Field Screening Measurements

At all test hole locations, readings of VOC concentrations in the soil samples collected during the drilling investigation were measured using either a Gastec GV-110-S manual pump or a MiniRAE® Lite photoionization detector (PID). The Gastec pumps use inline factory calibrated disposable gas sampling tubes. Colourimetric readings are obtained from the demarcated glass tubes, which are replaced as necessary. Precision of the sampling tube, measured by maximum allowable deviation in colour demarcation, is less than 10%, though may range depending on the sampling tube. Accuracy as measurable by the indicability of the sampling tube is $\pm 25\%$. Readings for soil samples were obtained using Gastec PCE tubes (Model #133LL, 0.1 to 9.0 ppm range). The detection limit for the 133LL PCE tube is 0.1 ppm, with a reported precision of 10% for the 0.2 to 1 ppm range and 5% for the 1 to 3 ppm range. The MiniRAE® Lite PID detector measures total VOCs in the range of 0 to 999.0 ppm with a resolution of 0.1 ppm.

The Gastec GV-110-S manual pump was used to screen soil samples collected from test holes TH101 to TH104, TH106, and TH109. PCE vapour readings ranged from non-detectable (<0.2 ppm) to 1.5 ppm (TH109S) in soil samples where there was sufficient recovery to perform

vapour measurements. The MiniRAE® Lite PID detector was used to screen soil samples from test holes TH105, TH107, and TH108. Total VOC readings measured at these test holes ranged from non-detectable (<0.1 ppm) to 0.8 ppm (TH105I) in soil samples where there was sufficient recovery to perform vapour measurements.

If the concentration of PCE or total VOCs was found to be non-detectable, readings of the petroleum vapour concentrations in the soil samples were then measured using an RKI Instruments Eagle 2, where there was sufficient recovery. This instrument is designed to detect and measure concentrations of combustible gas in the atmosphere. It is equipped with two ranges of measurement, reading concentrations in parts per million by volume (ppmv) or in percentage lower explosive limit (LEL). The RKI Eagle 2 instrument can determine combustible vapour concentrations in the range equivalent to 0 to 11,000 ppmv of hexane. The instrument was configured to eliminate any response from methane for all sampling conducted at the site. Instrument calibration is checked on a daily basis in the LEL range using standard gases comprised of a known concentration of hexane in air. If the instrument readings are within $\pm 10\%$ of the standard gas value, then the instrument is deemed to be calibrated, however if the readings are greater than $\pm 10\%$ of the standard gas value then the instrument is re-calibrated prior to use. The vapour concentrations are accurate to within $\pm 5\%$ of reading or $\pm 2\%$ LEL (whichever is greater) in the 0-100% LEL range and to within ± 50 ppm or $\pm 10\%$ of reading (whichever is greater) in the 0-50,000 ppm range.

Measured petroleum vapours ranged from non-detectable (<5 ppm) to 340 ppm (TH106) in soil samples where there was sufficient recovery to perform vapour measurements.

Sample selection for laboratory analysis was determined based on visual observation, odours, and field screening measurements.

4.5 Ground Water: Monitoring Well Installation

Six monitoring wells were installed within the underground parking garage at 11 Yorkville Avenue (TH106S/TH106D, TH107, TH108, and TH109S/TH109D) using a track-mounted K40 drill rig. Seven monitoring wells were installed within 21 Yorkville Avenue (TH101S/TH101D, TH102, TH103, TH104, and TH105I/TH105D) using a portable Hilti electric drill.

The monitoring wells installed using the K40 drill rig were constructed from 50 millimetre diameter threaded Schedule 40 PVC pipe with a slot size of 0.01 inches and 2 threads per inch (TPI). The monitoring wells installed using the Hilti drill rig were constructed from 31.75 millimetre diameter threaded Schedule 40 PVC pipe with a slot size of 0.01 inches and 2 TPI. The upper section of the pipe is solid and the lower section of pipe is slotted. The lower part of the annulus of the hole was backfilled with silica sand up to approximately 0.6 metres above the top of the slotted section. A bentonite seal a minimum of 0.6 metres thick was placed above the sand to just below grade. Bentonite and concrete was used to seal the monitoring wells at grade. Each monitoring well is equipped with a protective casing and locking lid.

Monitoring well construction details are provided in Table 4. The screened intervals within the newly installed shallow and intermediate monitoring wells were selected to provide horizontal delineation of VOC-impacts in ground water. The screened intervals within the newly installed deeper monitoring wells (TH101D, TH105D, TH106D, and TH109D) were determined by the City of Toronto's requirements for the hydrogeological investigation, based on the lowest footing elevation of the proposed structure. Ground water samples were collected from the deeper monitoring wells for analysis of VOCs for the purpose of vertical delineation.

Proper field sampling procedures as documented in *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (MECP, 1996), including decontamination of sampling equipment, were followed to minimize the potential for cross-contamination.

The locations of the ground water monitoring wells are shown in Figure 3.

4.6 Ground Water: Field Measurements of Water Quality Parameters

Immediately prior to collecting the ground water samples, wells were purged until water quality parameters indicated that stable aquifer conditions had been reached.

Water quality parameters (pH, specific conductance (EC), total dissolved solids (TDS), and temperature) were measured using a Hanna Portable pH/EC/TDS/Temperature Meter. The pH (two-point calibration) and EC are calibrated prior to use. The meter detects pH in the range of 0.00 to 14.00 ± 0.01 pH, EC from 0 to 3,999 $\mu\text{S}/\text{cm} \pm 2\%$ full scale (F.S.), TDS from 0 to 2,000 ppm (mg/L) $\pm 2\%$ F.S., and temperature from 0.0 to 60.0°C $\pm 0.5^\circ\text{C}$.

The water quality parameters were measured at each monitoring well prior to sample collection and are provided in Table 3.

4.7 Ground Water: Sampling

At least 24 hours prior to sampling, the monitoring wells were developed using a dedicated bailer by removing a minimum of three well volume equivalents of ground water or purging to dryness. Immediately prior to collecting the ground water samples, wells were purged until field stabilization parameters indicated that stable aquifer conditions had been reached.

A dedicated bailer was used to collect the ground water samples from the newly installed monitoring wells, with one exception. The initial ground water sample collected from monitoring well TH103 was collected using a bailer. However, subsequent sampling events at TH103 on November 30, 2018 and December 11, 2018 used a low flow ground water sampling technique.

Ground water sampling was conducted concurrent with drilling activities from November 6 to 30, 2018, and on December 11, 2018. Monitoring wells TH106S and TH107 remained dry as of January 14, 2019. Field duplicate samples were collected for QA/QC purposes and are discussed in Section 4.12.

The ground water samples selected for laboratory analysis were immediately placed into laboratory prepared glass bottles and vials, labeled, and transported to the laboratory stored in a cooler with ice at less than 10°C.

4.8 Sediment: Sampling

Sediment was not present at the Phase Two property. Therefore, no sediment samples were collected.

4.9 Analytical Testing

Laboratory analyses were completed by AGAT Laboratories (AGAT), an accredited laboratory located in Mississauga, Ontario. The laboratory performed the work following formal written methods and procedures. These methods include all the minimum requirements as specified in the document entitled *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* (March 9, 2004, amended as of July 1, 2011).

4.10 Residue Management Procedures

Soil cuttings from the drilling investigation were placed in drums in a designated area at the site and were disposed off-site following the completion of drilling. As no petroleum product sheen or odours were detected, purge water from development of the ground water monitors and fluids from the decontamination of sampling equipment were disposed on a paved portion of the site, away from any catch basins.

4.11 Elevation Surveying

A topographic survey was conducted by WSP on August 21, 2017. The benchmark used was a geodetic datum derived from City of Toronto Bench Mark No. CT828 (elevation= 116.982 metres). The benchmark is located on a public library building (north side of Yorkville Avenue, west of Yonge Street), 3.96 metres north of the southeast corner and 0.43 metres above grade. A copy of the topographic survey plan is provided as Appendix B.

The elevations of the newly installed monitoring wells were surveyed by EXP on November 13, 2018.

4.12 Quality Assurance and Quality Control Measures

Soil and ground water samples were collected, preserved, and handled in accordance with the sampling and analysis plan (Appendix D). Soil and ground water samples selected for laboratory analysis were immediately placed into laboratory prepared glass jars, bottles and/or vials, labeled, and stored in a cooler with ice at less than 10°C. Where F1/BTEX and/or VOC analysis of soil was required, the collection of discrete samples using methanol preservation and immediate placement into a cooler with free ice to maintain the temperature at less than 10°C for transport to the laboratory. All sample containers were labeled with the sample identification number, sample date, and project number.

Dedicated equipment was used for ground water sampling at different monitoring wells and soil sampling equipment was thoroughly cleaned between sample locations. Where sampling for trace organics, it was ensured that bare hand or latex glove did not come into contact with the soil or ground water as it was being placed into the laboratory sample container. Soil sampling equipment used for the collection of trace organics was cleaned using soap and water, followed by a water rinse and a methanol rinse between sampling locations.

One trip blank sample was submitted for laboratory analysis with each laboratory submission of ground water samples to be analyzed for VOCs.

Field duplicate samples were collected from each medium being sampled, so that at least one field duplicate sample was submitted for laboratory analysis for every ten samples submitted for laboratory analysis.

- One field duplicate soil sample was collected from test hole TH103 and submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, PAHs, metals, hydride-forming metals, and ORPs;
- One field duplicate soil sample was collected from test hole TH109S and submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, PAHs, metals, hydride-forming metals, and ORPs;
- One field duplicate ground water sample was collected from monitoring well TH101S and submitted for laboratory analysis of PHC fractions F1 to F4 and VOCs;
- One field duplicate ground water sample was collected from monitoring well TH102 and submitted for laboratory analysis of PHC fractions F1 to F4 and VOCs;
- One field duplicate ground water sample was collected from monitoring well TH103 and submitted for laboratory analysis of PHC fractions F1 to F4 and BTEX; and,
- One field duplicate ground water sample was collected from monitoring well TH106D and submitted for laboratory analysis of VOCs.

All field instruments are calibrated regularly, as described in Sections 4.4 and 4.6.

There were no deviations from the QA/QC measures as set out in the sampling and analysis plan. The QA/QC measures are discussed further in the Quality Management, Control and Assurance procedures outlined in Appendix F.

5. Review and Evaluation

5.1 Geology

The geology observed beneath the underground parking garage at 11 Yorkville Avenue and beneath the basement at 21 Yorkville Avenue was generally a thin layer of sand over silty clay to a depth of approximately 7 metres below the floor slab. The silty clay was underlain by silty sand/sandy silt to a depth greater than 19.8 metres below the floor slab.

According to the borehole log provided as part of the *Preliminary Geo-Environmental Investigation* report (MCR, 2016), the silty sand/sandy silt layer extended to a depth of 34 mbgs; a clayey silt till layer was encountered immediately overlying the shale bedrock, from approximately 34 to 38 mbgs.

5.2 Ground Water: Elevations and Flow Direction

The screened intervals within the newly installed shallow monitoring wells (Table 5A) were selected to provide horizontal delineation of VOC-impacts in ground water. The screened intervals within the newly installed deeper monitoring wells (Table 5B) were determined by the City of Toronto's requirements for the hydrogeological investigation, based on the lowest footing elevation of the proposed structure. Ground water samples were collected from these deeper monitoring wells for analysis of VOCs for the purpose of vertical delineation.

All measurements of ground water and liquid petroleum (if any) depth were made with a Solinst Model 122 oil/water interface probe. Both the probe and the measuring tape that come into contact with liquids within the monitor are cleaned with Alconox detergent, and then rinsed with distilled water and methanol and allowed to air dry after each measurement.

For all monitors in which liquid petroleum is detected with the interface probe, the presence of liquid petroleum is verified with a bailer. For all monitoring wells in which liquid petroleum is not detected with the interface probe, a bailer is used to check the monitoring well for the presence of phase-separated liquid petroleum. A free flowing liquid petroleum layer was not detected in any of the ground water monitoring wells installed during the Phase Two investigation.

The ground water elevations were calculated based on static water level measurements documented during the Phase Two investigation using a Solinst Model 122 oil/water interface probe. The ground water elevation in the shallow monitoring wells ranged from 108.41 (TH107) to 113.94 (MW04) masl. The ground water elevation in the deeper monitoring wells ranged from 96.16 masl (BH1) to 108.80 masl (TH105I) masl. The ground water elevations are provided in Table 5A and 5B.

A ground water contour plan was prepared using the measured elevations of the ground water table, as shown in Figures 7A and 7B. The ground water contours in the shallow ground water unit were determined based on ground water elevations at monitoring wells TH101S, MW02 and

BH15-3S. The ground water contours in the deep ground water unit were determined based on ground water elevations at monitoring wells TH101D, TH105D and TH106D. Based on the ground water contour plan, localized ground water flow across the site was determined to be southwest within the shallow water-bearing unit and west-northwest within the deeper water-bearing unit. The monitoring wells used to determine the ground water contours were selected based on their overlapping screen intervals and on a water table measurement that straddled the screen interval; any measurements that were believed to be outliers were excluded from the data set. The ground water table measurements at the site may be influenced by the presence of basements and by dewatering activities at nearby properties, and the ground water table may not have reached equilibrium within the newly installed wells. Additional monitoring events would be required to verify the ground water flow directions.

Given the depth of the ground water table from 3.109 to 3.862 mbgs in shallow monitoring wells advanced from grade, it is possible that local ground water flow conditions are being influenced by the presence of basements within the on-site buildings and at adjacent properties, and by buried utility conduits. Ground water flow conditions may also be influenced by dewatering activities associated with construction near the site.

5.3 Ground Water: Hydraulic Gradients

Results of ground water monitoring activities indicate a net on-site horizontal hydraulic gradient of 0.02 m/m to the southwest within the shallow water-bearing unit and of 6.7×10^{-3} m/m to the west-northwest within the deeper water-bearing unit, based on ground water contours developed from measurements obtained on January 14, 2019.

The vertical hydraulic gradients were calculated for in the clustered monitoring well pairs TH101S/TH101D, MW02/TH105D, and TH109S/TH109D based on measurements collected from January 14, 2019. The vertical hydraulic gradient in these pairs ranged from 0.716 to 1.065 m/m downward.

5.4 Fine-Medium Soil Texture

According to O. Reg.153/04, to be classified as medium to fine textured soil, at least two-thirds of the soil on Phase Two property, measured by volume, must contain 50% or more by mass of particles that are less than 75 micrometres in mean diameter.

Over the course of the Phase Two ESA (EXP, 2018b) and current Phase Two ESA Update, eight samples were submitted for grain size analysis. The results of these analyses are presented in Table 5.4.

Table 5.4: Grain Size Analyses

Sample ID	Sampling Interval (masl)	Soil Description	Classification
TH105I SS5	114.22 to 113.57	Silty Sand	Coarse
TH1	113.04 to 112.44	Silty Clay	Fine
TH101S SS4	112.05 to 111.40	Silty Clay	Fine
TH105I SS10	109.07 to 108.27	Clayey Silt	Fine
TH105D SS7	96.8 to 96.57	Silty Sand	Fine
TH106D SS9	96.28 to 95.68	Silty Sand	Coarse
TH101D SS11	95.55 to 95.25	Silty Sand	Coarse
TH105D SS8	95.37 to 95.07	Silty Sand	Coarse

The grain size classifications were reviewed alongside the stratigraphy presented in the test hole logs. Following this review, the Qualified Person (QP_{ESA}) is of the opinion that at least two-thirds of the material between grade and bedrock (38 mbgs) is anticipated to be medium to fine textured. Therefore, the Table 3 Generic Site Condition Standards for a residential/parkland/institutional land use with medium to fine textured soil were applied to the site.

5.5 Soil: Field Screening

At all test hole locations, readings of VOC vapour concentrations in the soil samples collected during the drilling investigation were measured using either a Gastec GV-110-S manual pump with sampling tubes calibrated for PCE or a MiniRAE® Lite PID. The detection limit for the 133LL Gastec PCE tube is 0.1 ppm, with a reported precision of 10% for the 0.2 to 1 ppm range and 5% for the 1 to 3 ppm range. The MiniRAE® Lite PID detector measures total VOCs in the range of 0 to 999.0 ppm with a resolution of 0.1 ppm.

The Gastec GV-110-S manual pump was used to screen soil samples collected from test holes TH101 to TH104, TH106, and TH109. PCE vapour readings ranged from non-detectable (<0.2 ppm) to 1.5 ppm (TH109S) in soil samples where there was sufficient recovery to perform vapour measurements. The MiniRAE® Lite PID detector was used to screen soil samples from test holes TH105I, TH107, and TH108. Total VOC readings measured at these test holes ranged from non-detectable (<0.1 ppm) to 0.8 ppm (TH105I) in soil samples where there was sufficient recovery to perform vapour measurements.

If the concentration of TCE was found to be non-detectable, readings of the petroleum vapour concentrations in the soil samples were then measured using an RKI Instruments Eagle 2, where there was sufficient recovery. Measured petroleum vapours ranged from non-detectable

(<5 ppm) to 340 ppm (TH106) in soil samples where there was sufficient recovery to perform vapour measurements.

Vapour readings for each soil sample are provided on the test hole logs in Appendix E.

5.6 Soil Quality

Soil samples were collected from nine locations and submitted to the laboratory for analysis of the pCOCs including PHC fractions F1 to F4, VOCs, PAHs, and/or metals, hydride-forming metals, and ORPs.

The maximum concentrations detected for each of the parameters analyzed in soil during the Phase Two investigation are provided in Table 6. The maximum concentrations presented in Table 6 include the soil samples collected as part of the Phase Two ESA (EXP, 2018_b) as well as the soil samples collected by others (SPL, 2015_a; MCR, 2016; Pinchin, 2016_a).

The results of the soil chemical analyses along with the Table 3 Standards are provided in Tables 7 through 10. The soil samples were within the Table 3 Standards for all parameters analyzed with the following exceptions:

- Soil sample TH101S-SS1, collected from TH101S at a depth of 0 to 0.6 metres below the basement floor slab, exceeded the Table 3 Standards for VOC parameters (PCE and TCE);
 - The deeper sample TH101S-SS4, at a depth of 1.8 to 2.4 metres below the basement floor slab, was within the Table 3 Standards for all VOC parameters.
- Soil sample TH103-SS1, collected from TH103 at a depth of 0 to 0.6 metres below the ground floor slab, exceeded the Table 3 Standards for cadmium and EC;
 - The deeper sample TH103-SS3, collected from 1.2 to 1.8 metres below the ground floor slab, was within the Table 3 Standards for cadmium and EC.
- Soil sample TH104-SS1, collected from TH104 at a depth of 0.3 to 0.9 metres below the ground floor slab, exceeded the Table 3 Standard for EC;
 - The deeper sample TH104-SS3, collected from 1.5 to 2.1 metres below the ground floor slab, was within the Table 3 Standard for EC.
- Soil sample TH106-SS1, collected at TH106 at a depth of 0 to 0.6 metres below the parking garage floor slab, exceeded the Table 3 Standards for EC and SAR;
 - The deeper sample TH106-SS3, collected from 1.2 to 1.8 metres below the parking garage floor slab, exceeded the Table 3 Standard for EC but was within the Standard from SAR.
- Soil sample TH107-SS1, collected from TH107 at a depth of 0 to 0.6 metres below the parking garage floor slab, exceeded the Table 3 Standards for two PAH parameters (benzo(a)pyrene and fluoranthene) and for SAR; and,
 - The deeper sample TH107-SS3, collected from 1.2 to 1.8 metres below the floor slab, was within the Table 3 Standards for all PAH parameters and for SAR.
- Soil sample TH108-SS1, collected from TH108 at a depth of 0 to 0.6 metres below the parking garage floor slab, exceeded the Table 3 Standards for EC and SAR;

- o The deeper sample TH108-SS2, collected from 0.6 to 1.2 metres below the parking garage floor slab, also exceeded the Table 3 Standards for EC and SAR.

Twelve soil samples were analyzed for pH. The pH of all soil samples collected from within 1.5 metres below ground level was within the range of 5.0 to 9.0. The pH of all soil samples collected below 1.5 metres below ground level was within the range of 5.0 to 11.0. The site was not classified as a sensitive area, and the Table 3 Standards are appropriate for this site.

The analytical results do not suggest the potential presence of dense non-aqueous phase liquids in soil at the site. The elevated concentration of TCE may be a result of the chemical or biological transformation of PCE in this sampling location. Ground water in this location was also impacted with various VOC parameters (cis-1,2-Dichloroethylene, PCE, trans-1,2-Dichloroethylene, TCE, and vinyl chloride), as discussed in Section 5.7.

Copies of the Laboratory Certificates of Analysis are provided in Appendix G.

5.7 Ground Water Quality

Twelve ground water samples, including three field duplicate samples, were collected and submitted to the laboratory for analysis of PHC fractions F1 to F4. Fourteen ground water samples, including three field duplicate samples, were collected and submitted to the laboratory for analysis of VOCs.

The maximum concentrations detected for each of the parameters analyzed in ground water during the Phase Two investigation are provided in Table 6. The maximum concentrations presented in Table 6 include the ground water samples collected as part of the Phase Two ESA (EXP, 2018_b) as well as any ground water samples collected by others (SPL, 2015_a; MCR, 2016; Pinchin, 2016_a).

The results of the ground water chemical analyses along with the Table 3 Standards are provided in Tables 11 and 12. The ground water samples were within the Table 3 Standards for all the parameters analyzed with the following exceptions:

- One ground water sample (TH101S) exceeded the Table 3 Standard for cis-1,2-Dichloroethylene, PCE, trans-1,2-Dichloroethylene, TCE, and vinyl chloride.

The initial ground water sample collected from monitoring well TH103, collected using a bailer on November 7, 2018, exceeded the Table 3 Standard for PHC fraction F2. This monitoring well was re-sampled on two separate occasions using a low flow sampling technique (November 30, 2018 and December 11, 2018). On both occasions, the ground water was found to be within the Table 3 Standard for PHC fractions F1 to F4. The elevated concentration of PHC fraction F2 in the initial sample was attributed to the presence of sediment in the sample; as a result, this exceedance was not carried forward.

Based on a comparison of the contaminant concentrations to their half solubility limits, the results of the current investigation do not suggest the presence of dense non-aqueous phase

liquids in ground water at the site. Certain contaminants detected in ground water at the site (cis-1,2-Dichloroethylene, trans-1,2-Dichloroethylene, TCE, and vinyl chloride) may be related to the chemical degradation of PCE at the selected sampling locations. The analytical results do not suggest that there are contaminants in soil serving as a source of contaminant mass contributing to the local ground water beneath the Phase Two property.

Copies of the Laboratory Certificates of Analysis are provided in Appendix G.

5.8 Quality Assurance and Quality Control Results

Laboratory analyses were completed by AGAT. The laboratory performed the work following formal written methods and procedures. These methods include all the minimum requirements as specified in the document entitled *Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act* (March 9, 2004, amended as of July 1, 2011). All samples were handled in accordance with the Protocol.

Data quality objectives for the parameters of concern were set to meet acceptable Reporting Detection Limits (RDLs) to achieve the goal of defining areas where such parameters are present at levels in excess of applicable generic Standards, as defined in O. Reg. 153/04, under the *Environmental Protection Act*. This included providing written instruction to the participating analytical laboratory describing the required analyses on the Chain of Custody prepared and delivered with the samples. All analytical RDLs were below the Table 3 Standards.

Field duplicate samples were collected from each medium being sampled, so that at least one field duplicate sample was submitted for laboratory analysis for every ten samples submitted for laboratory analysis.

- One field duplicate soil sample was collected from test hole TH103 and submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, PAHs, metals, hydride-forming metals, and ORPs;
- One field duplicate soil sample was collected from test hole TH109S and submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, PAHs, metals, hydride-forming metals, and ORPs;
- One field duplicate ground water sample was collected from monitoring well TH101S and submitted for laboratory analysis of PHC fractions F1 to F4 and VOCs;
- One field duplicate ground water sample was collected from monitoring well TH102 and submitted for laboratory analysis of PHC fractions F1 to F4 and VOCs;
- One field duplicate ground water sample was collected from monitoring well TH103 and submitted for laboratory analysis of PHC fractions F1 to F4 and BTEX; and,
- One field duplicate ground water sample was collected from monitoring well TH106D and submitted for laboratory analysis of VOCs.

One trip blank sample was submitted for laboratory analysis with each laboratory submission of ground water samples to be analyzed for VOCs.

The precision of the analytical results can be expressed by the relative percent difference (RPD) between the original sample and the duplicate sample. The equation used to determine the RPD is provided below.

$$\text{RPD} = 2 \times (|(S-D)|/(S+D)) \times 100$$

Where, S = concentration of the original sample
D = concentration of the duplicate sample

RPDs can only be calculated if the concentration of both the duplicate sample and the original sample are above the analytical reporting detection limit (RDL).

The alert limit criteria applied by EXP are set out in the document entitled the “Ontario QA/QC Interpretation Guide – Environmental Services”, prepared by Maxxam Analytics in 2015. In this document, it is noted that meaningful RPDs can only be calculated when the average of the two sample concentrations are greater than five times the laboratory RDL.

For soil samples, the calculated RPDs between the duplicate samples and the original samples were within the alert limits for all parameters analyzed with one exception. Sample TH103-SS1 and its field duplicate (TH1030-SS1) had concentrations of selenium with an RPD of 67%. The average concentration of selenium between the two samples was less than five times the RDL. Therefore, this alert limit exceedance was not considered to be significant. The concentration of selenium in both samples was within the Table 3 Standards.

For ground water samples, the calculated RPDs between the duplicate samples and the original samples were within the alert limits for all parameters analyzed with one exception. Sample TH103 and its field duplicate (TH1030) had concentrations of toluene and xylenes with RPDs of 32% and 68%, respectively. The average concentration of toluene between the two samples was less than five times the RDL. The average concentration of xylene between the two samples was slightly greater than five times the RDL. The concentrations of toluene and xylenes in both samples were well within the Table 3 Standards. The alert limit exceedance for xylene is not anticipated to have a material effect on the interpretation of results presented in this report.

All trip blanks submitted to the laboratory were below the laboratory RDL for VOCs.

AGAT did not provide any comments or remarks on the Certificates of Analysis regarding the validity of the results for any of the samples analyzed.

The QA/QC measures are discussed further in the Quality Management, Control and Assurance procedures outlined in Appendix F.

Laboratory Certificates of Analysis were provided for all samples analyzed and are provided in Appendix G.

5.9 Phase Two Conceptual Site Model

A CSM was developed based on the APECs and areas where a PCA has occurred, identified in the Phase One Study Area during the Phase One investigation, as well as using information collected during the Phase Two ESA and Phase Two ESA Update. The CSM is a simplification of reality, which aims to identify the areas of concern, contaminant transport and exposure pathways and receptors. Cross-sections of the site were developed showing the hydrogeological characteristics and distribution of potential COCs at the Phase Two property. Cross section plans of the site are provided as Figures 5A through 5G and Figures 6A through 6G.

The lateral and vertical delineation of the contaminants found to be in exceedance of the Table 3 Standards are illustrated on Figures 5A through 5G, 6A through 6G and Figures 8A through 8G. The maximum soil and ground water concentrations encountered during the Phase Two investigation are presented in Table 6.

The potential human and ecological receptors located on, in, or under the site were evaluated given the release mechanisms and routes of exposure to contaminants present at the site at concentrations greater than the Table 3 Standards. Human health receptors were assessed taking into consideration the intended use of the site for residential land use. The Ecological Conceptual Site Model (ECSM) and Human Health Conceptual Site Model (HHCSM) are provided as Figures 9 and 10, respectively.

There is the potential for human and ecological receptors at the site to be exposed to elevated levels of VOCs, PAHs, lead, cadmium, EC and/or SAR in soil and to VOCs in ground water through various exposure pathways. Soil and ground water in exceedance of the Table 3 Standards must be remediated and/or risk assessed before an RSC can be filed.

The Phase Two CSM is provided as Appendix H.

6. Conclusions

The objective of the Phase Two ESA Update was to determine the extent of soil and ground water impacts identified by the Phase Two ESA (EXP, 2018_b). Specialized interior drilling equipment was used to advance test holes in four locations within the underground parking garage at 11 Yorkville Avenue (TH106 to TH109), two locations within the basement at 21 Yorkville Avenue (TH101 and TH102), and three locations within the ground floor at 21 Yorkville Avenue (TH103 to TH105). All the test holes were completed as monitoring wells; clustered pairs were installed in four locations (TH101S/TH101D, TH105I/TH105D, TH106S/TH106D, and TH109S/TH109D).

Surficial soil samples collected from nine locations were found to exceed the Table 3 Standards for PAHs, cadmium, lead, EC, and/or SAR. Deeper soil samples analyzed for vertical

delineation purposes suggest that these impacts were confined to the fill material in the test holes advanced at grade, and within 1.5 metres below the floor slab beneath the site buildings.

VOC-impacts in soil and ground water appear to be confined to the western portion of the Phase Two property. Soil with concentrations of PCE and/or TCE in exceedance of the Table 3 Standards was identified in two locations (MW02 and TH101S) beneath 21 Yorkville Avenue. Soil samples collected from 17 additional locations across the site were within the Table 3 Standards for VOCs. Ground water with concentrations of VOCs in exceedance of the Table 3 Standards was identified in six locations, beneath the site building at 21 Yorkville Avenue and beneath the rear parking lot at 19 Yorkville Avenue. The highest concentrations of the VOC parameters that exceeded the Table 3 Standards were encountered at TH101S on the northwest corner of the Phase Two property. In a deeper sample collected from monitoring well TH101D, screened from 16.8 to 19.8 metres below the floor slab, PCE was detected but the concentration was within the Table 3 Standard for VOCs.

All soil and ground water samples analyzed for PHC fractions F1 to F4 were within Table 3 Standards.

Based on the findings of the Phase Two ESA and the Phase Two ESA Update, remediation and/or risk assessment will be required to address the soil and ground water impacts before an RSC can be filed for the site.

6.1 Signatures

Respectfully submitted,
EXP Services Inc.



Leah Whittaker, B.Sc.
Project Manager

I, the QP, certify that I have conducted and/or supervised the Phase Two ESA Update and that all findings and conclusions of the Phase Two ESA Update are included in the report.



Carla Reynolds, P.Biol., P.Geo. (Limited), QP_{ESA}
Manager, Environmental Services

7. References

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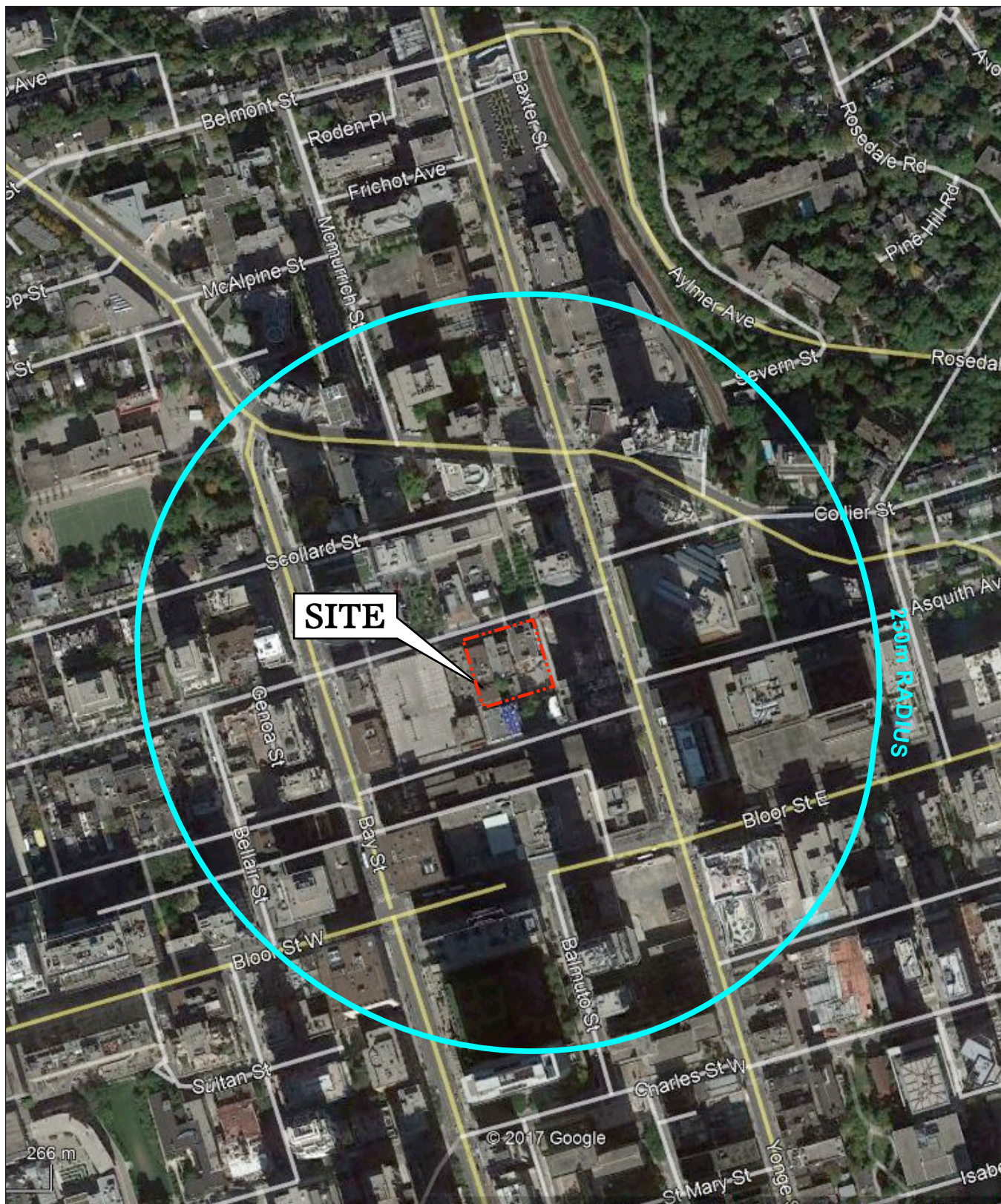
*Client: 11 Yorkville Partners Inc.
Project Name: Phase Two Environmental Site Assessment Update
11 Yorkville Avenue, Toronto, Ontario
Project Number: MRK-00242474-A0
Date: February 28, 2019*

Appendices



Figures





SCALE:
0 50 100m

SOURCE:
GOOGLE EARTH IMAGE
DATED NOV. 9, 2016



DRAWN BY	CHECKED BY
K.G.	L.W.

LEGEND:

- PHASE TWO PROPERTY BOUNDARY
- 250m RADIUS PHASE ONE STUDY AREA



LOCALITY PLAN

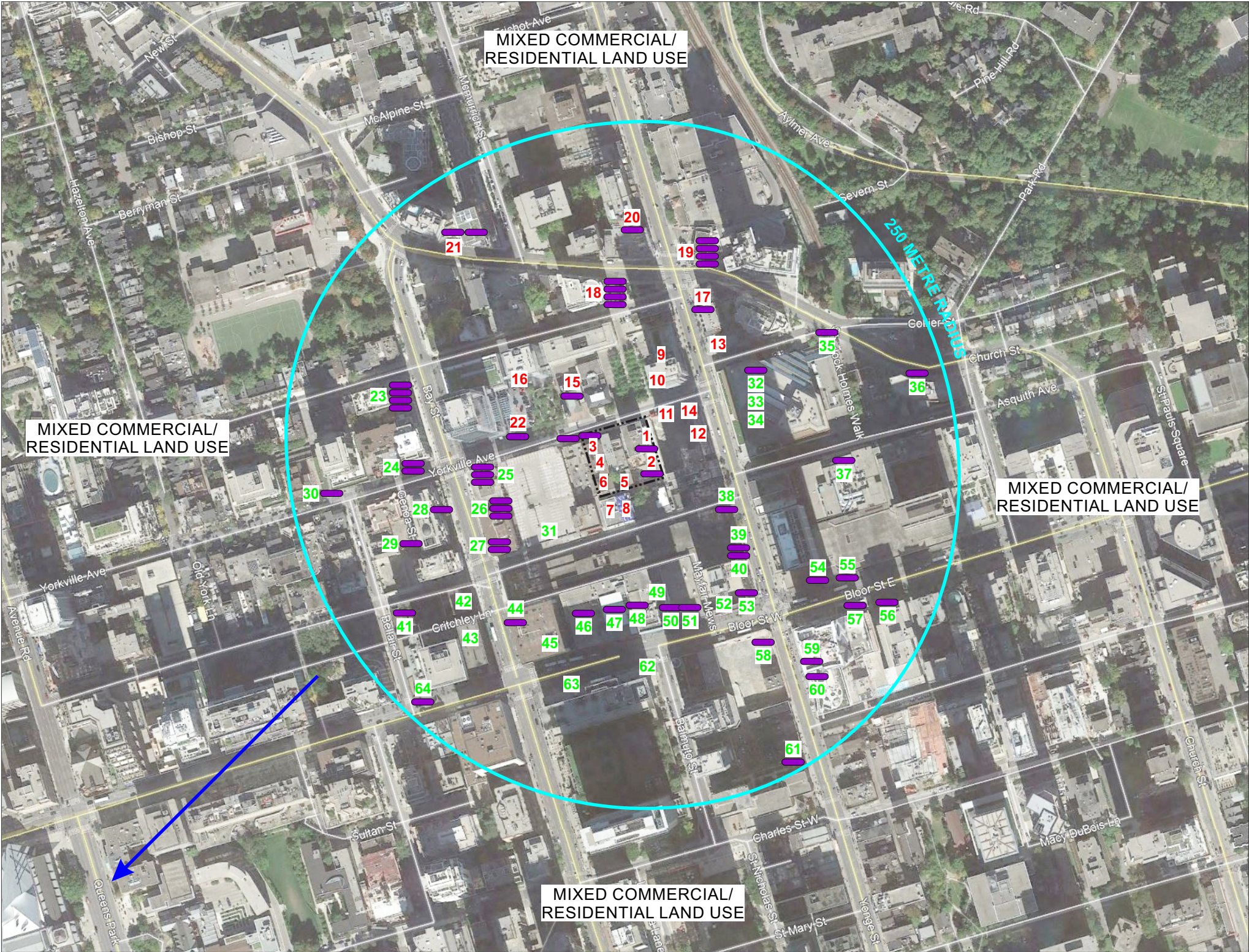
11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2019

FIGURE

1



PCA Source Number	PCA
1	(28) Gasoline and Associated Products Storage in Fixed Tanks
2	(28) Gasoline and Associated Products Storage in Fixed Tanks
3	(28) Gasoline and Associated Products Storage in Fixed Tanks
4	(10) Commercial Autobody Shops
5	(30) Importation of Fill Material of Unknown Quality
6	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
7	(8) Chemical manufacturing, processing and bulk storage
8	(10) Commercial Autobody Shops
9	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
10	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
11	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
12	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
13	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
14	(10) Commercial Autobody Shops
15	(28) Gasoline and Associated Products Storage in Fixed Tanks
16	(28) Gasoline and Associated Products Storage in Fixed Tanks
17	(28) Gasoline and Associated Products Storage in Fixed Tanks
18	(28) Gasoline and Associated Products Storage in Fixed Tanks
19	(28) Gasoline and Associated Products Storage in Fixed Tanks
20	(28) Gasoline and Associated Products Storage in Fixed Tanks
21	(28) Gasoline and Associated Products Storage in Fixed Tanks
22	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
De Minimis PCAs	
23 to 29	(28) Gasoline and Associated Products Storage in Fixed Tanks
30	(10) Commercial Autobody Shops
31	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
32	(28) Gasoline and Associated Products Storage in Fixed Tanks
33	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
34	(17) Dye Manufacturing, Processing and Bulk Storage
35 to 41	(28) Gasoline and Associated Products Storage in Fixed Tanks
42 to 43	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
44	(28) Gasoline and Associated Products Storage in Fixed Tanks
45	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
46 to 48	(28) Gasoline and Associated Products Storage in Fixed Tanks
49	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
50 to 51	(28) Gasoline and Associated Products Storage in Fixed Tanks
52	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
53 to 61	(28) Gasoline and Associated Products Storage in Fixed Tanks
62 to 63	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
64	(28) Gasoline and Associated Products Storage in Fixed Tanks



SOURCE:

BASED ON GOOGLE EARTH
IMAGE DATED OCT. 10, 2016

- LEGEND:
- RSC PROPERTY BOUNDARY
 - 250 METRE RADIUS PHASE ONE STUDY AREA
 - TANK LOCATION
 - INFERRED GROUND WATER FLOW DIRECTION (EXP, 2019)
 - RED INDICATES PCA CONTRIBUTING TO AN APEC
 - GREEN INDICATES PCA IS CONSIDERED TO BE DE MINIMIS

PHASE ONE
CONCEPTUAL SITE
MODEL – PCAs

FIGURE
2A

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 | DATE: FEBRUARY 2019

exp. DRAWN BY: K.G. CHECKED BY: L.W.



APEC	PCA Source Number	PCA
A1	1	(28) Gasoline and Associated Products Storage in Fixed Tanks
A2	2	(28) Gasoline and Associated Products Storage in Fixed Tanks
B1	3	(28) Gasoline and Associated Products Storage in Fixed Tanks
B2	4	(10) Commercial Autobody Shops
C	5	(30) Importation of Fill Material of Unknown Quality
D1	6	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
D2	7	(8) Chemical manufacturing, processing and bulk storage
E	8	(10) Commercial Autobody Shops
F1	9	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
	10	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
	11	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
	12	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
	13	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
F2	14	(10) Commercial Autobody Shops
G	15	(28) Gasoline and Associated Products Storage in Fixed Tanks
	16	(28) Gasoline and Associated Products Storage in Fixed Tanks
	17	(28) Gasoline and Associated Products Storage in Fixed Tanks
	18	(28) Gasoline and Associated Products Storage in Fixed Tanks
	19	(28) Gasoline and Associated Products Storage in Fixed Tanks
	20	(28) Gasoline and Associated Products Storage in Fixed Tanks
	21	(28) Gasoline and Associated Products Storage in Fixed Tanks
H	22	(37) Operation of Dry Cleaning Equipment (where chemicals are used)

SCALE:

0

10

20m



DRAWN BY

J.D.H.

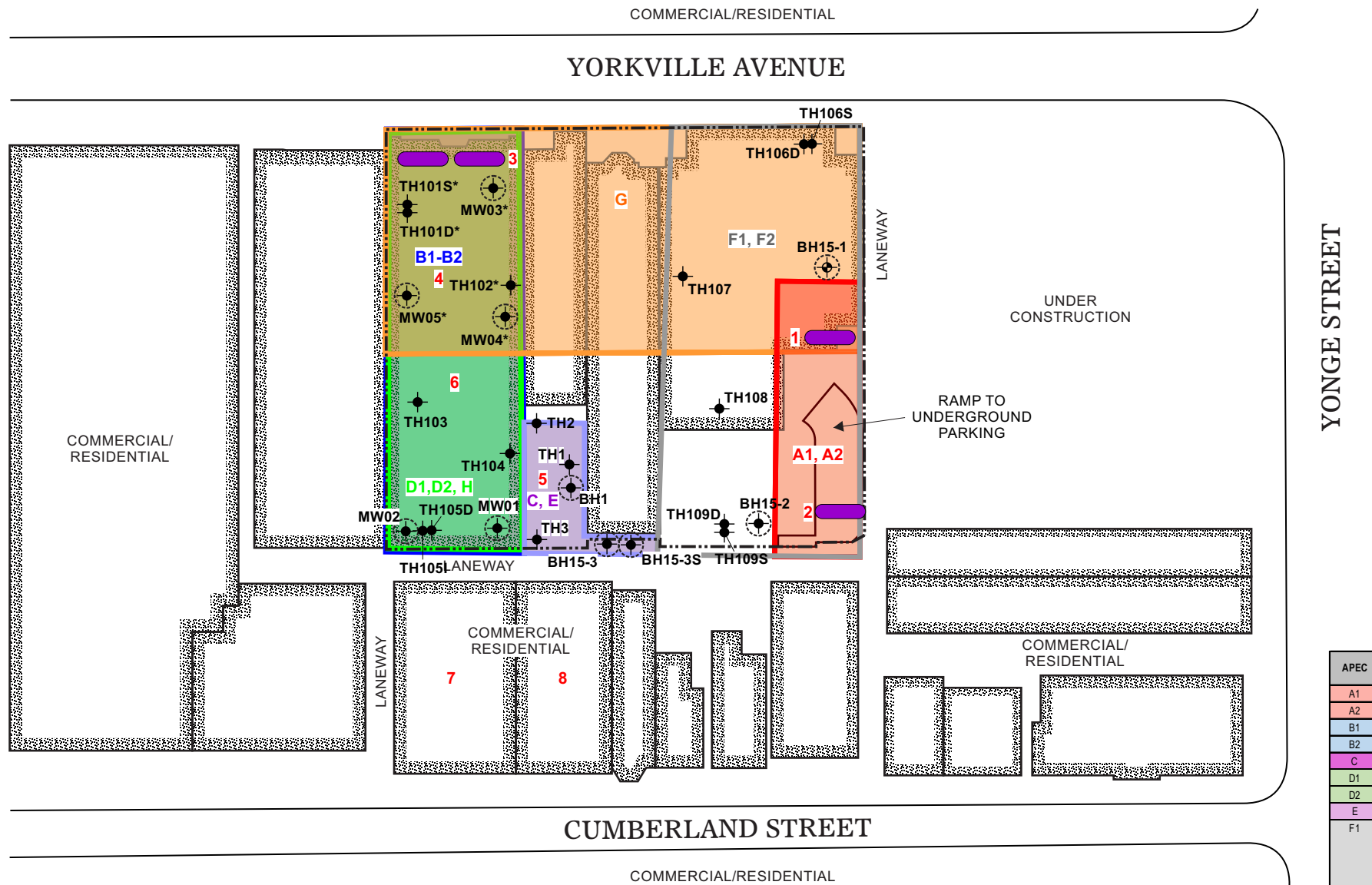
CHECKED BY

L.W.

SOURCE:

BASED ON GOOGLE EARTH
IMAGE DATED OCT. 10, 2016

- LEGEND:
- RSC PROPERTY BOUNDARY
 - TANK LOCATION
 - ➡ INFERRED GROUND WATER FLOW DIRECTION (EXP, 2019)
 - A AREA OF POTENTIAL ENVIRONMENTAL CONCERN
 - S1 POTENTIALLY CONTAMINATING ACTIVITY
 - RED INDICATES PCA CONTRIBUTING TO AN APEC



APEC	PCA Source Number	PCA
A1	1	(28) Gasoline and Associated Products Storage in Fixed Tanks
A2	2	(28) Gasoline and Associated Products Storage in Fixed Tanks
B1	3	(28) Gasoline and Associated Products Storage in Fixed Tanks
B2	4	(10) Commercial Autobody Shops
C	5	(30) Importation of Fill Material of Unknown Quality
D1	6	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
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E	8	(10) Commercial Autobody Shops
F1	9	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
	10	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
	11	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
	12	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
	13	(37) Operation of Dry Cleaning Equipment (where chemicals are used)
F2	14	(10) Commercial Autobody Shops
G	15	(28) Gasoline and Associated Products Storage in Fixed Tanks
	16	(28) Gasoline and Associated Products Storage in Fixed Tanks
	17	(28) Gasoline and Associated Products Storage in Fixed Tanks
	18	(28) Gasoline and Associated Products Storage in Fixed Tanks
	19	(28) Gasoline and Associated Products Storage in Fixed Tanks
	20	(28) Gasoline and Associated Products Storage in Fixed Tanks
	21	(28) Gasoline and Associated Products Storage in Fixed Tanks
H	22	(37) Operation of Dry Cleaning Equipment (where chemicals are used)

SCALE:

01020m

SOURCE:

BASED ON CITY OF TORONTO INTERACTIVE MAP, SURVEY PLAN BY WSP GEOMATICS ONTARIO LTD, DATE AUG. 21, 2017 AND FIELD OBSERVATIONS BY EXP STAFF

exp.

DRAWN BY

J.D.H.

CHECKED BY

L.W.

NOTES:

AT 11 YORKVILLE AVENUE, ALL TEST HOLES WERE ADVANCED WITHIN THE UNDERGROUND PARKING GARAGE.

AT 21 YORKVILLE AVENUE, THE TEST HOLES INDICATED BY AN * WERE ADVANCED WITHIN THE BASEMENT, ALL OTHER TEST HOLES WERE ADVANCED FROM THE GROUND FLOOR.

LEGEND:

PROPERTY BOUNDARY

TANK LOCATION

RED

INDICATES PCA CONTRIBUTING TO AN APEC

TEST HOLE WITH MONITOR

DEEP MONITORS: TH1, TH101D, TH105D, TH106D, TH109D (EXP, 2018)

INTERMEDIATE MONITOR: TH105I (EXP, 2018)

SHALLOW MONITORS: TH2, TH3, TH4, TH101S, TH102, TH103, TH104, TH106S, TH107, TH108, TH109S (EXP, 2018)

TEST HOLE WITH MONITORS

BH15-2, BH15-3, BH15-3S (SPL, 2015)

BH1 (MCCLYMONT & RAK, 2016)

MW SERIES (PINCHIN, 2016)

TEST HOLE

BH15-1 (SPL, 2015)

PHASE ONE
CONCEPTUAL SITE
MODEL – SITE PLAN

FIGURE
2C

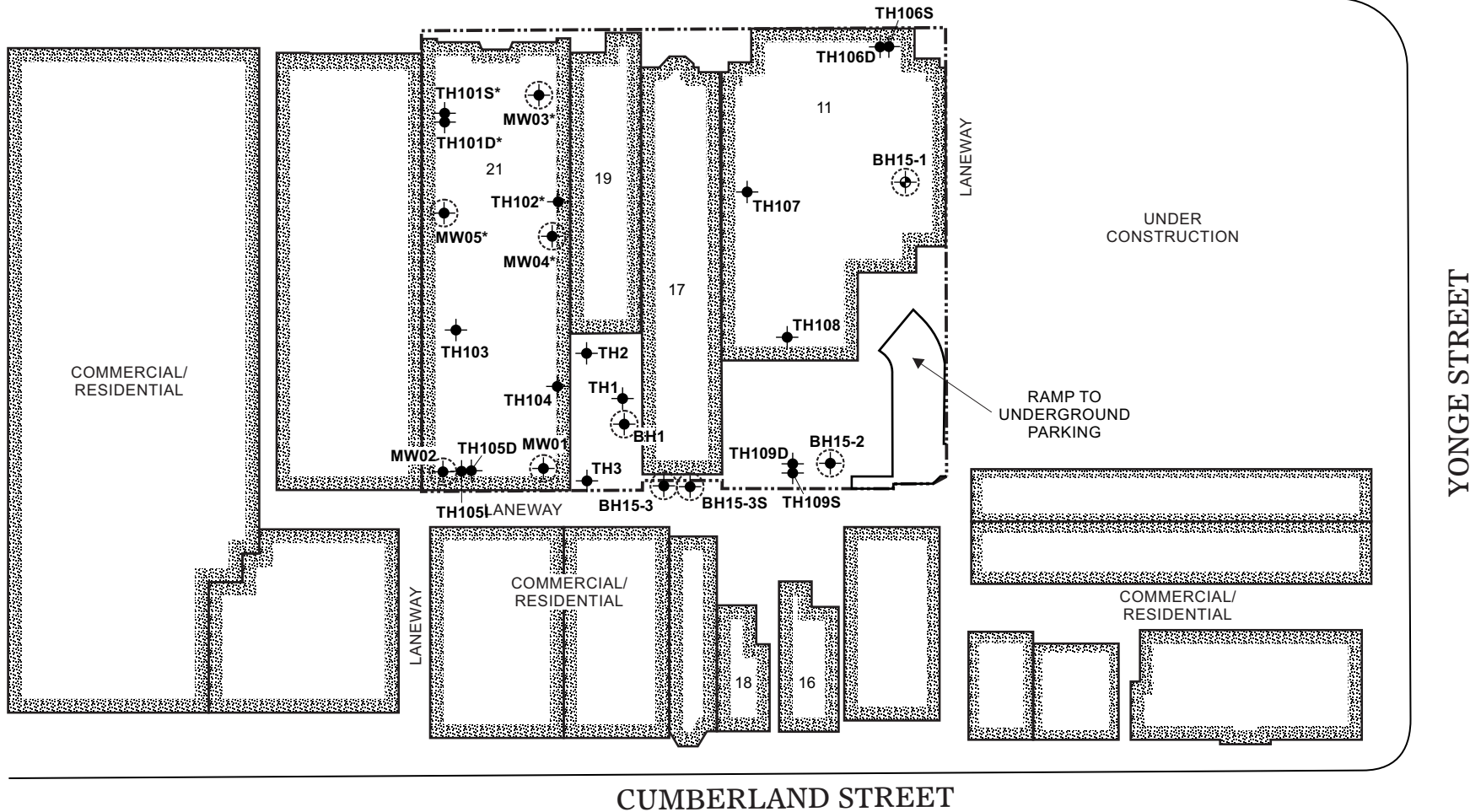
11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2019

COMMERCIAL/RESIDENTIAL

YORKVILLE AVENUE



UNDER
CONSTRUCTION

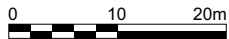
RAMP TO
UNDERGROUND
PARKING

YONGE STREET

CUMBERLAND STREET

COMMERCIAL/RESIDENTIAL

SCALE:



SOURCE:

BASED ON CITY OF TORONTO INTERACTIVE
MAP, SURVEY PLAN BY WSP GEOMATICS
ONTARIO LTD, DATE AUG. 21, 2017 AND FIELD
OBSERVATIONS BY EXP STAFF



DRAWN BY CHECKED BY

J.D.H.

L.W.

NOTE:

AT 11 YORKVILLE AVENUE, ALL
TEST HOLES WERE ADVANCED
WITHIN THE UNDERGROUND
PARKING GARAGE.

AT 21 YORKVILLE AVENUE, THE
TEST HOLES INDICATED BY AN *
WERE ADVANCED WITHIN THE
BASEMENT. ALL OTHER TEST
HOLES WERE ADVANCED FROM
THE GROUND FLOOR.

LEGEND:



--- PROPERTY BOUNDARY

TEST HOLE WITH MONITOR
DEEP MONITORS: TH1, TH101D, TH105D, TH106D,
TH109D (EXP, 2018)
INTERMEDIATE MONITOR: TH105I (EXP, 2018)
SHALLOW MONITORS: TH2, TH3, TH4, TH101S,
TH102, TH103, TH104, TH106S, TH107, TH108,
TH109S (EXP, 2018)



TEST HOLE WITH MONITORS
BH15-2, BH15-3, BH15-3S (SPL, 2015)
BH1 (MCCLYMONT & RAK, 2016)
MW SERIES (PINCHIN, 2016)



TEST HOLE
BH15-1 (SPL, 2015)

SITE PLAN

FIGURE

3

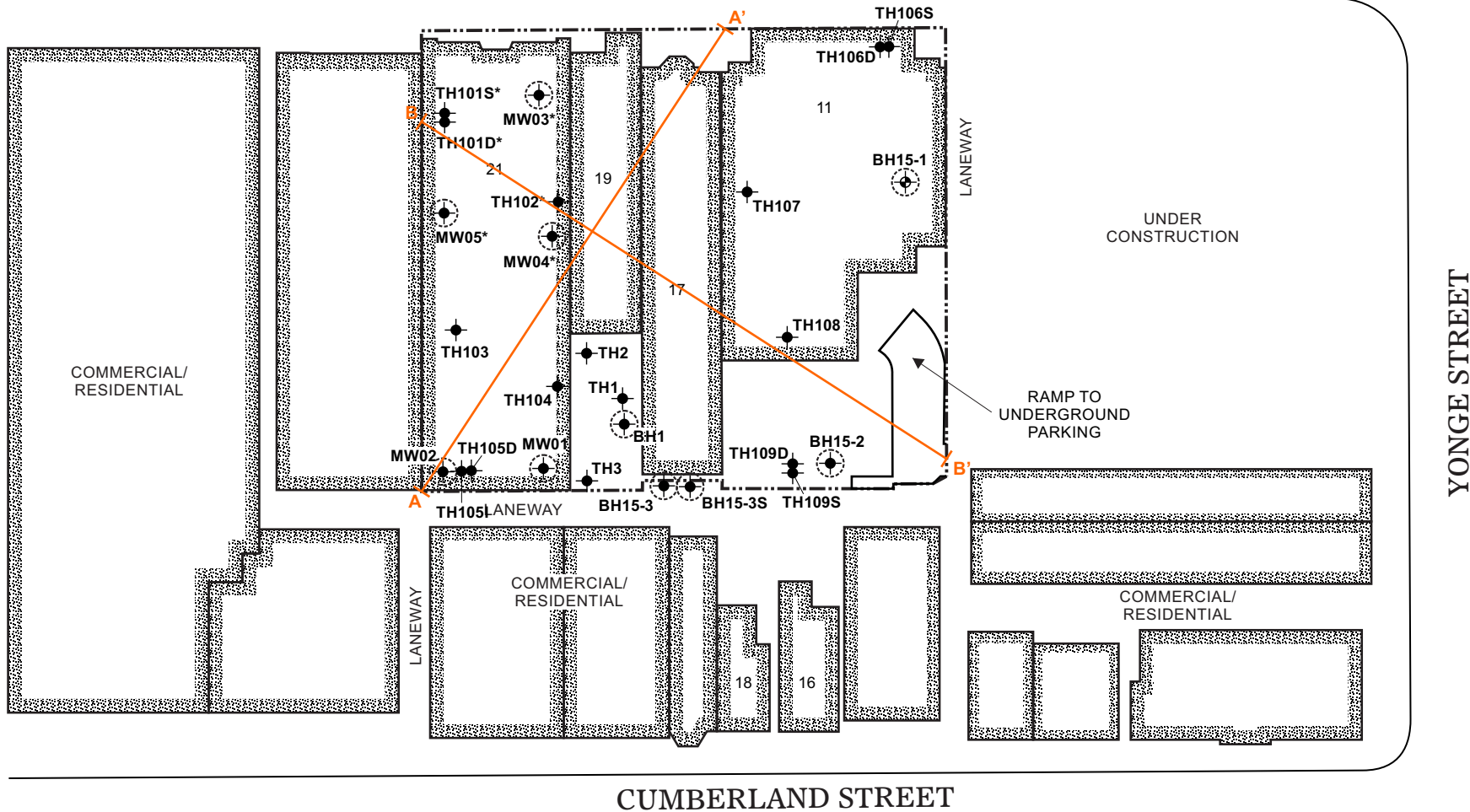
11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2019

COMMERCIAL/RESIDENTIAL

YORKVILLE AVENUE



CUMBERLAND STREET

COMMERCIAL/RESIDENTIAL



SOURCE:
 BASED ON CITY OF TORONTO INTERACTIVE
 MAP, SURVEY PLAN BY WSP GEOMATICS
 ONTARIO LTD, DATE AUG. 21, 2017 AND FIELD
 OBSERVATIONS BY EXP STAFF

	DRAWN BY	CHECKED BY
	J.D.H.	L.W.

NOTE:

AT 11 YORKVILLE AVENUE, ALL
 TEST HOLES WERE ADVANCED
 WITHIN THE UNDERGROUND
 PARKING GARAGE.

AT 21 YORKVILLE AVENUE, THE
 TEST HOLES INDICATED BY AN *
 WERE ADVANCED WITHIN THE
 BASEMENT. ALL OTHER TEST
 HOLES WERE ADVANCED FROM
 THE GROUND FLOOR.

LEGEND:

--- PROPERTY BOUNDARY

● TEST HOLE WITH MONITOR
DEEP MONITORS: TH1, TH101D, TH105D, TH106D,
 TH109D (EXP, 2018)
INTERMEDIATE MONITOR: TH105I (EXP, 2018)
SHALLOW MONITORS: TH2, TH3, TH4, TH101S,
 TH102, TH103, TH104, TH106S, TH107, TH108,
 TH109S (EXP, 2018)

● TEST HOLE WITH MONITORS
 BH15-2, BH15-3, BH15-3S (SPL, 2015)
 BH1 (MCCLYMONT & RAK, 2016)
 MW SERIES (PINCHIN, 2016)

● TEST HOLE
 BH15-1 (SPL, 2015)

— CROSS SECTION LOCATION

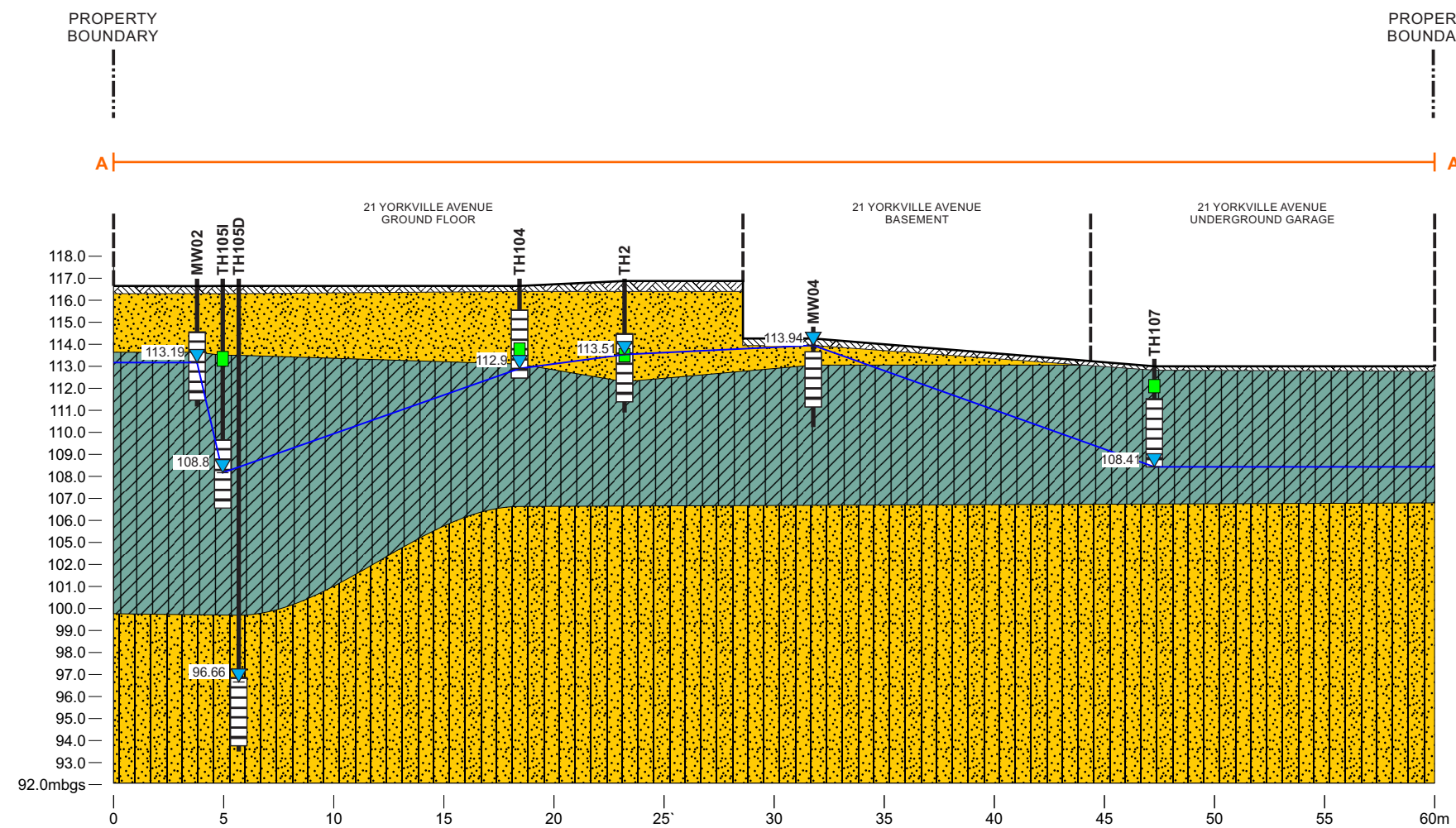
CROSS SECTION PLAN

FIGURE

4

11 YORKVILLE AVENUE
 TORONTO, ONTARIO

PROJECT NUMBER: 242474 DATE: FEBRUARY 2019



SCALE:
VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:
BASED ON FIELD
OBSERVATIONS BY EXP STAFF

DRAWN BY	CHECKED BY
J.D.H.	L.W.

LEGEND:

TEST HOLE

SCREEN INTERVAL

SOIL SAMPLE

GROUND WATER ELEVATION
(GW ELEV (masl, JANUARY 14, 2019))

113.44 GROUND WATER ELEVATION (masl)

CONCRETE

SAND

SILTY CLAY

SANDY SILT

LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN

CROSS SECTION VIEW A-
A' - SOIL ANALYTICAL
RESULTS - PHCS

FIGURE
5A

11 YORKVILLE AVENUE
TORONTO, ONTARIO

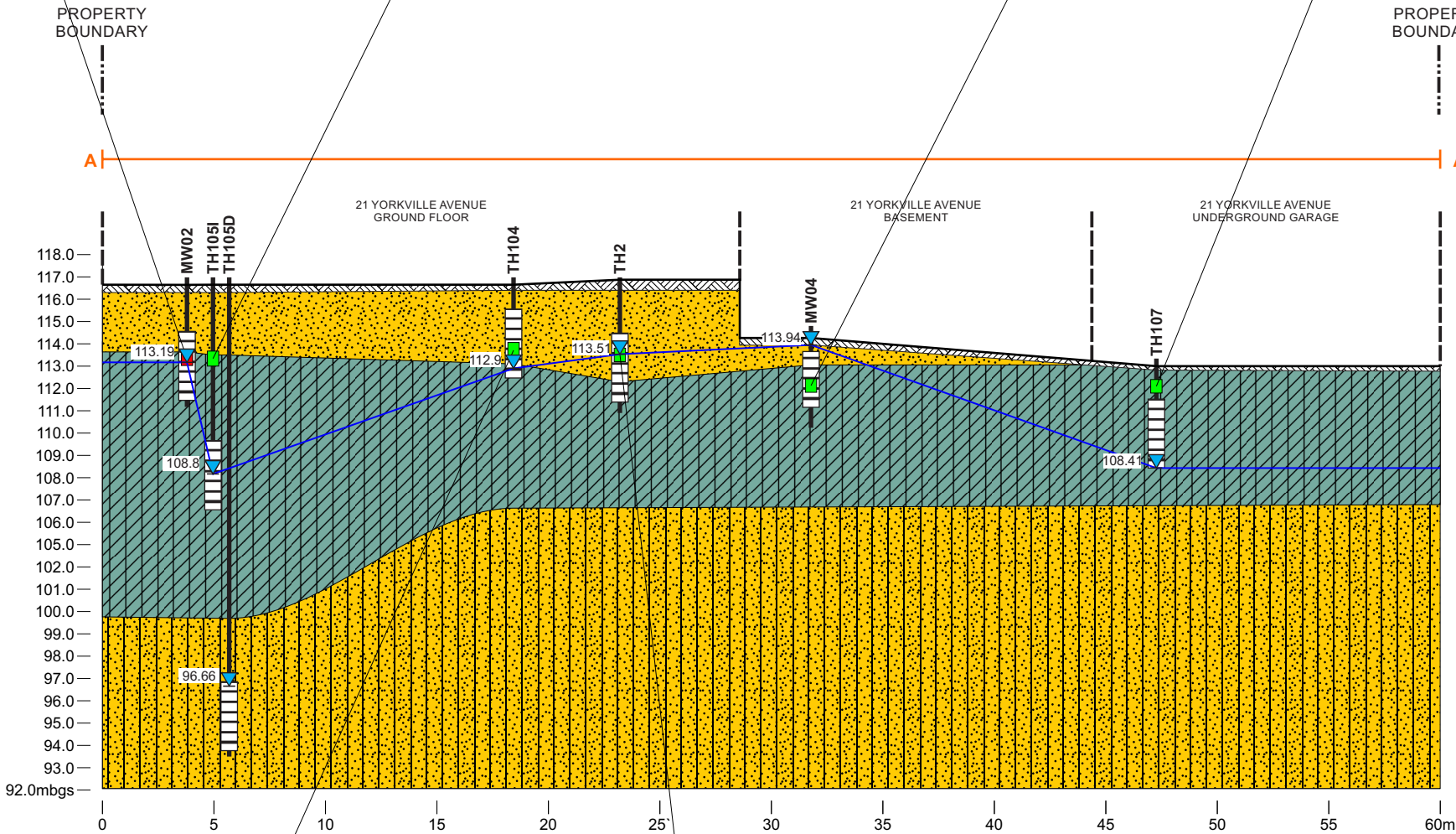
PROJECT NUMBER: 242474 DATE: FEBRUARY 2019

MW0217-Dec-15			
Sample	Depth (mbgs)	PCE	TCE
MW02-S6	3.05 to 3.66	2.9	<0.050

TH105I21-Nov-18			
Sample	Depth (mbgs)	PCE	TCE
TH105I-SS6	3.0 to 3.7*	1.9	<0.03

MW0418-Dec-15			
Sample	Depth (mbgs)	PCE	TCE
MW04-S4	1.83 to 2.44	<0.050	<0.050

TH10722-Nov-18			
Sample	Depth (mbgs)	PCE	TCE
TH107-SS2	0.6 to 1.2 ¹	<0.05	<0.03



TH1046-Nov-18			
Sample	Depth (mbgs)	PCE	TCE
TH104-SS4	2.7 to 3.4*	0.44	<0.03

TH225-Jan-18			
Sample	Depth (mbgs)	PCE	TCE
TH2-SS5	3.1 to 3.7	0.13	<0.03

Parameter	Abbreviation	Table 3 Soil Standards
Tetrachloroethylene	PCE	2.3
Trichloroethylene	TCE	0.52

SCALE:
VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:
BASED ON FIELD
OBSERVATIONS BY EXP STAFF

exp.	DRAWN BY	CHECKED BY
	J.D.H.	L.W.

LEGEND:	
	TEST HOLE
	SCREEN INTERVAL
	SOIL SAMPLE
	GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019))
113.44	GROUND WATER ELEVATION (masl)

	CONCRETE
	SAND
	SILTY CLAY
	SANDY SILT

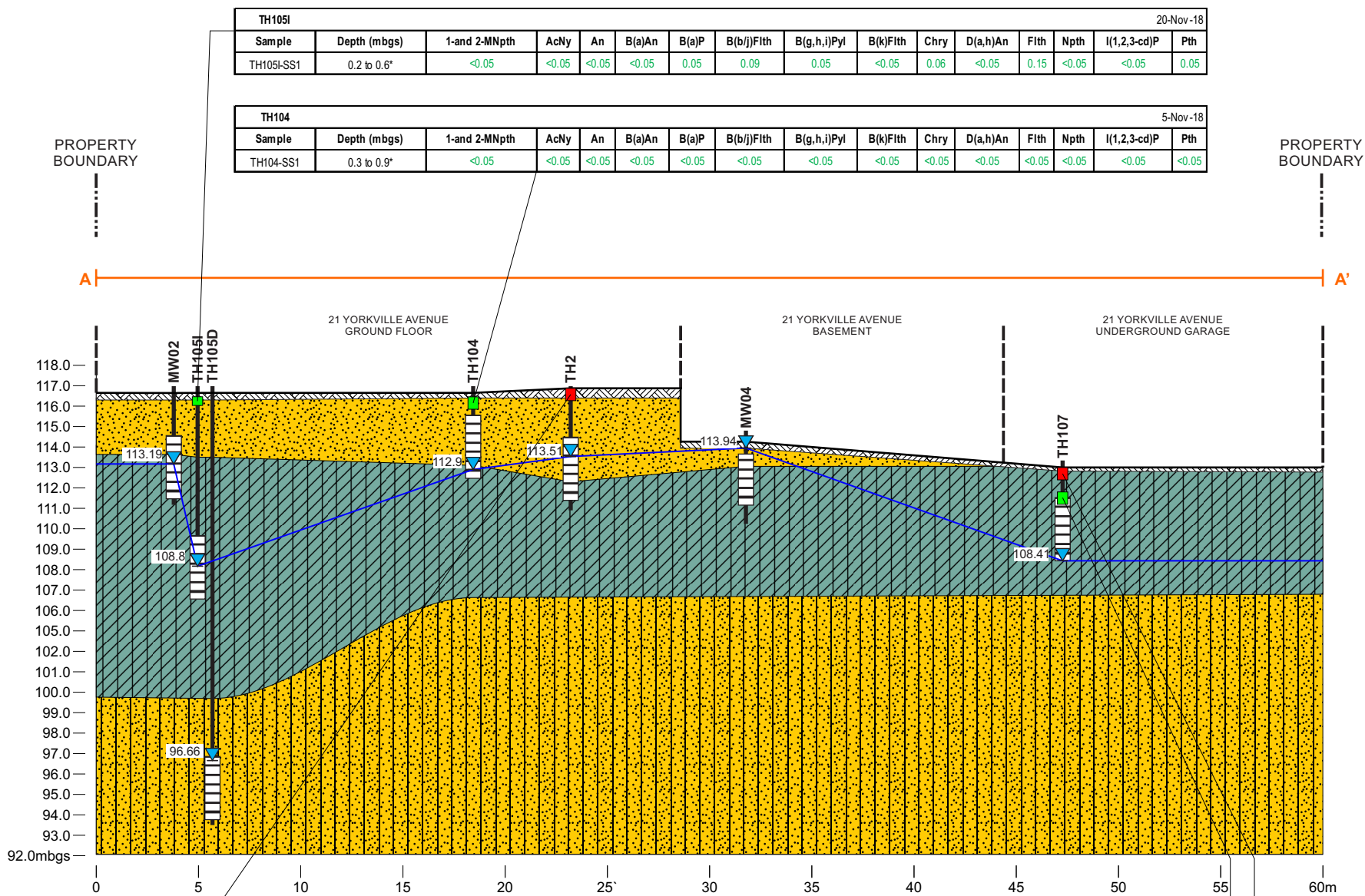
*STANDARDS SHOWN ARE FOR A RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND MEDIUM TO FINE TEXTURED SOILS
LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN
LOCATION WHERE SAMPLE EXCEEDS TABLE 3 STANDARDS FOR AT LEAST ONE PARAMETER IS SHOWN IN RED
CONCENTRATION OF CONTAMINANT EXCEEDING TABLE 3 STANDARDS SHOWN IN TEXT IN RED
CONCENTRATION OF CONTAMINANT WITHIN TABLE 3 STANDARDS SHOWN IN TEXT IN GREEN
~ INDICATES FIELD DUPLICATE SAMPLE
MBGS - METRES BELOW GROUND SURFACE
ALL RESULTS IN UNITS OF (µg/L), UNLESS OTHERWISE NOTED
* INDICATES SAMPLE INTERVAL MEASURED FROM GROUND FLOOR
£ INDICATES SAMPLE INTERVAL MEASURED FROM BASEMENT OR UNDERGROUND PARKING GARAGE CONCRETE FLOOR SURFACE
ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE

CROSS SECTION VIEW
A-A' - SOIL ANALYTICAL
RESULTS - VOCs

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 DATE: FEBRUARY 2019

FIGURE
5B



Parameter	Abbreviation	Table 3 Soil Standards
1- and 2-Methylnaphthalene	1-and 2-MNpth	3.4
Acenaphthylene	AcNy	0.17
Anthracene	An	0.74
Benzo(a)anthracene	B(a)An	0.63
Benzo(a)pyrene	B(a)P	0.3
Benzo(b)fluoranthene	B(b)Fith	0.78
Benzo(g,h,i)perylene	B(g,h,i)Pyl	7.8
Benzo(k)fluoranthene	B(k)Fith	0.78
Chrysene	Chry	7.8
Dibenzo(a,h)anthracene	D(a,h)An	0.1
Fluoranthene	Fith	0.69
Naphthalene	Npth	0.75
Indeno(1,2,3-cd)pyrene	I(1,2,3-cd)P	0.48
Phenanthrene	Pth	7.8

SCALE:

VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:

BASED ON FIELD OBSERVATIONS BY EXP STAFF

exp.

DRAWN BY

J.D.H.

CHECKED BY

L.W.

LEGEND:

TEST HOLE

SCREEN INTERVAL

SOIL SAMPLE

GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019))

113.44

GROUND WATER ELEVATION (masl)

CONCRETE

SAND

SILTY CLAY

SANDY SILT

*STANDARDS SHOWN ARE FOR A RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND MEDIUM TO FINE TEXTURED SOILS
LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN
LOCATION WHERE SAMPLE EXCEEDS TABLE 3 STANDARDS FOR AT LEAST ONE PARAMETER IS SHOWN IN RED
CONCENTRATION OF CONTAMINANT EXCEEDING TABLE 3 STANDARDS SHOWN IN TEXT IN RED
CONCENTRATION OF CONTAMINANT WITHIN TABLE 3 STANDARDS SHOWN IN TEXT IN GREEN

~* INDICATES FIELD DUPLICATE SAMPLE
MBGS - METRES BELOW GROUND SURFACE
ALL RESULTS IN UNITS OF (µg/L), UNLESS OTHERWISE NOTED
* INDICATES SAMPLE INTERVAL MEASURED FROM GROUND FLOOR
‡ INDICATES SAMPLE INTERVAL MEASURED FROM BASEMENT OR UNDERGROUND PARKING GARAGE CONCRETE FLOOR SURFACE
ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE

CROSS SECTION VIEW A-A' - SOIL ANALYTICAL RESULTS - PAHS

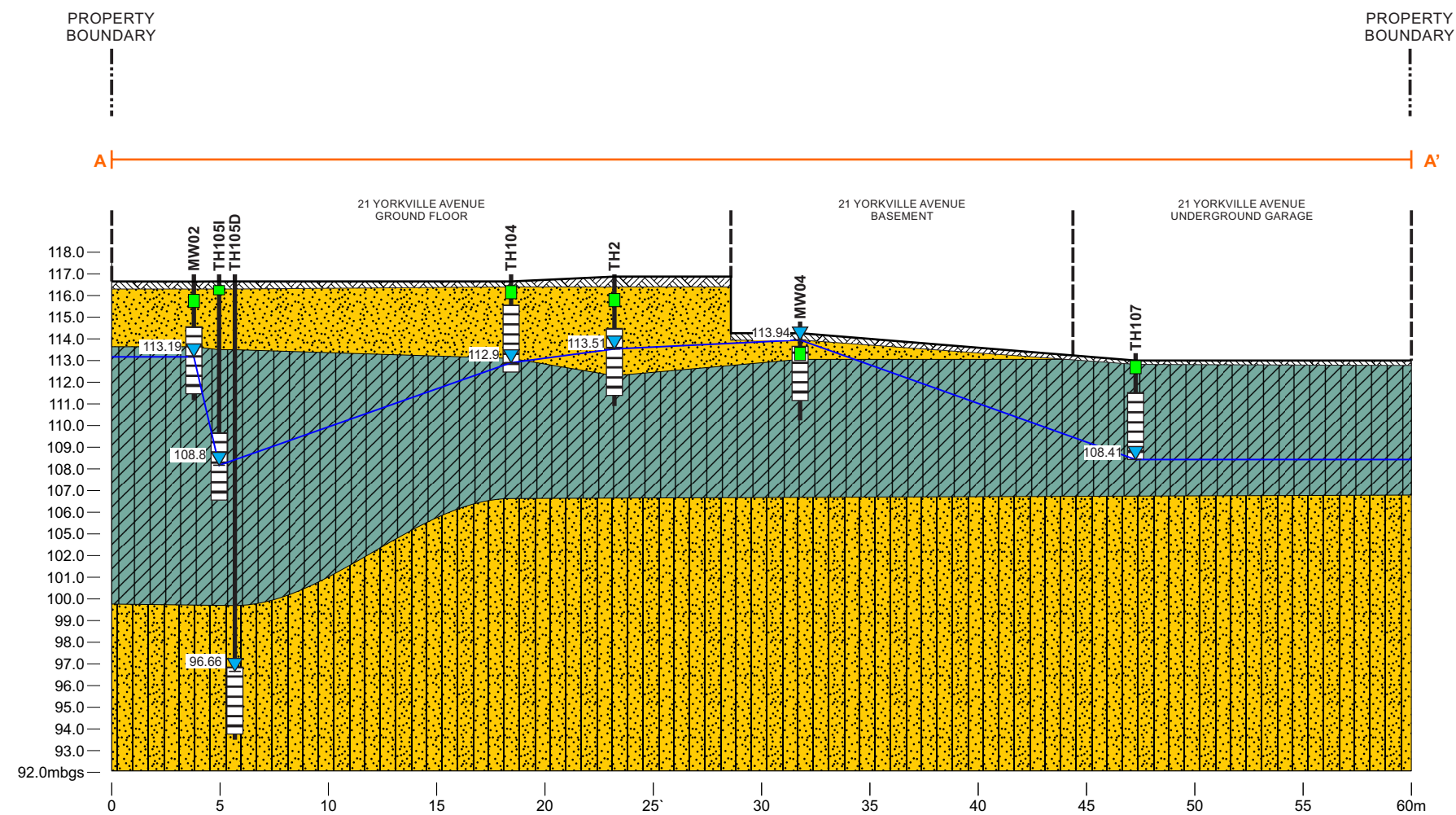
11 YORKVILLE AVENUE TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2019

FIGURE

5C



SCALE:
VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:
BASED ON FIELD
OBSERVATIONS BY EXP STAFF

exp.

DRAWN BY	CHECKED BY
J.D.H.	L.W.

LEGEND:

	TEST HOLE		CONCRETE
	SCREEN INTERVAL		SAND
	SOIL SAMPLE		SILTY CLAY
	GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019))		SANDY SILT
113.44	GROUND WATER ELEVATION (masl)		

ORPS INCLUDED HOT WATER SOLUBLE BORON, CYANIDE, HEXAVALENT CHROMIUM AND MERCURY
LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN

CROSS SECTION VIEW
VIEW A-A' - SOIL ANALYTICAL
RESULTS - METALS, HYDRIDE-
FORMING METALS AND ORPS

FIGURE
5D

11 YORKVILLE AVENUE
TORONTO, ONTARIO

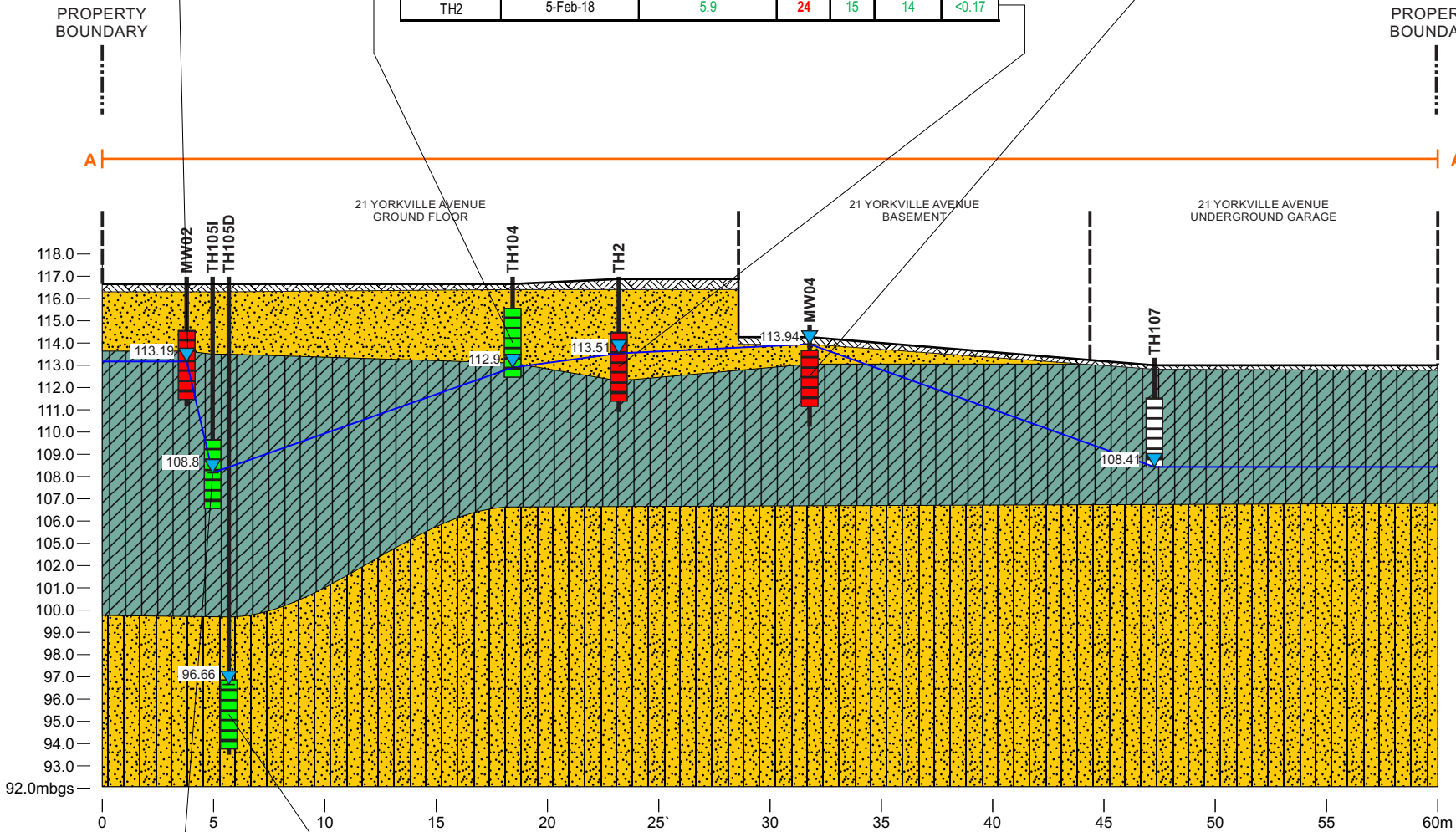
PROJECT NUMBER: 242474 DATE: FEBRUARY 2019

MW02	Screen Interval: 2.13 to 5.18					
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
MW02	22-Dec-15	<1.0	220	<1.0	1.9	<2.0
MW02	28-Nov-17	<0.50	120	<0.50	1.3	<0.20
-MW020	28-Nov-17	<0.50	100	<0.50	1.4	<0.20

TH104	Screen Interval: 1.2 to 4.3*					
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH104	9-Nov-18	<0.20	6.7	<0.20	<0.20	<0.17

TH2	Screen Interval: 2.4 to 5.5					
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH2	5-Feb-18	5.9	24	15	14	<0.17

MW04	Screen Interval: 0.61 to 3.05					
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
MW04	22-Dec-15	6.5	<0.10	2.6	<0.10	0.6
MW04	28-Nov-17	2.1	<0.20	1.1	<0.20	2.1



TH105I	Screen Interval: 7.0 to 10.1*					
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH105I	30-Nov-18	<0.20	0.38	<0.20	<0.20	<0.17

TH105D	Screen Interval: 19.8 to 22.9*					
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH105D	11-Dec-18	<0.20	<0.20	<0.20	<0.20	<0.17

Parameter	Abbreviation	Table 3 Soil Standards
Cis- 1,2-Dichloroethylene	c-DCE	17
Tetrachloroethylene	PCE	17
Trans- 1,2-Dichloroethylene	t-DCE	17
Trichloroethylene	TCE	17
Vinyl Chloride	VC	1.7

SCALE:
VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:
BASED ON FIELD
OBSERVATIONS BY EXP STAFF

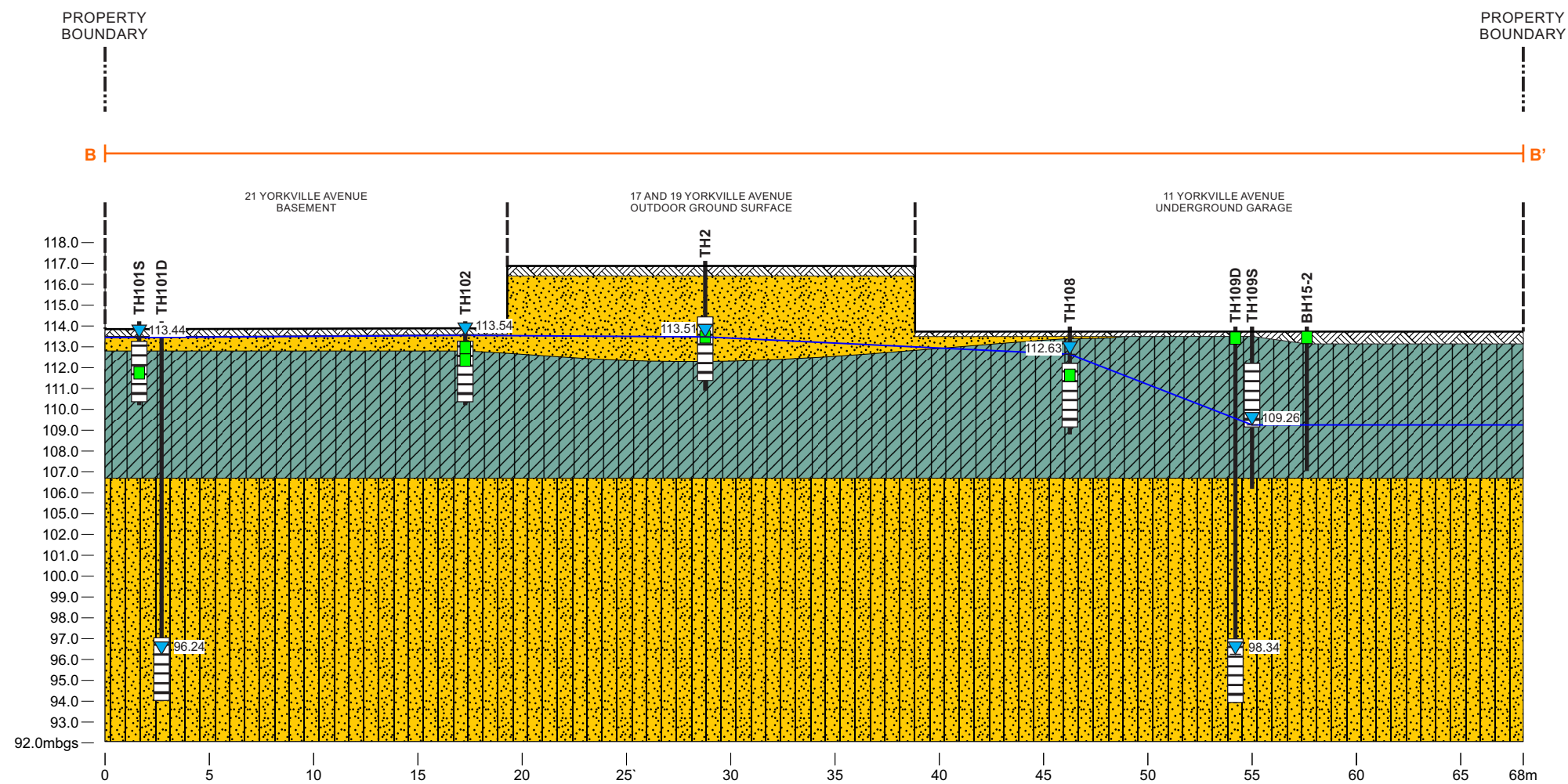
exp.
DRAWN BY: J.D.H.
CHECKED BY: L.W.

LEGEND:
TEST HOLE
SCREEN INTERVAL
SOIL SAMPLE
GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019))
GROUND WATER ELEVATION (masl)

CONCRETE
SAND
SILTY CLAY
SANDY SILT
TEXT

*STANDARDS SHOWN ARE FOR A RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND MEDIUM TO FINE TEXTURED SOILS
LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN
LOCATION WHERE SAMPLE EXCEEDS TABLE 3 STANDARDS FOR AT LEAST ONE PARAMETER IS SHOWN IN RED
CONCENTRATION OF CONTAMINANT EXCEEDING TABLE 3 STANDARDS SHOWN IN TEXT IN RED
CONCENTRATION OF CONTAMINANT WITHIN TABLE 3 STANDARDS SHOWN IN TEXT IN GREEN
~* INDICATES FIELD DUPLICATE SAMPLE
MBGS - METRES BELOW GROUND SURFACE
ALL RESULTS IN UNITS OF (µg/L), UNLESS OTHERWISE NOTED
* INDICATES SAMPLE INTERVAL MEASURED FROM GROUND FLOOR
£ INDICATES SAMPLE INTERVAL MEASURED FROM BASEMENT OR UNDERGROUND PARKING GARAGE CONCRETE FLOOR SURFACE
ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE

CROSS SECTION
VIEW A-A' -GROUND
WATER ANALYTICAL
RESULTS - VOCs
11 YORKVILLE AVENUE
TORONTO, ONTARIO
PROJECT NUMBER: 242474
DATE: FEBRUARY 2019



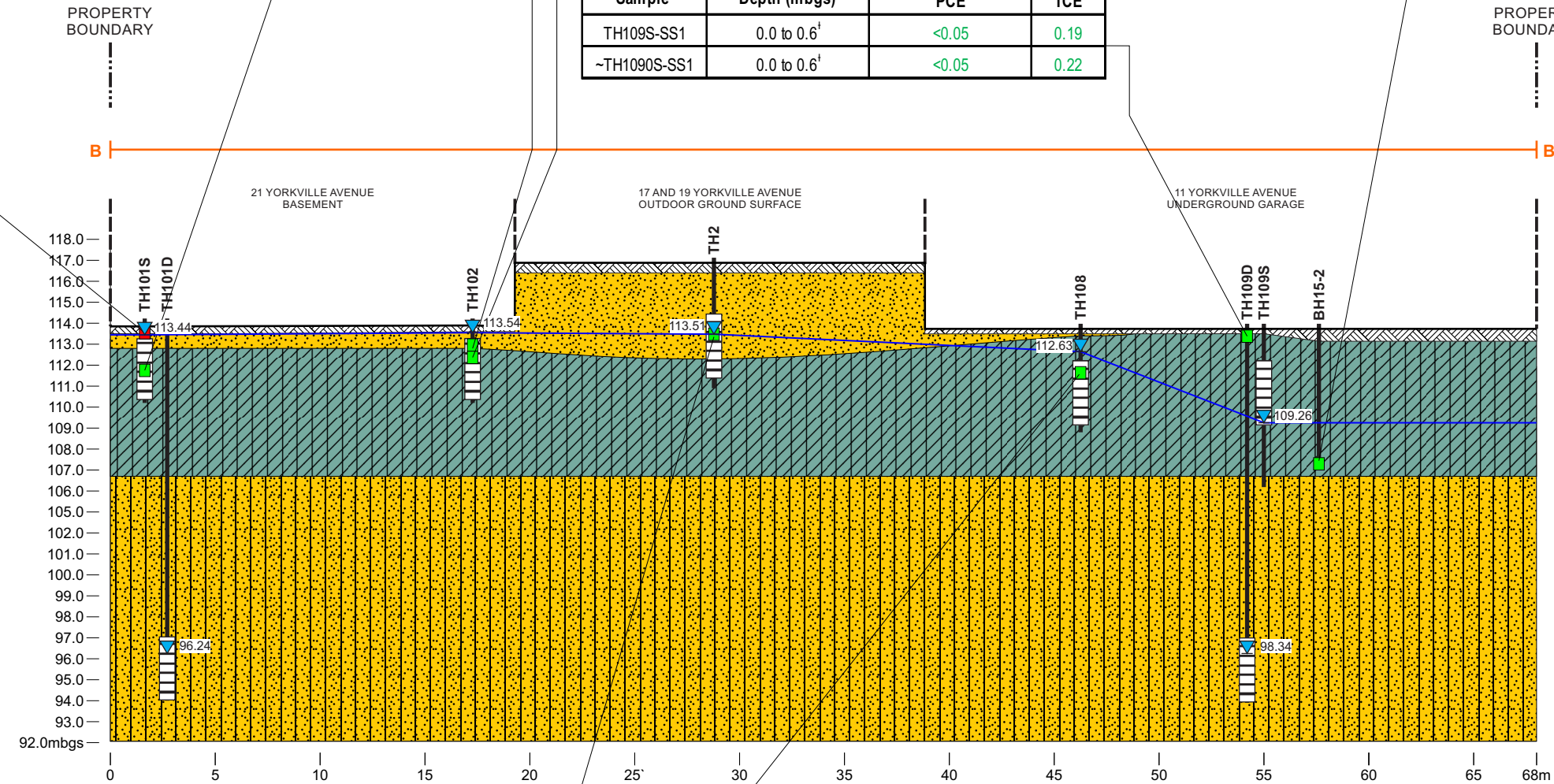
SCALE: VERTICAL & HORIZONTAL SCALE 1:1			LEGEND: TEST HOLE SCREEN INTERVAL SOIL SAMPLE GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019)) 113.44 GROUND WATER ELEVATION (masl) CONCRETE SAND SILTY CLAY SILTY SAND LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN			CROSS SECTION VIEW B-B' - SOIL ANALYTICAL RESULTS - PHCS		FIGURE 6A
SOURCE: BASED ON FIELD OBSERVATIONS BY EXP STAFF						11 YORKVILLE AVENUE TORONTO, ONTARIO		
exp.	DRAWN BY J.D.H.	CHECKED BY L.W.				PROJECT NUMBER: 242474 DATE: FEBRUARY 2019		

TH101S6-Nov-18			
Sample	Depth (mbgs)	PCE	TCE
TH101S-SS1	0.0 to 0.6 [†]	2.7	1.2
TH101S-SS4	1.8 to 2.4 [†]	<0.05	<0.03

TH1027-Nov-18			
Sample	Depth (mbgs)	PCE	TCE
TH102-SS2	0.6 to 1.2 [†]	<0.05	<0.03
TH102-SS3	1.2 to 1.8 [†]	<0.05	<0.03

BH15-223-Jan-15			
Sample	Depth (mbgs)	PCE	TCE
BH15-2 S6B	6.1 to 6.7 [†]	<0.05	<0.03
~QAQC 15-1	6.1 to 6.7 [†]	<0.05	<0.03

TH109S14-Nov-18			
Sample	Depth (mbgs)	PCE	TCE
TH109S-SS1	0.0 to 0.6 [†]	<0.05	0.19
~TH1090S-SS1	0.0 to 0.6 [†]	<0.05	0.22



TH225-Jan-18			
Sample	Depth (mbgs)	PCE	TCE
TH2-SS5	3.1 to 3.7	0.13	<0.03

TH10822-Nov-18			
Sample	Depth (mbgs)	PCE	TCE
TH108-SS4	1.8 to 2.4 [†]	<0.05	<0.03

Parameter	Abbreviation	Table 3 Soil Standards
Tetrachloroethylene	PCE	2.3
Trichloroethylene	TCE	0.52

SCALE:
VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:
BASED ON FIELD
OBSERVATIONS BY EXP STAFF

exp.	DRAWN BY	CHECKED BY
	J.D.H.	L.W.

- LEGEND:
- TEST HOLE
 - SCREEN INTERVAL
 - SOIL SAMPLE
 - GROUND WATER ELEVATION
(GW ELEV (masl, JANUARY 14, 2019))
 - 113.44 GROUND WATER ELEVATION (masl)

- CONCRETE
- SAND
- SILTY CLAY
- SILTY SAND

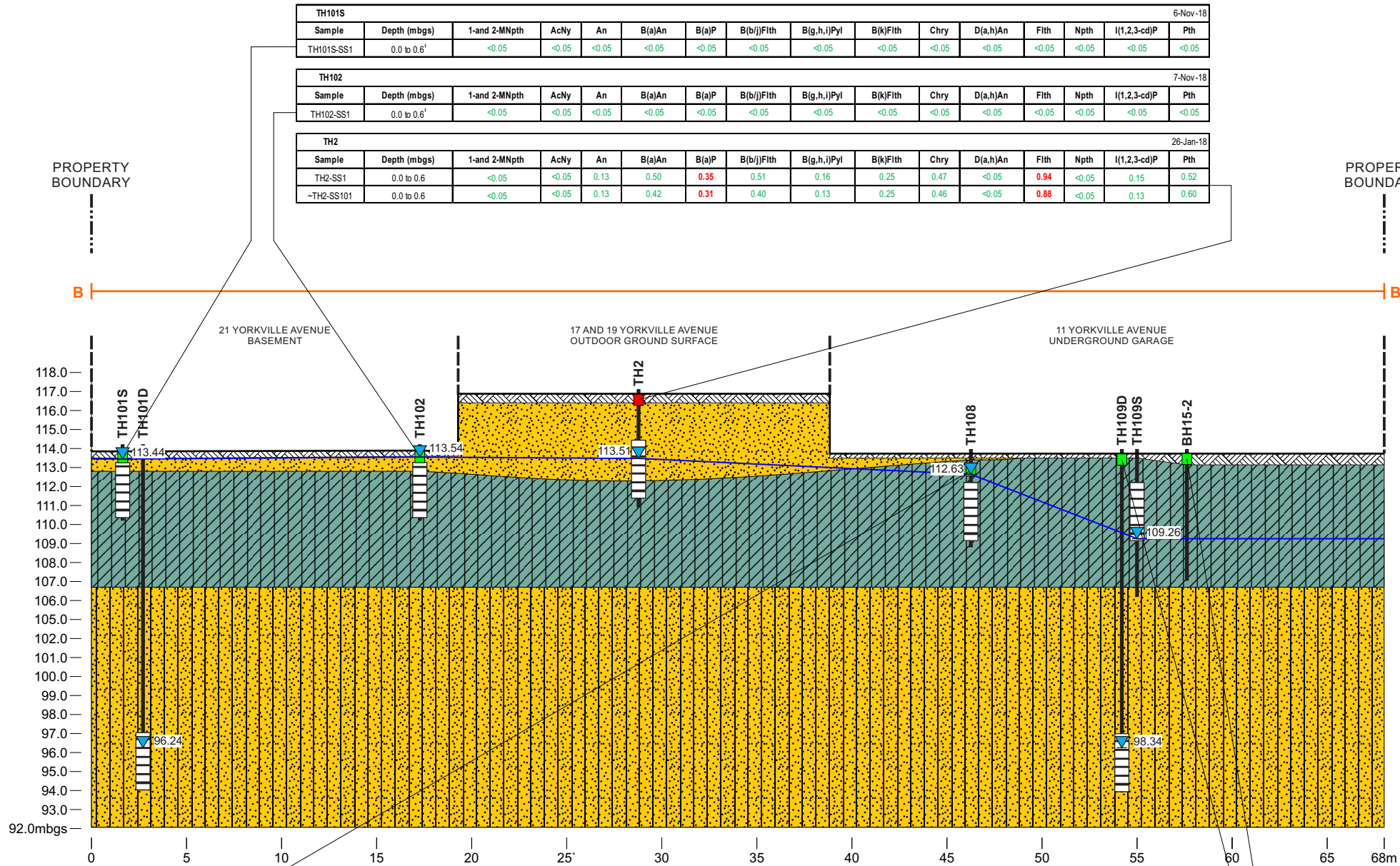
*STANDARDS SHOWN ARE FOR A RESIDENTIAL/PARKLAND/INSTITUTIONAL PROPERTY USE AND MEDIUM TO FINE TEXTURED SOILS
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ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE

CROSS SECTION VIEW
B-B' - SOIL ANALYTICAL
RESULTS - VOCs

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 DATE: FEBRUARY 2019

FIGURE
6B



TH101S															6-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)Ffith	B(g,h,i)Pyl	B(k)Ffith	Chry	D(a,h)An	Ffith	Npth	I(1,2,3-cd)P	Pth
TH101S-SS1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TH102															7-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)Ffith	B(g,h,i)Pyl	B(k)Ffith	Chry	D(a,h)An	Ffith	Npth	I(1,2,3-cd)P	Pth
TH102-SS1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TH2															26-Jan-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)Ffith	B(g,h,i)Pyl	B(k)Ffith	Chry	D(a,h)An	Ffith	Npth	I(1,2,3-cd)P	Pth
TH2-SS1	0.0 to 0.6'	<0.05	<0.05	0.13	0.50	0.35	0.51	0.16	0.25	0.47	<0.05	0.94	<0.05	0.15	0.52
~TH2-SS101	0.0 to 0.6'	<0.05	<0.05	0.13	0.42	0.31	0.40	0.13	0.25	0.46	<0.05	0.88	<0.05	0.13	0.60

TH109S															14-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)Ffith	B(g,h,i)Pyl	B(k)Ffith	Chry	D(a,h)An	Ffith	Npth	I(1,2,3-cd)P	Pth
TH109S-SS1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
~TH109S-SS1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

BH15-2															23-Jan-15
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)Ffith	B(g,h,i)Pyl	B(k)Ffith	Chry	D(a,h)An	Ffith	Npth	I(1,2,3-cd)P	Pth
BH15-2 S1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05

TH108															22-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)Ffith	B(g,h,i)Pyl	B(k)Ffith	Chry	D(a,h)An	Ffith	Npth	I(1,2,3-cd)P	Pth
TH108-SS1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05

Parameter	Abbreviation	Table 3 Soil Standards
1- and 2-Methylnaphthalene	1-and 2-MNpth	3.4
Acenaphthylene	AcNy	0.17
Anthracene	An	0.74
Benzo(a)anthracene	B(a)An	0.63
Benzo(a)pyrene	B(a)P	0.3
Benzo(b)fluoranthene	B(b)Ffith	0.78
Benzo(g,h,i)perylene	B(g,h,i)Pyl	7.8
Benzo(k)fluoranthene	B(k)Ffith	0.78
Chrysene	Chry	7.8
Dibenzo(a,h)anthracene	D(a,h)An	0.1
Fluoranthene	Ffith	0.69
Naphthalene	Npth	0.75
Indeno(1,2,3-cd)pyrene	I(1,2,3-cd)P	0.48
Phenanthrene	Pth	7.8

SCALE:
VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:
BASED ON FIELD
OBSERVATIONS BY EXP STAFF

exp.
DRAWN BY: J.D.H.
CHECKED BY: L.W.

LEGEND:
TEST HOLE
SCREEN INTERVAL
SOIL SAMPLE
GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019))
GROUND WATER ELEVATION (masl)

CONCRETE
SAND
SILTY CLAY
SILTY SAND

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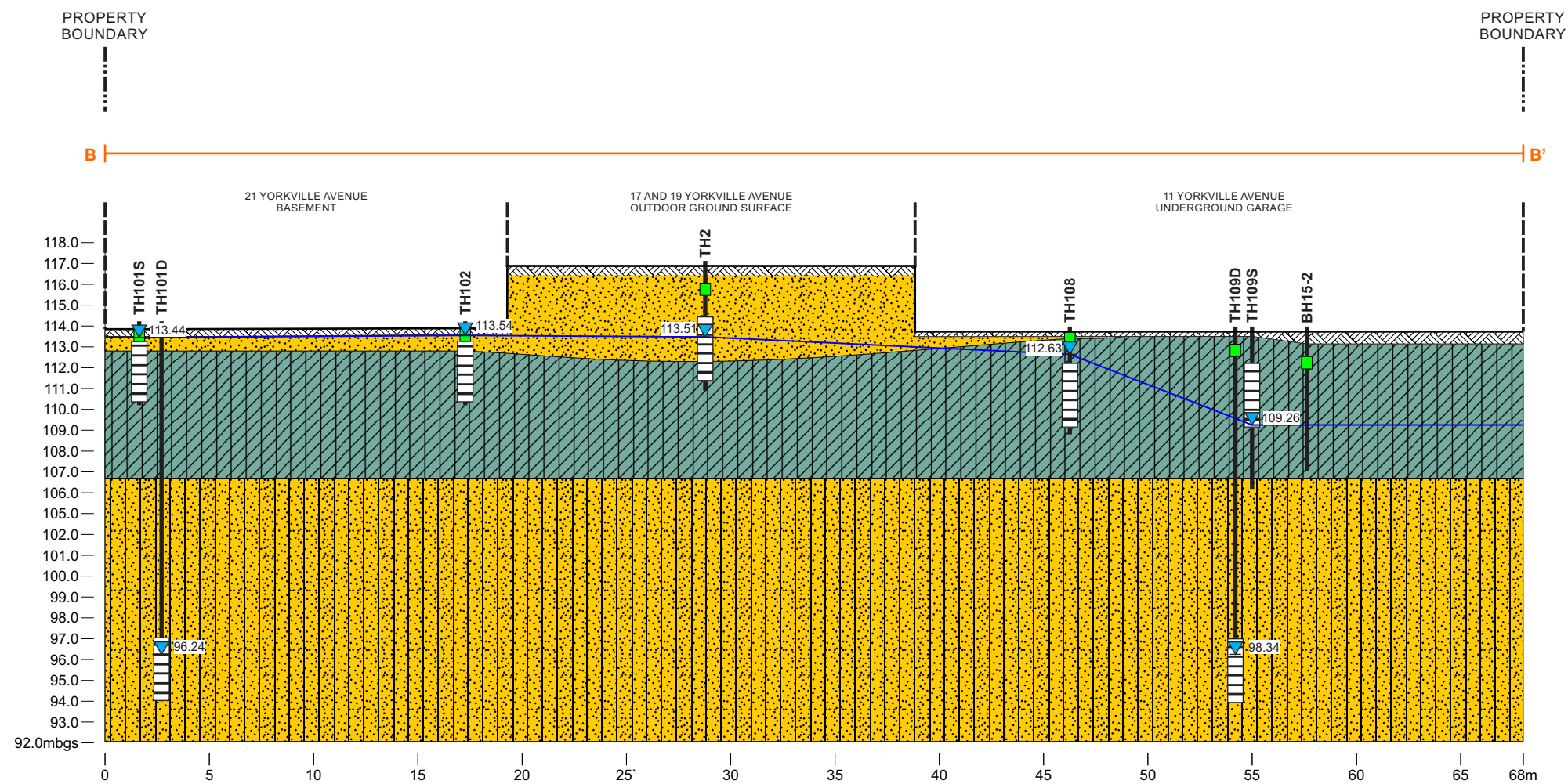
CROSS SECTION VIEW
B-B' - SOIL ANALYTICAL
RESULTS - PAHS

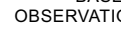
11 YORKVILLE AVENUE
TORONTO, ONTARIO

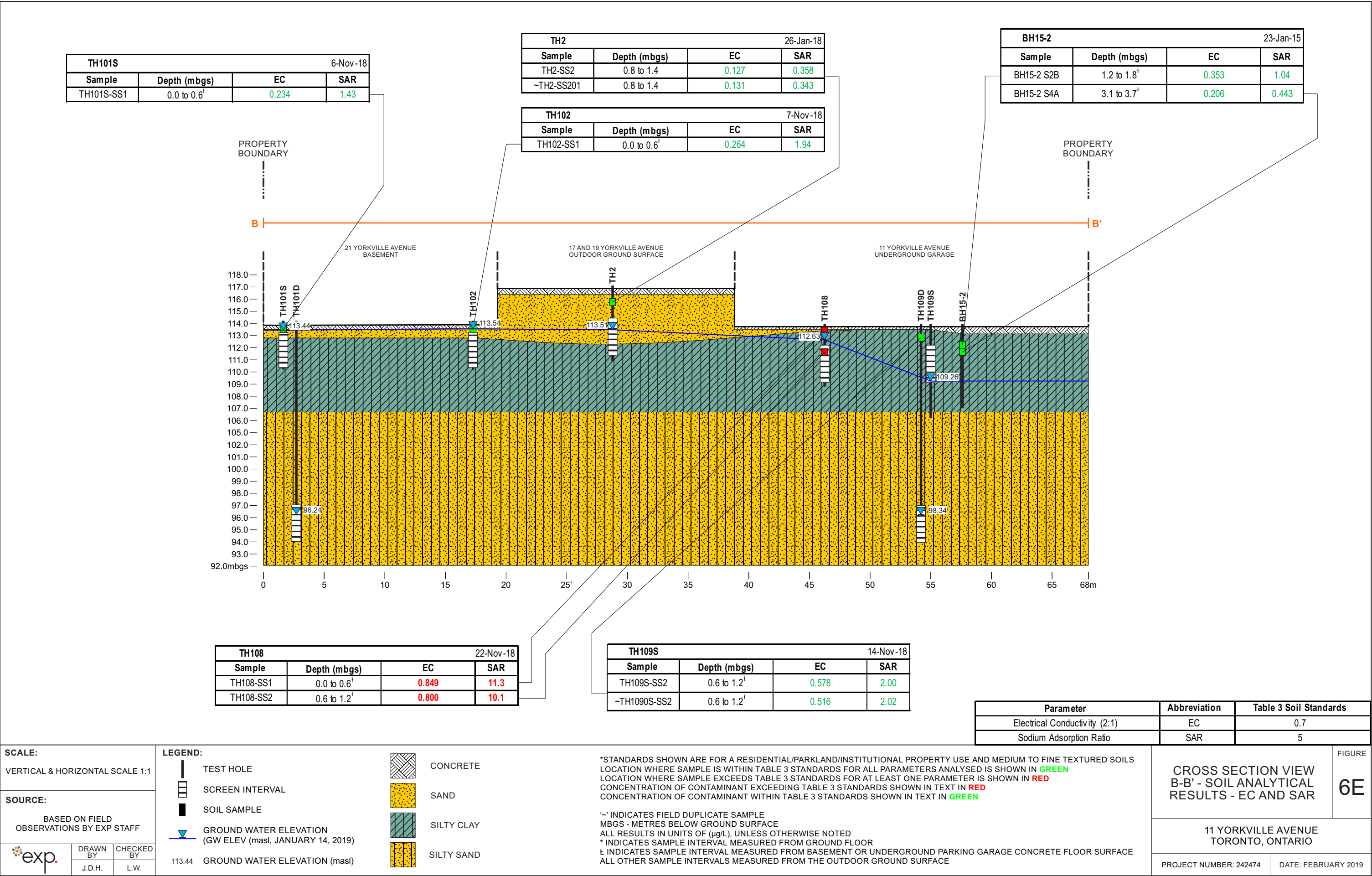
PROJECT NUMBER: 242474 DATE: FEBRUARY 2019

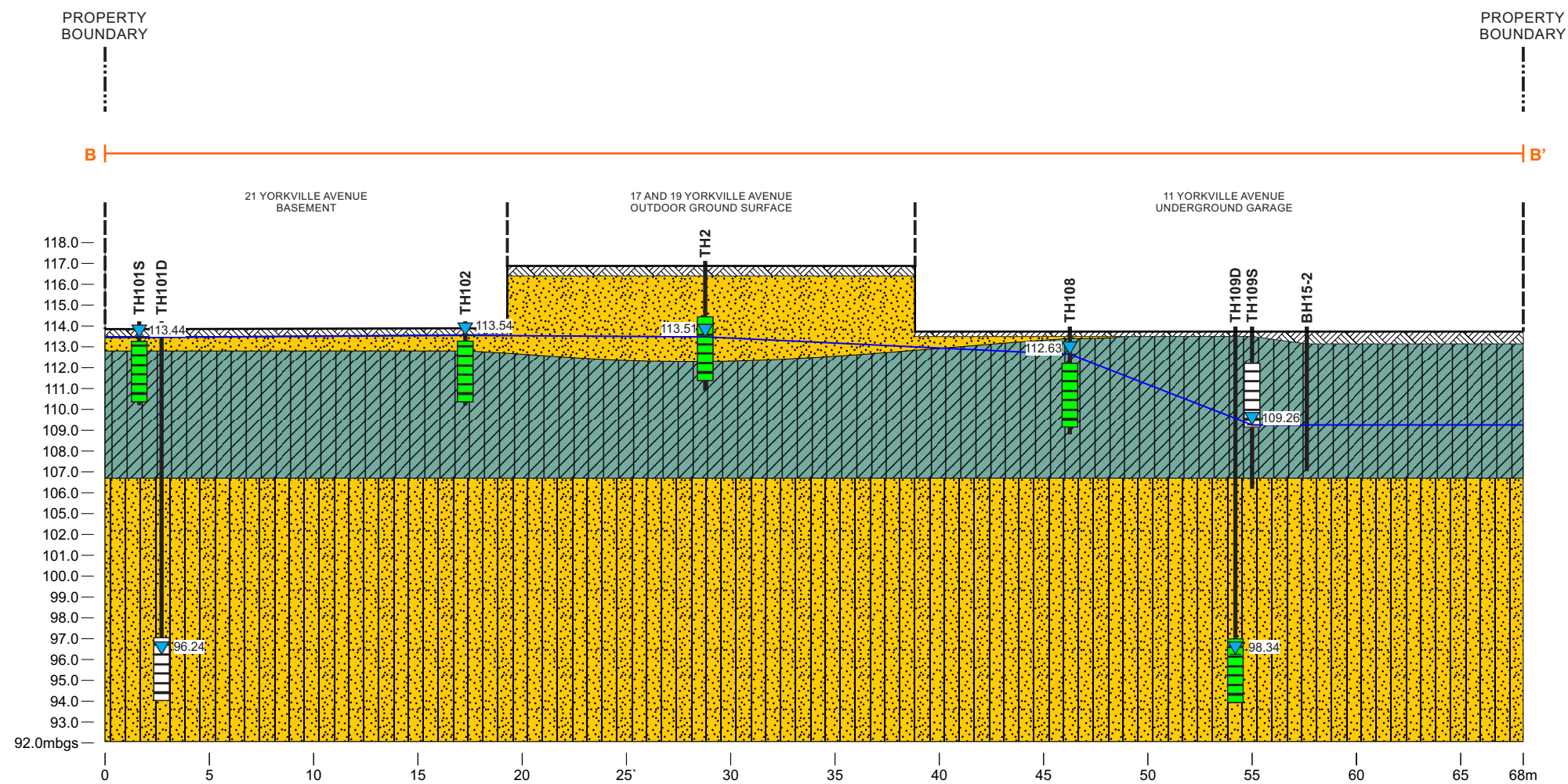
FIGURE

6C



SCALE: VERTICAL & HORIZONTAL SCALE 1:1			LEGEND: TEST HOLE SCREEN INTERVAL SOIL SAMPLE GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019) 113.44 GROUND WATER ELEVATION (masl) CONCRETE SAND SILTY CLAY SILTY SAND	ORPS INCLUDED HOT WATER SOLUBLE BORON, CYANIDE, HEXAVALENT CHROMIUM AND MERCURY LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN		CROSS SECTION VIEW VIEW B-B' - SOIL ANALYTICAL RESULTS - METALS, HYDRIDE- FORMING METALS AND ORPS		FIGURE 6D
SOURCE: BASED ON FIELD OBSERVATIONS BY EXP STAFF				11 YORKVILLE AVENUE TORONTO, ONTARIO				
	DRAWN BY J.D.H.	CHECKED BY L.W.		PROJECT NUMBER: 242474		DATE: FEBRUARY 2019		





SCALE:
VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:
BASED ON FIELD
OBSERVATIONS BY EXP STAFF

exp.

DRAWN BY	CHECKED BY
J.D.H.	L.W.

LEGEND:

- TEST HOLE
- SCREEN INTERVAL
- SOIL SAMPLE
- GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019))
- GROUND WATER ELEVATION (masl)

113.44

- CONCRETE
- SAND
- SILTY CLAY
- SILTY SAND

LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN

CROSS SECTION VIEW
B-B' -GROUND WATER
ANALYTICAL RESULTS
- PHCS

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 DATE: FEBRUARY 2019

FIGURE

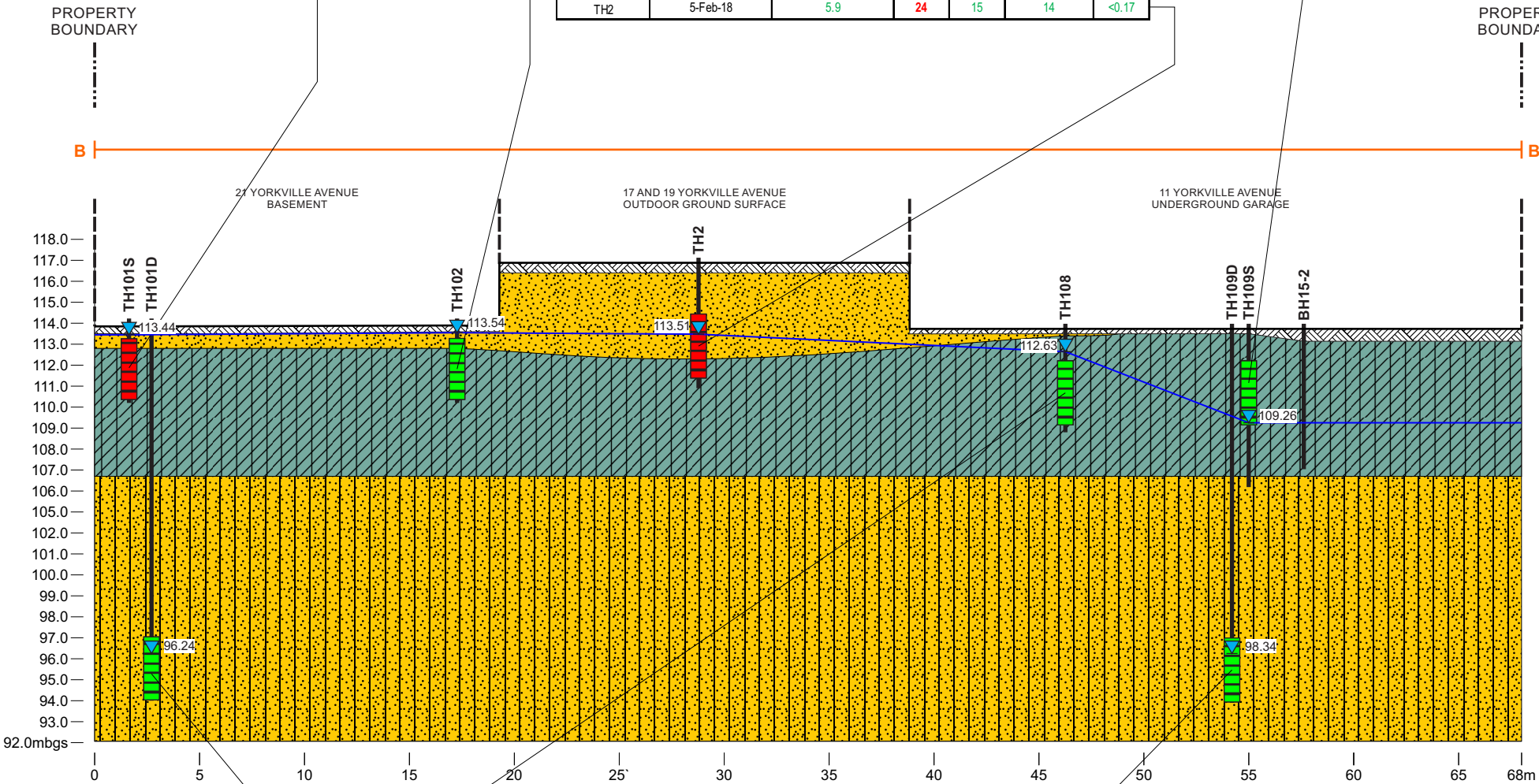
6F

TH101S Screen Interval: 0.6 to 3.7†						
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH101S	8-Nov-18	460	140	240	650	11
~TH101S	8-Nov-18	390	180	270	620	10

TH102 Screen Interval: 0.6 to 3.7†						
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH102	14-Nov-18	6.6	1.6	3.8	3.5	0.84
~TH1020	14-Nov-18	6.8	1.6	3.9	3.5	0.91

TH109D Screen Interval: 16.8 to 19.8†						
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH109D	11-Dec-18	<0.20	0.26	<0.20	<0.20	<0.17

TH2 Screen Interval: 2.4 to 5.5						
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH2	5-Feb-18	5.9	24	15	14	<0.17



TH101D Screen Interval: 16.8 to 19.8†						
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH101D	11-Dec-18	<0.40	2.10	<0.40	<0.40	<0.34

TH108 Screen Interval: 1.5 to 4.6†						
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH108	30-Nov-18	1.2	<0.20	<0.20	0.81	<0.17

TH109S Screen Interval: 1.5 to 4.6†						
Sample	Date	c-DCE	PCE	t-DCE	TCE	VC
TH109S	26-Nov-18	<0.20	<0.20	<0.20	<0.20	<0.17

Parameter	Abbreviation	Table 3 Soil Standards
Cis- 1,2-Dichloroethylene	c-DCE	17
Tetrachloroethylene	PCE	17
Trans- 1,2-Dichloroethylene	t-DCE	17
Trichloroethylene	TCE	17
Vinyl Chloride	VC	1.7

SCALE:
VERTICAL & HORIZONTAL SCALE 1:1

SOURCE:
BASED ON FIELD
OBSERVATIONS BY EXP STAFF

exp.	DRAWN BY	CHECKED BY
	J.D.H.	L.W.

- LEGEND:
- TEST HOLE
 - SCREEN INTERVAL
 - SOIL SAMPLE
 - GROUND WATER ELEVATION (GW ELEV (masl, JANUARY 14, 2019))
 - GROUND WATER ELEVATION (masl)

- CONCRETE
- SAND
- SILTY CLAY
- SILTY SAND

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ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE

CROSS SECTION VIEW
B-B' -GROUND WATER
ANALYTICAL RESULTS -
VOCs

11 YORKVILLE AVENUE
TORONTO, ONTARIO
PROJECT NUMBER: 242474 DATE: FEBRUARY 2019

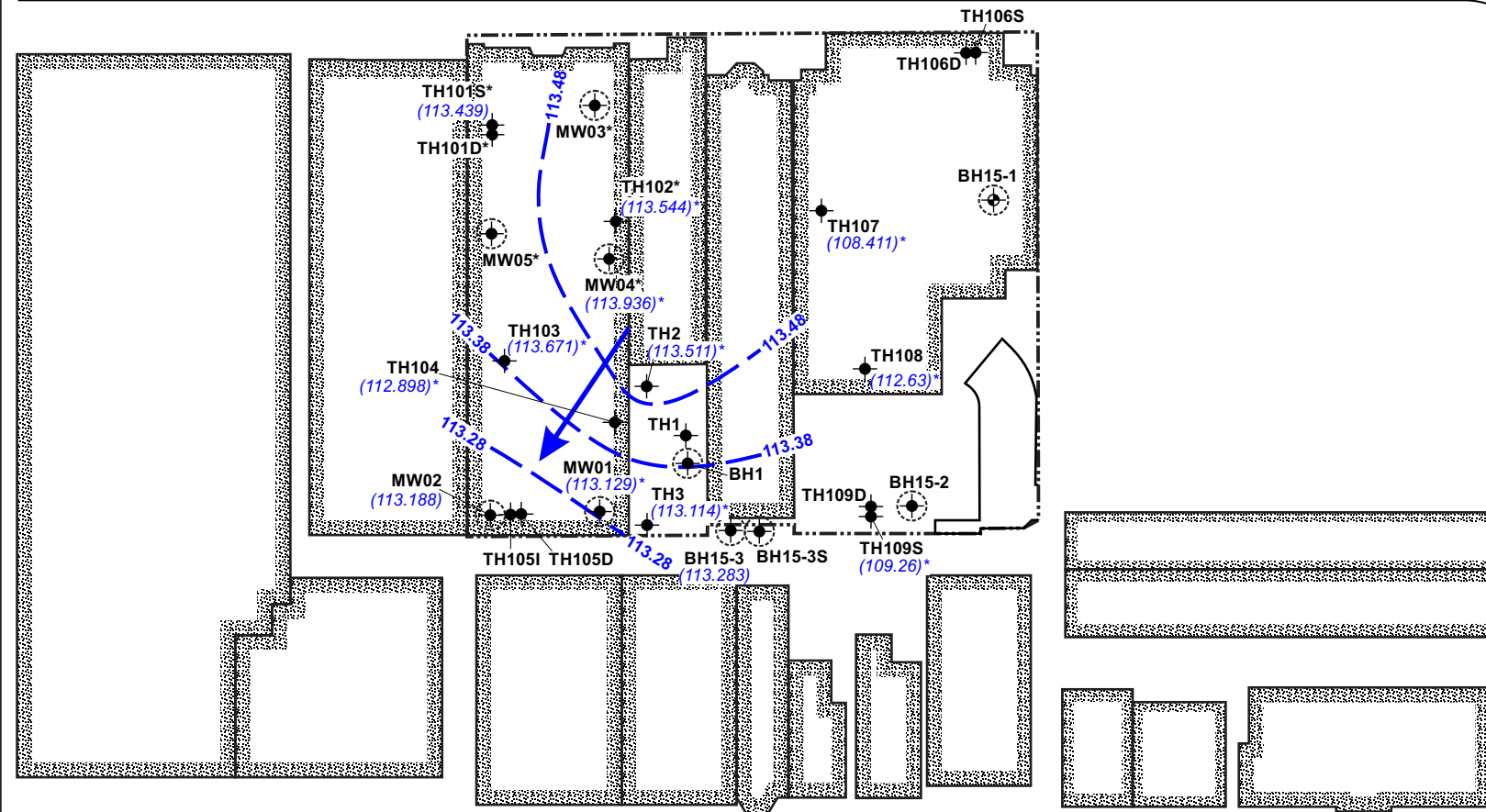
FIGURE
6G

YORKVILLE AVENUE

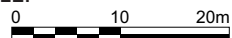


YONGE STREET

CUMBERLAND STREET



SCALE:



SOURCE:

BASED ON CITY OF TORONTO INTERACTIVE MAP, SURVEY PLAN BY WSP GEOMATICS ONTARIO LTD, DATE AUG. 21, 2017 AND FIELD OBSERVATIONS BY EXP STAFF



DRAWN BY CHECKED BY

J.D.H.

L.W.

LEGEND:

--- PROPERTY BOUNDARY



TEST HOLE WITH MONITOR

DEEP MONITORS: TH1, TH101D, TH105D, TH106D, TH109D (EXP, 2018)

INTERMEDIATE MONITOR: TH105I (EXP, 2018)

SHALLOW MONITORS: TH2, TH3, TH4, TH101S, TH102, TH103, TH104, TH106S, TH107, TH108, TH109S (EXP, 2018)



TEST HOLE WITH MONITORS
BH15-2, BH15-3, BH15-3S (SPL, 2015)
BH1 (MCCLYMONT & RAK, 2016)
MW SERIES (PINCHIN, 2016)



TEST HOLE
BH15-1 (SPL, 2015)

(100.00) GROUND WATER ELEVATION (masl)

(100.00)* GROUND WATER ELEVATION NOT USED IN CONTOURING (masl)

100.00 — GROUND WATER ELEVATION CONTOUR (masl)

→ GROUND WATER FLOW DIRECTION

GROUND WATER
CONTOUR PLAN
SHALLOW UNIT
(JANUARY 14, 2019)

FIGURE

7A

11 YORKVILLE AVENUE
TORONTO, ONTARIO

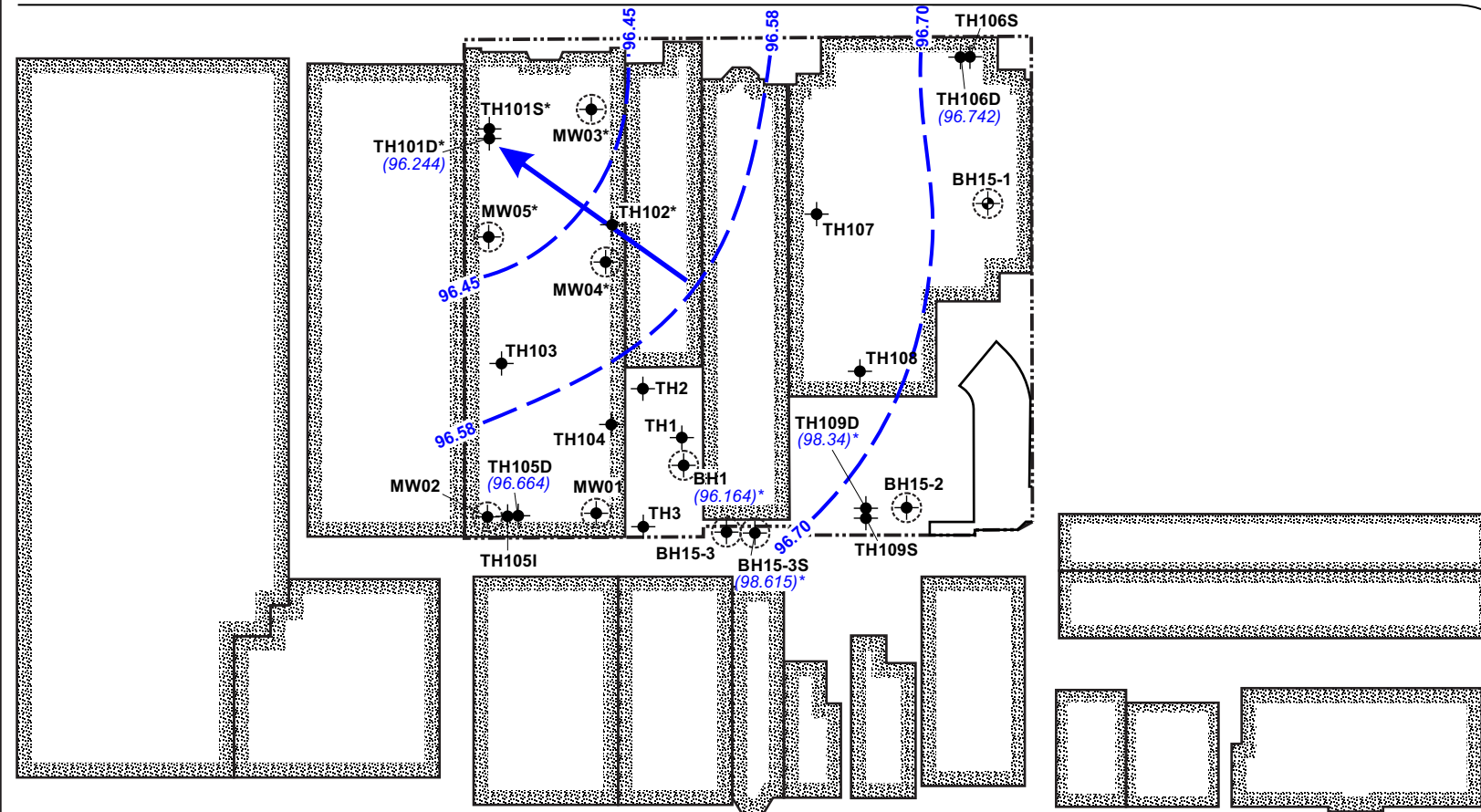
PROJECT NUMBER: 242474

DATE: FEBRUARY 2019

YORKVILLE AVENUE

YONGE STREET

CUMBERLAND STREET



SCALE:



SOURCE:

BASED ON CITY OF TORONTO INTERACTIVE MAP, SURVEY PLAN BY WSP GEOMATICS ONTARIO LTD, DATE AUG. 21, 2017 AND FIELD OBSERVATIONS BY EXP STAFF



DRAWN BY

CHECKED BY

J.D.H.

L.W.

LEGEND:



PROPERTY BOUNDARY



TEST HOLE WITH MONITOR

DEEP MONITORS: TH1, TH101D, TH105D, TH106D, TH109D (EXP, 2018)

INTERMEDIATE MONITOR: TH105I (EXP, 2018)

SHALLOW MONITORS: TH2, TH3, TH4, TH101S, TH102, TH103, TH104, TH106S, TH107, TH108, TH109S (EXP, 2018)



TEST HOLE WITH MONITORS
BH15-2, BH15-3, BH15-3S (SPL, 2015)
BH1 (MCCLYMONT & RAK, 2016)
MW SERIES (PINCHIN, 2016)



TEST HOLE
BH15-1 (SPL, 2015)

(100.00)

GROUND WATER ELEVATION (masl)

(100.00)*

GROUND WATER ELEVATION
NOT USED IN CONTOURING (masl)

100.00

GROUND WATER
ELEVATION CONTOUR (masl)



GROUND WATER FLOW
DIRECTION

(NM)

NOT MONITORED

(NA)

NOT ACCESSIBLE

GROUND WATER
CONTOUR PLAN
DEEP UNIT
(JANUARY 14, 2019)

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474

DATE: FEBRUARY 2019

FIGURE

7B

CUMBERLAND STREET

BH15-2		23-Jan-15
Sample	Depth (mbgs)	
BH15-2 S2B	0.0 to 0.6 [†]	PHCs

TH104		6-Nov-18
Sample	Depth (mbgs)	
TH104-SS4	2.7 to 3.4*	PHCs

TH109S		14-Nov-18
Sample	Depth (mbgs)	
TH109S-SS1	0.0 to 0.6 [†]	PHCs
~TH109S-SS1	0.0 to 0.6 [†]	PHCs

-J- INDICATES FIELD DUPLICATE SAMPLE
 MBGS - METRES BELOW GROUND SURFACE.
 * INDICATES SAMPLE INTERVAL MEASURED FROM GROUND FLOOR
 ‡ INDICATES SAMPLE INTERVAL MEASURED FROM BASEMENT OR UNDERGROUND PARKING GARAGE CONCRETE FLOOR SURFACE.
 ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE



SOURCE:

BASED ON CITY OF TORONTO INTERACTIVE
MAP, SURVEY PLAN BY WSP GEOMATICS
ONTARIO LTD, DATE AUG. 21, 2017 AND FIELD
OBSERVATIONS BY EXP STAFF



DRAWN BY	CHECKED BY
J.D.H.	L.W.

LEGEND:

— · — · — · — PROPERTY BOUNDARY

 TEST HOLE WITH MONITOR
DEEP MONITORS: TH1, TH101D, TH105D, TH106D,
TH109D (EXP. 2018)
INTERMEDIATE MONITOR: TH105I (EXP. 2018)
SHALLOW MONITORS: TH2, TH3, TH4, TH101S,
TH102, TH103, TH104, TH106S, TH107, TH108,
TH109S (EXP. 2018)



TEST HOLE
BH15-1 (SPL, 2015)



TEST HOLE WITH MONITORS
BH15-2, BH15-3, BH15-3S (SPL, 2015)
BH1 (MCCLYMONT & RAK, 2016)
MW SERIES (PINCHIN, 2016)

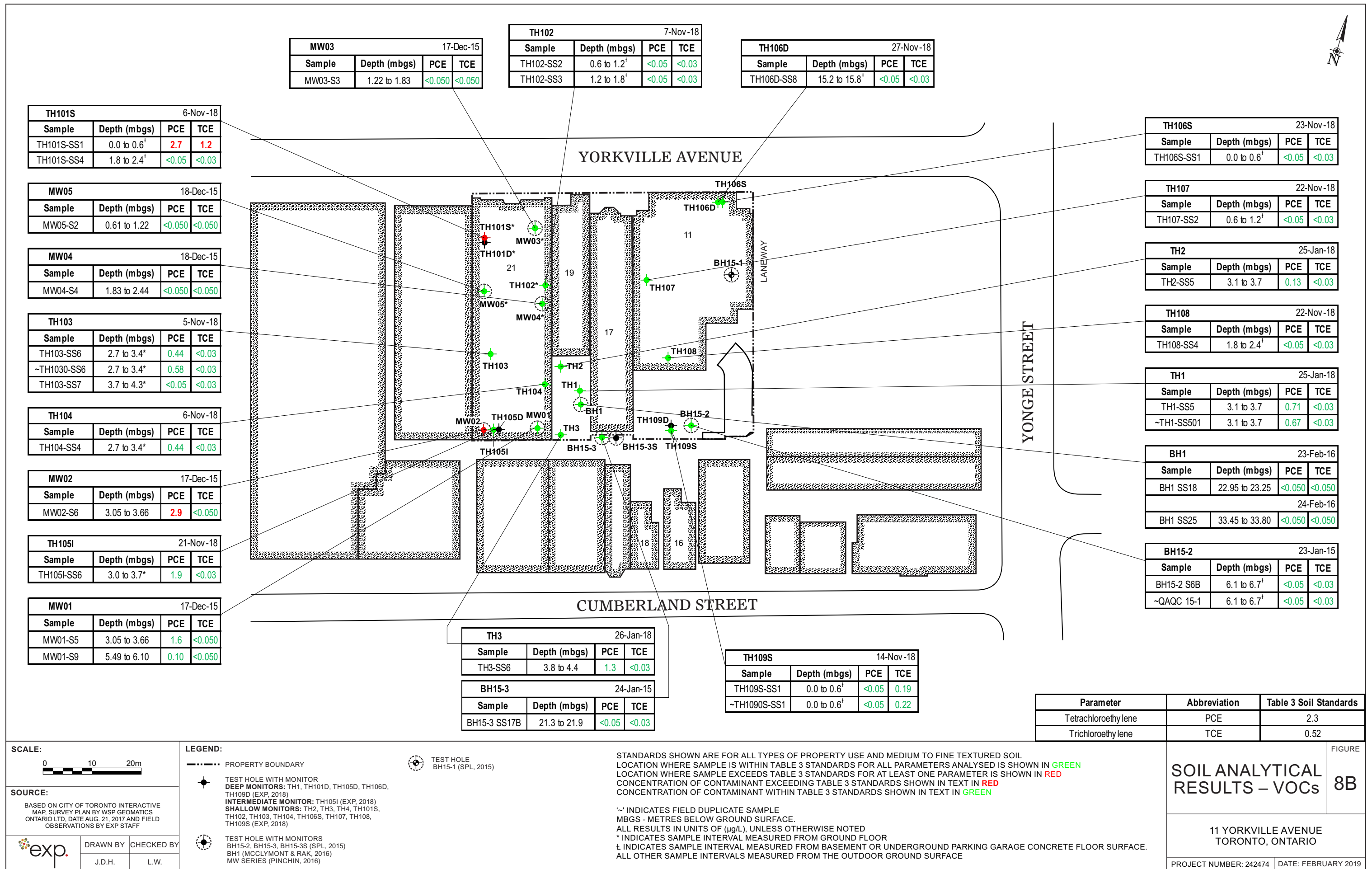
SOIL ANALYTICAL RESULTS - PHCs

FIGURE

3A

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474	DATE: FEBRUARY 2019



MW03															17-Dec-15
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/JFith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
MW03-S4	1.83 to 2.44	<0.0071	<0.0050	<0.0050	<0.0050	<0.0050	<0.05	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

TH101S															6-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/jFith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH101S-SS1	0.0 to 0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TH103															5-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)JFith	B(g,h,i)PyI	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH103-SS2	0.0 to 0.6*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
~TH1030-SS2	0.0 to 0.6*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TH104															5-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b/j)Fith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH104-SS1	0.3 to 0.9*	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TH105I															20-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/jFith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH105I-SS1	0.2 to 0.6*	<0.05	<0.05	<0.05	<0.05	0.05	0.09	0.05	<0.05	0.06	<0.05	0.15	<0.05	<0.05	0.05

TH3															29-Jan-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/JFith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH3-SS1	0.0 to 0.6	<0.05	<0.05	<0.05	0.19	0.20	0.30	0.09	0.09	0.19	<0.05	0.32	<0.05	0.08	0.13

BH15-3															24-Jan-15
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/JFith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
BH15-3 SS1	0.15 to 0.61	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05

TH102															7-Nov-18	
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b/j)Fith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth	
TH102-SS1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	

TH106S															23-Nov-18	
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/Fth	B(g,h,i)PyI	B(k)Fth	Chry	D(a,h)An	Fth	Npth	I(1,2,3-cd)P	Pth	
TH106S-SS1	0.0 to 0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05	<0.05	

TH107															22-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/Fith	B(g,h,i)PyI	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH107-SS1	0.0 to 0.6'	<0.05	<0.05	0.22	0.46	0.54	0.58	0.32	0.35	0.51	<0.05	1.2	<0.05	0.26	0.51
TH107-SS3	1.2 to 1.8'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

TH2															26-Jan-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/Fith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH2-SS1	0.0 to 0.6	<0.05	<0.05	0.13	0.50	0.35	0.51	0.16	0.25	0.47	<0.05	0.94	<0.05	0.15	0.52
~TH2-SS101	0.0 to 0.6	<0.05	<0.05	0.13	0.42	0.31	0.40	0.13	0.25	0.46	<0.05	0.88	<0.05	0.13	0.60

TH108															22-Nov-18	
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)JFith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth	
TH108-SS1	0.0 to 0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	

TH1															25-Jan-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b/j)Fith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH1-SS1	0.0 to 0.6	0.12	0.44	1.3	11	7.1	8.6	1.6	4.1	10	0.45	17	0.10	1.7	8.3
TH1-SS3	1.5 to 2.1	<0.05	<0.05	<0.05	0.07	0.05	0.07	<0.05	<0.05	0.06	<0.05	0.14	<0.05	<0.05	0.09

BH1															22-Feb-16	
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)F	Fith	B(g,h,i)PyI	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
BH1-SS1	0.0 to 0.6	15	1.8	30	33	27	34	13	12	27	3.6	90	22	16	110	
BH1-SS4	2.3 to 2.8	0.015	<0.0050	0.018	0.022	0.018	0.026	0.010	0.0092	0.019	<0.0050	0.057	0.024	0.012	0.065	

BH15-2															23-Jan-15	
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b)/Fth	B(g,h,i)Pyl	B(k)Fth	Chry	D(a,h)An	Fth	Npth	I(1,2,3-cd)P	Pth	
BH15-2 S1	0.0 to 0.6	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05	<0.05	

TH109S															14-Nov-18
Sample	Depth (mbgs)	1-and 2-MNpth	AcNy	An	B(a)An	B(a)P	B(b/j)Fith	B(g,h,i)Pyl	B(k)Fith	Chry	D(a,h)An	Fith	Npth	I(1,2,3-cd)P	Pth
TH109S-SS1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
~TH1090S-SS1	0.0 to 0.6'	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Parameter	Abbreviation	Table 3 Soil Standards
1- and 2-Methylnaphthalene	1-and 2-MNpth	3.4
Acenaphthylene	AcNy	0.17
Anthracene	An	0.74
Benzo(a)anthracene	B(a)An	0.63
Benzo(a)pyrene	B(a)P	0.3
Benzo(b)fluoranthene	B(b)F	0.78
Benzo(g,h,i)perylene	B(g,h,i)Pyl	7.8
Benzo(k)fluoranthene	B(k)Fith	0.78
Chrysene	Chry	7.8
Dibenzo(a,h)anthracene	D(a,h)An	0.1
Fluoranthene	Fith	0.69
Naphthalene	Npth	0.75
Indeno(1,2,3-cd)pyrene	I(1,2,3-cd)P	0.48
Phenanthrene	Pth	7.8



SOURCE:

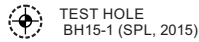
BASED ON CITY OF TORONTO INTERACTIVE MAP, SURVEY PLAN BY WSP GEOMATICS ONTARIO LTD, DATE AUG. 21, 2017 AND FIELD OBSERVATIONS BY EXP STAFF



DRAWN BY	CHECKED BY
J.D.H.	L.W.

LEGEND:

- PROPERTY BOUNDARY
- TEST HOLE WITH MONITOR
DEEP MONITORS: TH1, TH101D, TH105D, TH106D, TH109D (EXP, 2018)
INTERMEDIATE MONITOR: TH105I (EXP, 2018)
SHALLOW MONITORS: TH2, TH3, TH4, TH101S, TH102, TH103, TH104, TH106S, TH107, TH108, TH109S (EXP, 2018)
- TEST HOLE WITH MONITORS
BH15-2, BH15-3, BH15-3S (SPL, 2015)
BH1 (MCCLYMONT & RAK, 2016)
MW SERIES (PINCHIN, 2016)



TEST HOLE
BH15-1 (SPL, 2015)

STANDARDS SHOWN ARE FOR ALL TYPES OF PROPERTY USE AND MEDIUM TO FINE TEXTURED SOIL
LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN
LOCATION WHERE SAMPLE EXCEEDS TABLE 3 STANDARDS FOR AT LEAST ONE PARAMETER IS SHOWN IN RED
CONCENTRATION OF CONTAMINANT EXCEEDING TABLE 3 STANDARDS SHOWN IN TEXT IN RED
CONCENTRATION OF CONTAMINANT WITHIN TABLE 3 STANDARDS SHOWN IN TEXT IN GREEN

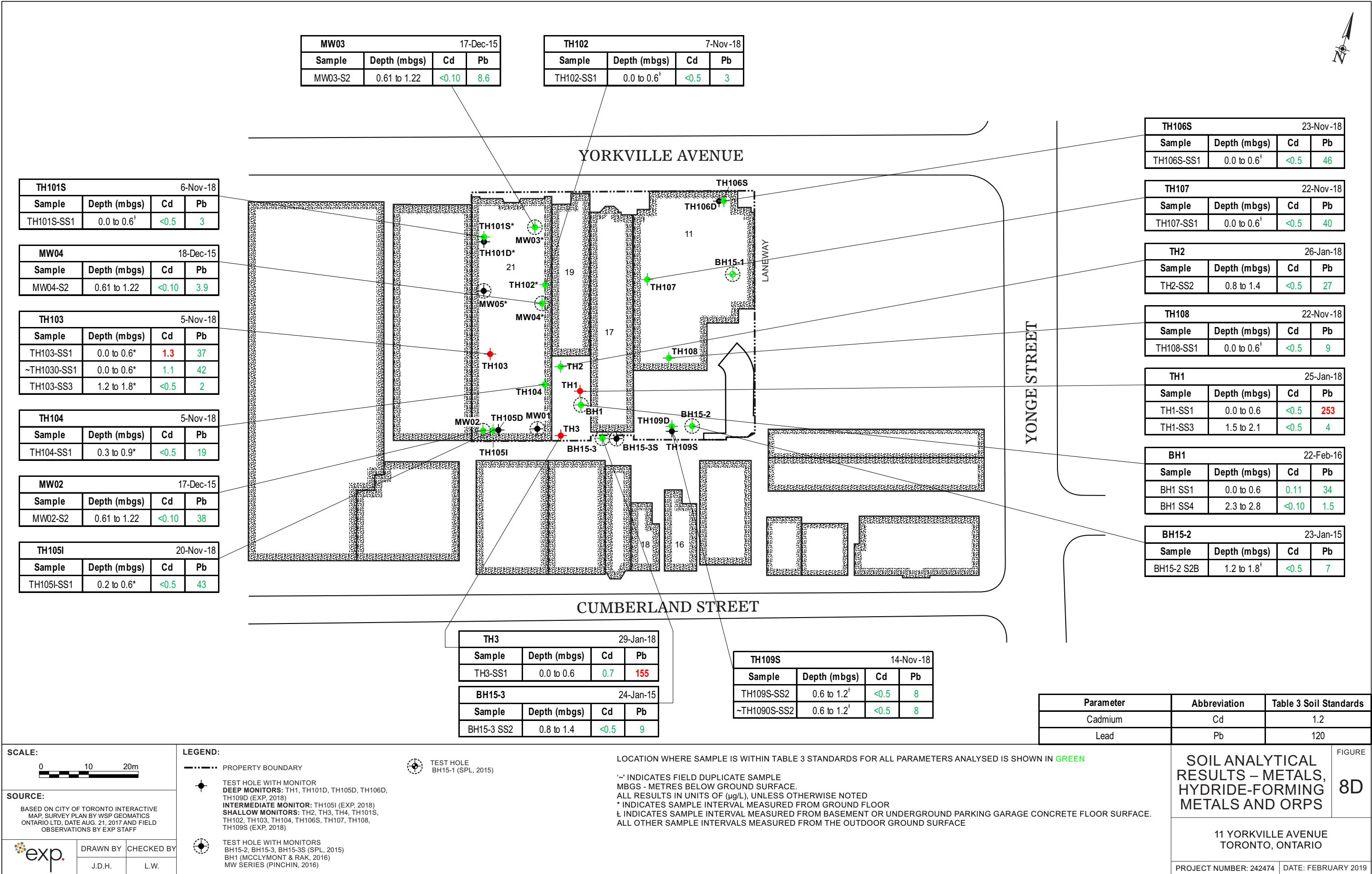
~' INDICATES FIELD DUPLICATE SAMPLE
MBGS - METRES BELOW GROUND SURFACE.
ALL RESULTS IN UNITS OF (µg/L), UNLESS OTHERWISE NOTED
* INDICATES SAMPLE INTERVAL MEASURED FROM GROUND FLOOR
L INDICATES SAMPLE INTERVAL MEASURED FROM BASEMENT OR UNDERGROUND PARKING GARAGE CONCRETE FLOOR SURFACE.
ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE

SOIL ANALYTICAL RESULTS – PAHs

FIGURE
8C

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 DATE: FEBRUARY 2019



TH1027-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH102-SS1	0.0 to 0.6 [†]	0.264	1.94

TH106S23-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH106S-SS1	0.0 to 0.6 [†]	1.15	9.97
TH106S-SS3	1.2 to 1.8 [†]	1.17	4.42

TH10722-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH107-SS1	0.0 to 0.6 [†]	0.645	6.62
TH107-SS3	1.2 to 1.8 [†]	NA	1.11

TH226-Jan-18			
Sample	Depth (mbgs)	EC	SAR
TH2-SS2	0.8 to 1.4	0.127	0.358
~TH2-SS201	0.8 to 1.4	0.131	0.343

TH10822-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH108-SS1	0.0 to 0.6 [†]	0.849	11.3
TH108-SS2	0.6 to 1.2 [†]	0.800	10.1

TH125-Jan-18			
Sample	Depth (mbgs)	EC	SAR
TH1-SS1	0.0 to 0.6	0.205	1.80
TH1-SS3	1.5 to 2.1	0.218	2.08

BH122-Feb-16			
Sample	Depth (mbgs)	EC	SAR
BH1 SS1	0.0 to 0.6	0.22	0.59
BH1 SS4	2.3 to 2.8	0.18	2.00

BH15-223-Jan-15			
Sample	Depth (mbgs)	EC	SAR
BH15-2 S2B	1.2 to 1.8 [†]	0.353	1.04
BH15-2 S4A	3.1 to 3.7 [†]	0.206	0.443



TH101S6-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH101S-SS1	0.0 to 0.6 [†]	0.234	1.43

TH1035-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH103-SS1	0.0 to 0.6*	1.38	1.32
~TH1030-SS1	0.0 to 0.6*	1.56	1.26
TH103-SS3	1.2 to 1.8*	0.288	NA

TH1045-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH104-SS1	0.3 to 0.9*	1.14	0.600
TH104-SS3	1.5 to 2.1*	0.278	NA

TH105I20-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH105I-SS1	0.2 to 0.6*	0.566	2.99

TH329-Jan-18			
Sample	Depth (mbgs)	EC	SAR
TH3-SS1	0.0 to 0.6	0.306	1.72

BH15-324-Jan-15			
Sample	Depth (mbgs)	EC	SAR
BH15-3 SS2	0.8 to 1.4	0.210	4.58
BH15-2 SS6	2.3 to 2.9	0.245	0.462

TH109S14-Nov-18			
Sample	Depth (mbgs)	EC	SAR
TH109S-SS2	0.6 to 1.2 [†]	0.578	2.00
~TH1090S-SS2	0.6 to 1.2 [†]	0.516	2.02

Parameter	Abbreviation	Table 3 Soil Standards
Electrical Conductivity (2:1)	EC	0.7
Sodium Adsorption Ratio	SAR	5

SCALE:

SOURCE:

BASED ON CITY OF TORONTO INTERACTIVE MAP. SURVEY PLAN BY WSP GEOMATICS ONTARIO LTD. DATE AUG. 21, 2017 AND FIELD OBSERVATIONS BY EXP STAFF

DRAWN BY	CHECKED BY
J.D.H.	L.W.

LEGEND:

--- PROPERTY BOUNDARY

● TEST HOLE WITH MONITOR
DEEP MONITORS: TH1, TH101D, TH105D, TH106D, TH109D (EXP, 2018)
INTERMEDIATE MONITOR: TH105I (EXP, 2018)
SHALLOW MONITORS: TH2, TH3, TH4, TH101S, TH102, TH103, TH104, TH106S, TH107, TH108, TH109S (EXP, 2018)

● TEST HOLE WITH MONITORS
BH15-2, BH15-3, BH15-3S (SPL, 2015)
BH1 (MCCLYMONT & RAK, 2016)
MW SERIES (PINCHIN, 2016)

● TEST HOLE
BH15-1 (SPL, 2015)

STANDARDS SHOWN ARE FOR ALL TYPES OF PROPERTY USE AND MEDIUM TO FINE TEXTURED SOIL
LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN **GREEN**
LOCATION WHERE SAMPLE EXCEEDS TABLE 3 STANDARDS FOR AT LEAST ONE PARAMETER IS SHOWN IN **RED**
CONCENTRATION OF CONTAMINANT EXCEEDING TABLE 3 STANDARDS SHOWN IN TEXT IN **RED**
CONCENTRATION OF CONTAMINANT WITHIN TABLE 3 STANDARDS SHOWN IN TEXT IN **GREEN**

~* INDICATES FIELD DUPLICATE SAMPLE
MBGS - METRES BELOW GROUND SURFACE.
ALL RESULTS IN UNITS OF (µg/L), UNLESS OTHERWISE NOTED
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ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE

SOIL ANALYTICAL RESULTS – EC and SAR

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 DATE: FEBRUARY 2019

FIGURE
8E



TH102 Screen Interval: 0.6 to 3.7†		
Sample	Date	
TH102	14-Nov-18	PHCs
~TH1020	14-Nov-18	PHCs

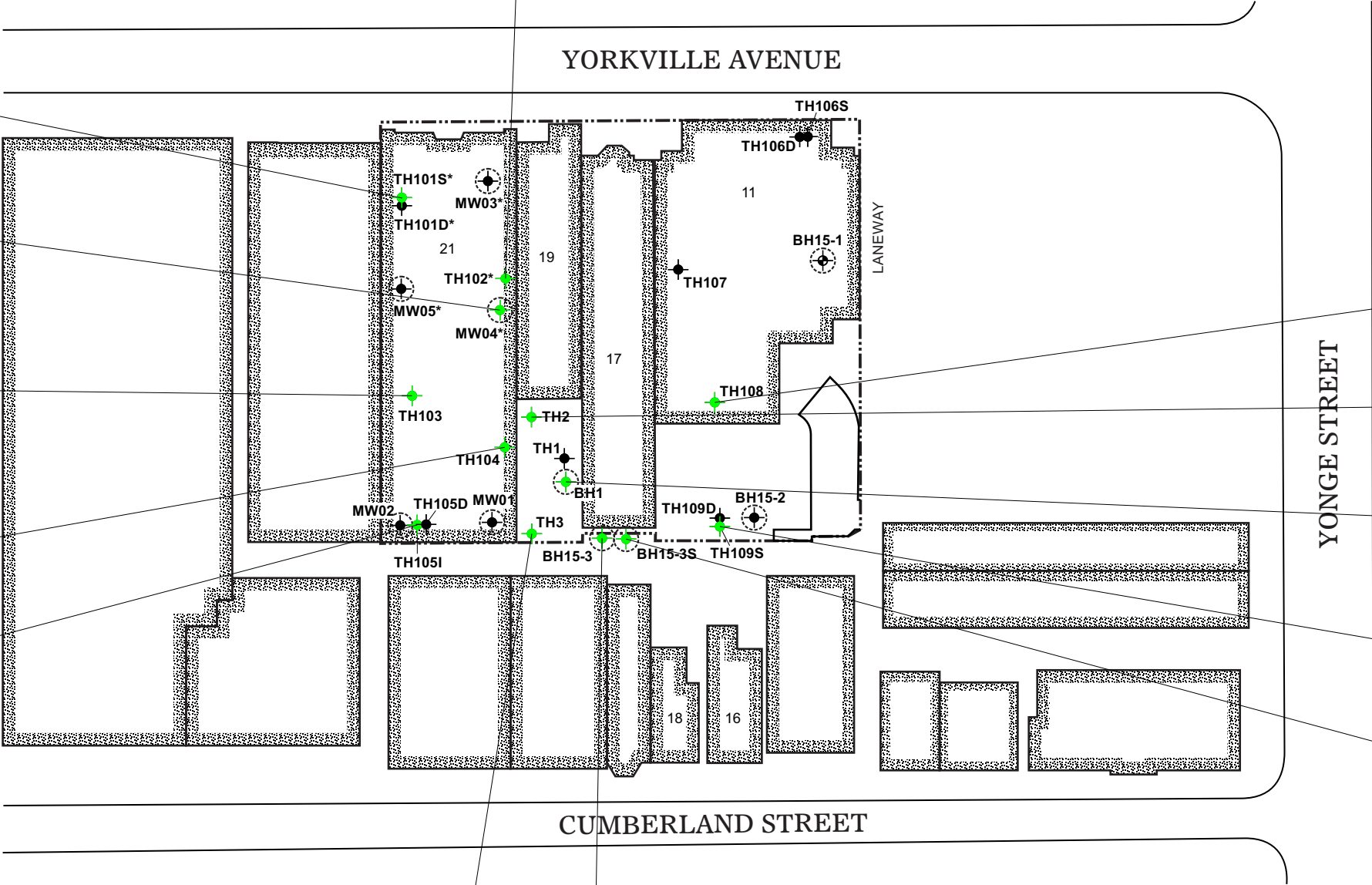
TH101S Screen Interval: 0.6 to 3.7†		
Sample	Date	
TH101S	8-Nov-18	PHCs
~TH1010S	8-Nov-18	PHCs

MW04 Screen Interval: 0.6 to 3.05		
Sample	Date	
MW04	22-Dec-15	PHCs
MW04	28-Nov-17	PHCs
~MW040	28-Nov-17	PHCs

TH103 Screen Interval: 1.2 to 4.3*		
Sample	Date	
TH103	30-Nov-18	PHCs
TH103	11-Dec-18	PHCs
~TH103	11-Dec-18	PHCs

TH104 Screen Interval: 1.2 to 4.3*		
Sample	Date	
TH104	9-Nov-18	PHCs

TH105I Screen Interval: 7.0 to 10.1*		
Sample	Date	
TH105I	30-Nov-18	PHCs



TH108 Screen Interval: 1.5 to 4.6†		
Sample	Date	
TH108	30-Nov-18	PHCs

TH2 Screen Interval: 2.4 to 5.5		
Sample	Date	
TH2	5-Feb-18	PHCs

BH1 Screen Interval: 24.2 to 26.6		
Sample	Date	
BH1	26-Feb-16	PHCs
BH1	28-Nov-17	PHCs

TH109S Screen Interval: 1.5 to 4.6†		
Sample	Date	
TH109S	26-Nov-18	PHCs

BH15-3S Screen Interval: 2.4 to 5.5		
Sample	Date	
BH15-3S	28-Jan-15	PHCs
BH15-3S	28-Nov-17	PHCs

TH3 Screen Interval: 2.7 to 5.8		
Sample	Date	
TH3	31-Jan-18	PHCs
~TH300	31-Jan-18	PHCs

BH15-3 Screen Interval: 18.3 to 21.3		
Sample	Date	
BH15-3	28-Jan-15	PHCs
BH15-3	28-Nov-17	PHCs



SOURCE:
BASED ON CITY OF TORONTO INTERACTIVE
MAP, SURVEY PLAN BY WSP GEOMATICS
ONTARIO LTD, DATE AUG. 21, 2017 AND FIELD
OBSERVATIONS BY EXP STAFF



DRAWN BY	CHECKED BY
J.D.H.	L.W.

LEGEND:

--- PROPERTY BOUNDARY

● TEST HOLE WITH MONITOR
DEEP MONITORS: TH1, TH101D, TH105D, TH106D,
TH109D (EXP, 2018)
INTERMEDIATE MONITOR: TH105I (EXP, 2018)
SHALLOW MONITORS: TH2, TH3, TH4, TH101S,
TH102, TH103, TH104, TH106S, TH107, TH108,
TH109S (EXP, 2018)



TEST HOLE WITH MONITORS
BH15-2, BH15-3, BH15-3S (SPL, 2015)
BH1 (MCCLYMONT & RAK, 2016)
MW SERIES (PINCHIN, 2016)



TEST HOLE
BH15-1 (SPL, 2015)

LOCATION WHERE SAMPLE IS WITHIN TABLE 3 STANDARDS FOR ALL PARAMETERS ANALYSED IS SHOWN IN GREEN

STANDARDS SHOWN ARE FOR ALL TYPES OF PROPERTY USE AND MEDIUM TO FINE TEXTURED SOILS

~' INDICATES FIELD DUPLICATE SAMPLE

* INDICATES SAMPLE INTERVAL MEASURED FROM GROUND FLOOR

‡ INDICATES SAMPLE INTERVAL MEASURED FROM BASEMENT OR UNDERGROUND PARKING GARAGE CONCRETE FLOOR SURFACE.

ALL OTHER SAMPLE INTERVALS MEASURED FROM THE OUTDOOR GROUND SURFACE

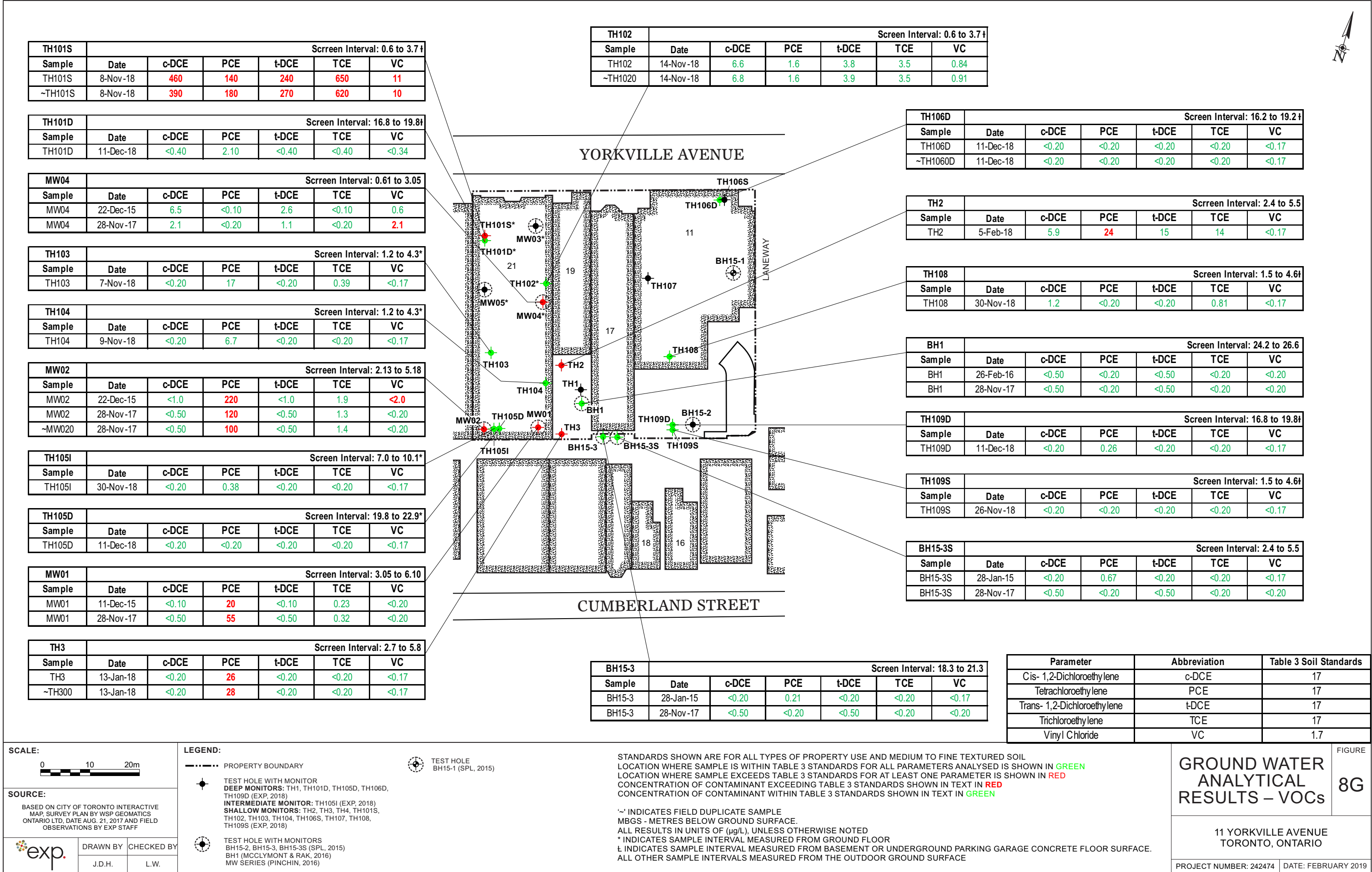
GROUND WATER ANALYTICAL RESULTS – PHCs

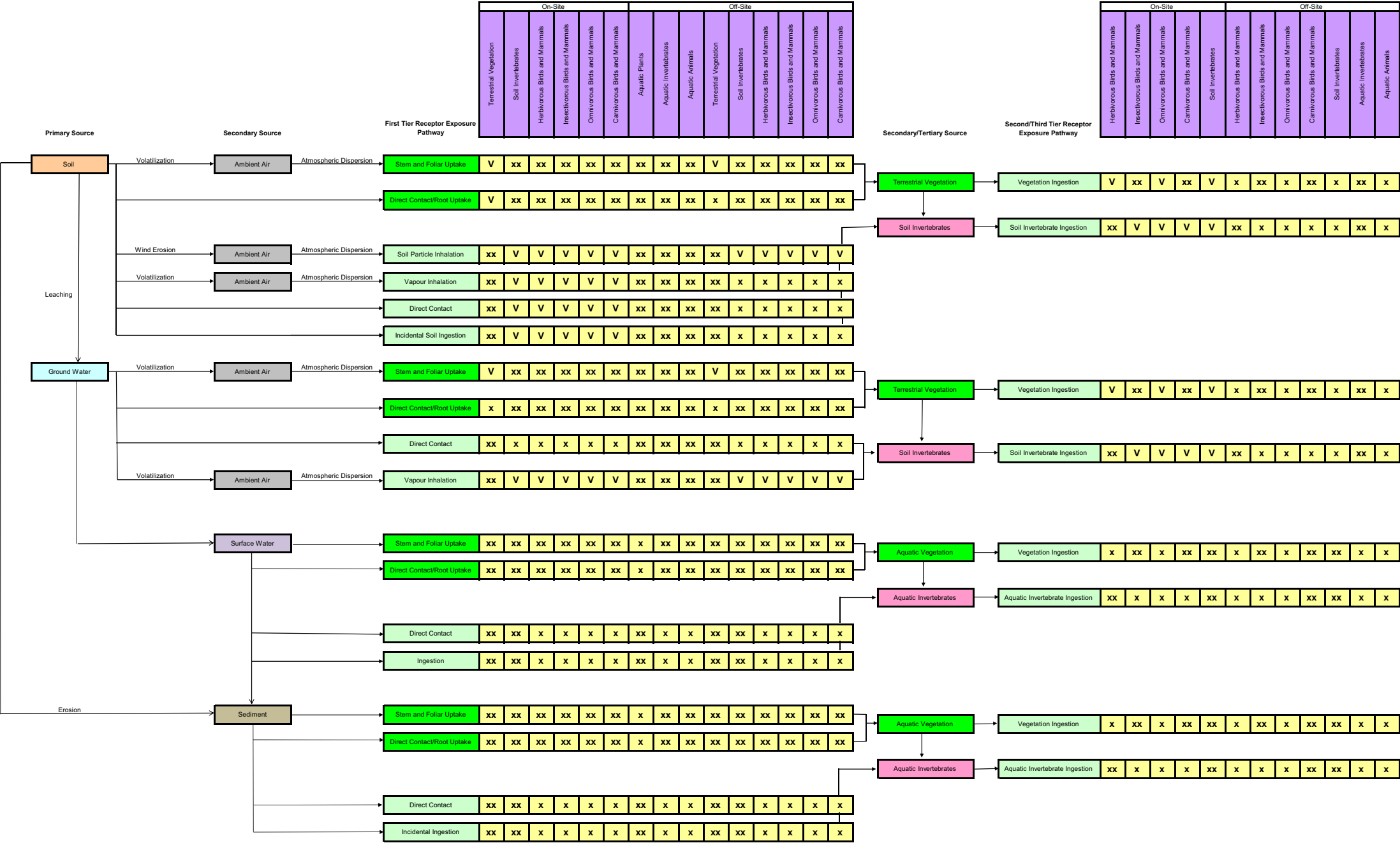
FIGURE

8F

11 YORKVILLE AVENUE
TORONTO, ONTARIO

PROJECT NUMBER: 242474 DATE: FEBRUARY 2019



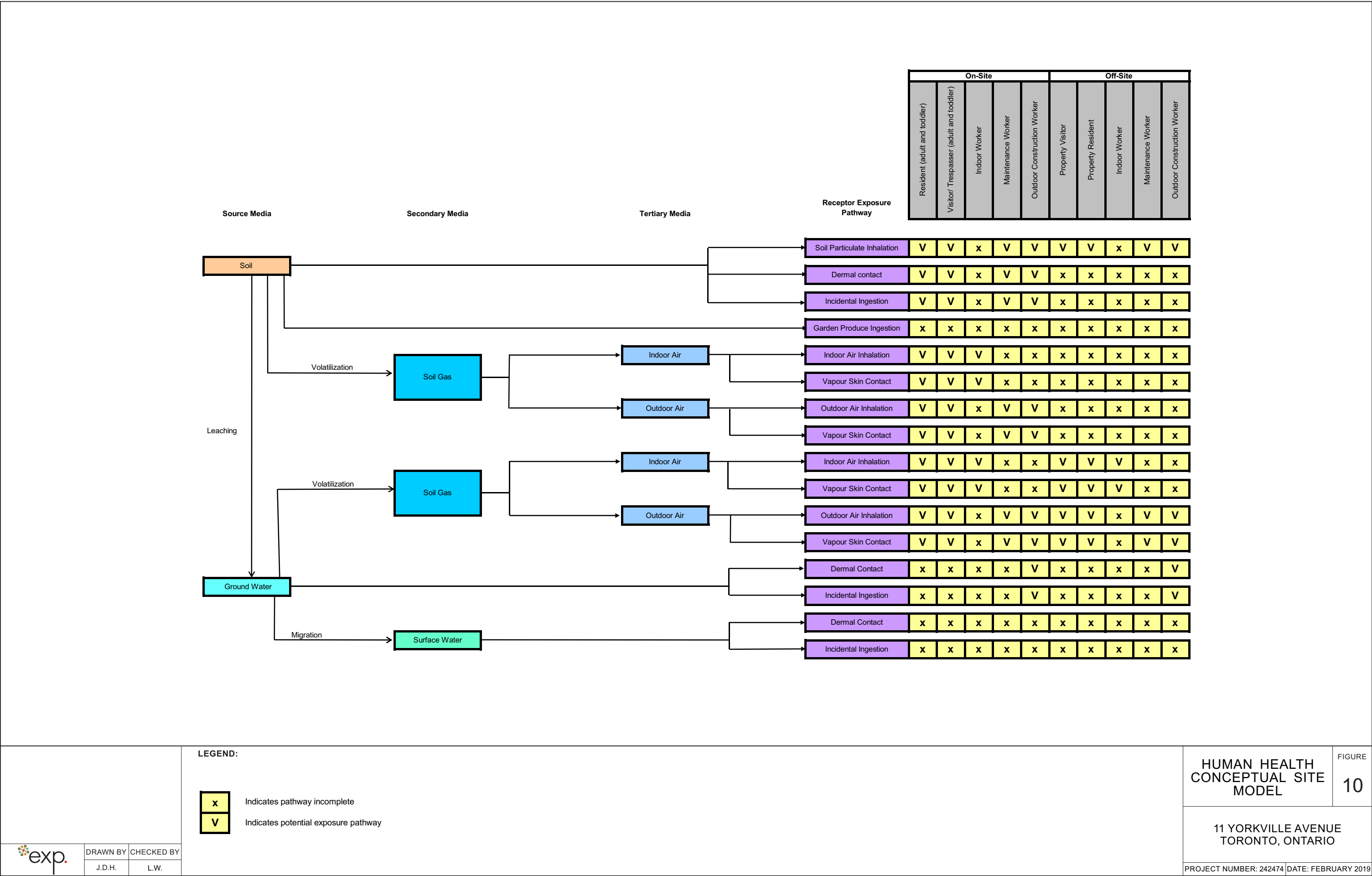


LEGEND:

x Indicates pathway incomplete

v Indicates potential exposure pathway

xx Pathway not applicable to this receptor



Tables

Table 1: SITE ENVIRONMENTAL SETTING DATA

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11 Yorkville Avenue, Toronto, Ontario
February 2019

NATIVE SOIL

Type: Silty Clay over Sandy Silt
Hydraulic Conductivity (select range)
> 10^{-3} cm/s:
< 10^{-3} to > 10^{-6} cm/s: 3.44×10^{-7} cm/s
< 10^{-6} cm/s:
Estimated or Measured: Measured (EXP, 2018c)
Soil Texture: Medium to fine
Estimated or Measured: Grain Size Analysis Performed (EXP, 2019)

GROUND WATER

Depth to Water Table: 2.962 to 3.141 mbgs
Estimated or Measured: Measured at TH2 and TH3 (EXP, 2019)
Direction of Flow: Southwest (Shallow Ground Water Unit)
Estimated or Measured: Measured (EXP, 2019)

MUNICIPAL SERVICES

Piped Water: Yes
Ground Water Source: No
Distance to Well: N/A
Surface Water Source: Yes - Lake Ontario
Sanitary Sewer: Yes
Storm Sewer: Yes

PRIVATE SERVICES

Distance to Nearest Well: N/A
Approximate Depth of Well: N/A
Private Sanitary Sewage: No

SURFACE WATER

Name of water body: Don River
Distance from site: 2.0 kilometres east of the site
Elevation drop from site: 40 metres
Direct Drainage from site: No

Table 2: DARCY'S LAW CALCULATIONS

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11 Yorkville Avenue, Toronto, Ontario
February 2019

$$Q=kiA \quad v=ki/n \quad t=T/v$$

Permeability k (m/sec) = $3.44\text{E-}09$
 (cm/sec) = $3.44\text{E-}07$
 Gradient i (m/m) = 0.020
 Effective Porosity n = 0.20
 Thickness T (m) = NA

Velocity v (m/sec) = $3.44\text{E-}10$
 (feet/sec) = $1.13\text{E-}09$
 (feet/day) = $9.75\text{E-}05$
 (feet/year) = $3.56\text{E-}02$
 (metres/year) = $1.08\text{E-}02$

Average hydraulic conductivity based on measurements by EXP (EXP, 2018c).
 Effective porosity based on published values for silt (McWhorter and Sunada, 1977).
 Gradient estimated based on depth to ground water measured in shallow ground water unit.



242474

Table 3: FIELD MEASUREMENTS OF WATER QUALITY PARAMETERS

11 Yorkville Avenue, Toronto, Ontario
February 2019

Page 1 of 1

Test Hole I.D.	Date Sampled	Temperature (°C)	pH	Specific Conductance (mS)	Total Suspended Solids (ppt)
TH101S	9-Nov-18	17.3	8.97	1.26	0.63
TH101D	11-Dec-18	15.1	7.90	0.81	1.52
TH102	14-Nov-18	16.8	7.68	1.33	0.67
TH103	7-Nov-18	16.6	7.77	1.41	0.70
	30-Nov-18	14.3	7.47	2.15	1.08
	11-Dec-18	11.1	3.56*	2.93	1.47
TH104	9-Nov-18	15.6	7.77	0.84	0.42
TH105I	30-Nov-18	13.3	7.81	0.51	0.22
TH105D	11-Dec-18	15.4	7.54	0.78	0.34
TH106D	11-Dec-18	14.8	7.61	0.64	0.32
TH108	30-Nov-18	15.5	7.68	4.26	2.17
TH109S	26-Nov-18	9.2	8.00	1.20	0.60
TH109D	11-Dec-18	15.2	7.58	1.33	0.64

*Number recorded on field form is believed to be a transcription error based on previous pH measurements in this location.

Table 4: Monitoring Well Construction Details

Page 1 of 1

11 Yorkville Avenue, Toronto, Ontario

February 2019

Test Hole I.D.	Elevation at Ground Surface (masl)	Top of Screen Elevation (masl)	Bottom of Screen Elevation (masl)	Screen Interval (mbgs)
BH1	116.64	94.94	89.14	21.7 to 27.5
BH15-3	116.30	98.00	95.00	18.3 to 21.3
BH15-3S	116.30	113.90	110.80	2.4 to 5.5
MW01	116.31	113.21	110.21	3.1 to 6.1*
MW02	116.31	114.21	111.11	2.1 to 5.2*
MW04	114.26	113.66	111.16	0.6 to 3.1 [†]
TH1	116.84	104.04	101.04	12.8 to 15.8
TH2	116.89	114.49	111.39	2.4 to 5.5
TH3	116.23	113.53	110.43	2.7 to 5.8
TH4	116.20	113.30	110.30	2.9 to 5.9
TH101S	113.85	113.25	110.15	0.6 to 3.7 [†]
TH101D	113.85	97.05	94.05	16.8 to 19.8 [†]
TH102	113.88	113.28	110.18	0.6 to 3.7 [†]
TH103	116.78	115.58	112.48	1.2 to 4.3*
TH104	116.76	115.56	112.46	1.2 to 4.3*
TH105I	116.67	109.67	106.57	7.0 to 10.1*
TH105D	116.67	96.87	93.77	19.8 to 22.9*
TH106S	113.08	112.48	109.38	0.6 to 3.7 [†]
TH106D	113.08	96.88	93.88	16.2 to 19.2 [†]
TH107	113.00	111.50	108.40	1.5 to 4.6 [†]
TH108	113.71	112.21	109.11	1.5 to 4.6 [†]
TH109S	113.72	112.22	109.12	1.5 to 4.6 [†]
TH109D	113.72	96.92	93.92	16.8 to 19.8 [†]

NOTES:

masl means "metres above sea level".

* Indicates screen interval measured from ground floor. [†] Indicates measured from basement or underground parking garage concrete floor surface.

All other screen intervals measured from outdoor ground surface.

Elevations surveyed by EXP (2018).

Elevations derived from City of Toronto Benchmark No. CT828 (elevation = 116.982 masl).

Table 5A: ELEVATIONS OF GROUND WATER TABLE - SHALLOW MONITORING WELLS

Page 1 of 1

11 Yorkville Avenue, Toronto, Ontario
February 2019

Test Hole I.D.	Elevation at Ground Surface (masl)	Ground Water Depth Below Top of Pipe (metres)	Height from Ground Surface to Top of Pipe (metres)	Ground Water Depth Below Ground Surface (metres)	Ground Water Table Elevation (masl)	Date Measured by EXP
BH15-3S	116.30	2.913	-0.104	3.017	113.28	14-Jan-19
MW01	116.31	3.094	-0.087	3.181	113.13	14-Jan-19
MW02	116.31	3.062	-0.060	3.122	113.19	14-Jan-19
MW04	114.26	0.280	-0.044	0.324	113.94	14-Jan-19
TH2	116.89	3.141	-0.238	3.379	113.51	14-Jan-19
TH3	116.23	2.962	-0.154	3.116	113.11	14-Jan-19
TH101S	113.85	0.302	-0.109	0.411	113.44	14-Jan-19
TH102	113.88	0.252	-0.084	0.336	113.54	14-Jan-19
TH103	116.78	2.966	-0.143	3.109	113.67	14-Jan-19
TH104	116.76	3.782	-0.080	3.862	112.90	14-Jan-19
TH106S	113.08	dry	-0.168	N/A	N/A	14-Jan-19
TH107	113.00	4.408	-0.181	4.589	108.41	14-Jan-19
TH108	113.71	1.029	-0.051	1.080	112.63	14-Jan-19
TH109S	113.72	4.286	-0.174	4.460	109.26	14-Jan-19

NOTES:

N/A means "not applicable". masl means "metres above sea level".

Elevation surveyed by EXP (2018).

Elevations derived from City of Toronto Benchmark No. CT828 (elevation = 116.982 masl).



242474

Table 5B: ELEVATIONS OF GROUND WATER TABLE - DEEP MONITORING WELLS

Page 1 of 1

11 Yorkville Avenue, Toronto, Ontario
February 2019

Test Hole I.D.	Elevation at Ground Surface (masl)	Ground Water Depth Below Top of Pipe (metres)	Height from Ground Surface to Top of Pipe (metres)	Ground Water Depth Below Ground Surface (metres)	Ground Water Table Elevation (masl)	Date Measured by EXP
BH1	116.64	20.387	-0.089	20.48	96.16	14-Jan-19
BH15-3	116.30	17.544	-0.141	17.69	98.62	14-Jan-19
TH1	116.84	dry	-0.067	N/A	N/A	14-Jan-19
TH101D	113.85	17.538	-0.068	17.61	96.24	14-Jan-19
TH105I	116.67	7.769	-0.103	7.87	108.80	14-Jan-19
TH105D	116.67	19.882	-0.124	20.01	96.66	14-Jan-19
TH106D	113.08	16.168	-0.170	16.34	96.74	14-Jan-19
TH109D	113.72	15.279	-0.101	15.38	98.34	14-Jan-19

NOTES:

N/A means "not applicable". masl means "metres above sea level".

Elevation surveyed by EXP (2018).

Elevations derived from City of Toronto Benchmark No. CT828 (elevation = 116.982 masl).



242474

Table 6: MAXIMUM SOIL CONCENTRATION DATA - Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario
February 2019

Page 1 of 1

Contaminant Name	Number of Sample Locations	Number of Samples Analyzed	MDL ¹	Maximum Measured Concentration	Ontario Regulation 153/04 Table 3 Standards ²	Date of Sampling	Test Hole	Sample I.D.	Sampling Depth (mbgs)
Benzene	13	17	0.02	<0.02	0.17	23-Nov-18	TH106S	TH106S - SS1	0 to 0.6 ^l
Toluene	13	17	0.05	<0.05	6	23-Nov-18	TH106S	TH106S - SS1	0 to 0.6 ^l
Ethylbenzene	13	17	0.05	<0.05	15	23-Nov-18	TH106S	TH106S - SS1	0 to 0.6 ^l
Xylene Mixture (Total)	13	17	0.05	<0.05	25	23-Nov-18	TH106S	TH106S - SS1	0 to 0.6 ^l
PHC F1 (C6 to C10) - BTEX	13	17	5	<5	65	23-Nov-18	TH106S	TH106S - SS1	0 to 0.6 ^l
PHC F2 (C10 to C16)	13	17	10	<10	150	23-Nov-18	TH106S	TH106S - SS1	0 to 0.6 ^l
PHC F3 (C16 to C34)	13	17	50	93	1,300	23-Nov-18	TH106S	TH106S - SS1	0 to 0.6 ^l
PHC F4 (C34 to C50)	13	17	50	<50	5,600	23-Nov-18	TH106S	TH106S - SS1	0 to 0.6 ^l

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

* Indicates sampling interval measured from ground floor. ^l Indicates sampling interval measured from basement or underground parking garage concrete floor surface. All other sampling intervals measured from outdoor ground surface.



242474

Table 6: MAXIMUM SOIL CONCENTRATION DATA - Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario
February 2019

Page 1 of 1

Contaminant Name	Number of Sample Locations	Number of Samples Analyzed	MDL ¹	Maximum Measured Concentration	Ontario Regulation 153/04 Table 3 Standards ²	Date of Sampling	Test Hole	Sample I.D.	Sampling Depth (mbgs)
1,1,1,2-Tetrachloroethane	13	20	0.04	<0.04	0.05	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,1,1-Trichloroethane	13	20	0.05	<0.05	3.4	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,1,1,2,2-Tetrachloroethane	13	20	0.05	<0.05	0.05	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,1,2-Trichloroethane	13	20	0.04	<0.04	0.05	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,1-Dichloroethane	13	20	0.02	<0.02	11	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,1-Dichloroethylene	13	20	0.05	<0.05	0.05	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,2-Dichlorobenzene	13	20	0.05	<0.05	4.3	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,2-Dichloroethane	13	20	0.03	<0.03	0.05	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,2-Dichloropropane	13	20	0.03	<0.03	0.085	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,3-Dichlorobenzene	13	20	0.05	<0.05	6	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,3-Dichloropropene	13	20	0.04	<0.04	0.083	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
1,4-Dichlorobenzene	13	20	0.05	<0.05	0.097	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Acetone	13	20	0.50	<0.50	28	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Benzene	13	20	0.02	<0.02	0.17	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Bromodichloromethane	13	20	0.05	<0.05	13	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Bromoform	13	20	0.05	<0.05	0.26	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Bromomethane	13	20	0.05	<0.05	0.05	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Carbon Tetrachloride	13	20	0.05	<0.05	0.12	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Chlorobenzene	13	20	0.05	<0.05	2.7	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Chloroform	13	20	0.04	<0.04	0.18	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
cis- 1,2-Dichloroethylene	13	20	0.02	0.13	30	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Dibromochloromethane	13	20	0.05	<0.05	9.4	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Dichlorodifluoromethane	13	20	0.05	<0.05	25	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Ethylbenzene	13	20	0.05	<0.05	15	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Ethylene Dibromide	13	20	0.04	<0.04	0.05	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Methyl Ethyl Ketone	13	20	0.50	<0.50	44	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Methyl Isobutyl Ketone	13	20	0.50	<0.50	4.3	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Methyl tert-butyl ether	13	20	0.05	<0.05	1.4	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Methylene Chloride	13	20	0.05	<0.05	0.96	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
n-Hexane	13	20	0.05	<0.05	34	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Styrene	13	20	0.05	<0.05	2.2	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Tetrachloroethylene	13	20	0.05	2.7	2.3	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Toluene	13	20	0.02	<0.05	6	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
trans- 1,2-Dichloroethylene	13	20	0.05	<0.05	0.75	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Trichloroethylene	13	20	0.03	1.2	0.52	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Trichlorofluoromethane	13	20	0.05	<0.05	5.8	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Vinyl Chloride	13	20	0.02	<0.02	0.022	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³
Xylene Mixture	13	20	0.05	<0.05	25	6-Nov-18	TH101S	TH101S - SS1	0 to 0.6 ³

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface. All other sampling intervals measured from outdoor ground surface.

Table 6: MAXIMUM SOIL CONCENTRATION DATA - Polycyclic Aromatic Hydrocarbons

11 Yorkville Avenue, Toronto, Ontario
February 2019

Page 1 of 1

Contaminant Name	Number of Sample Locations	Number of Samples Analyzed	MDL ¹	Maximum Measured Concentration	Ontario Regulation 153/04 Table 3 Standards ²	Date of Sampling	Test Hole	Sample I.D.	Sampling Depth (mbgs)
2-and 1-methyl Naphthalene	13	19	0.05	0.12	3.4	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Acenaphthene	13	19	0.05	0.22	58	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Acenaphthylene	13	19	0.05	0.44	0.17	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Anthracene	13	19	0.05	1.3	0.74	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Benzo(a)anthracene	13	19	0.05	11	0.63	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Benzo(a)pyrene	13	19	0.05	7.1	0.3	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Benzo(b)fluoranthene	13	19	0.05	8.6	0.78	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Benzo(g,h,i)perylene	13	19	0.05	1.6	7.8	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Benzo(k)fluoranthene	13	19	0.05	4.1	0.78	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Chrysene	13	19	0.05	10	7.8	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Dibenzo(a,h)anthracene	13	19	0.05	0.45	0.1	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Fluoranthene	13	19	0.05	17	0.69	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Fluorene	13	19	0.05	0.43	69	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Indeno(1,2,3-cd)pyrene	13	19	0.05	1.7	0.48	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Naphthalene	13	19	0.05	0.10	0.75	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Phenanthrene	13	19	0.05	8.3	7.8	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Pyrene	13	19	0.05	15	78	25-Jan-18	TH1	TH1-SS1	0 to 0.6

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface. All other sampling intervals measured from outdoor ground surface.



Table 6: MAXIMUM SOIL CONCENTRATION DATA - Metals, Hydride-Forming Metals, and Other Regulated Parameters

11 Yorkville Avenue, Toronto, Ontario
February 2019

Page 1 of 1

Contaminant Name	Number of Sample Locations	Number of Samples Analyzed	MDL ¹	Maximum Measured Concentration	Ontario Regulation 153/04 Table 3 Standards ²	Date of Sampling	Test Hole	Sample I.D.	Sampling Depth (mbgs)
Antimony	13	19	0.8	0.9	7.5	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Arsenic	13	19	1	7	18	29-Jan-18	TH3	TH3-SS1	0 to 0.6
Barium	13	19	2	173	390	14-Nov-18	TH109S	TH109 - SS2	0.6 to 1.2 ¹
Beryllium	13	19	0.5	0.6	5	22-Nov-18	TH108	TH108 - SS1	0 to 0.6 ¹
Boron	13	19	5	10	120	22-Nov-18	TH108	TH108 - SS1	0 to 0.6 ¹
Boron (Hot Water Soluble)	13	18	0.10	1.01	1.5	5-Nov-18	TH103	TH103 - SS1	0 to 0.6*
Cadmium	13	19	0.5	1.3	1.2	5-Nov-18	TH103	TH103 - SS1	0 to 0.6*
Chromium	13	19	2	29	160	22-Nov-18	TH108	TH108 - SS1	0 to 0.6 ¹
Chromium VI	13	18	0.2	<0.2	10	22-Nov-18	TH108	TH108 - SS1	0 to 0.6 ¹
Cobalt	13	19	0.5	10.1	22	14-Nov-18	TH109S	TH109 - SS2	0.6 to 1.2 ¹
Copper	13	19	1	48	180	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Cyanide	13	18	0.040	<0.040	0.051	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Lead	13	19	1	253	120	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Mercury	13	18	0.10	1.21	1.8	29-Jan-18	TH3	TH3-SS1	0 to 0.6
Molybdenum	13	19	0.5	1.1	6.9	5-Nov-18	TH103	TH1030 - SS1	0 to 0.6*
Nickel	13	19	1	20	130	14-Nov-18	TH109S	TH109 - SS2	0.6 to 1.2 ¹
Selenium	13	19	0.4	2.3	2.4	22-Nov-18	TH108	TH108 - SS1	0 to 0.6 ¹
Silver	13	19	0.2	<0.2	25	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Thallium	13	19	0.4	<0.4	1	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Uranium	13	19	0.5	0.8	23	14-Nov-18	TH109S	TH109 - SS2	0.6 to 1.2 ¹
Vanadium	13	19	1	38	86	22-Nov-18	TH108	TH108 - SS1	0 to 0.6 ¹
Zinc	13	19	5	301	340	25-Jan-18	TH1	TH1-SS1	0 to 0.6
Electrical Conductivity (2:1)	13	21	0.005	1.56	0.7	5-Nov-18	TH103	TH1030 - SS1	0 to 0.6*
Sodium Adsorption Ratio	13	21	NV	11.3	5	22-Nov-18	TH108	TH108 - SS1	0 to 0.6 ¹

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface. All other sampling intervals measured from outdoor ground surface.

Table 6: MAXIMUM GROUND WATER CONCENTRATION DATA - Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario
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Contaminant Name	Number of Sample Locations	Number of Samples Analyzed	MDL ¹	Maximum Measured Concentration	Ontario Regulation 153/04 Table 3 Standards ²	Date of Sampling	Monitor	Screen Interval (mbgs)
Benzene	14	21	0.20	0.24	430	9-Nov-18	TH101S	0.6 to 3.7 ¹
Toluene	14	21	0.20	22	18,000	30-Nov-18	TH105I	7.0 to 10.1*
Ethylbenzene	14	21	0.10	<0.20	2,300	28-Nov-17	BH15-3	18.3 to 21.3
Xylene Mixture (Total)	14	21	0.20	1.5	4,200	11-Dec-18	TH103	1.2 to 4.3*
PHC F1 (C6 to C10) - BTEX	14	21	25	290	750	9-Nov-18	TH101S	0.6 to 3.7 ¹
PHC F2 (C10 to C16)	14	21	100	<100	150	28-Nov-17	BH15-3	18.3 to 21.3
PHC F3 (C16 to C34)	14	21	100	310	500	9-Nov-18	TH104	1.2 to 4.3*
PHC F4 (C34 to C50)	14	21	100	<200	500	28-Nov-17	BH15-3	18.3 to 21.3

NOTES:

All results in ppb (µg/L).

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

* Indicates screen interval measured from ground floor. ¹ Indicates screen interval measured from basement or underground parking garage concrete floor surface. All other screen intervals measured from outdoor ground surface.



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Table 6: MAXIMUM GROUND WATER CONCENTRATION DATA - Volatile Organic Compounds

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Contaminant Name	Number of Sample Locations	Number of Samples Analyzed	MDL ¹	Maximum Measured Concentration	Ontario Regulation 153/04 Table 3 Standards ²	Date of Sampling	Monitor	Screen Interval (mbgs)
1,1,1,2-Tetrachloroethane	20	25	<0.10	<0.50	28	28-Nov-17	MW02	2.1 to 5.2*
1,1,1-Trichloroethane	20	25	<0.20	<0.60	6,700	11-Dec-18	TH101D	16.8 to 19.8 ^l
1,1,2,2-Tetrachloroethane	20	25	<0.10	<0.50	15	28-Nov-17	MW02	2.1 to 5.2*
1,1,2-Trichloroethane	20	25	<0.20	<0.50	30	28-Nov-17	MW02	2.1 to 5.2*
1,1-Dichloroethane	20	25	<0.20	0.41	3,100	28-Nov-17	MW04	0.6 to 3.1 ^l
1,1-Dichloroethylene	20	25	<0.20	5.4	17	9-Nov-18	TH101S	0.6 to 3.7 ^l
1,2-Dichlorobenzene	20	25	<0.10	<0.50	9,600	28-Nov-17	MW02	2.1 to 5.2*
1,2-Dichloroethane	20	25	<0.20	<0.50	12	28-Nov-17	MW02	2.1 to 5.2*
1,2-Dichloropropane	20	25	<0.20	0.85	140	28-Nov-17	MW02	2.1 to 5.2*
1,3-Dichlorobenzene	20	25	<0.10	<0.50	9,600	28-Nov-17	MW02	2.1 to 5.2*
1,3-Dichloropropene	20	25	<0.30	<0.60	45	11-Dec-18	TH101D	16.8 to 19.8 ^l
1,4-Dichlorobenzene	20	25	<0.10	<0.50	67	28-Nov-17	MW02	2.1 to 5.2*
Acetone	20	25	<1.0	69	130,000	28-Nov-17	BH15-3	18.3 to 21.3
Benzene	20	25	0.20	1.5	430	11-Dec-18	TH103	1.2 to 4.3*
Bromodichloromethane	20	25	<0.20	1.7	85,000	30-Nov-18	TH105I	7.0 to 10.1*
Bromoform	20	25	<0.10	<1.0	770	28-Nov-17	MW02	2.1 to 5.2*
Bromomethane	20	25	<0.20	<0.50	56	28-Nov-17	MW02	2.1 to 5.2*
Carbon Tetrachloride	20	25	<0.20	<0.40	8.4	11-Dec-18	TH101D	16.8 to 19.8 ^l
Chlorobenzene	20	25	<0.10	<0.20	630	28-Nov-17	MW02	2.1 to 5.2*
Chloroform	20	25	<0.20	4.2	22	9-Nov-18	TH104	1.2 to 4.3*
cis- 1,2-Dichloroethylene	20	25	<0.20	460	17	9-Nov-18	TH101S	0.6 to 3.7 ^l
Dibromochloromethane	20	25	<0.10	<0.50	82,000	28-Nov-17	MW02	2.1 to 5.2*
Dichlorodifluoromethane	20	25	<0.20	<1.0	4,400	28-Nov-17	MW02	2.1 to 5.2*
Ethylbenzene	20	25	0.10	<0.20	2,300	28-Nov-17	BH15-3	18.3 to 21.3
Ethylene Dibromide	20	25	<0.10	<0.20	0.83	28-Nov-17	MW02	2.1 to 5.2*
Methyl Ethyl Ketone	20	25	<1.0	<10	1,500,000	28-Nov-17	MW02	2.1 to 5.2*
Methyl Isobutyl Ketone	20	25	<1.0	<5.0	580,000	28-Nov-17	MW02	2.1 to 5.2*
Methyl tert-butyl ether	20	25	<0.20	<0.50	1400	28-Nov-17	MW02	2.1 to 5.2*
Methylene Chloride	20	25	<0.30	<2.0	5500	28-Nov-17	MW02	2.1 to 5.2*
n-Hexane	20	25	<0.20	<1.0	520	28-Nov-17	MW02	2.1 to 5.2*
Styrene	20	25	<0.10	<0.50	9,100	28-Nov-17	MW02	2.1 to 5.2*
Tetrachloroethylene	20	25	<0.20	180	17	9-Nov-18	TH101S	0.6 to 3.7 ^l
Toluene	20	25	0.20	22	18,000	30-Nov-18	TH105I	7.0 to 10.1*
trans- 1,2-Dichloroethylene	20	25	<0.20	270	17	9-Nov-18	TH101S	0.6 to 3.7 ^l
Trichloroethylene	20	25	<0.20	650	17	9-Nov-18	TH101S	0.6 to 3.7 ^l
Trichlorofluoromethane	20	25	<0.40	<0.80	2,500	11-Dec-18	TH101D	16.8 to 19.8 ^l
Vinyl Chloride	20	25	<0.17	11	1.7	9-Nov-18	TH101S	0.6 to 3.7 ^l
Xylene Mixture	20	25	0.20	1.5	4,200	11-Dec-18	TH103	1.2 to 4.3*

NOTES:

All results in ppb (µg/L).

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of the Table 3 Standards are shown in **bold**.

* Indicates screen interval measured from ground floor. ^l Indicates screen interval measured from basement or underground parking garage concrete floor surface. All other screen intervals measured from outdoor ground surface.

Table 7: SOIL CHEMICAL ANALYSIS - Petroleum Hydrocarbon Parameters									
11 Yorkville Avenue, Toronto, Ontario February 2019									
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Sample I.D.	Units	MDL ¹	Test Hole TH101S - SS1	Test Hole TH102 - SS2	Test Hole TH102 - SS3	Test Hole TH103 - SS6	Duplicate of TH103 - SS6 TH1030 - SS6	Test Hole TH104 - SS4	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
Depth (m)			0.0 to 0.6 ¹	0.6 to 1.2 ²	1.2 to 1.8 ¹	2.7 to 3.4*	2.7 to 3.4*	2.7 to 3.4*	
Soil Type			Sand	Sand	Silty Clay	Sand	Sand	Sand	
Date of Sample Collection			6-Nov-18	7-Nov-18	7-Nov-18	5-Nov-18	5-Nov-18	6-Nov-18	
Date of Sample Analysis			12-Nov-18	13-Nov-18	13-Nov-18	12-Nov-18	12-Nov-18	12-Nov-18	
Certificate of Analysis Number			18T406864	18T407460	18T407460	18T406864	18T406864	18T406864	
Laboratory I.D.			9685174	9687804	9687823	9685165	9685169	9685172	
Field Vapour Reading			<5 ppm	<5 ppm	<5 ppm	<5 ppm	<5 ppm	<5 ppm	
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17
Toluene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	6
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	15
Xylene Mixture (Total)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	25
PHC F1 (C6 to C10) - BTEX	µg/g	5	<5	<5	<5	<5	<5	<5	65
PHC F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	150
PHC F3 (C16 to C34)	µg/g	50	<50	<50	<50	<50	<50	<50	1,300
PHC F4 (C34 to C50)	µg/g	50	<50	<50	<50	<50	<50	<50	5,600
NOTES: Analysis by AGAT Laboratories. NM means "not measured". All results in ppm (µg/g) and based on dry weight basis. * Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface. ¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value. ² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil. Exceedances of Table 3 Standards are shown in bold .									

Table 7: SOIL CHEMICAL ANALYSIS - Petroleum Hydrocarbon Parameters									
11 Yorkville Avenue, Toronto, Ontario February 2019									
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Sample I.D.	Units	MDL ¹	Test Hole	Test Hole	Test Hole	Test Hole	Test Hole	Duplicate of TH109S - SS1	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
			TH105I - SS6	TH106S - SS1	TH107 - SS2	TH108 - SS4	TH109S - SS1	TH1090S - SS1	
Depth (m)			3.0 to 3.7*	0 to 0.6 ¹	0.6 to 1.2 ¹	1.8 to 2.4 ¹	0.0 to 0.6 ¹	0.0 to 0.6 ¹	
Soil Type			Clayey Silt	Silty Sand	Silty Sand	Silty Clay	Silty Clay	Silty Clay	
Date of Sample Collection			21-Nov-18	23-Nov-18	22-Nov-18	22-Nov-18	14-Nov-18	14-Nov-18	
Date of Sample Analysis			4-Dec-18	4-Dec-18	28-Nov-18	28-Nov-18	20-Nov-18	20-Nov-18	
Certificate of Analysis Number			18T414477	18T414477	18T412872	18T412872	18T410344	18T410344	
Laboratory I.D.			9744759	9744761	9732581	9732587	9709759	9709762	
Field Vapour Reading			<5 ppm	340 ppm	<5 ppm	<5 ppm	<5 ppm	<5 ppm	
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17
Toluene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	6
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	15
Xylene Mixture (Total)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	25
PHC F1 (C6 to C10) - BTEX	µg/g	5	<5	<5	<5	<5	<5	<5	65
PHC F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	150
PHC F3 (C16 to C34)	µg/g	50	<50	93	<50	<50	<50	<50	1,300
PHC F4 (C34 to C50)	µg/g	50	<50	<50	<50	<50	<50	<50	5,600
NOTES: Analysis by AGAT Laboratories. All results in ppm (µg/g) and based on dry weight basis. * Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface. ¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value. ² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil. Exceedances of Table 3 Standards are shown in bold .									

Table 8: SOIL CHEMICAL ANALYSIS - Volatile Organic Compounds

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Sample I.D.	Units	MDL ¹	Test Hole TH101S - SS1	Test Hole TH101S - SS4	Test Hole TH102 - SS2	Test Hole TH102 - SS3	Test Hole TH103 - SS6	Duplicate of TH103 - SS6 TH1030 - SS6	Test Hole TH103 - SS7	Test Hole TH104 - SS4	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
Depth (m)			0.0 to 0.6'	1.8 to 2.4'	0.6 to 1.2'	1.2 to 1.8'	2.7 to 3.4*	2.7 to 3.4*	3.7 to 4.3*	2.7 to 3.4*	
Soil Type			Sand	Silty Clay	Sand	Silty Clay	Sand	Sand	Silty Clay	Sand	
Date of Sample Collection			6-Nov-18	6-Nov-18	7-Nov-18	7-Nov-18	5-Nov-18	5-Nov-18	5-Nov-18	6-Nov-18	
Date of Sample Analysis			11-Nov-18	22-Nov-18	13-Nov-18	13-Nov-18	11-Nov-18	11-Nov-18	22-Nov-18	11-Nov-18	
Certificate of Analysis Number	18T406864		18T406864		18T407460		18T406864		18T406864		
Laboratory I.D.	9685174		9685176		9687804		9687823		9685165		
1,1,1,2-Tetrachloroethane	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05
1,1,1-Trichloroethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	3.4
1,1,2,2-Tetrachloroethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
1,1,2-Trichloroethane	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05
1,1-Dichloroethane	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	11
1,1-Dichloroethylene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
1,2-Dichlorobenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	4.3
1,2-Dichloroethane	µg/g	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05
1,2-Dichloropropane	µg/g	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.085
1,3-Dichlorobenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	6
1,3-Dichloropropene	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.083
1,4-Dichlorobenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.097
Acetone	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	28
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17
Bromodichloromethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	13
Bromoform	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.26
Bromomethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Carbon Tetrachloride	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12
Chlorobenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.7
Chloroform	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.18
Cis- 1,2-Dichloroethylene	µg/g	0.02	0.13	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	30
Dibromochloromethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	9.4
Dichlorodifluoromethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	25
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	15
Ethylene Dibromide	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05
Methyl Ethyl Ketone	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	44
Methyl Isobutyl Ketone	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.3
Methyl tert-butyl Ether	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.4
Methylene Chloride	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.96
n-Hexane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	34
Styrene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.2
Tetrachloroethylene	µg/g	0.05	2.7	<0.05	<0.05	<0.05	0.44	0.58	<0.05	0.44	2.3
Toluene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	6
Trans- 1,2-Dichloroethylene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.75
Trichloroethylene	µg/g	0.03	1.2	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.52
Trichlorofluoromethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	5.8
Vinyl Chloride	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
Xylene Mixture	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	25

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface.¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.Exceedances of Table 3 Standards are shown in **bold**.

Table 8: SOIL CHEMICAL ANALYSIS - Volatile Organic Compounds

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Sample I.D.	Units	MDL ¹	Test Hole TH1051 - SS6	Test Hole TH1065 - SS1	Test Hole TH1060 - SS8	Test Hole TH107 - SS2	Test Hole TH108 - SS4	Test Hole TH109S - SS1	Duplicate of TH109S - SS1 TH1090S - SS1	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
Depth (m)			3.0 to 3.7*	0 to 0.6 [†]	15.2 to 15.8 [†]	0.6 to 1.2 [†]	1.8 to 2.4 [†]	0.0 to 0.6 [†]	0.0 to 0.6 [†]	
Soil Type			Clayey Silt	Silty Sand	Silty Sand	Silty Sand	Silty Clay	Silty Clay	Silty Clay	
Date of Sample Collection			21-Nov-18	23-Nov-18	27-Nov-18	22-Nov-18	22-Nov-18	14-Nov-18	14-Nov-18	
Date of Sample Analysis			30-Nov-18	30-Nov-18	30-Nov-18	28-Nov-18	28-Nov-18	20-Nov-18	20-Nov-18	
Certificate of Analysis Number			18T414477	18T414477	18T414477	18T412872	18T412872	18T410344	18T410344	
Laboratory I.D.			9744759	9744761	9744764	9732581	9732587	9709759	9709762	
1,1,1,2-Tetrachloroethane	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05
1,1,1-Trichloroethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	3.4
1,1,2,2-Tetrachloroethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
1,1,2-Trichloroethane	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05
1,1-Dichloroethane	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	11
1,1-Dichloroethylene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
1,2-Dichlorobenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	4.3
1,2-Dichloroethane	µg/g	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05
1,2-Dichloropropane	µg/g	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.085
1,3-Dichlorobenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	6
1,3-Dichloropropane	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.083
1,4-Dichlorobenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.097
Acetone	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	28
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17
Bromodichloromethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	13
Bromoform	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.26
Bromomethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05
Carbon Tetrachloride	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.12
Chlorobenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.7
Chloroform	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.18
Cis- 1,2-Dichloroethylene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	30
Dibromochloromethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	9.4
Dichlorodifluoromethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	25
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	15
Ethylene Dibromide	µg/g	0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.05
Methyl Ethyl Ketone	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	44
Methyl Isobutyl Ketone	µg/g	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	4.3
Methyl tert-butyl Ether	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	1.4
Methylene Chloride	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.96
n-Hexane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	34
Styrene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.2
Tetrachloroethylene	µg/g	0.05	1.9	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	2.3
Toluene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	6
Trans- 1,2-Dichloroethylene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.75
Trichloroethylene	µg/g	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.19	0.22	0.52
Trichlorofluoromethane	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	5.8
Vinyl Chloride	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.02
Xylene Mixture	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	25

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Indicates sampling interval measured from ground floor. [†] Indicates sampling interval measured from basement or underground parking garage concrete floor surface.¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.Exceedances of Table 3 Standards are shown in **bold**.

Table 9: SOIL CHEMICAL ANALYSIS - Polycyclic Aromatic Hydrocarbons

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Sample I.D.	Units	MDL ¹	Test Hole TH101S - SS1	Test Hole TH102 - SS1	Test Hole TH103 - SS2	Duplicate of TH103 - SS2 TH1030 - SS2	Test Hole TH104 - SS1	Test Hole TH105I - SS1	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
Depth (m)			0.0 to 0.6 ¹	0.0 to 0.6 ¹	0.0 to 0.6*	0.0 to 0.6*	0.3 to 0.9*	0.2 to 0.6*	
Soil Type			Sand	Sand	Sand	Sand	Sand	Sand	
Date of Sample Collection			6-Nov-18	7-Nov-18	5-Nov-18	5-Nov-18	5-Nov-18	20-Nov-18	
Date of Sample Analysis			12-Nov-18	13-Nov-18	12-Nov-18	12-Nov-18	12-Nov-18	3-Dec-18	
Certificate of Analysis Number			18T406864	18T407460	18T406864	18T406864	18T406864	18T414477	
Laboratory I.D.			9685174	9687801	9685161	9685168	9685170	9744757	
2-and 1-methyl Naphthalene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	3.4
Acenaphthene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	58
Acenaphthylene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17
Anthracene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.74
Benzo(a)anthracene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.63
Benzo(a)pyrene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.3
Benzo(b)fluoranthene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	0.78
Benzo(g,h,i)perylene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	7.8
Benzo(k)fluoranthene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.78
Chrysene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	7.8
Dibenzo(a,h)anthracene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.1
Fluoranthene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.15	0.69
Fluorene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	69
Indeno(1,2,3-cd)pyrene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.48
Naphthalene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.75
Phenanthrene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	7.8
Pyrene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.14	78

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

*** The sum of 1- and 2-Methylnaphthalene concentrations must not exceed the soil Standard if both are detected.

Exceedances of Table 3 Standards are shown in **bold**.

Table 9: SOIL CHEMICAL ANALYSIS - Polycyclic Aromatic Hydrocarbons

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Sample I.D.	Units	MDL ¹	Test Hole TH106S - SS1	Test Hole TH107 - SS1	Test Hole TH107 - SS3	Test Hole TH108 - SS1	Test Hole TH109S - SS1	Duplicate of TH109S - SS1 TH1090S - SS1	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
Depth (m)			0.0 to 0.6 ¹	0.0 to 0.6 ¹	1.2 to 1.8 ¹	0 to 0.6 ¹	0 to 0.6 ¹	0 to 0.6 ¹	
Soil Type			Silty Sand	Silty Sand	Silty Clay	Silty Clay	Silty Clay	Silty Clay	
Date of Sample Collection			23-Nov-18	22-Nov-18	22-Nov-18	22-Nov-18	14-Nov-18	14-Nov-18	
Date of Sample Analysis			3-Dec-18	28-Nov-18	12-Dec-18	28-Nov-18	20-Nov-18	20-Nov-18	
Certificate of Analysis Number			18T414477	18T412872	18T412872	18T412872	18T410344	18T410344	
Laboratory I.D.			9744761	9732562	9732582	9732585	9709759	9709762	
2-and 1-methyl Naphthalene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	3.4
Acenaphthene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	58
Acenaphthylene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.17
Anthracene	µg/g	0.05	<0.05	0.22	<0.05	<0.05	<0.05	<0.05	0.74
Benzo(a)anthracene	µg/g	0.05	<0.05	0.46	<0.05	<0.05	<0.05	<0.05	0.63
Benzo(a)pyrene	µg/g	0.05	<0.05	0.54	<0.05	<0.05	<0.05	<0.05	0.3
Benzo(b)fluoranthene	µg/g	0.05	<0.05	0.58	<0.05	<0.05	<0.05	<0.05	0.78
Benzo(g,h,i)perylene	µg/g	0.05	<0.05	0.32	<0.05	<0.05	<0.05	<0.05	7.8
Benzo(k)fluoranthene	µg/g	0.05	<0.05	0.35	<0.05	<0.05	<0.05	<0.05	0.78
Chrysene	µg/g	0.05	<0.05	0.51	<0.05	<0.05	<0.05	<0.05	7.8
Dibenzo(a,h)anthracene	µg/g	0.05	<0.05	0.05	<0.05	<0.05	<0.05	<0.05	0.1
Fluoranthene	µg/g	0.05	0.07	1.2	<0.05	0.05	<0.05	<0.05	0.69
Fluorene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	69
Indeno(1,2,3-cd)pyrene	µg/g	0.05	<0.05	0.26	<0.05	<0.05	<0.05	<0.05	0.48
Naphthalene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.75
Phenanthrene	µg/g	0.05	<0.05	0.51	<0.05	<0.05	<0.05	<0.05	7.8
Pyrene	µg/g	0.05	0.07	1.1	<0.05	0.05	<0.05	<0.05	78

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

*** The sum of 1- and 2-Methylnaphthalene concentrations must not exceed the soil Standard if both are detected.

Exceedances of Table 3 Standards are shown in **bold**.

Table 10: SOIL CHEMICAL ANALYSIS - Metals, Hydride-Forming Metals and Other Regulated Parameters

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Sample I.D.	Units	MDL ¹	Test Hole TH101S - SS1	Test Hole TH102 - SS1	Test Hole TH103 - SS1	Duplicate of TH103 - SS1 TH1030 - SS1	Test Hole TH103 - SS3	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
Depth (m)			0.0 to 0.6 ¹	0.0 to 0.6 ¹	0.0 to 0.6*	0.0 to 0.6*	1.2 to 1.8*	
Soil Type			Sand	Sand	Sand	Sand	Sand	
Date of Sample Collection			6-Nov-18	7-Nov-18	5-Nov-18	5-Nov-18	5-Nov-18	
Date of Sample Analysis			12-Nov-18	13-Nov-18	12-Nov-18	12-Nov-18	20-Nov-18	
Certificate of Analysis Number			18T406864	18T407460	18T406864	18T406864	18T406864	
Laboratory I.D.			9685174	9687801	9685160	9685167	9685162	
Antimony	µg/g	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	7.5
Arsenic	µg/g	1	2	1	4	4	<1	18
Barium	µg/g	2	15	12	43	40	15	390
Beryllium	µg/g	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5
Boron	µg/g	5	<5	<5	7	7	<5	120
Boron (Hot Water Soluble)	µg/g	0.10	<0.10	<0.10	1.01	1.01	NA	1.5
Cadmium	µg/g	0.5	<0.5	<0.5	1.3	1.1	<0.5	1.2
Chromium	µg/g	2	5	4	9	9	3	160
Chromium VI	µg/g	0.2	<0.2	<0.2	<0.2	<0.2	NA	10
Cobalt	µg/g	0.5	2.5	2.2	3.5	3.4	1.2	22
Copper	µg/g	1	5	4	13	15	2	180
Cyanide	µg/g	0.040	<0.040	<0.040	<0.040	<0.040	NA	0.051
Lead	µg/g	1	3	3	37	42	2	120
Mercury	µg/g	0.10	<0.10	<0.10	0.14	0.13	NA	1.8
Molybdenum	µg/g	0.5	<0.5	<0.5	1.0	1.1	<0.5	6.9
Nickel	µg/g	1	4	4	7	7	3	130
Selenium	µg/g	0.4	0.4	<0.4	1.1	2.2	<0.4	2.4
Silver	µg/g	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	25
Thallium	µg/g	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	1
Uranium	µg/g	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	23
Vanadium	µg/g	1	11	8	15	16	7	86
Zinc	µg/g	5	13	10	118	117	8	340
Electrical Conductivity (2:1)	mS/cm	0.005	0.234	0.264	1.38	1.56	0.288	0.7
Sodium Adsorption Ratio	N/A	N/A	1.43	1.94	1.32	1.26	NA	5
pH, 2:1 CaCl2 Extraction***	pH Units	N/A	9.04	7.93	8.27	8.32	NA	NV

NOTES:

Analysis by AGAT Laboratories.

NV mean "no value". N/A means "not applicable". NA means "not analyzed".

All results in ppm (µg/g) and based on dry weight basis.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

*** pH range 5.0 to 9.0 for soil depths less than 1.5 m; pH range 5.0 to 11.0 for soil depths greater than 1.5 m.

Exceedances of Table 3 Standards are shown in **bold**.

Table 10: SOIL CHEMICAL ANALYSIS - Metals, Hydride-Forming Metals and Other Regulated Parameters

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Sample I.D.	Units	MDL ¹	Test Hole TH104 - SS1	Test Hole TH104 - SS3	Test Hole TH105I - SS1	Test Hole TH106S - SS1	Test Hole TH106S - SS3	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
Depth (m)			0.3 to 0.9*	1.5 to 2.1*	0.2 to 0.6*	0.0 to 0.6 ¹	1.2 to 1.8 ¹	
Soil Type			Sand	Sand	Sand	Silty Sand	Silty Clay	
Date of Sample Collection			5-Nov-18	5-Nov-18	20-Nov-18	23-Nov-18	23-Nov-18	
Date of Sample Analysis			12-Nov-18	19-Nov-18	3-Dec-18	3-Dec-18	10-Dec-18	
Certificate of Analysis Number			18T406864	18T406864	18T414477	18T414477	18T414477	
Laboratory I.D.			9685170	9685171	9744757	9744761	9744762	
Antimony	µg/g	0.8	<0.8	NA	<0.8	<0.8	NA	7.5
Arsenic	µg/g	1	2	NA	2	2	NA	18
Barium	µg/g	2	30	NA	30	68	NA	390
Beryllium	µg/g	0.5	<0.5	NA	<0.5	<0.5	NA	5
Boron	µg/g	5	<5	NA	<5	5	NA	120
Boron (Hot Water Soluble)	µg/g	0.10	0.54	NA	0.83	0.50	NA	1.5
Cadmium	µg/g	0.5	<0.5	NA	<0.5	<0.5	NA	1.2
Chromium	µg/g	2	8	NA	7	12	NA	160
Chromium VI	µg/g	0.2	<0.2	NA	<0.2	<0.2	NA	10
Cobalt	µg/g	0.5	3.0	NA	2.1	4.5	NA	22
Copper	µg/g	1	7	NA	6	12	NA	180
Cyanide	µg/g	0.040	<0.040	NA	<0.040	<0.040	NA	0.051
Lead	µg/g	1	19	NA	43	46	NA	120
Mercury	µg/g	0.10	<0.10	NA	0.16	0.11	NA	1.8
Molybdenum	µg/g	0.5	<0.5	NA	<0.5	<0.5	NA	6.9
Nickel	µg/g	1	6	NA	4	7	NA	130
Selenium	µg/g	0.4	<0.4	NA	<0.4	<0.4	NA	2.4
Silver	µg/g	0.2	<0.2	NA	<0.2	<0.2	NA	25
Thallium	µg/g	0.4	<0.4	NA	<0.4	<0.4	NA	1
Uranium	µg/g	0.5	<0.5	NA	<0.5	<0.5	NA	23
Vanadium	µg/g	1	16	NA	11	16	NA	86
Zinc	µg/g	5	201	NA	24	60	NA	340
Electrical Conductivity (2:1)	mS/cm	0.005	1.14	0.278	0.566	1.15	1.17	0.7
Sodium Adsorption Ratio	N/A	N/A	0.600	NA	2.99	9.97	4.42	5
pH, 2:1 CaCl ₂ Extraction***	pH Units	N/A	8.01	7.91	7.74	9.41	NA	NV

NOTES:

Analysis by AGAT Laboratories.

NV mean "no value". N/A means "not applicable". NA means "not analyzed".

All results in ppm (µg/g) and based on dry weight basis.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

*** pH range 5.0 to 9.0 for soil depths less than 1.5 m; pH range 5.0 to 11.0 for soil depths greater than 1.5 m.

Exceedances of Table 3 Standards are shown in **bold**.



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Table 10: SOIL CHEMICAL ANALYSIS - Metals, Hydride-Forming Metals and Other Regulated Parameters

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Sample I.D.	Units	MDL ¹	Test Hole TH107 - SS1	Test Hole TH107 - SS3	Test Hole TH108 - SS1	Test Hole TH108 - SS2	Test Hole TH109S - SS2	Duplicate of TH109S - SS2 TH1090S - SS2	Ontario Regulation 153/04 Table 3 Soil Standards ² (medium/fine)
Depth (m)			0.0 to 0.6 ¹	1.2 to 1.8 ¹	0.0 to 0.6 ¹	0.6 to 1.2 ¹	0.6 to 1.2 ¹	0.6 to 1.2 ¹	
Soil Type			Silty Sand	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	
Date of Sample Collection			22-Nov-18	22-Nov-18	22-Nov-18	22-Nov-18	14-Nov-18	14-Nov-18	
Date of Sample Analysis			29-Nov-18	12-Dec-18	29-Nov-18	12-Dec-18	20-Nov-18	20-Nov-18	
Certificate of Analysis Number			18T412872	18T412872	18T412872	18T412872	18T410344	18T410344	
Laboratory I.D.			9732562	9732582	9732585	9732586	9709760	9709763	
Antimony	µg/g	0.8	<0.8	NA	<0.8	NA	<0.8	<0.8	7.5
Arsenic	µg/g	1	2	NA	3	NA	2	2	18
Barium	µg/g	2	56	NA	152	NA	173	134	390
Beryllium	µg/g	0.5	<0.5	NA	0.6	NA	<0.5	<0.5	5
Boron	µg/g	5	5	NA	10	NA	8	7	120
Boron (Hot Water Soluble)	µg/g	0.10	0.23	NA	0.31	NA	0.14	0.14	1.5
Cadmium	µg/g	0.5	<0.5	NA	<0.5	NA	<0.5	<0.5	1.2
Chromium	µg/g	2	11	NA	29	NA	27	23	160
Chromium VI	µg/g	0.2	<0.2	NA	<0.2	NA	<0.2	<0.2	10
Cobalt	µg/g	0.5	4.1	NA	10.0	NA	10.1	8.2	22
Copper	µg/g	1	12	NA	23	NA	20	19	180
Cyanide	µg/g	0.040	<0.040	NA	<0.040	NA	<0.040	<0.040	0.051
Lead	µg/g	1	40	NA	9	NA	8	8	120
Mercury	µg/g	0.10	<0.10	NA	<0.10	NA	<0.10	<0.10	1.8
Molybdenum	µg/g	0.5	<0.5	NA	<0.5	NA	<0.5	<0.5	6.9
Nickel	µg/g	1	7	NA	17	NA	20	18	130
Selenium	µg/g	0.4	1.4	NA	2.3	NA	<0.4	<0.4	2.4
Silver	µg/g	0.2	<0.2	NA	<0.2	NA	<0.2	<0.2	25
Thallium	µg/g	0.4	<0.4	NA	<0.4	NA	<0.4	<0.4	1
Uranium	µg/g	0.5	<0.5	NA	0.7	NA	0.8	0.8	23
Vanadium	µg/g	1	15	NA	38	NA	35	30	86
Zinc	µg/g	5	48	NA	55	NA	58	46	340
Electrical Conductivity (2:1)	mS/cm	0.005	0.645	NA	0.849	0.800	0.578	0.516	0.7
Sodium Adsorption Ratio	N/A	N/A	6.62	1.11	11.3	10.1	2.00	2.02	5
pH, 2:1 CaCl2 Extraction***	pH Units	N/A	7.90	NA	7.84	NA	7.77	7.95	NV

NOTES:

Analysis by AGAT Laboratories.

NV mean "no value". N/A means "not applicable". NA means "not analyzed".

All results in ppm (µg/g) and based on dry weight basis.

* Indicates sampling interval measured from ground floor. ¹ Indicates sampling interval measured from basement or underground parking garage concrete floor surface.¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.² Standards shown are for a residential/parkland/institutional property use and medium to fine textured soil.

*** pH range 5.0 to 9.0 for soil depths less than 1.5 m; pH range 5.0 to 11.0 for soil depths greater than 1.5 m.

Exceedances of Table 3 Standards are shown in **bold**.

Table 11: GROUND WATER CHEMICAL ANALYSIS - Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario
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Sample I.D.	Units	MDL ¹	Monitor TH101S	Duplicate of TH101S TH1010S	Monitor TH102	Duplicate of TH102 TH1020	Monitor TH103	Monitor TH103	Monitor TH103	Duplicate of TH103 TH1030	Ontario Regulation 153/04 Table 3 Ground Water Standards ² (medium to fine)
Screen Interval (m)			0.6 to 3.7 [†]	0.6 to 3.7 [†]	0.6 to 3.7 [†]	0.6 to 3.7 [†]	1.2 to 4.3*	1.2 to 4.3*	1.2 to 4.3*	1.2 to 4.3*	
Date of Sample Collection			9-Nov-18	9-Nov-18	14-Nov-18	14-Nov-18	7-Nov-18	30-Nov-18	11-Dec-18	11-Dec-18	
Date of Sample Analysis			15-Nov-18	15-Nov-18	21-Nov-18	21-Nov-18	14-Nov-18	6-Dec-18	18-Dec-18	18-Dec-18	
Certificate of Analysis Number			18T408388	18T408388	18T410339	18T410339	18T407465	18T416197	18T420106	18T420106	
Laboratory I.D.			9696669	9696670	9710069	9710070	9687893	9754920	9783312	9783313	
Benzene	µg/L	0.20	0.24	0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	430
Toluene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	0.54	<0.20	0.4	0.29	18,000
Ethylbenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2,300
Xylene Mixture (Total)	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1.5	0.74	4,200
PHC F1 (C6 to C10) - BTEX	µg/L	25	240	290	<25	<25	<25	<25	<25	<25	750
PHC F2 (C10 to C16)	µg/L	100	<100	<100	<100	<100	170	<100	<100	<100	150
PHC F3 (C16 to C34)	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	500
PHC F4 (C34 to C50)	µg/L	100	<100	<100	<100	<100	<100	<100	<100	<100	500

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Indicates screen interval measured from ground floor. [†] Indicates screen interval measured from basement or underground parking garage concrete floor surface. All other screen intervals measured from outdoor ground surface.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of Table 3 Standards are shown in **bold**.

Table 11: GROUND WATER CHEMICAL ANALYSIS - Petroleum Hydrocarbon Parameters

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Sample I.D.	Units	MDL ¹	Monitor TH104	Monitor TH105I	Monitor TH108	Monitor 109S	Trip Blank	Trip Blank	Ontario Regulation 153/04 Table 3 Ground Water Standards ² (medium to fine)
Screen Interval (m)			1.2 to 4.3*	7.0 to 10.1*	1.5 to 4.6 ¹	1.5 to 4.6 ¹	-	-	
Date of Sample Collection			9-Nov-18	30-Nov-18	30-Nov-18	26-Nov-18	N/A	N/A	
Date of Sample Analysis			15-Nov-18	6-Dec-18	6-Dec-18	4-Dec-18	6-Dec-18	12-Nov-18	
Certificate of Analysis Number			18T408388	18T416197	18T416197	18T414477	18T416197	18T420106	
Laboratory I.D.			9696661	9754921	9754922	9744767	9754925	9783318	
Benzene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	430
Toluene	µg/L	0.20	<0.20	22	<0.20	<0.20	<0.20	<0.20	18,000
Ethylbenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2,300
Xylene Mixture (Total)	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	4,200
PHC F1 (C6 to C10) - BTEX	µg/L	25	<25	<25	<25	<25	<25	<25	750
PHC F2 (C10 to C16)	µg/L	100	<100	<100	<100	120	NA	NA	150
PHC F3 (C16 to C34)	µg/L	100	310	<100	<100	<100	NA	NA	500
PHC F4 (C34 to C50)	µg/L	100	<100	<100	<100	<100	NA	NA	500

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Indicates screen interval measured from ground floor. ¹ Indicates screen interval measured from basement or underground parking garage concrete floor surface.

All other screen intervals measured from outdoor ground surface.

¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

² Standards shown are for all types of property use and medium to fine textured soil.

Exceedances of Table 3 Standards are shown in **bold**.



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Table 12: GROUND WATER CHEMICAL ANALYSIS - Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario

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Sample I.D.	Units	MDL ¹	Monitor TH101S	Duplicate of TH101S TH1010S	Monitor TH101D	Monitor TH102	Duplicate of TH102 TH1020	Monitor TH103	Monitor TH104	Ontario Regulation 153/04 Table 3 Ground Water Standards ² (medium to fine)
Screen Interval (m)			0.6 to 3.7 ^a	0.6 to 3.7 ^a	16.8 to 19.8 ^b	0.6 to 3.7 ^a	0.6 to 3.7 ^a	1.2 to 4.3 ^a	1.2 to 4.3 ^a	
Date of Sample Collection			9-Nov-18	9-Nov-18	11-Dec-18	14-Nov-18	14-Nov-18	7-Nov-18	9-Nov-18	
Date of Sample Analysis			14-Nov-18	14-Nov-18	18-Dec-18	21-Nov-18	21-Nov-18	14-Nov-18	14-Nov-18	
Certificate of Analysis Number			18T408388	18T408388	18T410339	18T410339	18T410339	18T407465	18T408388	
Laboratory I.D.			9696669	9696670	9783317	9710069	9710070	9687893	9696661	
1,1,1,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	28
1,1,1-Trichloroethane	µg/L	0.30	<0.30	<0.30	<0.60	<0.30	<0.30	<0.30	<0.30	6,700
1,1,2,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	15
1,1,2-Trichloroethane	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.20	30
1,1-Dichloroethane	µg/L	0.30	<0.30	<0.30	<0.60	<0.30	<0.30	<0.30	<0.30	3,100
1,1-Dichloroethylene	µg/L	0.30	5.4	4.8	<0.60	<0.30	<0.30	<0.30	<0.30	17
1,2-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	9,600
1,2-Dichloroethane	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.20	12
1,2-Dichloropropane	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.20	140
1,3-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	9,600
1,3-Dichloropropene	µg/L	0.30	<0.30	<0.30	<0.60	<0.30	<0.30	<0.30	<0.30	45
1,4-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	67
Acetone	µg/L	1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	130,000
Benzene	µg/L	0.20	0.24	0.21	<0.40	<0.20	<0.20	<0.20	<0.20	430
Bromodichloromethane	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	0.37	85,000
Bromoform	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	770
Bromomethane	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.20	56
Carbon Tetrachloride	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.20	8.4
Chlorobenzene	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	630
Chloroform	µg/L	0.20	1.8	1.7	3.8	0.28	0.29	1.4	4.2	22
cis- 1,2-Dichloroethylene	µg/L	0.20	460	390	<0.40	6.6	6.8	<0.20	<0.20	17
Dibromochloromethane	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	82,000
Dichlorodifluoromethane	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.20	4,400
Ethylbenzene	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	2,300
Ethylene Dibromide	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	0.83
Methyl Ethyl Ketone	µg/L	1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	1,500,000
Methyl Isobutyl Ketone	µg/L	1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	580,000
Methyl tert-butyl ether	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.20	1400
Methylene Chloride	µg/L	0.30	<0.30	<0.30	<0.60	<0.30	<0.30	<0.30	<0.30	5500
n-Hexane	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	0.44	<0.20	520
Styrene	µg/L	0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	9,100
Tetrachloroethylene	µg/L	0.20	140	180	2.1	1.6	1.6	17	6.7	17
Toluene	µg/L	0.20	<0.20	<0.20	0.71	<0.20	<0.20	0.54	<0.20	18,000
trans- 1,2-Dichloroethylene	µg/L	0.20	240	270	<0.40	3.8	3.9	<0.20	<0.20	17
Trichloroethylene	µg/L	0.20	650	620	<0.40	3.5	3.5	0.39	<0.20	17
Trichlorofluoromethane	µg/L	0.40	<0.40	<0.40	<0.80	<0.40	<0.40	<0.40	<0.40	2,500
Vinyl Chloride	µg/L	0.17	11	10	<0.34	0.84	0.91	<0.17	<0.17	1.7
Xylene Mixture	µg/L	0.20	<0.20	<0.20	<0.40	<0.20	<0.20	<0.20	<0.20	4,200

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

^a Indicates screen interval measured from ground floor. ¹ Indicates screen interval measured from basement or underground parking garage concrete floor surface. All other screen intervals measured from outdoor ground surface.¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.² Standards shown are for all types of property use and medium to fine textured soil.Exceedances of Table 3 Standards are shown in **bold**.

Table 12: GROUND WATER CHEMICAL ANALYSIS - Volatile Organic Compounds

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Sample I.D.	Units	MDL ¹	Monitor TH105I 7.0 to 10.1*	Monitor TH105D 19.8 to 22.9*	Monitor TH106D 16.2 to 19.2 ²	Duplicate of TH106D TH1060D 16.2 to 19.2 ²	Monitor TH108 1.5 to 4.6 ²	Monitor 109S 1.5 to 4.6 ²	Monitor TH109D 16.8 to 19.8 ²	Ontario Regulation 153/04 Table 3 Ground Water Standards ² (medium to fine)
Screen Interval (m)			30-Nov-18	11-Dec-18	11-Dec-18	11-Dec-18	30-Nov-18	26-Nov-18	11-Dec-18	
Date of Sample Collection			6-Dec-18	18-Dec-18	18-Dec-18	18-Dec-18	6-Dec-18	4-Dec-18	18-Dec-18	
Date of Sample Analysis			18T416197	18T420106	18T420106	18T420106	18T416197	18T414477	18T420106	
Certificate of Analysis Number			9754921	9783316	9783314	9783319	9754922	9744767	9783315	
Laboratory I.D.										
1,1,1,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	28
1,1,1-Trichloroethane	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	6,700
1,1,2,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	15
1,1,2-Trichloroethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	30
1,1-Dichloroethane	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	3,100
1,1-Dichloroethylene	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	17
1,2-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	9,600
1,2-Dichloroethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	12
1,2-Dichloropropane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	140
1,3-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	9,600
1,3-Dichloropropene	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	45
1,4-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	67
Acetone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	18	<1.0	130,000
Benzene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	430
Bromodichloromethane	µg/L	0.20	1.7	<0.20	<0.20	<0.20	<0.20	0.51	<0.20	85,000
Bromoform	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	770
Bromomethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	56
Carbon Tetrachloride	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	8.4
Chlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	630
Chloroform	µg/L	0.20	2.4	<0.20	0.32	0.31	0.24	1.1	1.7	22
cis- 1,2-Dichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	1.2	<0.20	<0.20	17
Dibromochloromethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	82,000
Dichlorodifluoromethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	4,400
Ethylbenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2,300
Ethylene Dibromide	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.83
Methyl Ethyl Ketone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,500,000
Methyl Isobutyl Ketone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	580,000
Methyl tert-butyl ether	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1400
Methylene Chloride	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	5500
n-Hexane	µg/L	0.20	<0.20	0.77	0.71	0.60	<0.20	<0.20	0.43	520
Styrene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	9,100
Tetrachloroethylene	µg/L	0.20	0.38	<0.20	<0.20	<0.20	<0.20	<0.20	0.26	17
Toluene	µg/L	0.20	22	0.32	0.32	0.31	<0.20	<0.20	0.48	18,000
trans- 1,2-Dichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	17
Trichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	0.81	<0.20	<0.20	17
Trichlorofluoromethane	µg/L	0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	2,500
Vinyl Chloride	µg/L	0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	1.7
Xylene Mixture	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	4,200

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Indicates screen interval measured from ground floor. ¹ Indicates screen interval measured from basement or underground parking garage concrete floor surface. All other screen intervals measured from outdoor ground surface.¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.² Standards shown are for all types of property use and medium to fine textured soil.Exceedances of Table 3 Standards are shown in **bold**.

Table 12: GROUND WATER CHEMICAL ANALYSIS - Volatile Organic Compounds

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Sample I.D.	Units	MDL ¹	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Trip Blank	Ontario Regulation 153/04 Table 3 Ground Water Standards ² (medium to fine)
Screen Interval (m)			-	-	-	-	-	-	
Date of Sample Collection			N/A	N/A	N/A	N/A	N/A	N/A	
Date of Sample Analysis			14-Nov-18	14-Nov-18	21-Nov-18	4-Dec-18	6-Dec-18	12-Nov-18	
Certificate of Analysis Number			18T407465	18T408388	18T410339	18T414477	18T416197	18T420106	
Laboratory I.D.			9687894	9696672	9710071	9744766	9754925	9783318	
1,1,1,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	28
1,1,1-Trichloroethane	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	6,700
1,1,2,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	15
1,1,2-Trichloroethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	30
1,1-Dichloroethane	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	3,100
1,1-Dichloroethylene	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	17
1,2-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	9,600
1,2-Dichloroethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	12
1,2-Dichloropropane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	140
1,3-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	9,600
1,3-Dichloropropene	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	45
1,4-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	67
Acetone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	130,000
Benzene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	430
Bromodichloromethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	85,000
Bromoform	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	770
Bromomethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	56
Carbon Tetrachloride	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	8.4
Chlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	630
Chloroform	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	22
cis- 1,2-Dichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	17
Dibromochloromethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	82,000
Dichlorodifluoromethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	4,400
Ethylbenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	2,300
Ethylene Dibromide	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.83
Methyl Ethyl Ketone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1,500,000
Methyl Isobutyl Ketone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	580,000
Methyl tert-butyl ether	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	1400
Methylene Chloride	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	5500
n-Hexane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	520
Styrene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	9,100
Tetrachloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	17
Toluene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	18,000
trans- 1,2-Dichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	17
Trichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	17
Trichlorofluoromethane	µg/L	0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	2,500
Vinyl Chloride	µg/L	0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	1.7
Xylene Mixture	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	4,200

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Indicates screen interval measured from ground floor. ¹ Indicates screen interval measured from basement or underground parking garage concrete floor surface. All other screen intervals measured from outdoor ground surface.¹ Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.² Standards shown are for all types of property use and medium to fine textured soil.Exceedances of Table 3 Standards are shown in **bold**.

*Client: 11 Yorkville Partners Inc.
Project Name: Phase Two Environmental Site Assessment Update
11 Yorkville Avenue, Toronto, Ontario
Project Number: MRK-00242474-A0
Date: February 28, 2019*

Appendix A: Limitations and Use of Report



LIMITATIONS AND USE OF REPORT

BASIS OF REPORT

The Report is based on site conditions known or inferred by the investigation undertaken as of the date of the Report. Should changes occur which potentially impact the condition of the site the recommendations of EXP may require re-evaluation. Where special concerns exist, or the Client has special considerations or requirements, these should be disclosed to EXP to allow for additional or special investigations to be undertaken not otherwise within the scope of investigation conducted for the purpose of the Report.

Where applicable, recommended field services are the minimum necessary to ascertain that construction is being carried out in general conformity with building code guidelines, generally accepted practices and EXP's recommendations. Any reduction in the level of services recommended will result in EXP providing qualified opinions regarding the adequacy of the work. EXP can assist design professionals or contractors retained by the Client to review applicable plans, drawings, and specifications as they relate to the Report or to conduct field reviews during construction.

RELIANCE ON INFORMATION PROVIDED

The evaluation and conclusions contained in the Report are based on conditions in evidence at the time of site inspections and information provided to EXP by the Client and others. The Report has been prepared for the specific site, development, building, design or building assessment objectives and purpose as communicated by the Client. EXP has relied in good faith upon such representations, information and instructions and accepts no responsibility for any deficiency, misstatement or inaccuracy contained in the Report as a result of any misstatements, omissions, misrepresentation or fraudulent acts of persons providing information. Unless specifically stated otherwise, the applicability and reliability of the findings, recommendations, suggestions or opinions expressed in the Report are only valid to the extent that there has been no material alteration to or variation from any of the information provided to EXP.

STANDARD OF CARE

This report ("Report") has been prepared in a manner consistent with the degree of care and skill exercised by engineering consultants currently practicing under similar circumstances and locale. No other warranty, expressed or implied, is made. Unless specifically stated otherwise, the Report does not contain environmental consulting advice.



COMPLETE REPORT

All documents, records, data and files, whether electronic or otherwise, generated as part of this assignment form part of the Report. This material includes, but is not limited to, the terms of reference given to EXP by the Client, communications between EXP and the Client, other reports, proposals or documents prepared by EXP for the Client in connection with the site described in the Report. In order to properly understand the suggestions, recommendations and opinions expressed in the Report, reference must be made to the Report in its entirety. EXP is not responsible for use by any party of portions of the Report.

USE OF REPORT

The information and opinions expressed in the Report, or any document forming part of the Report, are for the sole benefit of the Client. No other party may use or rely upon the Report in whole or in part without the written consent of EXP. Any use of the Report, or any portion of the Report, by a third party are the sole responsibility of such third party. EXP is not responsible for damages suffered by any third party resulting from unauthorised use of the Report.

REPORT FORMAT

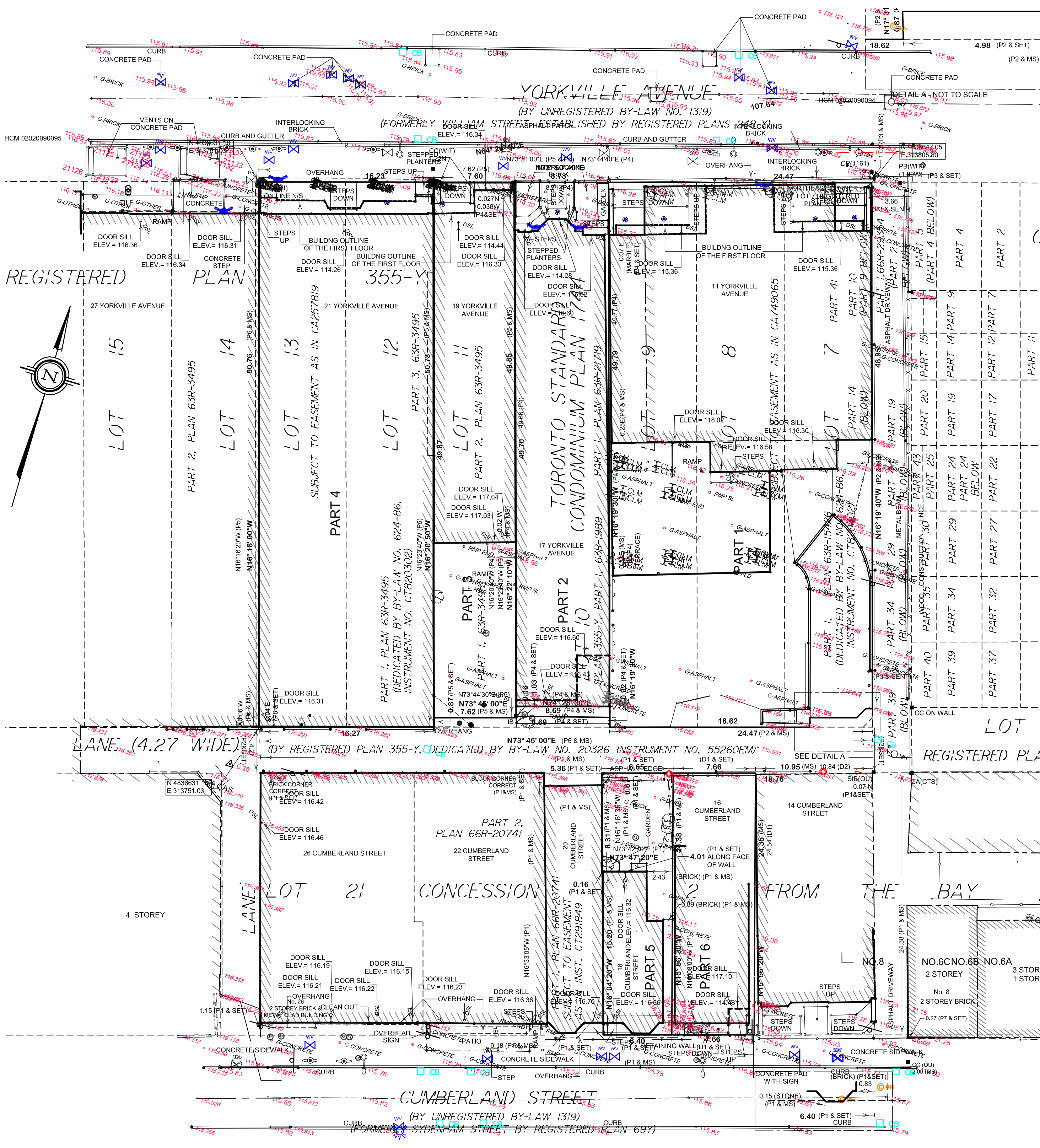
Where EXP has submitted both electronic file and a hard copy of the Report, or any document forming part of the Report, only the signed and sealed hard copy shall be the original documents for record and working purposes. In the event of a dispute or discrepancy, the hard copy shall govern. Electronic files transmitted by EXP utilize specific software and hardware systems. EXP makes no representation about the compatibility of these files with the Client's current or future software and hardware systems. Regardless of format, the documents described herein are EXP's instruments of professional service and shall not be altered without the written consent of EXP.



*Client: 11 Yorkville Partners Inc.
Project Name: Phase Two Environmental Site Assessment Update
11 Yorkville Avenue, Toronto, Ontario
Project Number: MRK-00242474-A0
Date: February 28, 2019*

Appendix B: Survey Plan





TOPOGRAPHIC PLAN OF
**ALL OF LOTS 8, 9, AND 12,
PART OF LOTS 7, 11, AND 13
REGISTERED PLAN 355-Y
AND
ALL OF TORONTO STANDARD
CONDOMINIUM PLAN 1744
AND
PART OF LOT 21
CONCESSION 2, FROM THE BAY
CITY OF TORONTO**
MUNICIPALITY OF METROPOLITAN TORONTO
SCALE 1: 250

WSP GEOMATICS ONTARIO LIMITED
ONTARIO LAND SURVEYORS
2017

STANDARD LEGEND		
	Denotes	SURVEY CONTROL POINT
	Denotes	BENCH MARK
	Denotes	ANCHOR
	Denotes	GUY POLE
	Denotes	LAMP STANDARD
	Denotes	UTILITY POLE
	Denotes	HANDWELL
	Denotes	FLOOD LIGHT
	Denotes	CATCH BASIN
	Denotes	MANHOLE
	Denotes	MANHOLE-HYDRO
	Denotes	MANHOLE-STORM
	Denotes	MANHOLE-SANI
	Denotes	TERMINAL BOX : HYDRO
	Denotes	TERMINAL BOX : COMM
	Denotes	BIKE RACK
	Denotes	SINGLE POST SIGN
	Denotes	DOUBLE POST SIGN
	Denotes	TRAFFIC LIGHT
	Denotes	FIRE HYDRANT
	Denotes	VALVE CHAMBER
	Denotes	WATER VALVE
	Denotes	GAS VALVE
	Denotes	BURIED COMM PLANT
	Denotes	HYDRO AND COMMUNICATIONS ON SAME POLE
	Denotes	BURIED HYDRO PLANT
	Denotes	BURIED GAS PLANT
	Denotes	CONIFER TREE
	Denotes	DECIDUOUS TREE
	Denotes	BUSH OR HEDGE
	Denotes	WIRE FENCE
	Denotes	SANITARY LINE
	Denotes	STORM LINE
	Denotes	WATER LINE
	Denotes	DITCH
	Denotes	TOP OF SLOPE
	Denotes	BOTTOM OF SLOPE
	Denotes	GUARD RAIL
	Denotes	CHAIN LINK FENCE
	Denotes	BOLLARD
	Denotes	STANDARD BARRIER CURB AND GUTTER ie. ...
	Denotes	BARRIER TYPE CURB ie.

DATE OF SURVEY : AUGUST 21, 2017

BENCHMARK
ELEVATIONS ARE IN METRES AND ARE DERIVED FROM CITY OF TORONTO BENCHMARK NO. CT828
NORTH SIDE OF YORKVILLE AVENUE WEST OF YONGE STREET, BENCHMARK ON A 1 STOREY PUBLIC
LIBRARY BUILDING 3.96M NORTH FROM SOUTHEAST CORNER 0.43M ABOVE GRADE.

ELEVATION = 116.982M		
	WSP Geomatics Ontario Limited Ontario Land Surveyors	
Drawing Number : 17M-01494-000		
610 Chartwell Road, Suite 300, Oakville, Ontario Canada, L6J 4A5 t: 905-823-8500 f: 905-823-8503 Website : www.wspgroup.ca		
P.Chief : A.K.	Dwg. By : C.E.W.	Chk'd by : G.M.
Job Number : 17M-01494-00-AV1	Tab Name : A2	
Dwg File Name :	17M-01494-00_T01_C3D2015.DWG	

K:\Jobs\17\17M-01494 Yorkville.dwg 17m-01494-00_T01_C3D2015.dwg

Appendix C: Qualifications of Assessors



Qualifications

Carla Reynolds, P.Biol., P.Geo. (Limited), QP_{ESA} (Manager, Environmental Services)

Carla Reynolds obtained an Honours degree in Biology from Queen's University in 1991 and a diploma in Terrain and Water Resources from Fleming College in 1994. Ms. Reynolds became a Professional Biologist with the Alberta Society of Professional Biologists in 2009. She is also registered as a Professional Geoscientist with the Association of Professional Geoscientists of Ontario and is a Qualified Person (QP) for both environmental assessments and risk assessments under Ontario Regulation 153/04.

Ms. Reynolds has over 24 years of experience in environmental assessment and remediation. To date, she has completed over 2,000 environmental assessment or remediation projects for various clients across Canada. This work has included consultation during purchase, sale, leasing and development of land, consultation for brownfield site re-development and peer review of remedial design and reports.

Leah C. Whittaker, B.Sc. (Project Manager)

Leah Whittaker graduated from the University of Guelph in 2010 with a Bachelor of Science degree with a specialization in Environmental Toxicology (Honours, co-op).

Since joining EXP in 2011, Ms. Whittaker has conducted the field work, reporting and/or project management associated with over a hundred environmental assessment projects. Ms. Whittaker has also managed a number of due diligence portfolios. She has conducted and managed work at sites throughout Canada and in the United States.

Andrea Fernandes, M.Sc. (Environmental Scientist)

Andrea Fernandes graduated from the University of Western Ontario in 2009 with an Honours Bachelor of Medical Sciences degree, specializing in Pharmacology and Toxicology. She completed her Master of Science Degree in Geology at the University of Western Ontario in 2012. As a Mineral Scientist at Activation Laboratories Ltd. from 2012 to 2015, Andrea analyzed a variety of geological samples for mineral composition, associations and liberation, using Scanning Electron Microscope and X-ray Diffraction technologies, and compiled reports highlighting findings for clients. Andrea completed correspondence courses in Environmental Chemistry, Environmental Geology and Physical Geography through Athabasca University in 2015. Since joining EXP in 2016 Andrea has worked on several Phase I and II environmental assessments, from conducting field work to the reporting phases.

Harry Nandakumar, B.Sc. (Environmental Scientist)

Mr. Nandakumar graduated from University of Toronto in 2014 with an Honours in Bachelor of Science in Environmental Science specializing in Environmental Biology. He has over three years of field work experience. Mr. Nandakumar has been involved in number of Phase I and II environmental assessments for commercial, industrial and residential projects.

*Client: 11 Yorkville Partners Inc.
Project Name: Phase Two Environmental Site Assessment Update
11 Yorkville Avenue, Toronto, Ontario
Project Number: MRK-00242474-A0
Date: February 28, 2019*

Appendix D: Sampling and Analysis Plan





Memorandum

Date: November 16, 2018 (REVISED)
To: Andrea Fernandes, Harry Nandakumar
From: Leah Whittaker
CC: Carla Reynolds

RE: Supplemental Phase Two Environmental Site Assessment and Hydrogeological Investigation, 11-25 Yorkville Avenue, Toronto, Ontario

Project Number: MRK-00242474-A0, Phases 010 and 011
Date(s) of Field Work: Private Locates – Monday, November 22, 2018
Drilling – Monday, November 5 to Wednesday, December 12, 2018
Site Address: 11 Yorkville Avenue and 21-25 Yorkville Avenue, Toronto
PM Contact: Leah Whittaker, 647-834-4686
Rob Ferris, 416-451-0524
Site Contact: German Aguilo, 437-992-6995
Client Contact: Zac Watson (Metropia), 647-391-3068
Lorelei Fernandes (RioCan), 416-489-2300
Laboratory: AGAT, Michael Conversano, 905-712-5074
Drilling Subcontractor: Pontil, Bruce Whyte, 905-557-0190
Private Locator: All Clear Locates, Drew – 416-890-4357

PROJECT OBJECTIVES:

The site is being redeveloped as a high-rise condominium with some retail use at grade and on the concourse level. A Record of Site Condition (RSC) filing will be required to support the redevelopment to a more sensitive land use, in accordance with Ontario Regulation (O. Reg.) 153/04.

In early 2018, a Phase Two ESA was conducted to support the proposed redevelopment of the site. Prior to conducting the Phase Two ESA drilling investigation, EXP collected ground water samples from previously installed monitoring wells. Ground water samples collected from two locations (MW01 and MW02) exceeded the O. Reg. 153/04 Table 3 Standard for tetrachloroethylene (PCE); one ground water sample (MW04) exceeded the Table 3 Standard for vinyl chloride. The ground water samples were within the Table 3 Standards for petroleum hydrocarbon (PHC) fractions F1 to F4.

The Phase Two ESA conducted by EXP included the advancement of four test holes (TH1 to TH4), all of which were completed as ground water monitoring wells. Surficial soil samples collected from three of the four sampling locations were found to exceed the Table 3 Standards for various polycyclic aromatic hydrocarbons (PAHs), lead, and/or

.../2

**Supplemental Phase Two ESA and Hydrogeological Investigation
11-25 Yorkville Avenue, Toronto, Ontario**

sodium adsorption ratio (SAR). Deeper soil samples analyzed for vertical delineation purposes suggest that these impacts were confined to the fill material. All soil samples analyzed for PHCs and volatile organic compounds (VOCs) were within Table 3 Standards.

Ground water samples collected from two locations (TH2 and TH3) exceeded the Table 3 Standard for PCE and one ground water sample (TH4) exceeded the Table 3 Standard for trichloroethylene (TCE). The ground water samples were within the Table 3 Standards for PHC fractions F1 to F4.

The objective of the Supplemental Phase Two ESA is to provide additional characterization of soil and ground water impacts within each area of potential environmental concern (APEC) identified by the Phase One ESA and to horizontally and vertically delineate soil and ground water impacts. The results of the proposed investigation will be used to verify whether the soil and ground water impacts can be addressed through remediation, or whether a risk assessment will be recommended.

SCOPE OF WORK:

EXP will carry out a soil and ground water sampling program at the site. Pontil Drilling has been retained for the drilling work. Pontil will use a Hilti handheld drill for the test holes in the basement of 21-25 Yorkville Avenue and a K40 limited access rig for the test holes in the underground parking garage at 11 Yorkville Avenue.

Since the drilling work is to be performed on private property, private underground services, wires, or structures in the proposed drilling area must be identified by the owner prior to initiation of the work. Public utility locates were requested by EXP on October 3, 2018 (See attached locates for OneCall Tickets #20184012539 and 20184012615). All Clear Locates was retained to clear the test hole locations on Monday, October 22, 2018.

The Supplemental Phase Two ESA drilling program will include concrete coring in nine locations and the advancement of nine indoor boreholes: four boreholes will be located in the basement of 21 Yorkville Avenue (TH101 to TH104), one borehole will be located on the ground floor at the rear of 21 Yorkville Avenue (TH105), and four boreholes will be located within the parking garage at 11 Yorkville Avenue (TH106 to TH109). If possible, given the limitations of drilling inside with small equipment, all monitoring wells will be installed approximately 1 metre beyond the ground water table depth, to a maximum depth of approximately 6 metres below the floor slab in all locations. One of the boreholes at the rear of 21 Yorkville Avenue will be advanced deeper, to a depth of approximately 10 mbgs for vertical delineation purposes, if possible given the limitations of the drilling equipment. The boreholes will be about 15 centimetres or less in diameter.

The scope of work for the Hydrogeological drilling program is based upon the construction of a high-rise tower with 4 levels of underground parking with a finished floor elevation of the lowest underground parking level of approximately 13 mbgs. The drilling program will include the advancement for four boreholes: one borehole will be located in the basement of 21 Yorkville Avenue (TH101D), one borehole will be located on the ground floor at the rear of 21 Yorkville Avenue (TH105D), and two boreholes will be located within the parking garage at 11 Yorkville Avenue (TH106D and TH109D).

Supplemental Phase Two ESA and Hydrogeological Investigation
11-25 Yorkville Avenue, Toronto, Ontario

TABLE 1 - TEST HOLE RATIONALE

Address	Test Hole ID	Objective	Monitoring Well Status
21-25 Yorkville Avenue	101S	Phase Two ESA - Horizontal delineation of VOC-impacted ground water	Shallow well – screened to a maximum depth of 6 metres below floor slab. Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.
	101D	Hydrogeological Investigation only – soil sampling every 6 ft below depth of TH101S to characterize soil for TH logs.	Deep well – screened to a depth of 19.9 mbgs (65 feet) below the floor slab. The well should be constructed as a 38 mm diameter PVC monitoring well with a 3 metre (10 foot) screen length.
	102	Phase Two ESA - Horizontal delineation of VOC-impacted ground water	Shallow well – screened to a maximum depth of 6 metres below floor slab. Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.
	103	Phase Two ESA - Horizontal delineation of VOC-impacted ground water	Shallow well – screened to a maximum depth of 6 metres below floor slab. Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.
	104	Phase Two ESA - Horizontal delineation of VOC-impacted ground water	Shallow well – screened to a maximum depth of 6 metres below floor slab. Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.
	105I	Phase Two ESA – Vertical delineation of VOC-impacted ground water at MW02 (screened 2.1 to 5.2 metres (7-17 feet) below ground floor slab)	Intermediate well – screened approximately 7-10 metres (23 to 33 feet) below the floor slab. <u>Please call PM to discuss soil moisture characteristics prior to installing.</u> Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.
	105D	Hydrogeological Investigation only – soil sampling every 5ft below depth of TH105I to characterize soil for TH logs.	Deep well – screened to a depth of 22.7 metres (74 feet) below the floor slab. The well should be constructed as a 50 mm diameter PVC monitoring well with a 3 metre (10 foot) screen length.
11 Yorkville Avenue	106S	Phase Two ESA - Horizontal delineation of VOC-impacted ground water	Shallow well – screened to a maximum depth of 6 metres below floor slab. Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.

Supplemental Phase Two ESA and Hydrogeological Investigation**11-25 Yorkville Avenue, Toronto, Ontario**

Address	Test Hole ID	Objective	Monitoring Well Status
	106D	Hydrogeological Investigation only – soil sampling every 5 ft below depth of TH106S to characterize soil for TH logs.	Deep well – screened to a depth of 19.1 metres (63 feet) below the floor slab. The well should be constructed as a 50 mm diameter PVC monitoring well with a 3 metre (10 foot) screen length.
	107	Phase Two ESA - Horizontal delineation of VOC-impacted ground water	Shallow well – screened to a maximum depth of 6 metres below floor slab. Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.
	108	Phase Two ESA - Horizontal delineation of VOC-impacted ground water	Shallow well – screened to a maximum depth of 6 metres below floor slab. Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.
	109S	Phase Two ESA - Horizontal delineation of VOC-impacted ground water	Shallow well – screened to a maximum depth of 6 metres below floor slab. Intended to capture water-bearing sand layer beneath the floor slab immediately overlying the clay.
	109D	Hydrogeological Investigation only – soil sampling every 5 ft below depth of TH109S to characterize soil for TH logs.	Deep well – screened to a depth of 19.7 metres (65 feet) below the floor slab. The well should be constructed as a 50 mm diameter PVC monitoring well with a 3 metre (10 foot) screen length.

Soil Sampling

- All test holes will be completed as monitoring wells, screened per the instructions provided in Table 1. Soil logging and sampling as outlined below will be performed at the Phase Two ESA sampling locations. For the Hydrogeological sampling locations, we can auger straight to the well installation depth. No soil sampling is warranted.
- Soil samples will be inspected for visual and olfactory evidence of chemical impact and for geological composition. The findings will be recorded in a log. Vapour readings in the soil will be measured using a Gastec GV-100 manual pump and colourimetric detection tubes (133LL, 133L, 133M), as appropriate.
- Inferred “worst-case” soil samples will be collected from each borehole for laboratory analysis of PHC fractions F1 to F4 and VOCs. Samples of the fill material from each borehole will be collected for laboratory analysis of PAHs and metals and inorganics. Please collect a deeper delineation sample for each parameter and submit on hold. For

soil samples placed in methanol vials, please ensure that they are accompanied by a jar of soil for **moisture content** analysis.

Guidance on sampling depths:

PAHs, M&I – worst case from fill material or based on visual and olfactory evidence.

VOCs – worst case based on visual and olfactory evidence and vapour readings. If no evidence of contamination is observed, take above water table depth.

PHCs – worst case based on visual and olfactory evidence and vapour readings. If no evidence of contamination is observed, take sample at water table depth.

NOTE: Please do not straddle 1.5 mbgs interval when submitting soil samples.

- Please collect 1 surficial (above 1.5 metres) and 1 sub-surface (below 1.5 metres) sample for **pH analysis**.
- Please collect one representative soil sample from each strata for **grain size analysis**, excluding surficial fill and/or topsoil.
- Collect one field duplicate soil sample for each parameter, to be submitted to the laboratory for QA/QC purposes.
- Monitors will be constructed with a PVC screen interval no longer than 3.1 metres (10 feet) as specified by O. Reg. 153/04 and capped at the base of the monitor. The monitor will be backfilled with sand to an elevation of 0.3 to 0.6 metres (1 to 2 feet) above the top of the screened interval. The monitor will be sealed with bentonite to surface, capped with a locked j-plug and finished with a flush mount casing set in concrete. Please record monitor installation details including riser pipe length, screen interval slot size (e.g. 0.01 inch slot size, 2 TPI), diameter of annulus and depth to top of sand pack.
- Drumming of soil cuttings is anticipated. Please place drums neatly at the rear of 19 Yorkville Avenue (confirm location with German). A TCLP sample was previously analyzed in January 2018, therefore no additional TCLP sample is required.
- Soil samples should be submitted on a regular (4-5 day) turn-around time. Please ensure soil samples are properly preserved with ice in a storage cooler maintained below 10°C. Please coordinate sample pick-ups with the PM as required, as their frequency will depend on the progress of drilling.

Ground Water Sampling

- Develop the newly installed ground water monitoring wells concurrent with the on-going drilling activities by purging three well volumes or until dry.
- The ground water monitoring wells will be properly purged prior to sampling; record stabilized field parameters for each monitor on sample form. One ground water sample will be retrieved from each of the newly installed monitors. Use proper sampling techniques to avoid introducing contaminants into the ground water sample. Use proper decontamination techniques between monitors.

Supplemental Phase Two ESA and Hydrogeological Investigation
11-25 Yorkville Avenue, Toronto, Ontario

- If no obvious impacts are noted, purged water can be disposed onto a paved area of the site away from any catch basins.
- Ground water samples will be collected from the ground water monitoring wells using new clean bailers. Collected ground water samples will be submitted to an accredited laboratory for analysis of PHC fractions F1 to F4 and VOCs.
- Collect one field duplicate sample for each parameter, to be submitted to the laboratory for QA/QC purposes. A trip blank should be submitted with the ground water samples, to be analyzed for VOCs. Let the PM know if additional trip blanks are required.
- Please communicate with the PM to arrange the sample pickup details for the ground water samples. Samples should be submitted on a regular (4-5 day) turn-around time. Please ensure soil samples are properly preserved with ice in a storage cooler maintained below 10°C.

Reminders

- Please ensure that the HASP paperwork is completed prior to any drilling activities. All subcontractors should sign-off on this paperwork.
- Always wear hard hat, visi-vest and use pylons as needed. Discuss scope of work with any other contractors on-site, prior to the commencement of field work.
- Check in with PM daily and text (at a minimum) to confirm when leaving the site for the day.
- Mark TH locations with measurements/GPS coordinates on a site plan.
- Take photographs of the site during the investigation.
- Document any near miss incidents.

Chain of Custody Information

- Project number MRK-00242474-A0-010, Table 3 RPI Standards, medium-fine soil texture.
- Use TH101, TH102, nomenclature.
- Soil Analyses: PAHs, M&I, PHC fractions F1 to F4, VOCs (include moisture content sample, if required), pH, grain size.
- Soil QA/QC: field duplicate sample.
- Ground Water Analyses: PHC fractions F1 to F4 and VOCs.
- Ground Water QA/QC: field duplicate sample, VOC trip blank (with each submission of GW samples).

Soil and ground water samples will be submitted on a regular (4-5 day) turn-around time.

Submit results to leah.whittaker@exp.com.

References

EXP SOP, *Decontamination, Version 2.0*, rev. 2017
EXP SOP, *Field Screening, Version 2.0*, rev. 2017
EXP SOP, *Field QA/QC Programs, Version 2.0*, rev. 2012
EXP SOP, *Monitor Installation, Version 2.0*, rev. 2017
EXP SOP, *Monitor Development, Version 2.0*, rev. 2017
EXP SOP, *Monitor and Ground Water Sampling, Version 2.0*, rev. 2017
EXP SOP, *Soil Descriptions, Version 2.0*, rev. 2017
EXP SOP, *Subsurface Soil Sampling, Version 2.0*, rev. 2017
EXP SOP, *Test Hole Assessment, Version 2.0*, rev. 2017
EXP SOP, *Test Hole Procedure, Version 2.0*, rev. 2017

TOPOGRAPHIC PLAN OF
ALL OF LOTS 8, 9, AND 12,
PART OF LOTS 7, 11, AND 13
REGISTERED PLAN 355-Y

AND
ALL OF TORONTO STANDARD
CONDOMINIUM PLAN 1744

AND
PART OF LOT 21
CONCESSION 2, FROM THE BAY
CITY OF TORONTO
MUNICIPALITY OF METROPOLITAN TORONTO
SCALE 1: 250

WSP GEOMATICS ONTARIO LIMITED
ONTARIO LAND SURVEYORS
2017

STANDARD LEGEND

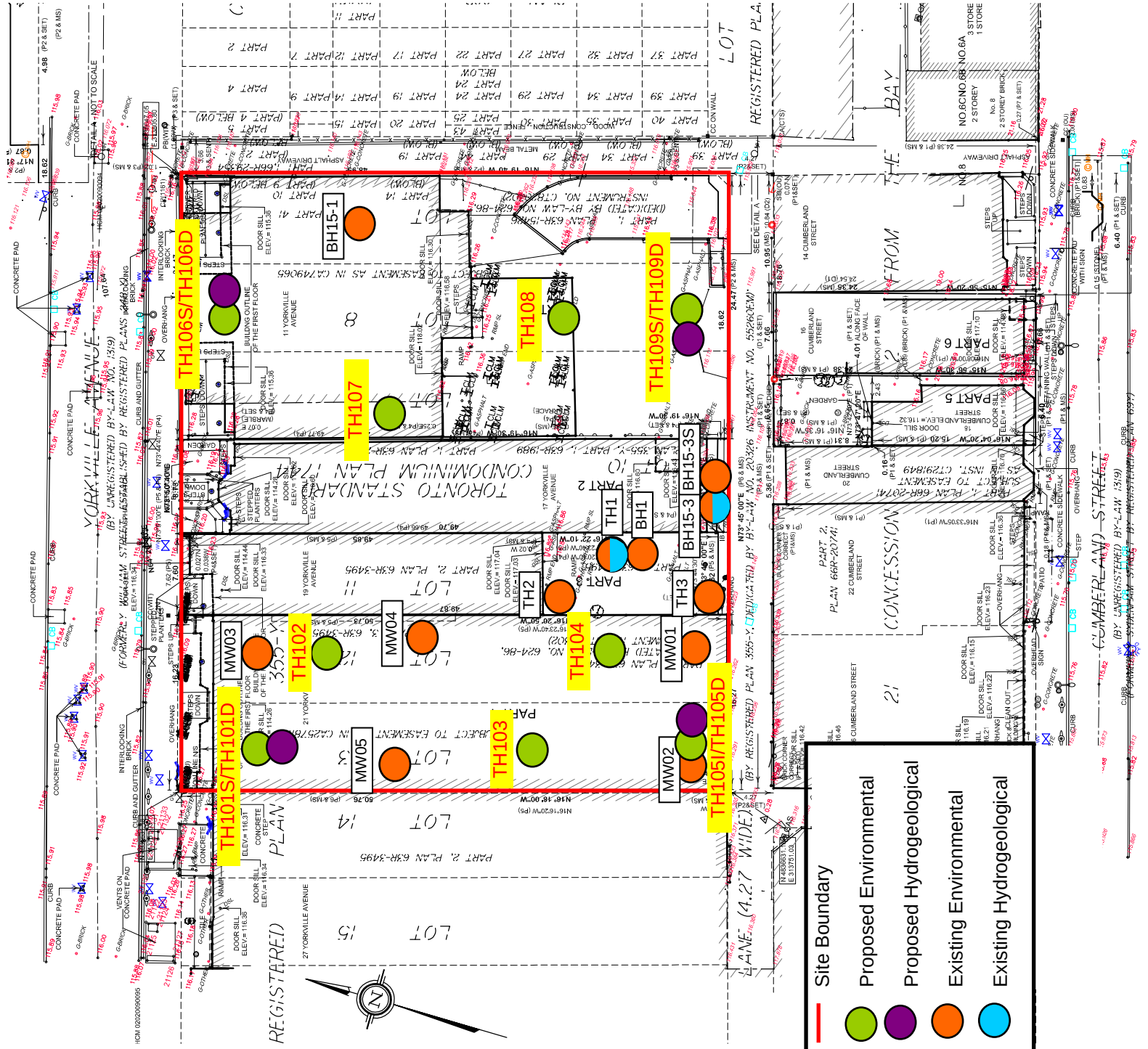
.....	SURVEY CONTROL POINT
.....	BENCH MARK
.....	ANCHOR
.....	GUY POLE
.....	LAMP STANDARD
.....	UTILITY POLE
.....	HANDWELL
.....	FLOOD LIGHT
.....	CATCH BASIN
.....	MANHOLE
.....	MANHOLE-HYDRO
.....	MANHOLE-STORM
.....	MANHOLE-SANI
.....	TERMINAL BOX: HYDRO
.....	TERMINAL BOX: COMM
.....	BIKE RACK
.....	SINGLE POST SIGN
.....	DOUBLE POST SIGN
.....	TRAFFIC LIGHT
.....	FIRE HYDRANT
.....	VALVE CHAMBER
.....	WATER VALVE
.....	GAS VALVE
.....	BURIED COMM PLANT
.....	BURIED HYDRO PLANT
.....	BURIED GAS PLANT
.....	CONIFER TREE
.....	DECIDUOUS TREE
.....	BUSH OR HEDGE
.....	WIRE FENCE
.....	SANITARY LINE
.....	STORM LINE
.....	WATER LINE
.....	DITCH
.....	TOP OF SLOPE
.....	BOTTOM OF SLOPE
.....	GUARD RAIL
.....	CHAIN LINK FENCE
.....	BOLLARD
.....	STANDARD BARRIER CURB AND GUTTER
.....	BARRIER TYPE CURB
.....	BARRIER TYPE CURB

DATE OF SURVEY : AUGUST 21, 2017

BENCHMARK
ELEVATIONS IN METRES AND ARE DERIVED FROM CITY OF TORONTO BENCHMARK NO. C7828
NORTH SIDE OF YORKVILLE AVENUE WEST OF YONGE STREET BENCHMARK ON A STOREY PUBLIC
LIBRARY BUILDING 1.58M NORTH FROM SOUTHEAST CORNER 1.58M ABOVE GRADE

ELEVATION = 116.92M

WSP Geomatics
Ontario Limited
Drawing Number: 17M-01494-000
610 Charter Road, Suite 300, Oakville, Ontario Canada, L6J 4A5
Website: www.wspgroup.ca
t: 905-923-8500 f: 905-923-8503
P Chief: A.K. Ckd by: G.M.
Job Number: 17M-01494-00-AV1
Tab Name: A2
Dwg File Name: 17M-01494-00_17M_0320215.dwg



*Client: 11 Yorkville Partners Inc.
Project Name: Phase Two Environmental Site Assessment Update
11 Yorkville Avenue, Toronto, Ontario
Project Number: MRK-00242474-A0
Date: February 28, 2019*

Appendix E: Test Hole Logs



Log of Borehole TH1

Project No. MRK-00242474-A0

Drawing No. 1

Project: Phase Two Environmental Site Assessment

Sheet No. 1 of 2

Location: Yorkville Avenue and Cumberland Street, Toronto, Ontario

Date Drilled: January 25 & 26, 2018

Drill Type: CME-55 Track, HSA

Datum: Benchmark CT828

Chemical Analysis

BTEX Benzene, Toluene, Ethylbenzene and Xylenes

* Duplicate Sample

ING Metals and Inorganics

PCB Polychlorinated Biphenyls

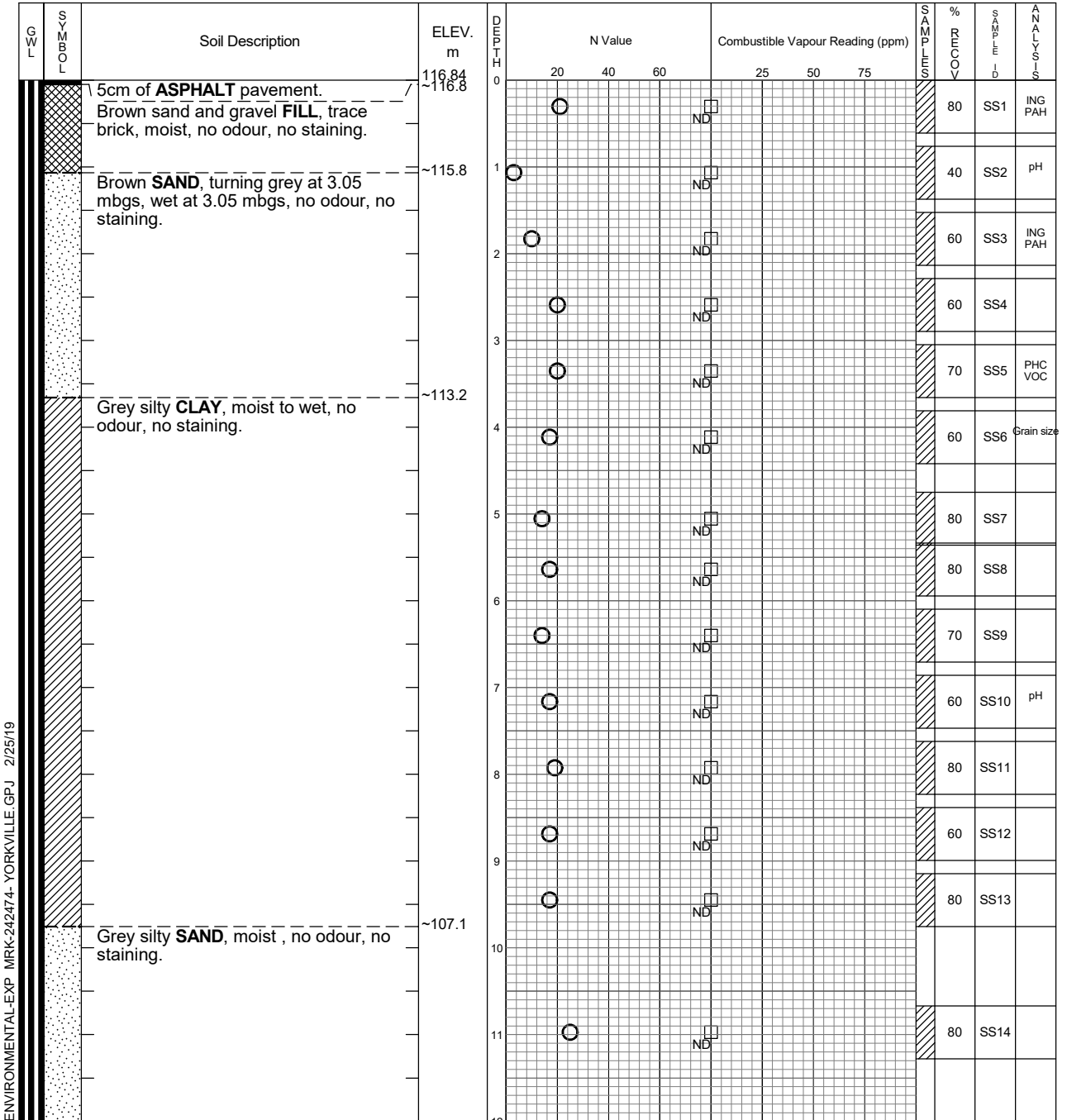
MET Metals

Petroleum Hydrocarbons (F1-F4)

PAH Polycyclic Aromatic Hydrocarbons

VOC Volatile Organic Compounds

PEST Organochlorine Pesticides



Continued Next Page



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
January 29, 2018	Dry	
January 31, 2018	Dry	
February 5, 2018	Dry	
January 14, 2019	Dry	

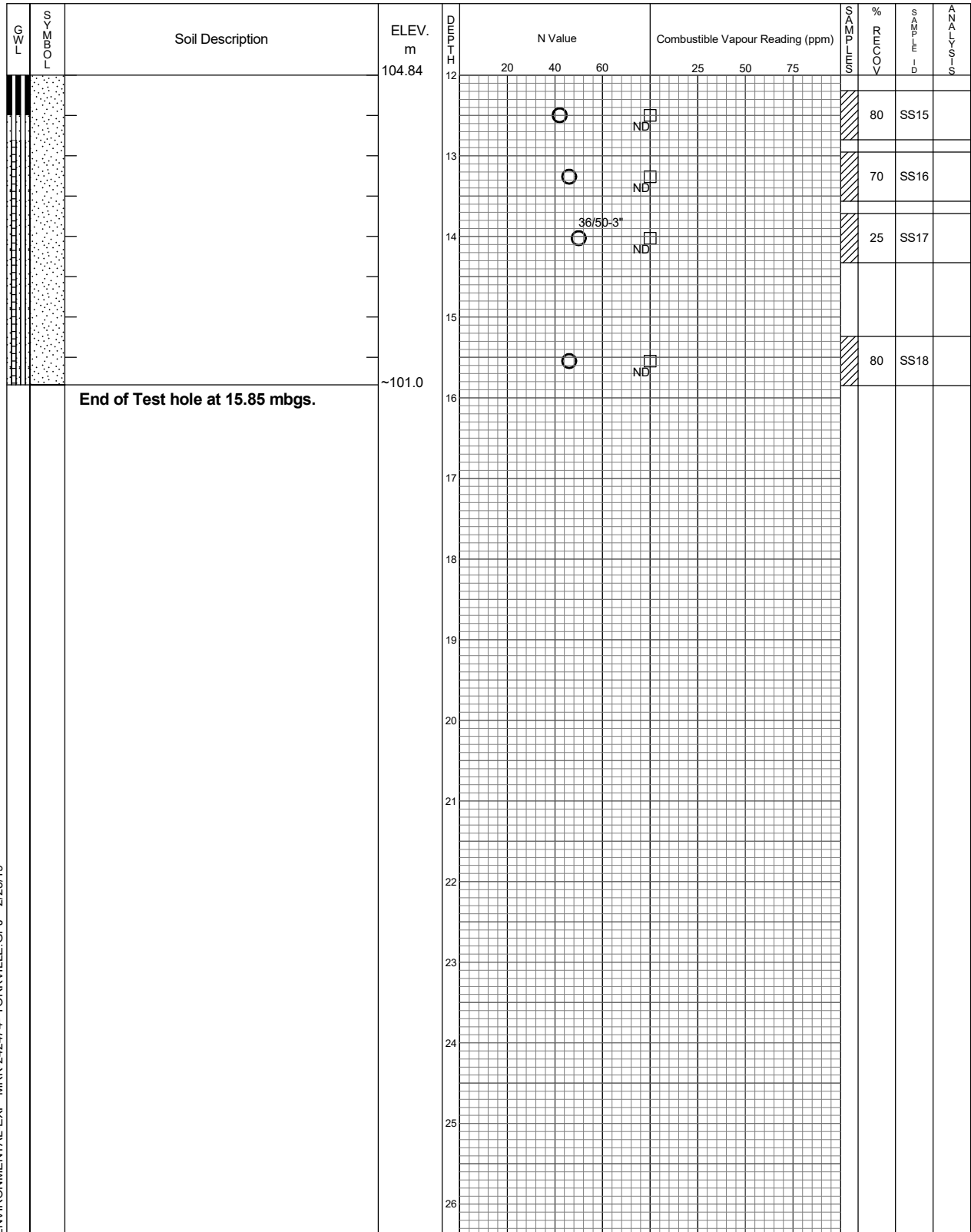
Log of Borehole TH1

Project No. MRK-00242474-A0

Drawing No. 1

Project: Phase Two Environmental Site Assessment

Sheet No. 2 of 2



ENVIRONMENTAL-EXP MRK-242474- YORKVILLE.GPJ 2/25/19



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
January 29, 2018	Dry	
January 31, 2018	Dry	
February 5, 2018	Dry	
January 14, 2019	Dry	

Log of Borehole TH2

Project No. MRK-00242474-A0

Drawing No. 2

Project: Phase Two Environmental Site Assessment

Sheet No. 1 of 1

Location: Yorkville Avenue and Cumberland Street, Toronto, Ontario

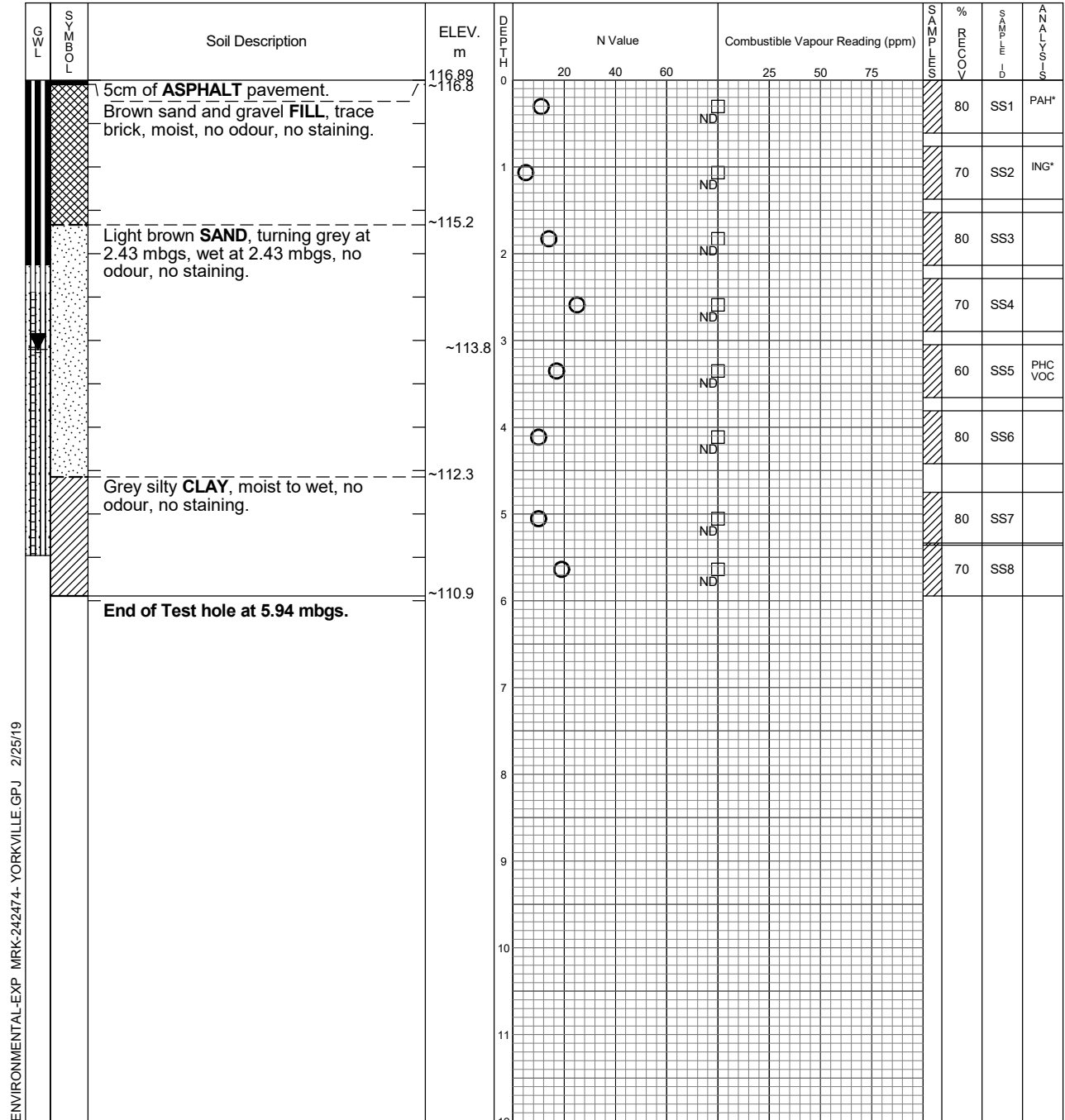
Date Drilled: January 26, 2018

Drill Type: CME-45 Truck, HSA

Datum: Benchmark CT828

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



ENVIRONMENTAL-EXP MRK-242474- YORKVILLE.GPJ 2/25/19



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
January 29, 2018	3.41	
February 5, 2018	3.44	
January 14, 2019	3.14	

Log of Borehole TH3

Project No. MRK-00242474-A0

Drawing No. 3

Project: Phase Two Environmental Site Assessment

Sheet No. 1 of 1

Location: Yorkville Avenue and Cumberland Street, Toronto, Ontario

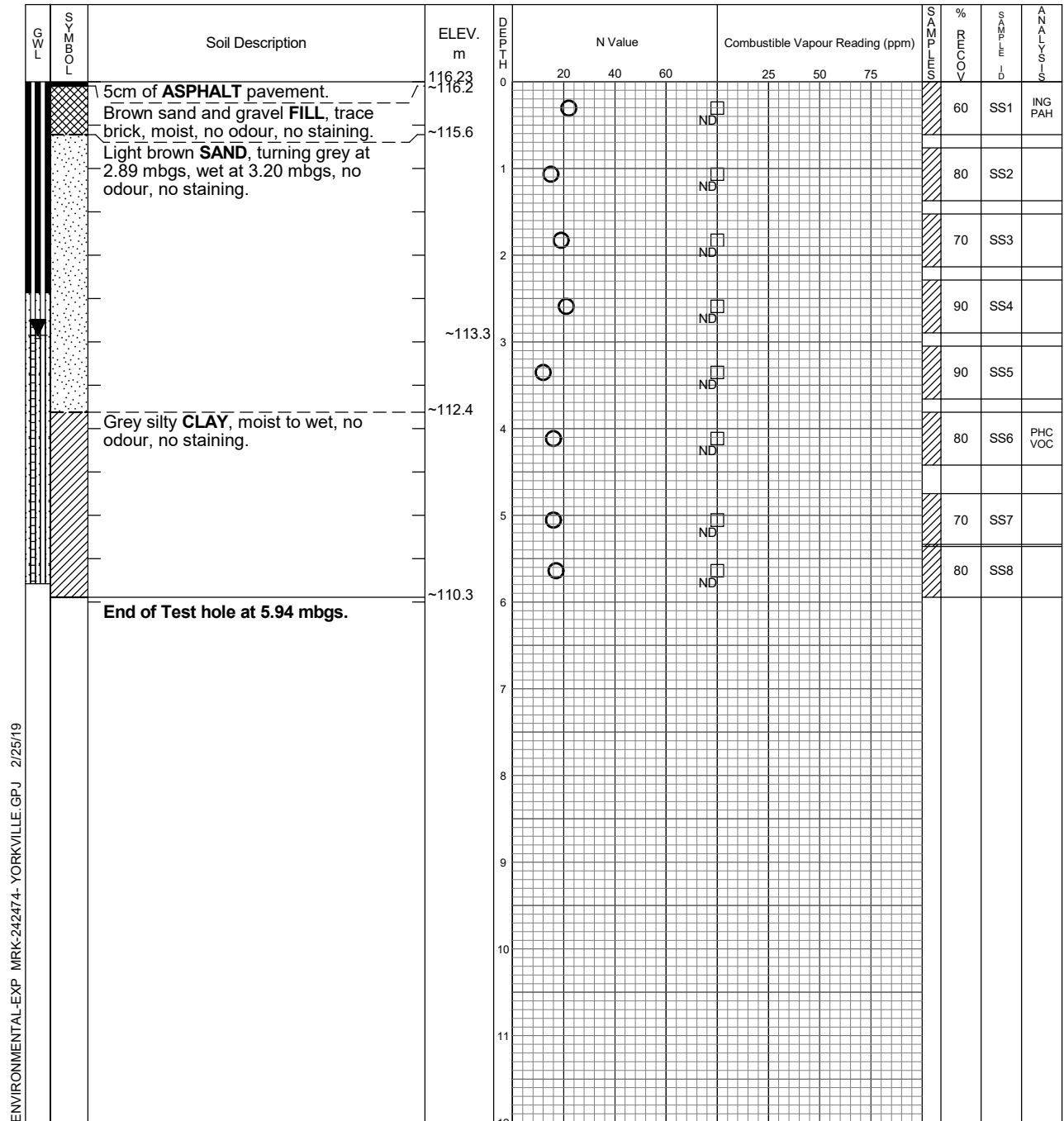
Date Drilled: January 29, 2018

Drill Type: CME-55 Track, HSA

Datum: Benchmark CT828

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



ENVIRONMENTAL-EXP MRK-242474- YORKVILLE.GPJ 2/25/19



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
January 29, 2018	3.19	
January 31, 2018	3.22	
January 14, 2019	2.96	

Log of Borehole TH101S

Project No. MRK-00242474-A0-011

Drawing No. 1

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

21 Yorkville Avenue, NW portion of basement, 1 m N of TH101D

Date Drilled: November 6, 2018

Chemical Analysis

Drill Type: Hilti

BTEX Benzene, Toluene, Ethylbenzene and Xylenes

* Duplicate Sample

Datum: City of Toronto BM# CT828

ING Metals and Inorganics

PCB Polychlorinated Biphenyls

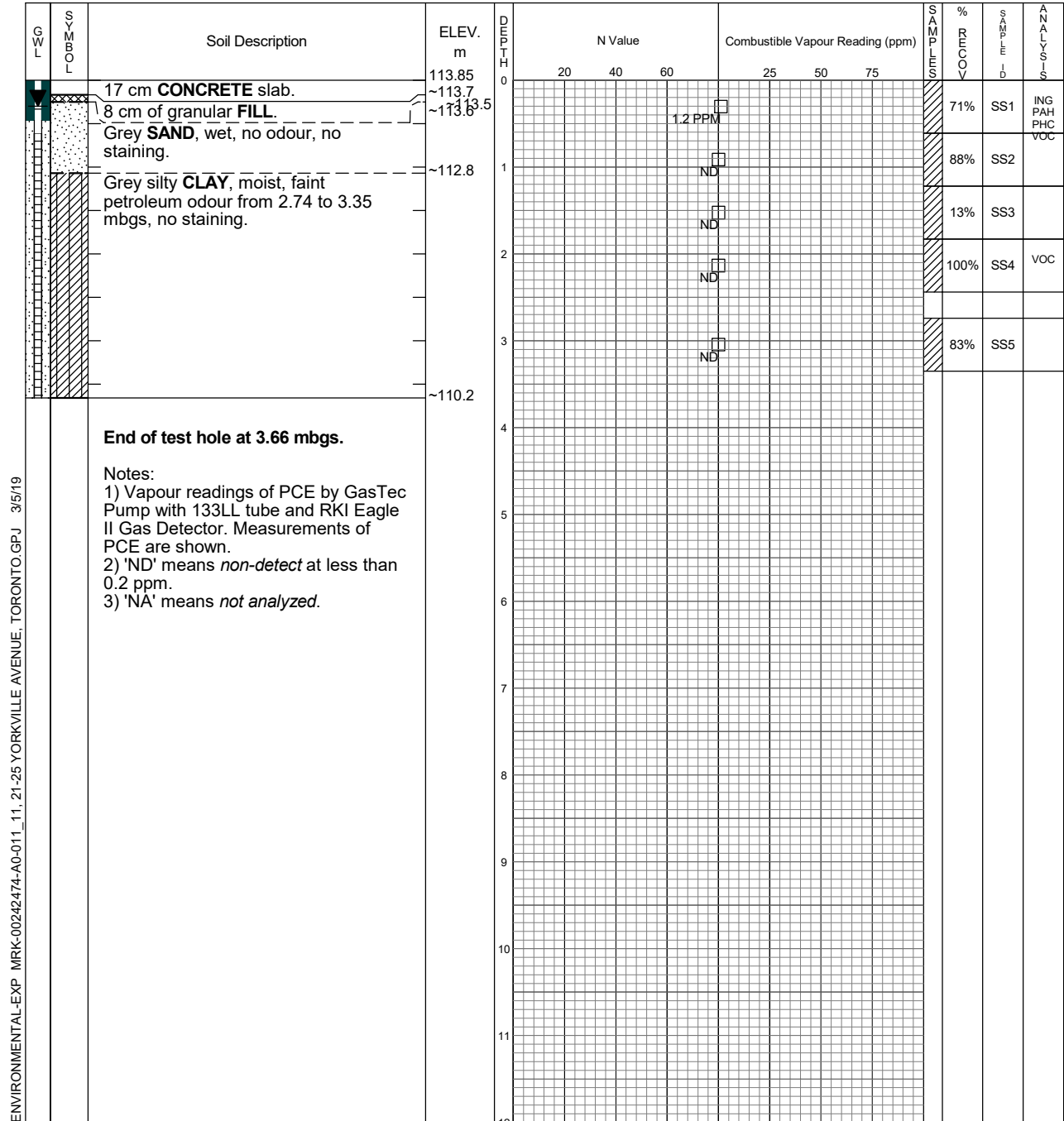
MET Metals

Petroleum Hydrocarbons (F1-F4)

PAH Polycyclic Aromatic Hydrocarbons

VOC Volatile Organic Compounds

PEST Organochlorine Pesticides



exp Services Inc.
 Markham, Ontario
 Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
November 9, 2018	0.335	
January 14, 2019	0.302	

Log of Borehole TH101D

Project No. MRK-00242474-A0-011

Drawing No. 2

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 2

Location: 11-25 Yorkville Avenue, Toronto, Ontario

21 Yorkville Avenue, NW portion of basement, 1 m S of TH101S

Date Drilled: November 14 to 15, 2018

Chemical Analysis

Drill Type: Hilti

Datum: City of Toronto BM# CT828

BTEX Benzene, Toluene, Ethylbenzene and Xylenes

* Duplicate Sample

ING Metals and Inorganics

PCB Polychlorinated Biphenyls

MET Metals

Petroleum Hydrocarbons (F1-F4)

PAH Polycyclic Aromatic Hydrocarbons

VOC Volatile Organic Compounds

PEST Organochlorine Pesticides

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH	N Value			Combustible Vapour Reading (ppm)			SAMPLING METHOD	% RECOVERY	SAMPLE ID	ANALYSIS
					20	40	60	25	50	75				
		Straight augered to 3.66 mbgs. Strata same as TH101S.	113.85	0										
				1										
				2										
				3										
		Grey silty CLAY , moist, no odour, no staining.	~110.2	4								66%	SS1	
				5								72%	SS2	
				6										
		Grey sandy SILT to silty SAND , moist turning wet at 13.72 mbgs, no odour, no staining.	~107.3	7								100%	SS3	
				8								100%	SS4	
				9										
				10								100%	SS5	
				11									SS6	
				12										

ENVIRONMENTAL-EXP MRK-00242474-A0-011_11_21-25 YORKVILLE AVENUE, TORONTO.GPJ 3/5/19

Continued Next Page



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
December 11, 2018	17.408	
January 14, 2019	17.538	

Log of Borehole TH101D

Project No. MRK-00242474-A0-011

Drawing No. 2

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 2 of 2

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH m	N Value			Combustible Vapour Reading (ppm)			SAMPLE NO.	% RUCOV	SAMPLE ID	ANALYSIS
					20	40	60	25	50	75				
			101.85	12								25%	SS7	
				13										
				14								75%	SS8	
				15								100%	SS9	
				16										
				17								50%	SS10	
			~96.4	18								100%	SS11	
				19										
			~94.0	20										
				21										
				22										
				23										
				24										
				25										
				26										

End of test hole at 19.81 mbgs.

Note:

1) 'NA' means *not analyzed*.

ENVIRONMENTAL-EXP MRK-00242474-A0-011_11_21-25 YORKVILLE AVENUE, TORONTO.GPJ 3/5/19



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
December 11, 2018	17.408	
January 14, 2019	17.538	

Log of Borehole TH102

Project No. MRK-00242474-A0-011

Drawing No. 3

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

21 Yorkville Avenue, NE portion of basement

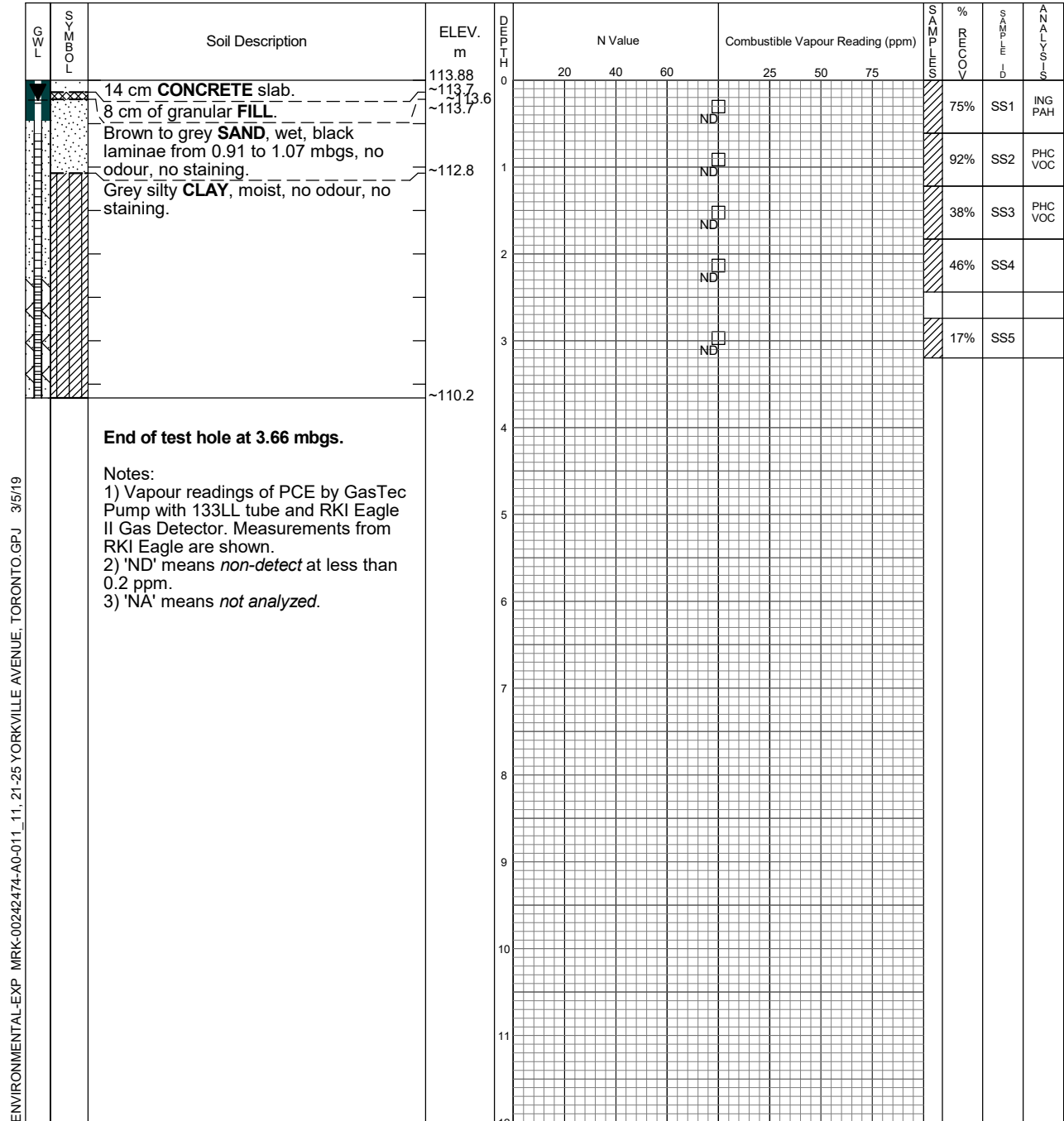
Date Drilled: November 6 to 7, 2018

Drill Type: Hilti

Datum: City of Toronto BM# CT828

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



ENVIRONMENTAL-EXP MRK-00242474-A0-011_11_21-25 YORKVILLE AVENUE, TORONTO.GPJ 3/5/19



exp Services Inc.
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Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
November 14, 2018	0.267	
January 14, 2019	0.252	

Log of Borehole TH103

Project No. MRK-00242474-A0-011

Drawing No. 4

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

21 Yorkville Avenue, west-central portion of ground floor

Date Drilled: November 5, 2018

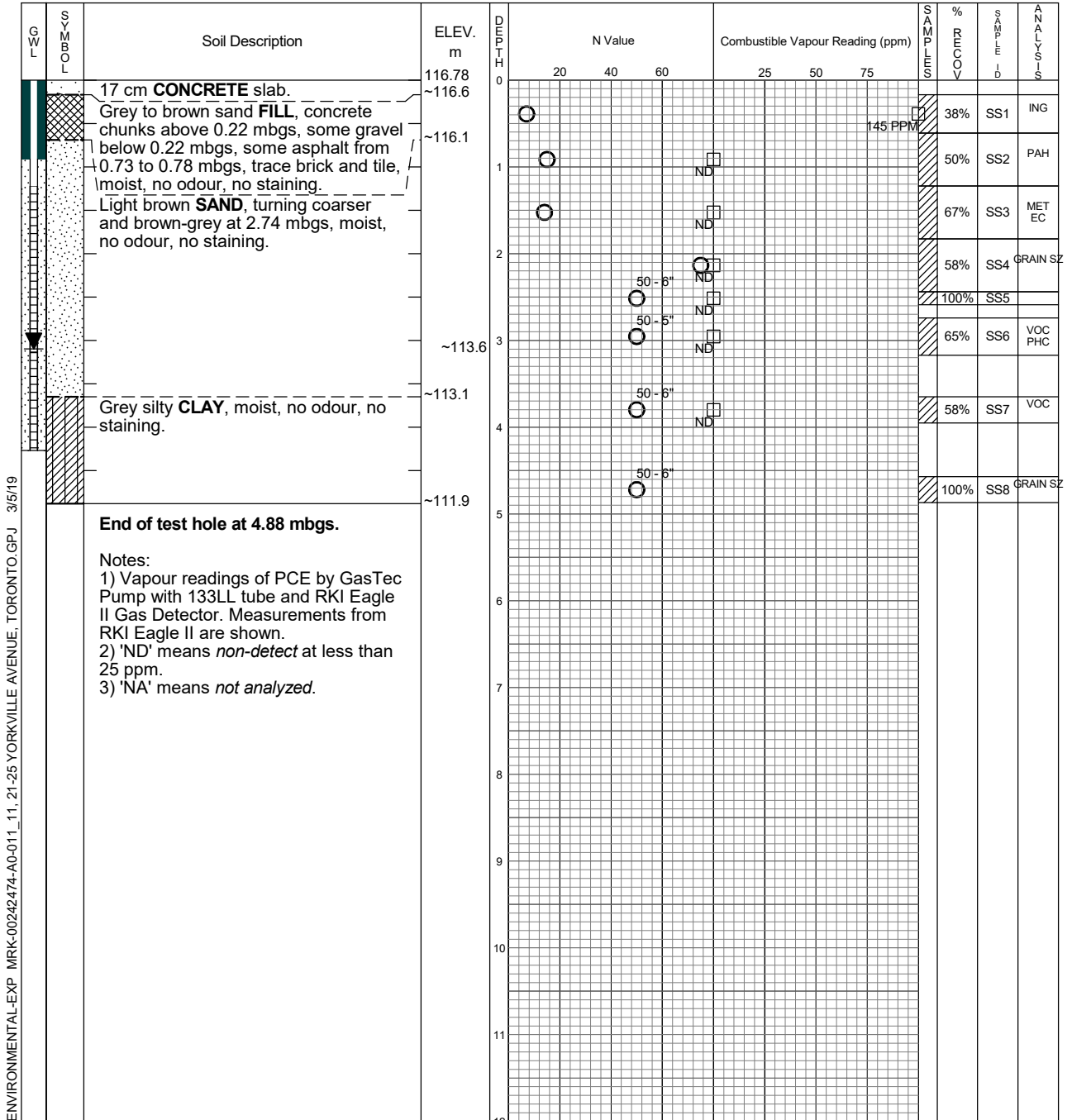
Drill Type: Hilti

Datum: City of Toronto BM# CT828

Chemical Analysis

BTEX Benzene, Toluene, Ethylbenzene and Xylenes
ING Metals and Inorganics
MET Metals
PAH Polycyclic Aromatic Hydrocarbons
PEST Organochlorine Pesticides

* Duplicate Sample
Polychlorinated Biphenyls
Petroleum Hydrocarbons (F1-F4)
VOC Volatile Organic Compounds



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
November 7, 2018	3.208	
November 30, 2018	3.179	
December 11, 2018	3.134	
January 14, 2019	2.966	

Log of Borehole TH104

Project No. MRK-00242474-A0-011

Drawing No. 5

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

21 Yorkville Avenue, southeast portion of ground floor

Date Drilled: November 5 to 6, 2018

Chemical Analysis

Drill Type: Hilti

Datum: City of Toronto BM# CT828

BTEX Benzene, Toluene, Ethylbenzene and Xylenes

* Duplicate Sample

ING Metals and Inorganics

PCB Polychlorinated Biphenyls

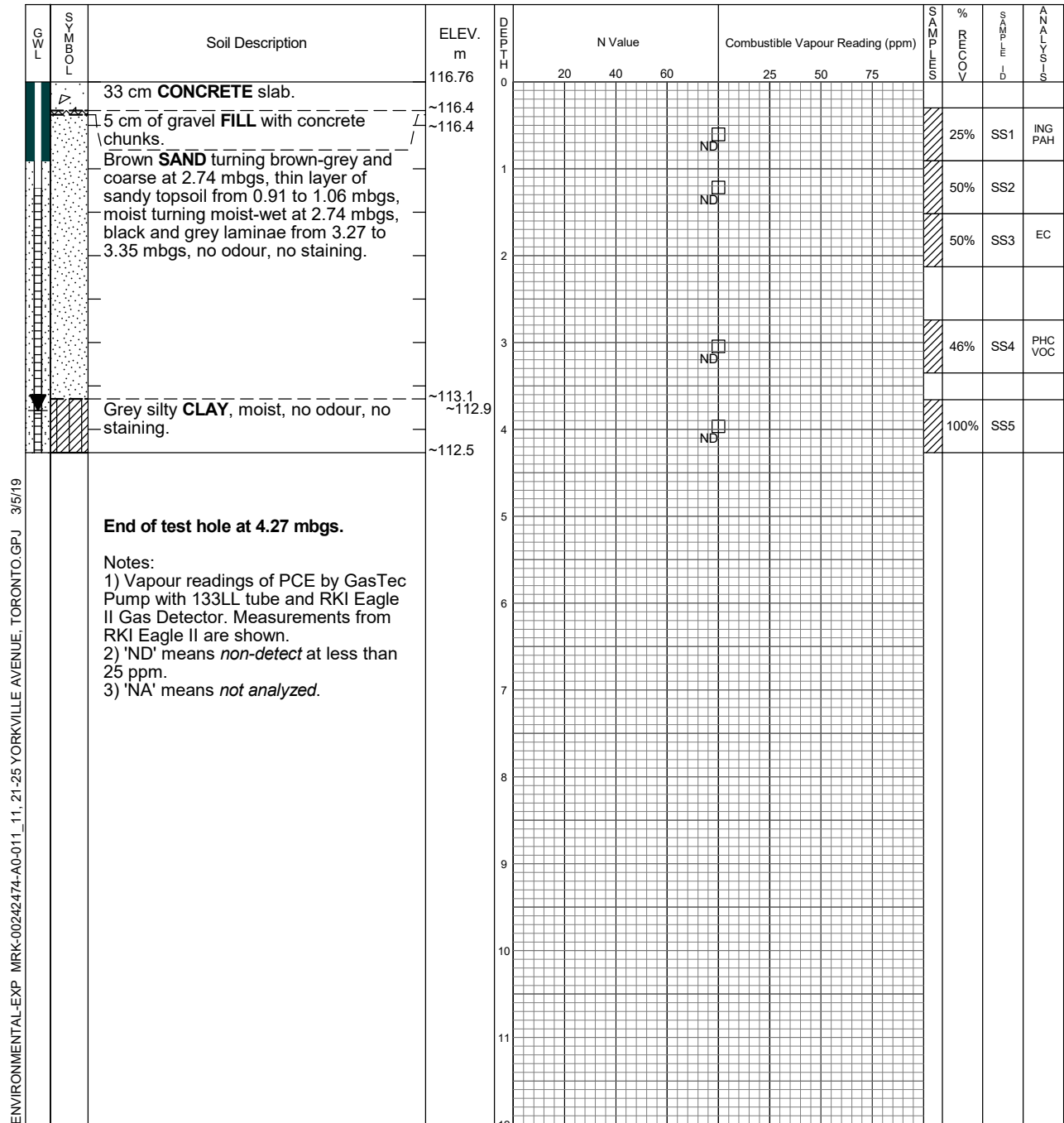
MET Metals

Petroleum Hydrocarbons (F1-F4)

PAH Polycyclic Aromatic Hydrocarbons

VOC Volatile Organic Compounds

PEST Organochlorine Pesticides



ENVIRONMENTAL-EXP MRK-00242474-A0-011_11_21-25 YORKVILLE AVENUE, TORONTO.GPJ 3/5/19



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
November 9, 2018	3.821	
January 14, 2019	3.782	

Log of Borehole TH105I

Project No. MRK-00242474-A0-011

Drawing No. 6

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

21 Yorkville Avenue, southwest portion of ground floor, 1 m W of TH105D

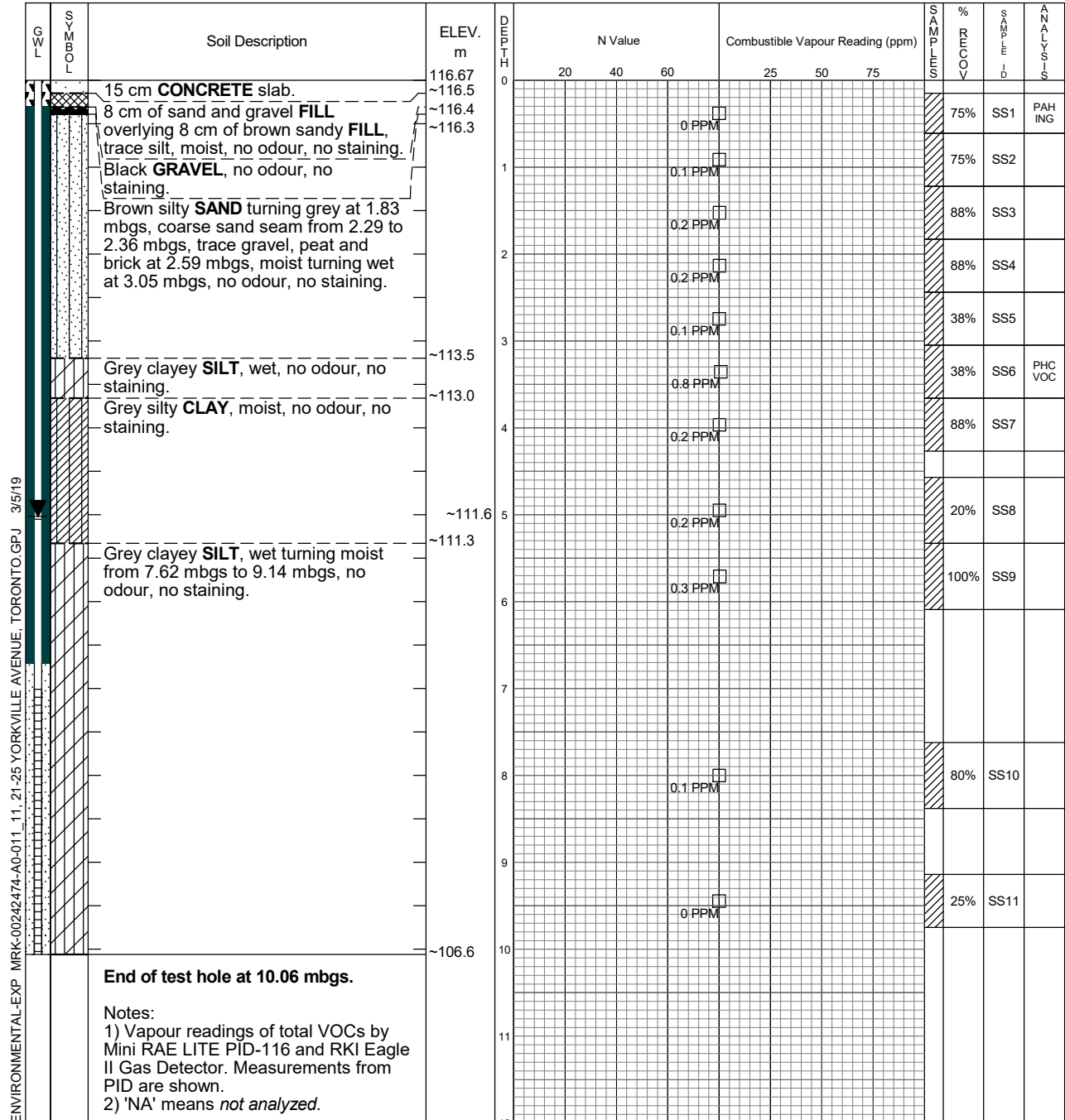
Date Drilled: November 20-21, 2018

Drill Type: Hilti

Datum: City of Toronto BM# CT828

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



exp Services Inc.
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Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
November 30, 2018	5.053	
January 14, 2019	7.769	

Log of Borehole TH105D

Project No. MRK-00242474-A0-011

Drawing No. 7

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 2

Location: 11-25 Yorkville Avenue, Toronto, Ontario

21 Yorkville Avenue, southwest portion of ground floor, 1 m E of TH105I

Date Drilled: November 21 and 26, 2018

Chemical Analysis

Drill Type: Hilti

Datum: City of Toronto BM# CT828

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		

GWL	SYMBOL	Soil Description	ELEV. m	DEPTH m	N Value			Combustible Vapour Reading (ppm)			SAMPLING DEPTH m	% RECOVER	SAMPLE ID	ANALYSIS
					20	40	60	25	50	75				
		15 cm CONCRETE slab. Straight augered to 10.67 mbgs. Strata same as TH105I.	116.67 ~116.5	0										
				1										
				2										
				3										
				4										
				5										
				6										
				7										
				8										
				9										
				10										
				11										
		Grey silty CLAY to clay with trace silt, wet, no odour, no staining.	~106.0	11								100%	SS1	
				12										

ENVIRONMENTAL-EXP MRK-00242474-A0-011_11_21-25 YORKVILLE AVENUE, TORONTO.GPJ 3/5/19

Continued Next Page



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
December 11, 2018	19.873	
January 14, 2019	19.882	

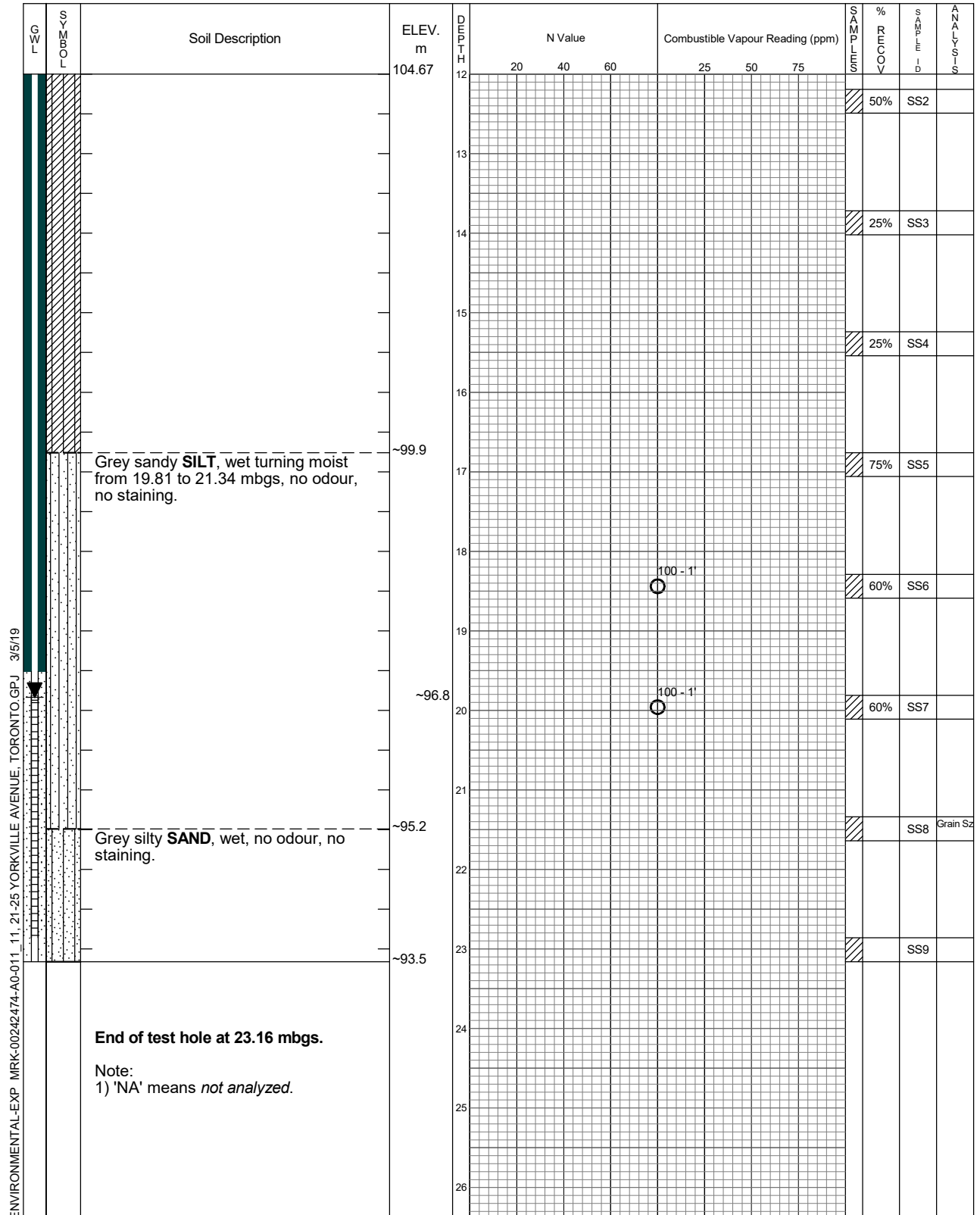
Log of Borehole TH105D

Project No. MRK-00242474-A0-011

Drawing No. 7

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 2 of 2



exp Services Inc.
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Time	Water Level (m)	Depth to Cave (m)
December 11, 2018	19.873	
January 14, 2019	19.882	

Log of Borehole TH106S

Project No. MRK-00242474-A0-011

Drawing No. 8

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

11 Yorkville Avenue, 2 m S of N-wall, 2.8 m W of E-wall

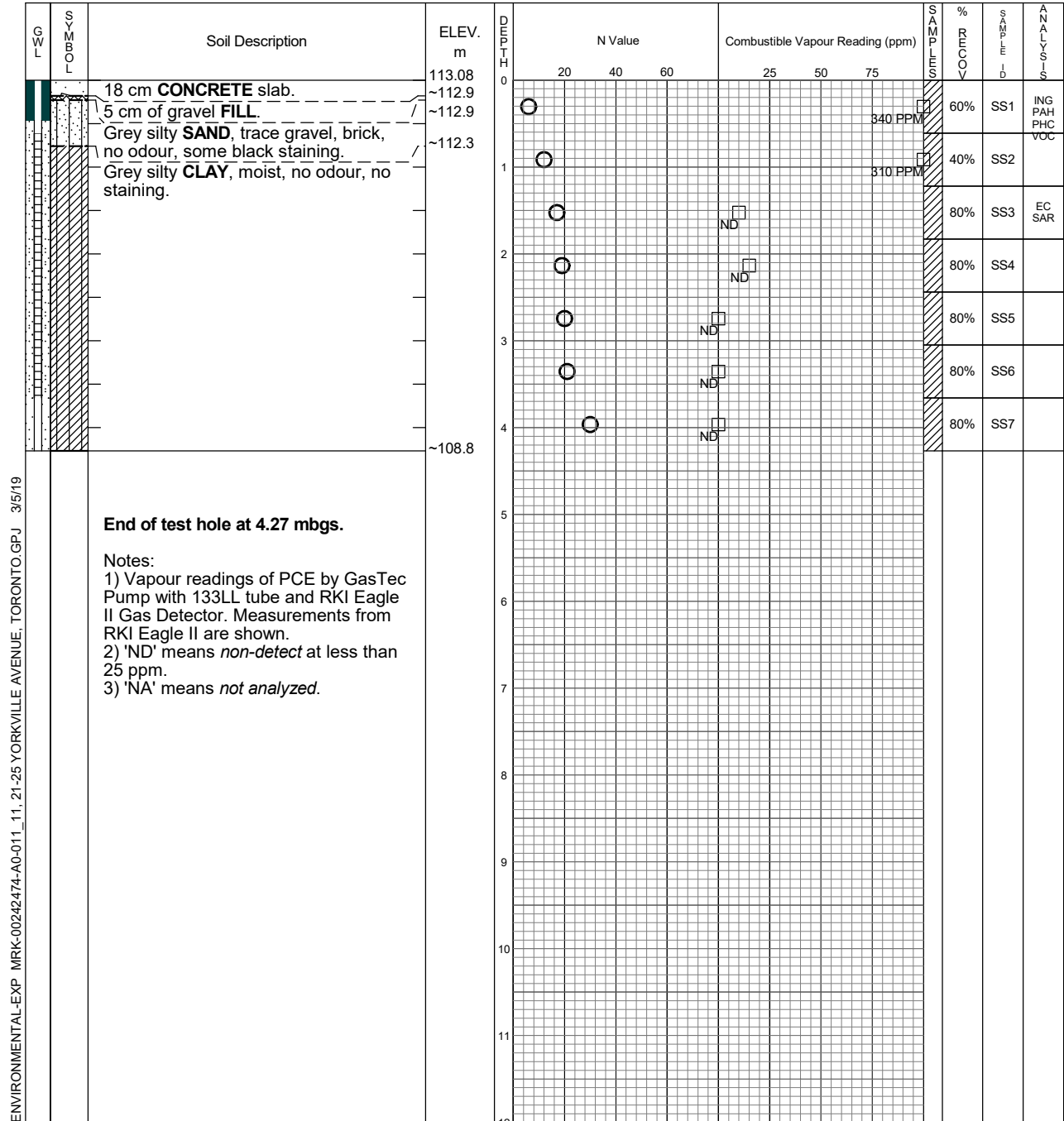
Date Drilled: November 23, 2018

Drill Type: K40, track mounted

Datum: City of Toronto BM# CT828

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
January 14, 2019	Dry	

Log of Borehole TH106D

Project No. MRK-00242474-A0-011

Drawing No. 9

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 2

Location: 11-25 Yorkville Avenue, Toronto, Ontario

11 Yorkville Avenue, 2 m S of N-wall, 3.6 m W of E-wall

Date Drilled: November 26 to 28, 2018

Chemical Analysis

Drill Type: K40, track mounted

BTEX Benzene, Toluene, Ethylbenzene and Xylenes

* Duplicate Sample

ING Metals and Inorganics

PCB Polychlorinated Biphenyls

MET Metals

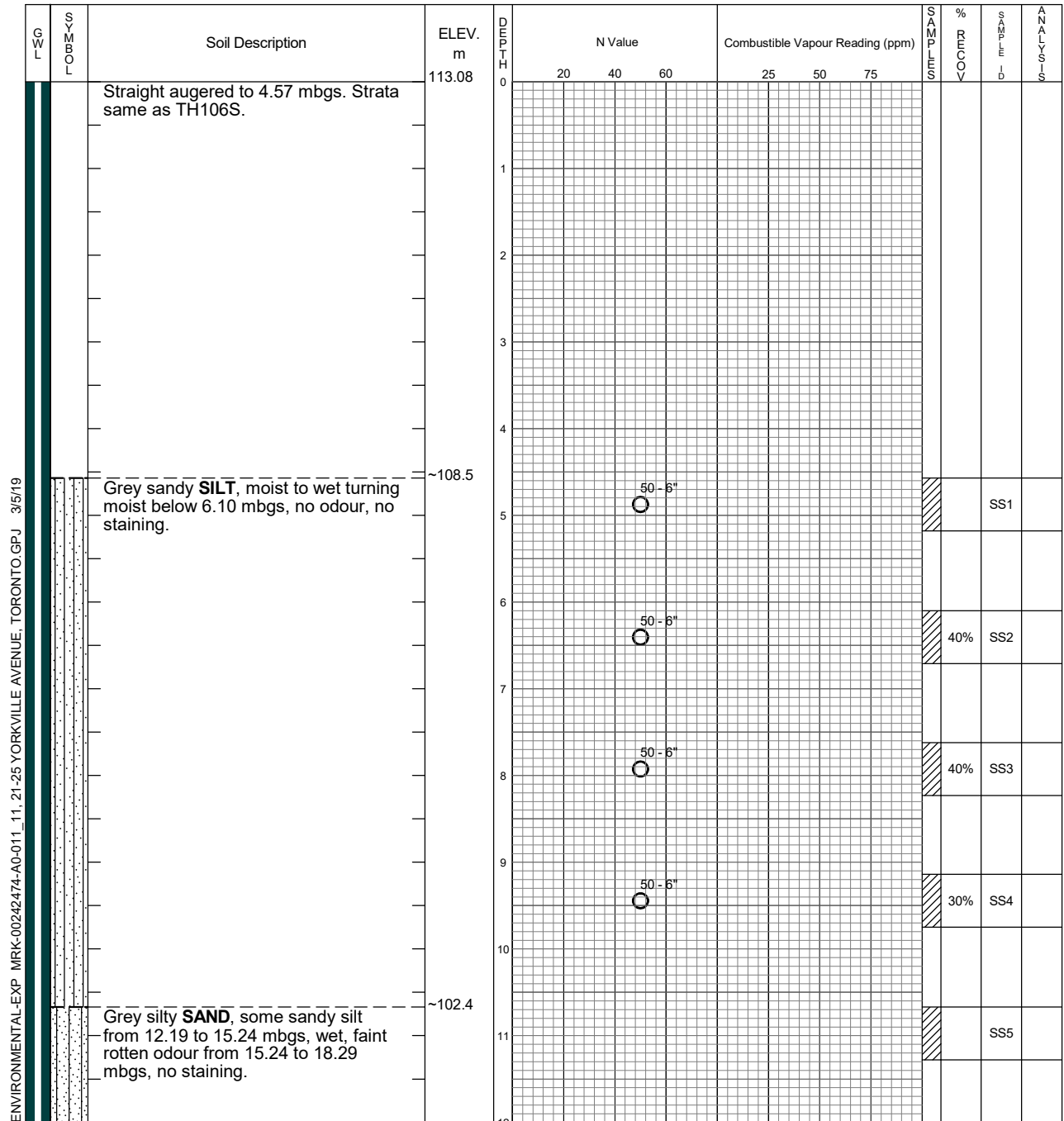
PHC Petroleum Hydrocarbons (F1-F4)

Datum: City of Toronto BM# CT828

PAH Polycyclic Aromatic Hydrocarbons

VOC Volatile Organic Compounds

PEST Organochlorine Pesticides



Continued Next Page



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
December 11, 2018	15.453	
January 14, 2019	16.168	

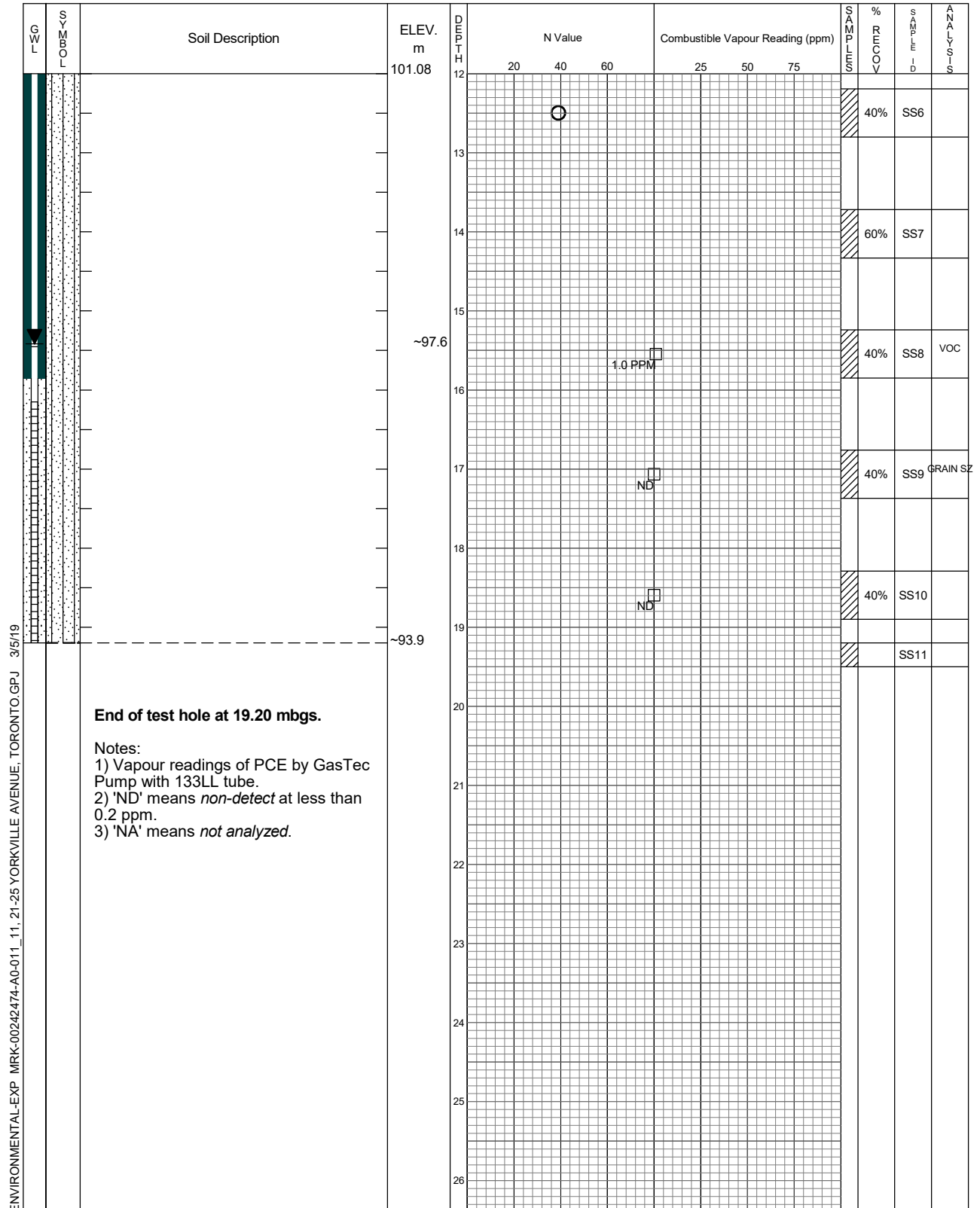
Log of Borehole TH106D

Project No. MRK-00242474-A0-011

Drawing No. 9

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 2 of 2



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
December 11, 2018	15.453	
January 14, 2019	16.168	

Log of Borehole TH107

Project No. MRK-00242474-A0-011

Drawing No. 10

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

11 Yorkville Avenue, 17.9 m S of N-wall, 2.7 m E of W-wall

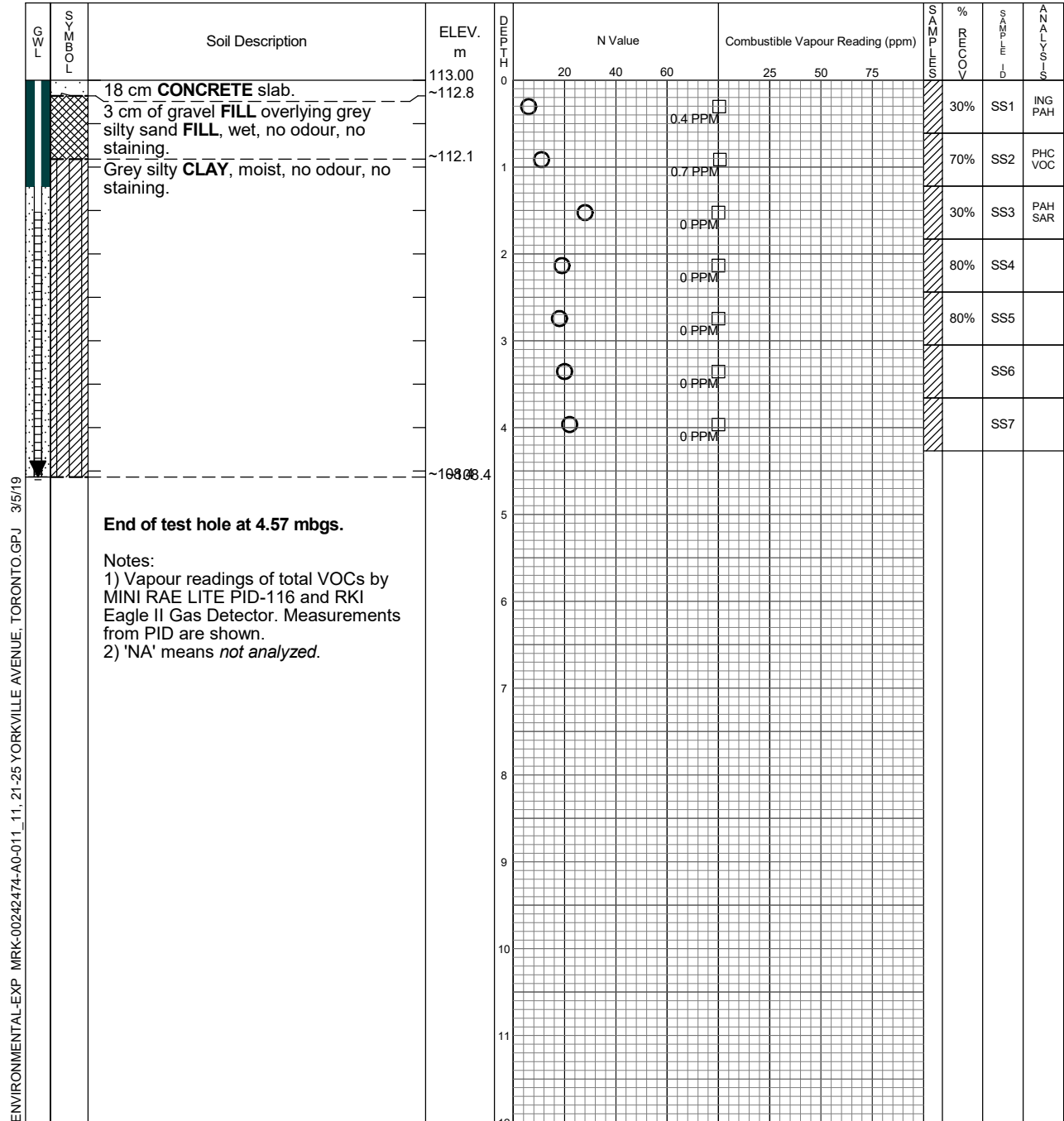
Date Drilled: November 22, 2018

Drill Type: K40, track mounted

Datum: City of Toronto BM# CT828

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
November 28, 2018	4.515	
December 4, 2018	4.602	
January 14, 2019	4.408	

Log of Borehole TH108

Project No. MRK-00242474-A0-011

Drawing No. 11

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

11 Yorkville Avenue, 16.5 m N of S-wall, 2.8 m W of E-wall

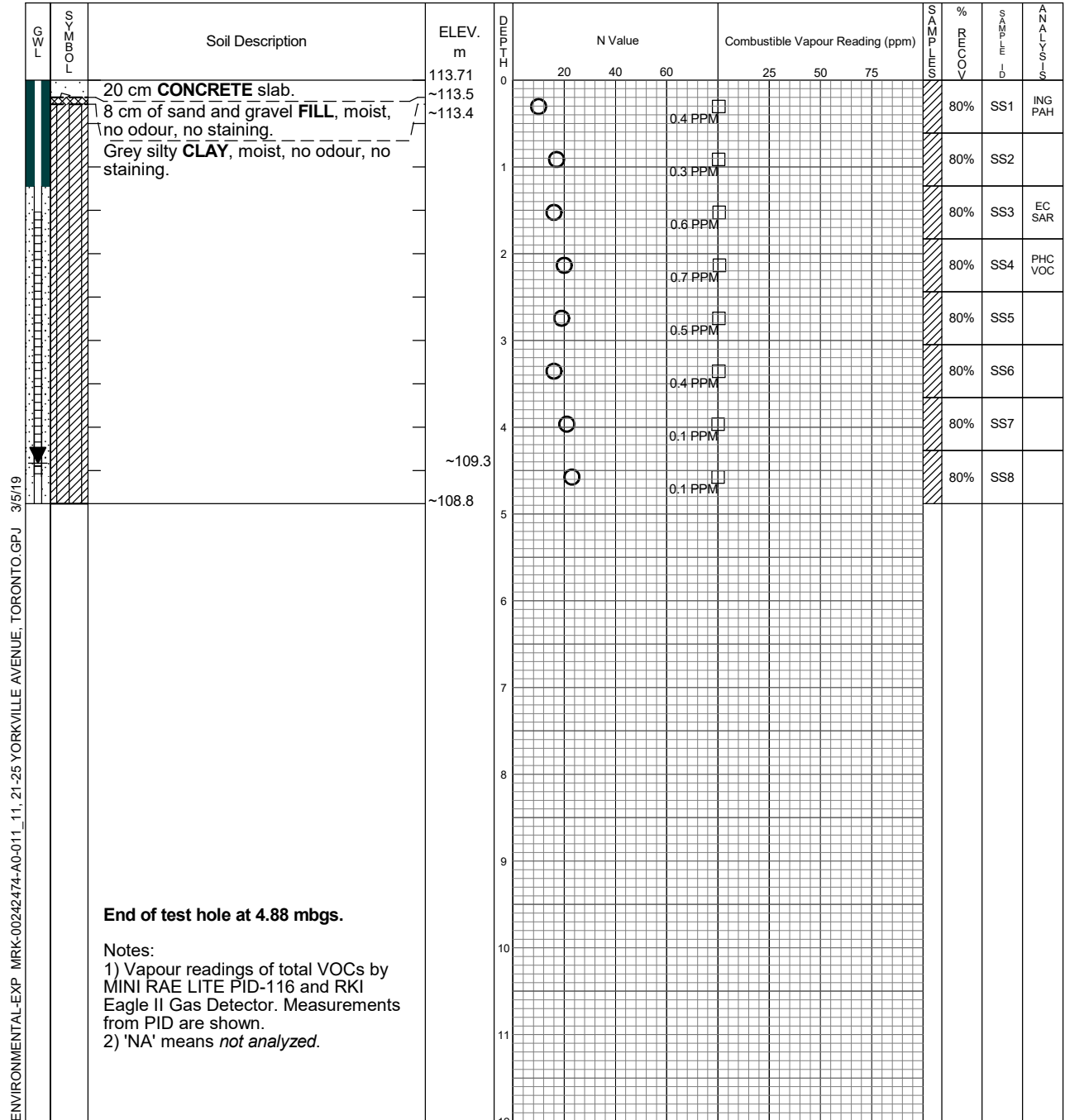
Date Drilled: November 21, 2018

Drill Type: K40, track mounted

Datum: City of Toronto BM# CT828

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



exp Services Inc.
 Markham, Ontario
 Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
November 30, 2018	4.451	
January 14, 2019	1.029	

Log of Borehole TH109S

Project No. MRK-00242474-A0-011

Drawing No. 12

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 1

Location: 11-25 Yorkville Avenue, Toronto, Ontario

11 Yorkville Avenue, 1.7 m N of S-wall, 7.7 m E of W-wall

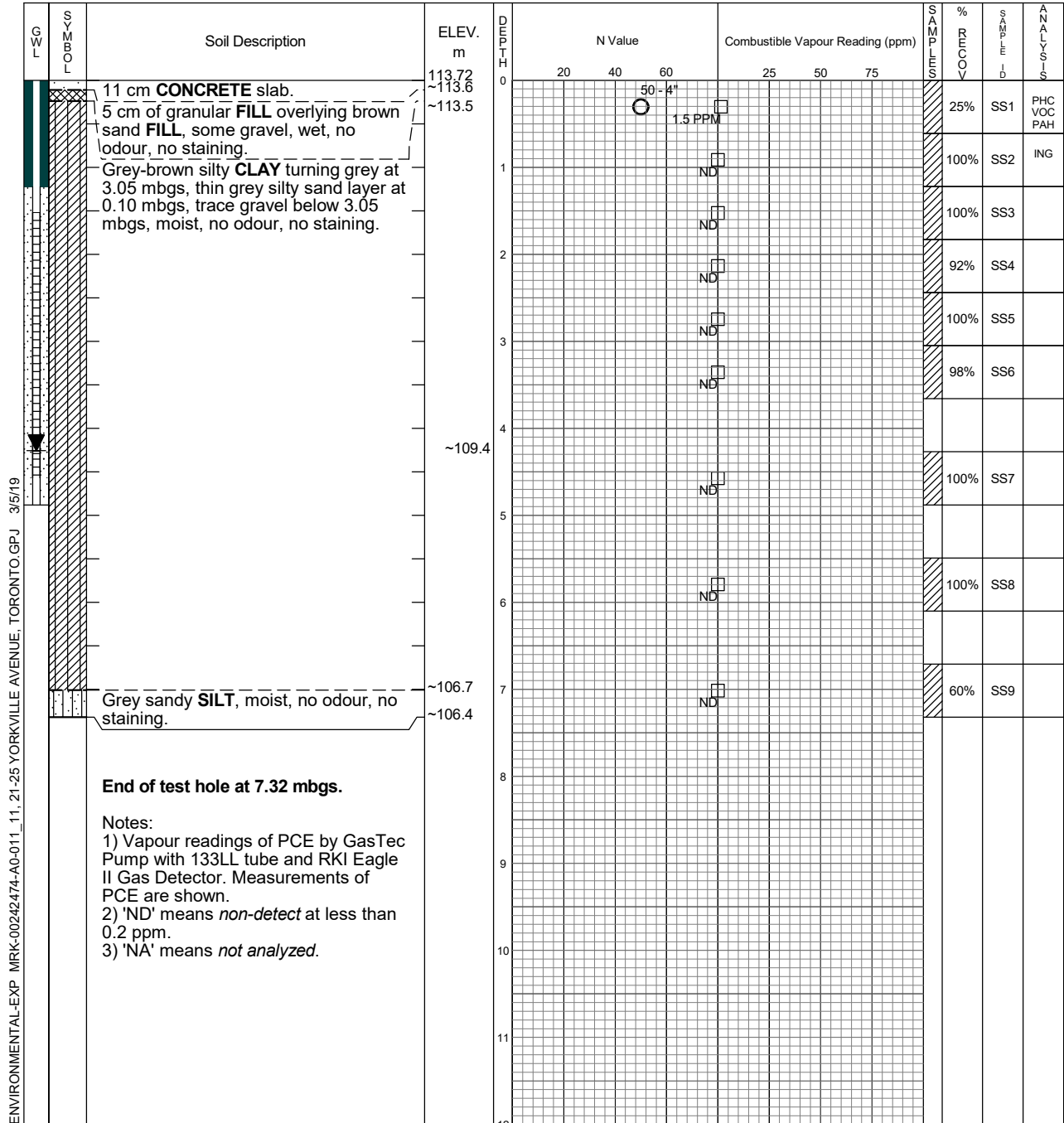
Date Drilled: November 14, 2018

Drill Type: K40, track mounted

Datum: City of Toronto BM# CT828

Chemical Analysis

BTEX	Benzene, Toluene, Ethylbenzene and Xylenes	*	Duplicate Sample
ING	Metals and Inorganics	PCB	Polychlorinated Biphenyls
MET	Metals	PHC	Petroleum Hydrocarbons (F1-F4)
PAH	Polycyclic Aromatic Hydrocarbons	VOC	Volatile Organic Compounds
PEST	Organochlorine Pesticides		



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
November 26, 2018	4.291	
January 14, 2019	4.286	

Log of Borehole TH109D

Project No. MRK-00242474-A0-011

Drawing No. 13

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 1 of 2

Location: 11-25 Yorkville Avenue, Toronto, Ontario

11 Yorkville Avenue, 2.7 m N of S-wall, 7.7 m E of W-wall

Date Drilled: November 15 to 16, 2018

Chemical Analysis

Drill Type: K40, track mounted

Datum: City of Toronto BM# CT828

BTEX Benzene, Toluene, Ethylbenzene and Xylenes

* Duplicate Sample

ING Metals and Inorganics

PCB Polychlorinated Biphenyls

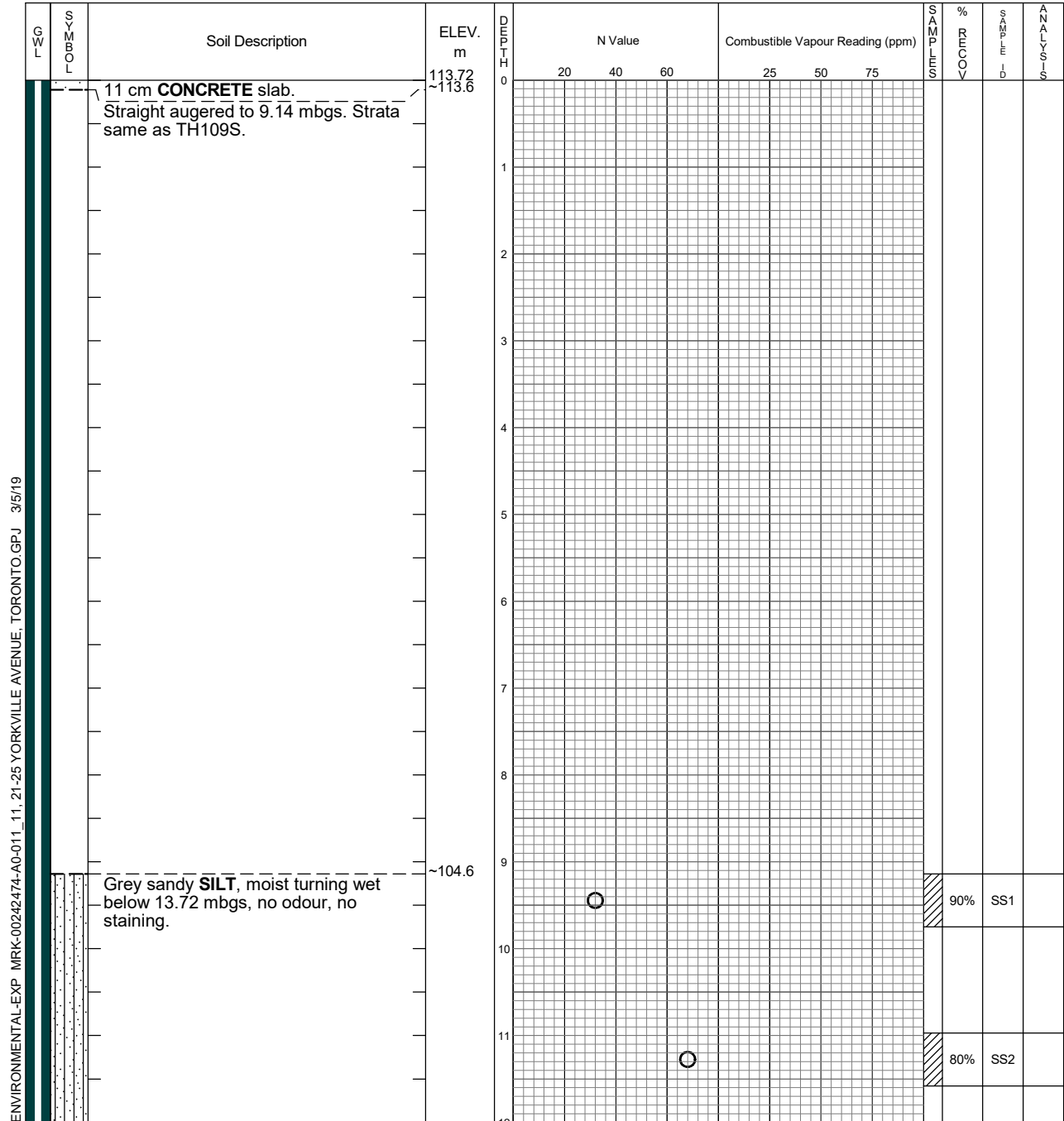
MET Metals

PHC Petroleum Hydrocarbons (F1-F4)

PAH Polycyclic Aromatic Hydrocarbons

VOC Volatile Organic Compounds

PEST Organochlorine Pesticides



Continued Next Page



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
December 11, 2018	16.301	
January 14, 2019	15.279	

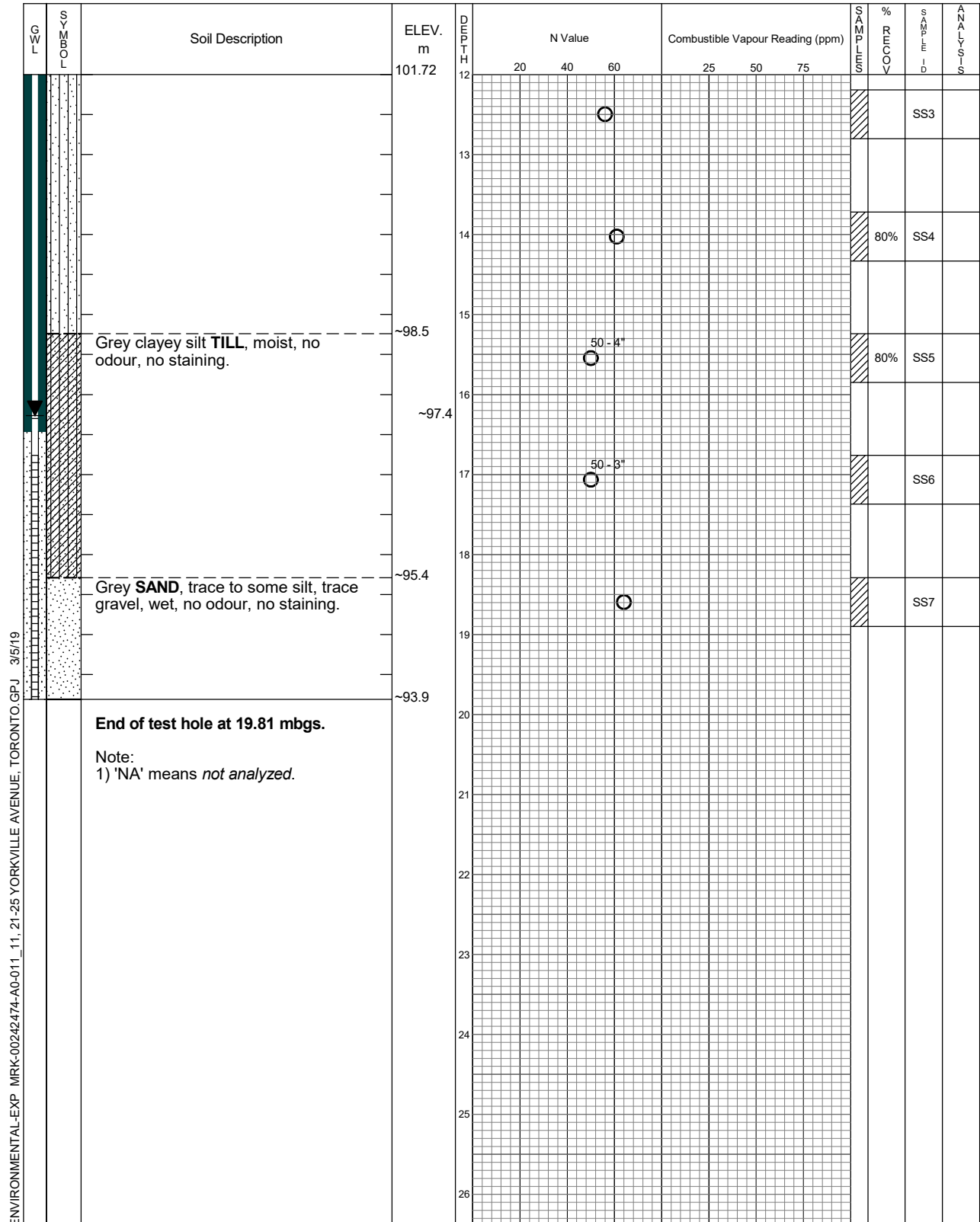
Log of Borehole TH109D

Project No. MRK-00242474-A0-011

Drawing No. 13

Project: Supplemental Phase II ESA and Hydrogeological Investigation

Sheet No. 2 of 2



exp Services Inc.
Markham, Ontario
Telephone: 905.695.3217

Time	Water Level (m)	Depth to Cave (m)
December 11, 2018	16.301	
January 14, 2019	15.279	

Appendix F: Quality Assurance and Quality Control Measures



QUALITY MANAGEMENT, CONTROL AND ASSURANCE

Project Quality Management

Sample collection was performed using generally accepted principles and with appropriate sampling equipment. Written field sampling procedures for soil and ground water developed by EXP were used to ensure consistency in sample collection and preparation of samples for submission to the laboratory. The Ministry of Environment, Conservation and Parks (MECP) document entitled *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario*, December 1996, was used as a reference.

The staff involved in the field sampling have participated in regular, ongoing EXP training programs and were qualified and experienced in collecting, describing, and preparing environmental samples for laboratory analysis.

Laboratory analysis was performed using generally accepted principles in accordance with the *Protocol for Analytical Methods Used in the Assessment of Properties* under Part XV.1 of the Environmental Protection Act (Protocol).

Data quality objectives for the parameters of concern were set to meet acceptable reporting detection limits (RDLs) to achieve the goal of defining areas where such parameters are present at levels in excess of applicable generic Standards, as defined in Ontario Regulation (O. Reg.) 153/04, as amended to date, under the *Environmental Protection Act*. This included providing written instruction to the participating analytical laboratory describing the required analyses on the Chain of Custody prepared and delivered with the samples.

Field Quality Assurance/ Quality Control

The Sampling and Analysis Plan for the Phase Two ESA Update was prepared and executed based on the findings of the Phase One and Two ESAs completed by EXP in 2018, to support the future site redevelopment activities.

Field observations were made and documented in a field book in accordance with generally accepted practices and with the procedures developed and utilized by EXP.

EXP field sampling Quality Assurance/Quality Control (QA/QC) protocols are tailored to the investigation and include, where appropriate:

- the collection of at least one field duplicate sample per site for both soil and ground water (where three or more such samples are collected);
- where volatile organic chemical analysis of ground water is required, one trip blank shall be submitted for laboratory analysis with each submission;
- where volatile organic chemical analysis is required, the collection of discrete samples directly into sample bottles with teflon-lined lids and immediate placement into a cooler with free ice to maintain the temperature at less than 10° C for transport to the laboratory;
- the use of dedicated equipment for ground water sampling at different monitors and the thorough cleaning of soil sampling equipment between sample sites; and,
- where sampling for trace organics (organic chemicals with a criterion value of less than 1 µg/g and/or samples collected for determination of background trace organic concentrations), ensuring that neither the bare hand or latex glove comes into contact with the soil or water as it is being placed into the laboratory sample container; soil

sampling equipment used for the collection of trace organics is cleaned using soap & water, followed by a water rinse and a methanol rinse between sampling sites.

The results of the duplicate samples are presented along with the tabulated data in the report. Tabulated data are presented to a maximum of three significant digits where reported by the laboratory.

Laboratory Quality Assurance/Quality Control

Laboratory analyses were completed by AGAT Laboratories (AGAT), an accredited laboratory for these tests. AGAT performed the work following formal written methods and procedures. These methods include all the minimum requirements as specified in the Protocol.

EXP has accepted the data provided by the laboratories based on the assurance that as a minimum, the following requirements have been met and documentation to demonstrate compliance can be produced on request:

- the method performance criteria identified in the Protocol were met;
- sample storage requirements, pre-analysis processing techniques, and holding times for all sample types as identified in the Protocol were met;
- the results of all laboratory QC samples were within statistically determined control limits and if not, reasons were provided;
- surrogate recoveries (for organic analyses) were monitored and recorded;
- details on the precision and accuracy of the data have been recorded and retained and are available from the laboratory should they be required as a result of an MECP audit;
- the analytical data were reported without blank correction (unless the correction was clearly identified on the Certificate of Analysis);
- all soil sampling results were reported on a dry weight basis; and,
- a Certificate of Analysis with all QA/QC sample data, including surrogate recoveries, has been received from the laboratory and is appended.

Field duplicate samples were collected from each medium being sampled, so that at least one field duplicate sample was submitted for laboratory analysis for every ten samples submitted for laboratory analysis:

- One field duplicate soil sample was collected from test hole TH103 and submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, PAHs, metals, hydride-forming metals, and ORPs;
- One field duplicate soil sample was collected from test hole TH109S and submitted for laboratory analysis of PHC fractions F1 to F4, VOCs, PAHs, metals, hydride-forming metals, and ORPs;
- One field duplicate ground water sample was collected from monitoring well TH101S and submitted for laboratory analysis of PHC fractions F1 to F4 and VOCs;

- One field duplicate ground water sample was collected from monitoring well TH102 and submitted for laboratory analysis of PHC fractions F1 to F4 and VOCs;
- One field duplicate ground water sample was collected from monitoring well TH103 and submitted for laboratory analysis of PHC fractions F1 to F4 and benzene, toluene, ethylbenzene and xylenes (BTEX); and,
- One field duplicate ground water sample was collected from monitoring well TH106D and submitted for laboratory analysis of VOCs.

A trip blank was also transported to the site and submitted to the laboratory with each submission of ground water samples to be analyzed for VOCs.

The relative percent differences (RPDs) between the field duplicate samples and the original samples are provided in this appendix. It should be noted that meaningful RPDs cannot be calculated if one or both of the analytical results are less than the reporting detection limits (RDLs).

The alert limit criteria applied by EXP are set out in the document entitled the “Ontario QA/QC Interpretation Guide – Environmental Services”, prepared by Maxxam Analytics in 2015. A copy of this document is attached. In this document, it is noted that meaningful RPDs can only be calculated when the average of the two sample concentrations are greater than five times the laboratory RDL.

For soil samples, the calculated RPDs between the duplicate samples and the original samples were within the alert limits for all parameters analyzed with one exception. Sample TH103-SS1 and its field duplicate (TH1030-SS1) had concentrations of selenium with an RPD of 67%. The average concentration of selenium between the two samples was less than five times the RDL. Therefore, this alert limit exceedance was not considered to be significant. The concentration of selenium in both samples was within the Table 3 Standards.

For ground water samples, the calculated RPDs between the duplicate samples and the original samples were within the alert limits for all parameters analyzed with one exception. Sample TH103 and its field duplicate (TH1030) had concentrations of toluene and xylenes with RPDs of 32% and 68%, respectively. The average concentration of toluene between the two samples was less than five times the RDL. The average concentration of xylene between the two samples was slightly greater than five times the RDL. The concentrations of toluene and xylenes in both samples were well within the Table 3 Standards. The alert limit exceedance for xylene is not anticipated to have a material effect on the conclusions of this investigation.

The trip blanks were below the laboratory RDLs for all VOCs analyzed.

No laboratory data quality issues were identified that would have a material effect on the interpretation of results presented in this report.

ONTARIO QA/QC INTERPRETATION GUIDE - ENVIRONMENTAL SERVICES			Maxxam A Bureau Veritas Group Company																	
QA/QC Sample Type	Frequency and Purpose	Application and Regulatory Criteria		Recommended Actions																
LABORATORY																				
Method Blank A laboratory control sample that is free of the target parameters and of any substance that may interfere with that analysis. A method blank is processed through the entire analytical method including any extraction, digestion or any other preparation procedure.	1 in 20 samples or 1 in batch. Monitors laboratory background levels of target analytes and laboratory artifacts	Used for most analytical parameters. Evaluate the impact on data for results >RDL or that that approaches the concentration reported in the sample.		Maxxam uses and recommends an alert criteria of 2 to 5xRDL to avoid uncertainty in concentrations close to the RDL. The laboratory will repeat the analysis for all samples in the batch, if unacceptable concentrations of target analytes are identified in the method blank. The laboratory may report elevated RDL values if project/regulatory criteria are not exceeded.																
Blank Spike: A laboratory control sample free of the target analytes or interferences is fortified with a known concentration of all or selected target analytes. The blank spike is processed through the entire analytical method including any extraction, digestion or any other preparation procedure. Results are expressed as a percentage recovery.	1 in 20 samples or 1 in batch. Monitors analyte recovery and potential loss during the preparation procedures (extraction efficiency). It also serves to validate the calibration of the instrumentation or technique.	<table><tr><td colspan="2">Used for most analytical parameters.</td></tr><tr><td>Metals</td><td>80% - 120% (water and soil)</td></tr><tr><td>VOCs</td><td>60% -130% (water and soil)</td></tr><tr><td>PHCs</td><td>60%-140% water; 80%-120% soil</td></tr><tr><td>Volatile Gases and Ketones</td><td>50% - 140% (water and soil)</td></tr><tr><td>General Chem. (typical)</td><td>80% - 120% (water and soil)</td></tr><tr><td>ABNs</td><td>50%-140% (water and soil)</td></tr><tr><td>PAHs</td><td>50%-140% (water and soil)</td></tr></table>		Used for most analytical parameters.		Metals	80% - 120% (water and soil)	VOCs	60% -130% (water and soil)	PHCs	60%-140% water; 80%-120% soil	Volatile Gases and Ketones	50% - 140% (water and soil)	General Chem. (typical)	80% - 120% (water and soil)	ABNs	50%-140% (water and soil)	PAHs	50%-140% (water and soil)	Repeat the analysis for all samples in the batch, if >10% blank spike parameter recoveries are outside control limits by 10% absolute.
Used for most analytical parameters.																				
Metals	80% - 120% (water and soil)																			
VOCs	60% -130% (water and soil)																			
PHCs	60%-140% water; 80%-120% soil																			
Volatile Gases and Ketones	50% - 140% (water and soil)																			
General Chem. (typical)	80% - 120% (water and soil)																			
ABNs	50%-140% (water and soil)																			
PAHs	50%-140% (water and soil)																			
Matrix Spike A second aliquot from a randomly chosen sample is fortified with a known concentration of target analytes. The sample is processed through the entire analytical method. Results are expressed as a percentage recovery.	1 in 20 samples or 1 in batch. Evaluates any “matrix effects” that may exist in a sample due to its composition that may affect the recovery of analytes. An example is the presence of peat in soils, which tends to adsorb analytes such as benzene resulting in a poor matrix spike recovery.	<table><tr><td colspan="2">Used for most analytical procedures. Matrix spike alert criteria apply when the MS target concentration is ≥ the native analyte concentration.</td></tr><tr><td>Metals</td><td>70% - 130% (water and soil)</td></tr><tr><td>VOCs</td><td>50% - 140% (water and soil)</td></tr><tr><td>PHCs</td><td>60% - 140% (water and soil)</td></tr><tr><td>General Chem. (typical)</td><td>70% - 120% (water and soil)</td></tr><tr><td>ABNs</td><td>50% - 140% (water and soil)</td></tr><tr><td>PAHs</td><td>50% - 140% (water and soil)</td></tr></table>		Used for most analytical procedures. Matrix spike alert criteria apply when the MS target concentration is ≥ the native analyte concentration.		Metals	70% - 130% (water and soil)	VOCs	50% - 140% (water and soil)	PHCs	60% - 140% (water and soil)	General Chem. (typical)	70% - 120% (water and soil)	ABNs	50% - 140% (water and soil)	PAHs	50% - 140% (water and soil)	Maxxam uses and recommends MS alert criteria be applied when the native analyte concentration is <1/2 of MS target concentration. Laboratory will repeat analysis if recovery of analytes is outside of control limits for >10% compounds and if similar outcome is observed, the data is reported with appropriate qualifiers.		
Used for most analytical procedures. Matrix spike alert criteria apply when the MS target concentration is ≥ the native analyte concentration.																				
Metals	70% - 130% (water and soil)																			
VOCs	50% - 140% (water and soil)																			
PHCs	60% - 140% (water and soil)																			
General Chem. (typical)	70% - 120% (water and soil)																			
ABNs	50% - 140% (water and soil)																			
PAHs	50% - 140% (water and soil)																			
Laboratory Duplicates (RPD) A second aliquot from a randomly chosen sample within an analytical batch processed through the entire analytical method. Laboratory duplicates are expressed as the Relative Percent Difference (RPD) between the two results.	1 in 20 samples or 1 in batch. Evaluates analytical precision and sample homogeneity.	<table><tr><td colspan="2">Applicable for all analytical parameters. RPDs are calculated when the average of the two sample concentrations are greater than 5xRDL.</td></tr><tr><td>ABNs, PAHs, OC Pesticides, PCBs, Methyl Mercury</td><td>RPD ≤30% water ; ≤40%soil</td></tr><tr><td>PHCs</td><td>RPD ≤30% water and soil</td></tr><tr><td>VOCs</td><td>RPD ≤30% water; ≤50% soil</td></tr><tr><td>Metals and Inorganics, Mercury</td><td>RPD ≤20% water; ≤30% soil</td></tr><tr><td>HWSB</td><td>RPD ≤40% water and soil</td></tr><tr><td>Chromium VI, FOC, Chloride, Cyanide</td><td>RPD ≤20% water; ≤35% soil</td></tr><tr><td>Electrical Conductivity</td><td>RPD ≤10% water and soil</td></tr></table>		Applicable for all analytical parameters. RPDs are calculated when the average of the two sample concentrations are greater than 5xRDL.		ABNs, PAHs, OC Pesticides, PCBs, Methyl Mercury	RPD ≤30% water ; ≤40%soil	PHCs	RPD ≤30% water and soil	VOCs	RPD ≤30% water; ≤50% soil	Metals and Inorganics, Mercury	RPD ≤20% water; ≤30% soil	HWSB	RPD ≤40% water and soil	Chromium VI, FOC, Chloride, Cyanide	RPD ≤20% water; ≤35% soil	Electrical Conductivity	RPD ≤10% water and soil	Maxxam uses and recommends 2 to 5xRDL for each sample concentration, in order for RPDs to be calculated. This alert criteria results in less uncertainty for concetrations close to the RDL. The laboratory will repeat affected sample. If still not acceptable, inspect for homogeneity and qualify data appropriately.
Applicable for all analytical parameters. RPDs are calculated when the average of the two sample concentrations are greater than 5xRDL.																				
ABNs, PAHs, OC Pesticides, PCBs, Methyl Mercury	RPD ≤30% water ; ≤40%soil																			
PHCs	RPD ≤30% water and soil																			
VOCs	RPD ≤30% water; ≤50% soil																			
Metals and Inorganics, Mercury	RPD ≤20% water; ≤30% soil																			
HWSB	RPD ≤40% water and soil																			
Chromium VI, FOC, Chloride, Cyanide	RPD ≤20% water; ≤35% soil																			
Electrical Conductivity	RPD ≤10% water and soil																			
Certified Reference Material (CRM) Purchased samples that have been certified by a recognized agency to contain specified levels of selected constituents, when measured by specified standard procedures. Results are expressed as a percentage of the design value.	1 in 20 samples or 1 in batch. Used for validating the performance of a method including precision, extraction or digestion efficiency.	Applicable for all analytical parameters where CRMs are commercially available. Acceptable recovery ranges are provided by the supplier.		Repeat the analysis for all samples in the batch, if CRM % recovery is outside control limits.																
Surrogate Recovery Surrogates are deuterated analogues or compounds not normally found in nature but have chemical and physical behaviour similar to the analytes of interest. Known surrogate concentrations are added to samples prior to analysis and recoveries are calculated and expressed as a percentage.	Every organic analysis, included in every sample and standard. Monitors the efficiency of organic extractions, instrument performance and provides within-run quality control.	<table><tr><td colspan="2">Applicable for all analytical parameters determined by Gas Chromatography or HPLC techniques.</td></tr><tr><td>VOCs, ABNs (SVOCs)</td><td>50% - 140% (water and soil)</td></tr><tr><td>PHCs</td><td>60% - 140% (water and soil)</td></tr></table>		Applicable for all analytical parameters determined by Gas Chromatography or HPLC techniques.		VOCs, ABNs (SVOCs)	50% - 140% (water and soil)	PHCs	60% - 140% (water and soil)	Repeat the analysis or qualify data, if interferences are suspected.										
Applicable for all analytical parameters determined by Gas Chromatography or HPLC techniques.																				
VOCs, ABNs (SVOCs)	50% - 140% (water and soil)																			
PHCs	60% - 140% (water and soil)																			
FIELD																				
Blind Duplicates A second sample is collected at the same time and location in separate containers. Samples are homogenized where possible (ie alternate filling of sample and duplicate for waters and bowl mixing for soils). Samples are submitted to the laboratory without identifying them as duplicates. VOCs in soil should not be homogenized.	1 for every 10 samples collected; must be representative of all parameters. Evaluates analytical precision, field precision and sample homogeneity. Has limited use for samples that cannot be homogenized (ie VOCs in soil).	<table><tr><td colspan="2">As with laboratory duplicates, meaningful RPDs can be calculated when the average of the two sample concentrations are greater than 5xRDL.</td></tr><tr><td>ABNs, PAHs, OC Pesticides, PCBs, Methyl Mercury</td><td>RPD ≤30% water ; ≤40%soil</td></tr><tr><td>PHCs</td><td>RPD ≤30% water and soil</td></tr><tr><td>VOCs</td><td>RPD ≤30% water; ≤50% soil</td></tr><tr><td>Metals and Inorganics, Mercury</td><td>RPD ≤20% water; ≤30% soil</td></tr><tr><td>HWSB</td><td>RPD ≤40% water and soil</td></tr><tr><td>Chromium VI, FOC, Chloride, Cyanide</td><td>RPD ≤20% water; ≤35% soil</td></tr><tr><td>Electrical Conductivity</td><td>RPD ≤10% water and soil</td></tr></table>		As with laboratory duplicates, meaningful RPDs can be calculated when the average of the two sample concentrations are greater than 5xRDL.		ABNs, PAHs, OC Pesticides, PCBs, Methyl Mercury	RPD ≤30% water ; ≤40%soil	PHCs	RPD ≤30% water and soil	VOCs	RPD ≤30% water; ≤50% soil	Metals and Inorganics, Mercury	RPD ≤20% water; ≤30% soil	HWSB	RPD ≤40% water and soil	Chromium VI, FOC, Chloride, Cyanide	RPD ≤20% water; ≤35% soil	Electrical Conductivity	RPD ≤10% water and soil	Evaluate laboratory QC, homogenization procedures and field collection technique. Contact the laboratory as soon as possible. Although specific regulatory guidance on field duplicate RPDs is not provided, it is generally acceptable to apply laboratory duplicate criteria, as an initial step. Site-specific considerations should be evaluated by the QP, beyond this (i.e.. soil heterogeneity, etc.) to assess the feasibility of wider criteria.
As with laboratory duplicates, meaningful RPDs can be calculated when the average of the two sample concentrations are greater than 5xRDL.																				
ABNs, PAHs, OC Pesticides, PCBs, Methyl Mercury	RPD ≤30% water ; ≤40%soil																			
PHCs	RPD ≤30% water and soil																			
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HWSB	RPD ≤40% water and soil																			
Chromium VI, FOC, Chloride, Cyanide	RPD ≤20% water; ≤35% soil																			
Electrical Conductivity	RPD ≤10% water and soil																			
Trip Blank A sample of analyte free media (supplied by the laboratory) taken to the site and returned to the laboratory unopened. The laboratory prepares the trip blank. A duplicate of the trip blank prepared at the same time is retained at the laboratory in a contaminant free location.	1 per VOC water submission. Identifies any potential cross-contamination that may occur from other samples, ambient conditions, or other sources that samples may be exposed.	Evaluate the impact on data for results >5x the RDL or that that approaches the concentration reported in the sample.		Analyze the laboratory trip blank duplicate retained by the laboratory.																
Trip Spike A sample prepared by the laboratory that is fortified with a known concentration of target analytes. This sample is shipped along with containers and is to be taken into the field, but returned unopened to the laboratory. Analysis is conducted and recoveries are reported expressed as a percentage.	1 per VOC water monitoring program. Monitors the breakdown or loss of analytes during the sampling process. Holding time, and temperature effects on concentration can be accessed.	<table><tr><td colspan="2">Usually volatile organics in water. May be applied to other analyses.</td></tr><tr><td>Majority of VOCs</td><td>60% - 130%</td></tr><tr><td>Vinyl Chloride, Bomomethane, Chloromethane, Freon-12, Acetone, MIK & MIBK</td><td>50% - 140%</td></tr></table>		Usually volatile organics in water. May be applied to other analyses.		Majority of VOCs	60% - 130%	Vinyl Chloride, Bomomethane, Chloromethane, Freon-12, Acetone, MIK & MIBK	50% - 140%	Review storage conditions, temperatures of samples upon receipt.										
Usually volatile organics in water. May be applied to other analyses.																				
Majority of VOCs	60% - 130%																			
Vinyl Chloride, Bomomethane, Chloromethane, Freon-12, Acetone, MIK & MIBK	50% - 140%																			
Field Blank Supplied by the laboratory and prepared in the field by filling container with analyte free water.	1 per VOC monitoring program Determines if the field or transporting environments have contaminated the sample.	<table><tr><td colspan="2">Applicable for most parameters.</td></tr><tr><td colspan="2">Evaluate the impact on data for results >5x the RDL or that that approaches the concentration reported in the sample.</td></tr></table>		Applicable for most parameters.		Evaluate the impact on data for results >5x the RDL or that that approaches the concentration reported in the sample.		Evaluate any hits found in the sample that were also found in the trip blank.												
Applicable for most parameters.																				
Evaluate the impact on data for results >5x the RDL or that that approaches the concentration reported in the sample.																				
Blind Known A purchased CRM (see above) or a sample previously analyzed by an accredited laboratory multiple times is submitted to the laboratory blind.	1 per remediation or large project. Evaluates laboratory accuracy and precision.	Ideal for long holding time tests such as metals in soil. Submission of the same blind known multiple times during a large project provides excellent monitoring of the laboratory precision and accuracy. Acceptable recovery ranges are provided by the supplier.		Contact the laboratory.																

SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2019

Page 1 of 2

Sample I.D.	MDL*	Test Hole TH103 - SS6	Duplicate of TH103 - SS6 TH1030 - SS6	RPD	Alert Limit
Depth (m)		2.7 to 3.4	2.7 to 3.4		
Soil Type		Sand	Sand		
Date of Sample Collection		5-Nov-18	5-Nov-18		
Date of Sample Analysis		12-Nov-18	12-Nov-18		
Certificate of Analysis Number		18T406864	18T406864		
Laboratory I.D.		9685165	9685169		
Benzene	0.02	<0.02	<0.02	nc	>30%
Toluene	0.02	<0.05	<0.05	nc	>30%
Ethylbenzene	0.05	<0.05	<0.05	nc	>30%
Xylene Mixture (Total)	0.05	<0.05	<0.05	nc	>30%
PHC F1 (C6 to C10) - BTEX	5	<5	<5	nc	>30%
PHC F2 (C10 to C16)	10	<10	<10	nc	>30%
PHC F3 (C16 to C34)	50	<50	<50	nc	>30%
PHC F4 (C34 to C50)	50	<50	<50	nc	>30%

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.

242474



SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

February 2019

Page 2 of 2

Sample I.D.	MDL*	Test Hole TH109S - SS1	Duplicate of TH109S - SS1 TH1090S - SS1	RPD	Alert Limit
Depth (m)		0.0 to 0.6	0.0 to 0.6		
Soil Type		Silty Clay	Silty Clay		
Date of Sample Collection		14-Nov-18	14-Nov-18		
Date of Sample Analysis		20-Nov-18	20-Nov-18		
Certificate of Analysis Number		18T410344	18T410344		
Laboratory I.D.		9709759	9709762		
Benzene	0.02	<0.02	<0.02	nc	>30%
Toluene	0.02	<0.05	<0.05	nc	>30%
Ethylbenzene	0.05	<0.05	<0.05	nc	>30%
Xylene Mixture (Total)	0.05	<0.05	<0.05	nc	>30%
PHC F1 (C6 to C10) - BTEX	5	<5	<5	nc	>30%
PHC F2 (C10 to C16)	10	<10	<10	nc	>30%
PHC F3 (C16 to C34)	50	<50	<50	nc	>30%
PHC F4 (C34 to C50)	50	<50	<50	nc	>30%

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.

242474



SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario
February 2019

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Sample I.D.	MDL*	Test Hole TH103 - SS6	Duplicate of TH103 - SS6 TH1030 - SS6	RPD	Alert Limit
Depth (m)		2.7 to 3.4	2.7 to 3.4		
Soil Type		Sand	Sand		
Date of Sample Collection		5-Nov-18	5-Nov-18		
Date of Sample Analysis		11-Nov-18	11-Nov-18		
Certificate of Analysis Number		18T406864	18T406864		
Laboratory I.D.		9685165	9685169		
1,1,1,2-Tetrachloroethane	0.04	<0.04	<0.04	nc	>50%
1,1,1-Trichloroethane	0.05	<0.05	<0.05	nc	>50%
1,1,2,2-Tetrachloroethane	0.05	<0.05	<0.05	nc	>50%
1,1,2-Trichloroethane	0.04	<0.04	<0.04	nc	>50%
1,1-Dichloroethane	0.02	<0.02	<0.02	nc	>50%
1,1-Dichloroethylene	0.05	<0.05	<0.05	nc	>50%
1,2-Dichlorobenzene	0.05	<0.05	<0.05	nc	>50%
1,2-Dichloroethane	0.03	<0.03	<0.03	nc	>50%
1,2-Dichloropropane	0.03	<0.03	<0.03	nc	>50%
1,3-Dichlorobenzene	0.05	<0.05	<0.05	nc	>50%
1,3-Dichloropropene	0.04	<0.04	<0.04	nc	>50%
1,4-Dichlorobenzene	0.05	<0.05	<0.05	nc	>50%
Acetone	0.50	<0.50	<0.50	nc	>50%
Benzene	0.02	<0.02	<0.02	nc	>50%
Bromodichloromethane	0.05	<0.05	<0.05	nc	>50%
Bromoform	0.05	<0.05	<0.05	nc	>50%
Bromomethane	0.05	<0.05	<0.05	nc	>50%
Carbon Tetrachloride	0.05	<0.05	<0.05	nc	>50%
Chlorobenzene	0.05	<0.05	<0.05	nc	>50%
Chloroform	0.04	<0.04	<0.04	nc	>50%
cis- 1,2-Dichloroethylene	0.02	<0.02	<0.02	nc	>50%
Dibromochloromethane	0.05	<0.05	<0.05	nc	>50%
Dichlorodifluoromethane	0.05	<0.05	<0.05	nc	>50%
Ethylbenzene	0.05	<0.05	<0.05	nc	>50%
Ethylene Dibromide	0.04	<0.04	<0.04	nc	>50%
Methyl Ethyl Ketone	0.50	<0.50	<0.50	nc	>50%
Methyl Isobutyl Ketone	0.50	<0.50	<0.50	nc	>50%
Methyl tert-butyl ether	0.05	<0.05	<0.05	nc	>50%
Methylene Chloride	0.05	<0.05	<0.05	nc	>50%
n-Hexane	0.05	<0.05	<0.05	nc	>50%
Styrene	0.05	<0.05	<0.05	nc	>50%
Tetrachloroethylene	0.05	0.44	0.58	27	>50%
Toluene	0.02	<0.05	<0.05	nc	>50%
trans- 1,2-Dichloroethylene	0.05	<0.05	<0.05	nc	>50%
Trichloroethylene	0.03	<0.03	<0.03	nc	>50%
Trichlorofluoromethane	0.05	<0.05	<0.05	nc	>50%
Vinyl Chloride	0.02	<0.02	<0.02	nc	>50%
Xylene Mixture	0.05	<0.05	<0.05	nc	>50%

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the Reporting Detection Limit (RDL).

Exceedences of alert limits are shown in **bold**.



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SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario
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Sample I.D.	MDL *	Test Hole TH109S - SS1	Duplicate of TH109S - SS1 TH1090S - SS1	RPD	Alert Limit
Depth (m)		0.0 to 0.6	0.0 to 0.6		
Soil Type		Silty Clay	Silty Clay		
Date of Sample Collection		14-Nov-18	14-Nov-18		
Date of Sample Analysis		20-Nov-18	20-Nov-18		
Certificate of Analysis Number		18T410344	18T410344		
Laboratory I.D.		9709759	9709762		
1,1,1,2-Tetrachloroethane	0.04	<0.04	<0.04	nc	>50%
1,1,1-Trichloroethane	0.05	<0.05	<0.05	nc	>50%
1,1,2,2-Tetrachloroethane	0.05	<0.05	<0.05	nc	>50%
1,1,2-Trichloroethane	0.04	<0.04	<0.04	nc	>50%
1,1-Dichloroethane	0.02	<0.02	<0.02	nc	>50%
1,1-Dichloroethylene	0.05	<0.05	<0.05	nc	>50%
1,2-Dichlorobenzene	0.05	<0.05	<0.05	nc	>50%
1,2-Dichloroethane	0.03	<0.03	<0.03	nc	>50%
1,2-Dichloropropane	0.03	<0.03	<0.03	nc	>50%
1,3-Dichlorobenzene	0.05	<0.05	<0.05	nc	>50%
1,3-Dichloropropene	0.04	<0.04	<0.04	nc	>50%
1,4-Dichlorobenzene	0.05	<0.05	<0.05	nc	>50%
Acetone	0.50	<0.50	<0.50	nc	>50%
Benzene	0.02	<0.02	<0.02	nc	>50%
Bromodichloromethane	0.05	<0.05	<0.05	nc	>50%
Bromoform	0.05	<0.05	<0.05	nc	>50%
Bromomethane	0.05	<0.05	<0.05	nc	>50%
Carbon Tetrachloride	0.05	<0.05	<0.05	nc	>50%
Chlorobenzene	0.05	<0.05	<0.05	nc	>50%
Chloroform	0.04	<0.04	<0.04	nc	>50%
cis- 1,2-Dichloroethylene	0.02	<0.02	<0.02	nc	>50%
Dibromochloromethane	0.05	<0.05	<0.05	nc	>50%
Dichlorodifluoromethane	0.05	<0.05	<0.05	nc	>50%
Ethylbenzene	0.05	<0.05	<0.05	nc	>50%
Ethylene Dibromide	0.04	<0.04	<0.04	nc	>50%
Methyl Ethyl Ketone	0.50	<0.50	<0.50	nc	>50%
Methyl Isobutyl Ketone	0.50	<0.50	<0.50	nc	>50%
Methyl tert-butyl ether	0.05	<0.05	<0.05	nc	>50%
Methylene Chloride	0.05	<0.05	<0.05	nc	>50%
n-Hexane	0.05	<0.05	<0.05	nc	>50%
Styrene	0.05	<0.05	<0.05	nc	>50%
Tetrachloroethylene	0.05	<0.05	<0.05	nc	>50%
Toluene	0.02	<0.05	<0.05	nc	>50%
trans- 1,2-Dichloroethylene	0.05	<0.05	<0.05	nc	>50%
Trichloroethylene	0.03	0.19	0.22	15	>50%
Trichlorofluoromethane	0.05	<0.05	<0.05	nc	>50%
Vinyl Chloride	0.02	<0.02	<0.02	nc	>50%
Xylene Mixture	0.05	<0.05	<0.05	nc	>50%

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the Reporting Detection Limit (RDL).

Exceedences of alert limits are shown in **bold**.



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SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Polycyclic Aromatic Hydrocarbons

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Sample I.D.	MDL*	Test Hole TH103 - SS2	Duplicate of TH103 - SS6 TH1030 - SS2	RPD	Alert Limit
Depth (m)		0.0 to 0.6	0.0 to 0.6		
Soil Type		Sand	Sand		
Date of Sample Collection		5-Nov-18	5-Nov-18		
Date of Sample Analysis		12-Nov-18	12-Nov-18		
Certificate of Analysis Number		18T406864	18T406864		
Laboratory I.D.		9685161	9685168		
2-and 1-methyl Naphthalene	0.05	<0.05	<0.05	nc	>40%
Acenaphthene	0.05	<0.05	<0.05	nc	>40%
Acenaphthylene	0.05	<0.05	<0.05	nc	>40%
Anthracene	0.05	<0.05	<0.05	nc	>40%
Benzo(a)anthracene	0.05	<0.05	<0.05	nc	>40%
Benzo(a)pyrene	0.05	<0.05	<0.05	nc	>40%
Benzo(b)fluoranthene	0.05	<0.05	<0.05	nc	>40%
Benzo(g,h,i)perylene	0.05	<0.05	<0.05	nc	>40%
Benzo(k)fluoranthene	0.05	<0.05	<0.05	nc	>40%
Chrysene	0.05	<0.05	<0.05	nc	>40%
Dibenzo(a,h)anthracene	0.05	<0.05	<0.05	nc	>40%
Fluoranthene	0.05	<0.05	<0.05	nc	>40%
Fluorene	0.05	<0.05	<0.05	nc	>40%
Indeno(1,2,3-cd)pyrene	0.05	<0.05	<0.05	nc	>40%
Naphthalene	0.05	<0.05	<0.05	nc	>40%
Phenanthrene	0.05	<0.05	<0.05	nc	>40%
Pyrene	0.05	<0.05	<0.05	nc	>40%

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

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Exceedences of alert limits are shown in **bold**.



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SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Polycyclic Aromatic Hydrocarbons

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Sample I.D.	MDL*	Test Hole TH109S - SS1	Duplicate of TH109S - SS1 TH1090S - SS1	RPD	Alert Limit
Depth (m)		0 to 0.6	0 to 0.6		
Soil Type		Silty Clay	Silty Clay		
Date of Sample Collection		14-Nov-18	14-Nov-18		
Date of Sample Analysis		20-Nov-18	20-Nov-18		
Certificate of Analysis Number		18T410344	18T410344		
Laboratory I.D.		9709759	9709762		
2-and 1-methyl Naphthalene	0.05	<0.05	<0.05	nc	>40%
Acenaphthene	0.05	<0.05	<0.05	nc	>40%
Acenaphthylene	0.05	<0.05	<0.05	nc	>40%
Anthracene	0.05	<0.05	<0.05	nc	>40%
Benzo(a)anthracene	0.05	<0.05	<0.05	nc	>40%
Benzo(a)pyrene	0.05	<0.05	<0.05	nc	>40%
Benzo(b)fluoranthene	0.05	<0.05	<0.05	nc	>40%
Benzo(g,h,i)perylene	0.05	<0.05	<0.05	nc	>40%
Benzo(k)fluoranthene	0.05	<0.05	<0.05	nc	>40%
Chrysene	0.05	<0.05	<0.05	nc	>40%
Dibenzo(a,h)anthracene	0.05	<0.05	<0.05	nc	>40%
Fluoranthene	0.05	<0.05	<0.05	nc	>40%
Fluorene	0.05	<0.05	<0.05	nc	>40%
Indeno(1,2,3-cd)pyrene	0.05	<0.05	<0.05	nc	>40%
Naphthalene	0.05	<0.05	<0.05	nc	>40%
Phenanthrene	0.05	<0.05	<0.05	nc	>40%
Pyrene	0.05	<0.05	<0.05	nc	>40%

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

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Exceedences of alert limits are shown in **bold**.



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SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Metals, Hydride-Forming Metals and Other Regulated Parameters

11 Yorkville Avenue, Toronto, Ontario
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Sample I.D.	MDL*	Test Hole TH103 - SS1	Duplicate of TH103 - SS1 TH1030 - SS1	RPD	Alert Limit
Depth (m)		0.0 to 0.6	0.0 to 0.6		
Soil Type		Sand	Sand		
Date of Sample Collection		5-Nov-18	5-Nov-18		
Date of Sample Analysis		12-Nov-18	12-Nov-18		
Certificate of Analysis Number		18T406864	18T406864		
Laboratory I.D.		9685160	9685167		
Antimony	0.8	<0.8	<0.8	nc	>30%
Arsenic	1	4	4	0	>30%
Barium	2	43	40	7	>30%
Beryllium	0.5	<0.5	<0.5	nc	>30%
Boron	5	7	7	0	>30%
Boron (Hot Water Soluble)	0.10	1.01	1.01	0	>40%
Cadmium	0.5	1.3	1.1	17	>30%
Chromium	2	9	9	0	>30%
Chromium VI	0.2	<0.2	<0.2	nc	>35%
Cobalt	0.5	3.5	3.4	3	>30%
Copper	1	13	15	14	>30%
Cyanide	0.040	<0.040	<0.040	nc	>35%
Lead	1	37	42	13	>30%
Mercury	0.10	0.14	0.13	7	>30%
Molybdenum	0.5	1.0	1.1	10	>30%
Nickel	1	7	7	0	>30%
Selenium	0.4	1.1	2.2	67	>30%
Silver	0.2	<0.2	<0.2	nc	>30%
Thallium	0.4	<0.4	<0.4	nc	>30%
Uranium	0.5	<0.5	<0.5	nc	>30%
Vanadium	1	15	16	6	>30%
Zinc	5	118	117	1	>30%
Electrical Conductivity (2:1)	0.005	1.38	1.56	12	>30%
Sodium Adsorption Ratio	NV	1.32	1.26	5	>30%

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the Reporting Detection Limit (RDL).

Exceedences of alert limits are shown in **bold**.



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SOIL FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Metals, Hydride-Forming Metals and Other Regulated Parameters

11 Yorkville Avenue, Toronto, Ontario

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Sample I.D.	MDL*	Test Hole TH109S - SS2	Duplicate of TH109S - SS2 TH1090S - SS2	RPD	Alert Limit
Depth (m)		0.6 to 1.2	0.6 to 1.2		
Soil Type		Silty Clay	Silty Clay		
Date of Sample Collection		14-Nov-18	14-Nov-18		
Date of Sample Analysis		20-Nov-18	20-Nov-18		
Certificate of Analysis Number		18T410344	18T410344		
Laboratory I.D.		9709760	9709763		
Antimony	0.8	<0.8	<0.8	nc	>30%
Arsenic	1	2	2	0	>30%
Barium	2	173	134	25	>30%
Beryllium	0.5	<0.5	<0.5	nc	>30%
Boron	5	8	7	13	>30%
Boron (Hot Water Soluble)	0.10	0.14	0.14	0	>40%
Cadmium	0.5	<0.5	<0.5	nc	>30%
Chromium	2	27	23	16	>30%
Chromium VI	0.2	<0.2	<0.2	nc	>35%
Cobalt	0.5	10.1	8.2	21	>30%
Copper	1	20	19	5	>30%
Cyanide	0.040	<0.040	<0.040	nc	>35%
Lead	1	8	8	0	>30%
Mercury	0.10	<0.10	<0.10	nc	>30%
Molybdenum	0.5	<0.5	<0.5	nc	>30%
Nickel	1	20	18	11	>30%
Selenium	0.4	<0.4	<0.4	nc	>30%
Silver	0.2	<0.2	<0.2	nc	>30%
Thallium	0.4	<0.4	<0.4	nc	>30%
Uranium	0.5	0.8	0.8	0	>30%
Vanadium	1	35	30	15	>30%
Zinc	5	58	46	23	>30%
Electrical Conductivity (2:1)	0.005	0.578	0.516	11	>30%
Sodium Adsorption Ratio	NV	2.00	2.02	1	>30%

NOTES:

Analysis by AGAT Laboratories.

All results in ppm (µg/g) and based on dry weight basis.

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'nc' means "not calculable", since one (or both) of the results are less than the Reporting Detection Limit (RDL).

Exceedences of alert limits are shown in **bold**.



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GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Petroleum Hydrocarbon Parameters

11 Yorkville Avenue, Toronto, Ontario

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Sample I.D.	MDL*	Monitor TH101S	Duplicate of TH101S TH1010S	RPD	Alert Limit
Depth (m)		0.6 to 3.7	0.6 to 3.7		
Date of Sample Collection		9-Nov-18	9-Nov-18		
Date of Sample Analysis		15-Nov-18	15-Nov-18		
Certificate of Analysis Number		18T408388	18T408388		
Laboratory I.D.		9696669	9696670		
Benzene	0.20	0.24	0.21	13	>30%
Toluene	0.20	<0.20	<0.20	nc	>30%
Ethylbenzene	0.10	<0.10	<0.10	nc	>30%
Xylene Mixture (Total)	0.20	<0.20	<0.20	nc	>30%
PHC F1 (C6 to C10) - BTEX	25	240	290	19	>30%
PHC F2 (C10 to C16)	100	<100	<100	nc	>30%
PHC F3 (C16 to C34)	100	<100	<100	nc	>30%
PHC F4 (C34 to C50)	100	<100	<100	nc	>30%

NOTES:

Analysis by Maxxam Analytics.

NA means 'not analyzed'.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.



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GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Petroleum Hydrocarbon Parameters

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Sample I.D.	MDL *	Monitor TH102	Duplicate of TH102 TH1020	RPD	Alert Limit
Depth (m)		0.6 to 3.7	0.6 to 3.7		
Date of Sample Collection		14-Nov-18	14-Nov-18		
Date of Sample Analysis		21-Nov-18	21-Nov-18		
Certificate of Analysis Number		18T410339	18T410339		
Laboratory I.D.		9710069	9710070		
Benzene	0.20	<0.20	<0.20	nc	>30%
Toluene	0.20	<0.20	<0.20	nc	>30%
Ethylbenzene	0.10	<0.10	<0.10	nc	>30%
Xylene Mixture (Total)	0.20	<0.20	<0.20	nc	>30%
PHC F1 (C6 to C10) - BTEX	25	<25	<25	nc	>30%
PHC F2 (C10 to C16)	100	<100	<100	nc	>30%
PHC F3 (C16 to C34)	100	<100	<100	nc	>30%
PHC F4 (C34 to C50)	100	<100	<100	nc	>30%

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.



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GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Petroleum Hydrocarbon Parameters

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Sample I.D.	MDL *	Monitor TH103	Duplicate of TH103 TH1030	RPD	Alert Limit
Depth (m)		1.2 to 4.3	1.2 to 4.3		
Date of Sample Collection		11-Dec-18	11-Dec-18		
Date of Sample Analysis		18-Dec-18	18-Dec-18		
Certificate of Analysis Number		18T420106	18T420106		
Laboratory I.D.		9783312	9783313		
Benzene	0.20	<0.20	<0.20	nc	>30%
Toluene	0.20	0.4	0.29	32	>30%
Ethylbenzene	0.10	<0.10	<0.10	nc	>30%
Xylene Mixture (Total)	0.20	1.5	0.74	68	>30%
PHC F1 (C6 to C10) - BTEX	25	<25	<25	nc	>30%
PHC F2 (C10 to C16)	100	<100	<100	nc	>30%
PHC F3 (C16 to C34)	100	<100	<100	nc	>30%
PHC F4 (C34 to C50)	100	<100	<100	nc	>30%

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.



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GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Volatile Organic Compounds

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Sample I.D.	MDL *	Monitor TH101S	Duplicate of TH101S TH1010S	RPD	Alert Limit
Depth (m)		0.6 to 3.7	0.6 to 3.7		
Date of Sample Collection		9-Nov-18	9-Nov-18		
Date of Sample Analysis		14-Nov-18	14-Nov-18		
Certificate of Analysis Number		18T408388	18T408388		
Laboratory I.D.		9696669	9696670		
1,1,1,2-Tetrachloroethane	0.10	<0.10	<0.10	nc	>30%
1,1,1-Trichloroethane	0.30	<0.30	<0.30	nc	>30%
1,1,2,2-Tetrachloroethane	0.10	<0.10	<0.10	nc	>30%
1,1,2-Trichloroethane	0.20	<0.20	<0.20	nc	>30%
1,1-Dichloroethane	0.30	<0.30	<0.30	nc	>30%
1,1-Dichloroethylene	0.30	5.4	4.8	12	>30%
1,2-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
1,2-Dichloroethane	0.20	<0.20	<0.20	nc	>30%
1,2-Dichloropropane	0.20	<0.20	<0.20	nc	>30%
1,3-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
1,3-Dichloropropene	0.30	<0.30	<0.30	nc	>30%
1,4-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
Acetone	1.0	<1.0	<1.0	nc	>30%
Benzene	0.20	0.24	0.21	13	>30%
Bromodichloromethane	0.20	<0.20	<0.20	nc	>30%
Bromoform	0.10	<0.10	<0.10	nc	>30%
Bromomethane	0.20	<0.20	<0.20	nc	>30%
Carbon Tetrachloride	0.20	<0.20	<0.20	nc	>30%
Chlorobenzene	0.10	<0.10	<0.10	nc	>30%
Chloroform	0.20	1.8	1.7	6	>30%
cis- 1,2-Dichloroethylene	0.20	460	390	16	>30%
Dibromochloromethane	0.10	<0.10	<0.10	nc	>30%
Dichlorodifluoromethane	0.20	<0.20	<0.20	nc	>30%
Ethylbenzene	0.10	<0.10	<0.10	nc	>30%
Ethylene Dibromide	0.10	<0.10	<0.10	nc	>30%
Methyl Ethyl Ketone	1.0	<1.0	<1.0	nc	>30%
Methyl Isobutyl Ketone	1.0	<1.0	<1.0	nc	>30%
Methyl tert-butyl ether	0.20	<0.20	<0.20	nc	>30%
Methylene Chloride	0.30	<0.30	<0.30	nc	>30%
n-Hexane	0.20	<0.20	<0.20	nc	>30%
Styrene	0.10	<0.10	<0.10	nc	>30%
Tetrachloroethylene	0.20	140	180	25	>30%
Toluene	0.20	<0.20	<0.20	nc	>30%
trans- 1,2-Dichloroethylene	0.20	240	270	12	>30%
Trichloroethylene	0.20	650	620	5	>30%
Trichlorofluoromethane	0.40	<0.40	<0.40	nc	>30%
Vinyl Chloride	0.17	11	10	10	>30%
Xylene Mixture	0.20	<0.20	<0.20	nc	>30%

NOTES:

Analysis by Maxxam Analytics.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.



242474

GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario
February 2019

Page 2 of 3

Sample I.D.	MDL*	Monitor TH102	Duplicate of TH102 TH1020	RPD	Alert Limit
Depth (m)		0.6 to 3.7	0.6 to 3.7		
Date of Sample Collection		14-Nov-18	14-Nov-18		
Date of Sample Analysis		21-Nov-18	21-Nov-18		
Certificate of Analysis Number		18T410339	18T410339		
Laboratory I.D.		9710069	9710070		
1,1,1,2-Tetrachloroethane	0.10	<0.10	<0.10	nc	>30%
1,1,1-Trichloroethane	0.30	<0.30	<0.30	nc	>30%
1,1,2,2-Tetrachloroethane	0.10	<0.10	<0.10	nc	>30%
1,1,2-Trichloroethane	0.20	<0.20	<0.20	nc	>30%
1,1-Dichloroethane	0.30	<0.30	<0.30	nc	>30%
1,1-Dichloroethylene	0.30	<0.30	<0.30	nc	>30%
1,2-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
1,2-Dichloroethane	0.20	<0.20	<0.20	nc	>30%
1,2-Dichloropropane	0.20	<0.20	<0.20	nc	>30%
1,3-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
1,3-Dichloropropene	0.30	<0.30	<0.30	nc	>30%
1,4-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
Acetone	1.0	<1.0	<1.0	nc	>30%
Benzene	0.20	<0.20	<0.20	nc	>30%
Bromodichloromethane	0.20	<0.20	<0.20	nc	>30%
Bromoform	0.10	<0.10	<0.10	nc	>30%
Bromomethane	0.20	<0.20	<0.20	nc	>30%
Carbon Tetrachloride	0.20	<0.20	<0.20	nc	>30%
Chlorobenzene	0.10	<0.10	<0.10	nc	>30%
Chloroform	0.20	0.28	0.29	4	>30%
cis- 1,2-Dichloroethylene	0.20	6.6	6.8	3	>30%
Dibromochloromethane	0.10	<0.10	<0.10	nc	>30%
Dichlorodifluoromethane	0.20	<0.20	<0.20	nc	>30%
Ethylbenzene	0.10	<0.10	<0.10	nc	>30%
Ethylene Dibromide	0.10	<0.10	<0.10	nc	>30%
Methyl Ethyl Ketone	1.0	<1.0	<1.0	nc	>30%
Methyl Isobutyl Ketone	1.0	<1.0	<1.0	nc	>30%
Methyl tert-butyl ether	0.20	<0.20	<0.20	nc	>30%
Methylene Chloride	0.30	<0.30	<0.30	nc	>30%
n-Hexane	0.20	<0.20	<0.20	nc	>30%
Styrene	0.10	<0.10	<0.10	nc	>30%
Tetrachloroethylene	0.20	1.6	1.6	0	>30%
Toluene	0.20	<0.20	<0.20	nc	>30%
trans- 1,2-Dichloroethylene	0.20	3.8	3.9	3	>30%
Trichloroethylene	0.20	3.5	3.5	0	>30%
Trichlorofluoromethane	0.40	<0.40	<0.40	nc	>30%
Vinyl Chloride	0.17	0.84	0.91	8	>30%
Xylene Mixture	0.20	<0.20	<0.20	nc	>30%

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.



242474

GROUND WATER FIELD DUPLICATES - RELATIVE PERCENT DIFFERENCES

Volatile Organic Compounds

11 Yorkville Avenue, Toronto, Ontario
February 2019

Page 3 of 3

Sample I.D.	MDL*	Monitor TH106D	Duplicate of TH106D TH1060D	RPD	Alert Limit
Depth (m)		16.2 to 19.2	16.2 to 19.2		
Date of Sample Collection		11-Dec-18	11-Dec-18		
Date of Sample Analysis		18-Dec-18	18-Dec-18		
Certificate of Analysis Number		18T420106	18T420106		
Laboratory I.D.		9783314	9783319		
1,1,1,2-Tetrachloroethane	0.10	<0.10	<0.10	nc	>30%
1,1,1-Trichloroethane	0.30	<0.30	<0.30	nc	>30%
1,1,2,2-Tetrachloroethane	0.10	<0.10	<0.10	nc	>30%
1,1,2-Trichloroethane	0.20	<0.20	<0.20	nc	>30%
1,1-Dichloroethane	0.30	<0.30	<0.30	nc	>30%
1,1-Dichloroethylene	0.30	<0.30	<0.30	nc	>30%
1,2-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
1,2-Dichloroethane	0.20	<0.20	<0.20	nc	>30%
1,2-Dichloropropane	0.20	<0.20	<0.20	nc	>30%
1,3-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
1,3-Dichloropropene	0.30	<0.30	<0.30	nc	>30%
1,4-Dichlorobenzene	0.10	<0.10	<0.10	nc	>30%
Acetone	1.0	<1.0	<1.0	nc	>30%
Benzene	0.20	<0.20	<0.20	nc	>30%
Bromodichloromethane	0.20	<0.20	<0.20	nc	>30%
Bromoform	0.10	<0.10	<0.10	nc	>30%
Bromomethane	0.20	<0.20	<0.20	nc	>30%
Carbon Tetrachloride	0.20	<0.20	<0.20	nc	>30%
Chlorobenzene	0.10	<0.10	<0.10	nc	>30%
Chloroform	0.20	0.32	0.31	3	>30%
cis- 1,2-Dichloroethylene	0.20	<0.20	<0.20	nc	>30%
Dibromochloromethane	0.10	<0.10	<0.10	nc	>30%
Dichlorodifluoromethane	0.20	<0.20	<0.20	nc	>30%
Ethylbenzene	0.10	<0.10	<0.10	nc	>30%
Ethylene Dibromide	0.10	<0.10	<0.10	nc	>30%
Methyl Ethyl Ketone	1.0	<1.0	<1.0	nc	>30%
Methyl Isobutyl Ketone	1.0	<1.0	<1.0	nc	>30%
Methyl tert-butyl ether	0.20	<0.20	<0.20	nc	>30%
Methylene Chloride	0.30	<0.30	<0.30	nc	>30%
n-Hexane	0.20	0.71	0.60	17	>30%
Styrene	0.10	<0.10	<0.10	nc	>30%
Tetrachloroethylene	0.20	<0.20	<0.20	nc	>30%
Toluene	0.20	0.32	0.31	3	>30%
trans- 1,2-Dichloroethylene	0.20	<0.20	<0.20	nc	>30%
Trichloroethylene	0.20	<0.20	<0.20	nc	>30%
Trichlorofluoromethane	0.40	<0.40	<0.40	nc	>30%
Vinyl Chloride	0.17	<0.17	<0.17	nc	>30%
Xylene Mixture	0.20	<0.20	<0.20	nc	>30%

NOTES:

Analysis by AGAT Laboratories.

All results in ppb (µg/L).

* Minimum Analytical Reporting Detection Limit (MDL) is listed. Refer to individual Certificate of Analyses for sample-specific Reporting Detection Limit (RDL) value.

'nc' means "not calculable", since one (or both) of the results are less than the RDL.

Exceedences of alert limits are shown in **bold**.



242474

*Client: 11 Yorkville Partners Inc.
Project Name: Phase Two Environmental Site Assessment Update
11 Yorkville Avenue, Toronto, Ontario
Project Number: MRK-00242474-A0
Date: February 28, 2019*

Appendix G: Laboratory Certificates of Analysis



CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-00242474-A0-010

AGAT WORK ORDER: 18T406864

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Nov 14, 2018

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: Revised report issued November 22, 2018.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V2)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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.

Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request

Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION:		TH103 - SS1	TH1030 - SS1	TH104 - SS1	TH101S - SS1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-05	2018-11-05	2018-11-06
Parameter	Unit	G / S	RDL	9685160	9685167	9685170	9685174
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	4	4	2	2
Barium	µg/g	390	2	43	40	30	15
Beryllium	µg/g	5	0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/g	120	5	7	7	<5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	1.01	1.01	0.54	<0.10
Cadmium	µg/g	1.2	0.5	1.3	1.1	<0.5	<0.5
Chromium	µg/g	160	2	9	9	8	5
Cobalt	µg/g	22	0.5	3.5	3.4	3.0	2.5
Copper	µg/g	180	1	13	15	7	5
Lead	µg/g	120	1	37	42	19	3
Molybdenum	µg/g	6.9	0.5	1.0	1.1	<0.5	<0.5
Nickel	µg/g	130	1	7	7	6	4
Selenium	µg/g	2.4	0.4	1.1	2.2	<0.4	0.4
Silver	µg/g	25	0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	µg/g	86	1	15	16	16	11
Zinc	µg/g	340	5	118	117	201	13
Chromium VI	µg/g	10	0.2	<0.2	<0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	1.8	0.10	0.14	0.13	<0.10	<0.10
Electrical Conductivity	mS/cm	0.7	0.005	1.38	1.56	1.14	0.234
Sodium Adsorption Ratio	NA	5	NA	1.32	1.26	0.600	1.43
pH, 2:1 CaCl2 Extraction	pH Units		NA	8.27	8.32	8.01	9.04

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9685160-9685174 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)

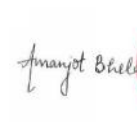
DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION: TH103 - SS3		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 2018-11-05		
Parameter	Unit	G / S	RDL	9685162
Antimony	µg/g	7.5	0.8	<0.8
Arsenic	µg/g	18	1	<1
Barium	µg/g	390	2	15
Beryllium	µg/g	5	0.5	<0.5
Boron	µg/g	120	5	<5
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	160	2	3
Cobalt	µg/g	22	0.5	1.2
Copper	µg/g	180	1	2
Lead	µg/g	120	1	2
Molybdenum	µg/g	6.9	0.5	<0.5
Nickel	µg/g	130	1	3
Selenium	µg/g	2.4	0.4	<0.4
Silver	µg/g	25	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	23	0.5	<0.5
Vanadium	µg/g	86	1	7
Zinc	µg/g	340	5	8

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.
Analysis performed at AGAT Toronto (unless marked by *)

Certified By:






Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION:		TH103 - SS3	TH104 - SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-05
Parameter	Unit	G / S	RDL	9685162	9685171
Electrical Conductivity	mS/cm	0.7	0.005	0.288	0.278

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9685162-9685171 EC was determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).
Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

SAMPLE DESCRIPTION: TH104 - SS3

SAMPLE TYPE: Soil

DATE SAMPLED: 2018-11-05

Parameter	Unit	G / S	RDL	9685171
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.91

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

9685171 pH was determined on the 0.01M CaCl₂ extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Particle Size by Sieve (Wet)

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION:		TH103 - SS4	TH103 - SS8
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-05
Parameter	Unit	G / S	RDL	9685163	9685164
Sieve Analysis - 75 µm (retained)	%		NA	4.10	91.2
Sieve Analysis - 75 µm (passing)	%		NA	95.90	8.8
Soil Texture (Toronto)				Fine	Coarse

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

9685163-9685164 Value reported is the amount of sample passing through or retained on sieve after wash with water and represents proportion by weight particles smaller or larger than indicated sieve size.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION:		TH103 - SS2	TH1030 - SS2	TH104 - SS1	TH101S - SS1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-05	2018-11-05	2018-11-06
Parameter	Unit	G / S	RDL	9685161	9685168	9685170	9685174
Naphthalene	µg/g	0.75	0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.17	0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	58	0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	69	0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	7.8	0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.74	0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.63	0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7.8	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.48	0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	7.8	0.05	<0.05	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	3.4	0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	8.7	10.0	16.1	20.8
Surrogate	Unit	Acceptable Limits					
Chrysene-d12	%	50-140		93	88	89	93

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9685161-9685174 Results are based on the dry weight of the soil.

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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:


Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION:		TH103 - SS6	TH1030 - SS6	TH104 - SS4
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-05	2018-11-06
Parameter	Unit	G / S	RDL	9685165	9685169	9685172
F1 (C6 to C10)	µg/g	65	5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	65	5	<5	<5	<5
F2 (C10 to C16)	µg/g	150	10	<10	<10	<10
F3 (C16 to C34)	µg/g	1300	50	<50	<50	<50
F4 (C34 to C50)	µg/g	5600	50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	5600	50	NA	NA	NA
Moisture Content	%		0.1	18.7	16.3	16.2
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140		77	90	94

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9685165-9685172 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:




Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

SAMPLE DESCRIPTION: TH101S - SS1

SAMPLE TYPE: Soil

DATE SAMPLED: 2018-11-06

Parameter	Unit	G / S	RDL	9685174
F1 (C6 to C10)	µg/g	65	5	<5
F1 (C6 to C10) minus BTEX	µg/g	65	5	<5
F2 (C10 to C16)	µg/g	150	10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10
F3 (C16 to C34)	µg/g	1300	50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50
F4 (C34 to C50)	µg/g	5600	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	5600	50	NA
Moisture Content	%		0.1	20.8
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140		106

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9685174 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
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.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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:

N Popmukolof



Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

Parameter	Unit	SAMPLE DESCRIPTION:		TH103 - SS7	TH101S - SS4
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-06
		G / S	RDL	9685166	9685176
Dichlorodifluoromethane	µg/g	25	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.022	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	5.8	0.05	<0.05	<0.05
Acetone	ug/g	28	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.96	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.75	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	1.4	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	11	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	44	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	30	0.02	<0.02	<0.02
Chloroform	ug/g	0.18	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	3.4	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.12	0.05	<0.05	<0.05
Benzene	ug/g	0.17	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.085	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.52	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	4.3	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	6	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	2.3	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.7	0.05	<0.05	<0.05
Ethylbenzene	ug/g	15	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

5835 COOPERS AVENUE
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION:		TH103 - SS7	TH101S - SS4
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-06
Parameter	Unit	G / S	RDL	9685166	9685176
Bromoform	ug/g	0.26	0.05	<0.05	<0.05
Styrene	ug/g	2.2	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	6	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.097	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	4.3	0.05	<0.05	<0.05
Xylene Mixture	ug/g	25	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.083	0.04	<0.04	<0.04
n-Hexane	µg/g	34	0.05	<0.05	<0.05
Moisture Content	%		0.1	23.5	20.6
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		101	99
4-Bromofluorobenzene	% Recovery	50-140		92	96

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9685166-9685176 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:




Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

Parameter	Unit	SAMPLE DESCRIPTION:		TH103 - SS6	TH1030 - SS6	TH104 - SS4	TH101S - SS1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-05	2018-11-06	2018-11-06
		G / S	RDL	9685165	9685169	9685172	9685174
Dichlorodifluoromethane	µg/g	25	0.05	<0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.022	0.02	<0.02	<0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	5.8	0.05	<0.05	<0.05	<0.05	<0.05
Acetone	ug/g	28	0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.96	0.05	<0.05	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.75	0.05	<0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	1.4	0.05	<0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	11	0.02	<0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	44	0.50	<0.50	<0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	30	0.02	<0.02	<0.02	<0.02	0.13
Chloroform	ug/g	0.18	0.04	<0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	3.4	0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.12	0.05	<0.05	<0.05	<0.05	<0.05
Benzene	ug/g	0.17	0.02	<0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.085	0.03	<0.03	<0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.52	0.03	<0.03	<0.03	<0.03	1.2
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	4.3	0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Toluene	ug/g	6	0.05	<0.05	<0.05	<0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	2.3	0.05	0.44	0.58	0.44	2.7
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.7	0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g	15	0.05	<0.05	<0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-07

DATE REPORTED: 2018-11-14

Parameter	Unit	SAMPLE DESCRIPTION:		TH103 - SS6	TH1030 - SS6	TH104 - SS4	TH101S - SS1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil
		DATE SAMPLED:		2018-11-05	2018-11-05	2018-11-06	2018-11-06
		G / S	RDL	9685165	9685169	9685172	9685174
Bromoform	ug/g	0.26	0.05	<0.05	<0.05	<0.05	<0.05
Styrene	ug/g	2.2	0.05	<0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	6	0.05	<0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.097	0.05	<0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	4.3	0.05	<0.05	<0.05	<0.05	<0.05
Xylene Mixture	ug/g	25	0.05	<0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.083	0.04	<0.04	<0.04	<0.04	<0.04
n-Hexane	µg/g	34	0.05	<0.05	<0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits					
Toluene-d8	% Recovery	50-140		96	95	97	93
4-Bromofluorobenzene	% Recovery	50-140		84	83	87	83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9685165-9685174 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Guideline Violation

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9685160	TH103 - SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cadmium	µg/g	1.2	1.3
9685160	TH103 - SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.7	1.38
9685167	TH1030 - SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.7	1.56
9685170	TH104 - SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.7	1.14
9685174	TH101S - SS1	ON T3 S RPI MFT	O. Reg. 153(511) - VOCs (Soil)	Tetrachloroethylene	ug/g	2.3	2.7
9685174	TH101S - SS1	ON T3 S RPI MFT	O. Reg. 153(511) - VOCs (Soil)	Trichloroethylene	ug/g	0.52	1.2

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T406864

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Soil Analysis															
RPT Date: Nov 14, 2018			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) - Metals & Inorganics (Soil)

Antimony	9686498		<0.8	<0.8	NA	< 0.8	102%	70%	130%	82%	80%	120%	98%	70%	130%
Arsenic	9686498		2	2	NA	< 1	107%	70%	130%	100%	80%	120%	109%	70%	130%
Barium	9686498		19	19	0.0%	< 2	103%	70%	130%	101%	80%	120%	107%	70%	130%
Beryllium	9686498		<0.5	<0.5	NA	< 0.5	86%	70%	130%	104%	80%	120%	104%	70%	130%
Boron	9686498		<5	<5	NA	< 5	94%	70%	130%	103%	80%	120%	101%	70%	130%
Boron (Hot Water Soluble)	9685160	9685160	1.01	0.99	2.0%	< 0.10	104%	60%	140%	103%	70%	130%	105%	60%	140%
Cadmium	9686498		<0.5	<0.5	NA	< 0.5	98%	70%	130%	104%	80%	120%	105%	70%	130%
Chromium	9686498		5	5	NA	< 2	89%	70%	130%	107%	80%	120%	112%	70%	130%
Cobalt	9686498		1.9	2.0	NA	< 0.5	98%	70%	130%	110%	80%	120%	112%	70%	130%
Copper	9686498		4	4	NA	< 1	91%	70%	130%	114%	80%	120%	119%	70%	130%
Lead	9686498		7	7	0.0%	< 1	106%	70%	130%	106%	80%	120%	107%	70%	130%
Molybdenum	9686498		<0.5	<0.5	NA	< 0.5	106%	70%	130%	106%	80%	120%	111%	70%	130%
Nickel	9686498		3	3	NA	< 1	93%	70%	130%	105%	80%	120%	103%	70%	130%
Selenium	9686498		<0.4	2.2	NA	< 0.4	98%	70%	130%	96%	80%	120%	107%	70%	130%
Silver	9686498		<0.2	<0.2	NA	< 0.2	118%	70%	130%	111%	80%	120%	103%	70%	130%
Thallium	9686498		<0.4	<0.4	NA	< 0.4	100%	70%	130%	100%	80%	120%	101%	70%	130%
Uranium	9686498		<0.5	<0.5	NA	< 0.5	101%	70%	130%	99%	80%	120%	102%	70%	130%
Vanadium	9686498		10	10	0.0%	< 1	96%	70%	130%	106%	80%	120%	113%	70%	130%
Zinc	9686498		29	30	3.4%	< 5	99%	70%	130%	111%	80%	120%	120%	70%	130%
Chromium VI	9685170	9685170	<0.2	<0.2	NA	< 0.2	73%	70%	130%	100%	80%	120%	106%	70%	130%
Cyanide	9691183		<0.040	<0.040	NA	< 0.040	97%	70%	130%	93%	80%	120%	103%	70%	130%
Mercury	9686498		<0.10	<0.10	NA	< 0.10	102%	70%	130%	94%	80%	120%	100%	70%	130%
Electrical Conductivity	9685160	9685160	1.38	1.38	0.0%	< 0.005	94%	90%	110%	NA			NA		
Sodium Adsorption Ratio	9685160	9685160	1.32	1.29	2.3%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	9685171	9685171	7.91	8.02	1.4%	NA	101%	80%	120%	NA			NA		

Particle Size by Sieve (Wet)

Sieve Analysis - 75 µm (retained)	9685163	9685163	4.10	4.14	1.0%	NA	98%	70%	130%						
Sieve Analysis - 75 µm (passing)	9685163	9685163	95.90	95.86	0.0%	NA	NA	70%	130%						

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)

Antimony	9685162	9685162	< 0.8	<0.8	NA	< 0.8	116%	70%	130%	99%	80%	120%	91%	70%	130%
Arsenic	9685162	9685162	< 1	<1	NA	< 1	99%	70%	130%	102%	80%	120%	98%	70%	130%
Barium	9685162	9685162	15	16	6.5%	< 2	103%	70%	130%	101%	80%	120%	96%	70%	130%
Beryllium	9685162	9685162	< 0.5	<0.5	NA	< 0.5	79%	70%	130%	114%	80%	120%	98%	70%	130%
Boron	9685162	9685162	< 5	<5	NA	< 5	73%	70%	130%	115%	80%	120%	102%	70%	130%
Cadmium	9685162	9685162	< 0.5	<0.5	NA	< 0.5	102%	70%	130%	101%	80%	120%	93%	70%	130%

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T406864

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Soil Analysis (Continued)

RPT Date: Nov 14, 2018			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
Chromium	9685162	9685162	3	3	NA	< 2	76%	70%	130%	92%	80%	120%	107%	70%	130%
Cobalt	9685162	9685162	1.2	1.1	NA	< 0.5	84%	70%	130%	96%	80%	120%	83%	70%	130%
Copper	9685162	9685162	2	2	NA	< 1	91%	70%	130%	103%	80%	120%	90%	70%	130%
Lead	9685162	9685162	2	2	NA	< 1	104%	70%	130%	94%	80%	120%	93%	70%	130%
Molybdenum	9685162	9685162	< 0.5	<0.5	NA	< 0.5	100%	70%	130%	103%	80%	120%	92%	70%	130%
Nickel	9685162	9685162	3	3	NA	< 1	91%	70%	130%	94%	80%	120%	82%	70%	130%
Selenium	9685162	9685162	< 0.4	< 0.4	NA	< 0.4	94%	70%	130%	105%	80%	120%	98%	70%	130%
Silver	9685162	9685162	< 0.2	<0.2	NA	< 0.2	99%	70%	130%	109%	80%	120%	95%	70%	130%
Thallium	9685162	9685162	< 0.4	<0.4	NA	< 0.4	85%	70%	130%	100%	80%	120%	96%	70%	130%
Uranium	9685162	9685162	< 0.5	<0.5	NA	< 0.5	96%	70%	130%	101%	80%	120%	99%	70%	130%
Vanadium	9685162	9685162	7	7	0.0%	< 1	88%	70%	130%	93%	80%	120%	84%	70%	130%
Zinc	9685162	9685162	8	7	NA	< 5	96%	70%	130%	107%	80%	120%	92%	70%	130%

O. Reg. 153(511) - ORPs (Soil)

Electrical Conductivity	9685162	9685162	0.288	0.301	4.4%	< 0.005	98%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

Certified By:



Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T406864

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Trace Organics Analysis

RPT Date: Nov 14, 2018			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) - PAHs (Soil)

Naphthalene	9655282		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	95%	50%	140%	94%	50%	140%
Acenaphthylene	9655282		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	96%	50%	140%	93%	50%	140%
Acenaphthene	9655282		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	93%	50%	140%	89%	50%	140%
Fluorene	9655282		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	93%	50%	140%	89%	50%	140%
Phenanthrene	9655282		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	84%	50%	140%	86%	50%	140%
Anthracene	9655282		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	99%	50%	140%	85%	50%	140%
Fluoranthene	9655282		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	94%	50%	140%	82%	50%	140%
Pyrene	9655282		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	95%	50%	140%	81%	50%	140%
Benz(a)anthracene	9655282		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	89%	50%	140%	93%	50%	140%
Chrysene	9655282		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	87%	50%	140%	91%	50%	140%
Benzo(b)fluoranthene	9655282		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	90%	50%	140%	94%	50%	140%
Benzo(k)fluoranthene	9655282		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	88%	50%	140%	93%	50%	140%
Benzo(a)pyrene	9655282		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	98%	50%	140%	94%	50%	140%
Indeno(1,2,3-cd)pyrene	9655282		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	95%	50%	140%	85%	50%	140%
Dibenz(a,h)anthracene	9655282		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	99%	50%	140%	91%	50%	140%
Benzo(g,h,i)perylene	9655282		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	97%	50%	140%	89%	50%	140%
2-and 1-methyl Naphthalene	9655282		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	98%	50%	140%	97%	50%	140%

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

Dichlorodifluoromethane	9685790		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	124%	50%	140%	113%	50%	140%
Vinyl Chloride	9685790		< 0.02	< 0.02	NA	< 0.02	85%	50%	140%	125%	50%	140%	110%	50%	140%
Bromomethane	9685790		< 0.05	< 0.05	NA	< 0.05	79%	50%	140%	116%	50%	140%	110%	50%	140%
Trichlorofluoromethane	9685790		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	105%	50%	140%	114%	50%	140%
Acetone	9685790		< 0.50	< 0.50	NA	< 0.50	123%	50%	140%	109%	50%	140%	103%	50%	140%
1,1-Dichloroethylene	9685790		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	91%	60%	130%	107%	50%	140%
Methylene Chloride	9685790		< 0.05	< 0.05	NA	< 0.05	124%	50%	140%	126%	60%	130%	108%	50%	140%
Trans- 1,2-Dichloroethylene	9685790		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	86%	60%	130%	86%	50%	140%
Methyl tert-butyl Ether	9685790		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	99%	60%	130%	85%	50%	140%
1,1-Dichloroethane	9685790		< 0.02	< 0.02	NA	< 0.02	99%	50%	140%	84%	60%	130%	98%	50%	140%
Methyl Ethyl Ketone	9685790		< 0.50	< 0.50	NA	< 0.50	103%	50%	140%	86%	50%	140%	99%	50%	140%
Cis- 1,2-Dichloroethylene	9685790		< 0.02	< 0.02	NA	< 0.02	109%	50%	140%	79%	60%	130%	96%	50%	140%
Chloroform	9685790		< 0.04	< 0.04	NA	< 0.04	116%	50%	140%	79%	60%	130%	97%	50%	140%
1,2-Dichloroethane	9685790		< 0.03	< 0.03	NA	< 0.03	75%	50%	140%	75%	60%	130%	90%	50%	140%
1,1,1-Trichloroethane	9685790		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	74%	60%	130%	89%	50%	140%
Carbon Tetrachloride	9685790		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	86%	60%	130%	90%	50%	140%
Benzene	9685790		< 0.02	< 0.02	NA	< 0.02	85%	50%	140%	82%	60%	130%	96%	50%	140%
1,2-Dichloropropane	9685790		< 0.03	< 0.03	NA	< 0.03	92%	50%	140%	76%	60%	130%	88%	50%	140%
Trichloroethylene	9685790		< 0.03	< 0.03	NA	< 0.03	87%	50%	140%	80%	60%	130%	94%	50%	140%
Bromodichloromethane	9685790		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	83%	60%	130%	79%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T406864

PROJECT: MRK-00242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Nov 14, 2018			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
Methyl Isobutyl Ketone	9685790		< 0.50	< 0.50	NA	< 0.50	87%	50%	140%	75%	50%	140%	83%	50%	140%
1,1,2-Trichloroethane	9685790		< 0.04	< 0.04	NA	< 0.04	100%	50%	140%	89%	60%	130%	102%	50%	140%
Toluene	9685790		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	104%	60%	130%	101%	50%	140%
Dibromochloromethane	9685790		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	83%	60%	130%	79%	50%	140%
Ethylene Dibromide	9685790		< 0.04	< 0.04	NA	< 0.04	87%	50%	140%	79%	60%	130%	93%	50%	140%
Tetrachloroethylene	9685790		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	102%	60%	130%	101%	50%	140%
1,1,1,2-Tetrachloroethane	9685790		< 0.04	< 0.04	NA	< 0.04	81%	50%	140%	77%	60%	130%	91%	50%	140%
Chlorobenzene	9685790		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	97%	60%	130%	112%	50%	140%
Ethylbenzene	9685790		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	97%	60%	130%	113%	50%	140%
m & p-Xylene	9685790		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	104%	60%	130%	123%	50%	140%
Bromoform	9685790		< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	97%	60%	130%	73%	50%	140%
Styrene	9685790		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	86%	60%	130%	93%	50%	140%
1,1,2,2-Tetrachloroethane	9685790		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	80%	60%	130%	103%	50%	140%
o-Xylene	9685790		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	102%	60%	130%	119%	50%	140%
1,3-Dichlorobenzene	9685790		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	88%	60%	130%	103%	50%	140%
1,4-Dichlorobenzene	9685790		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	93%	60%	130%	110%	50%	140%
1,2-Dichlorobenzene	9685790		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	86%	60%	130%	99%	50%	140%
1,3-Dichloropropene	9685790		< 0.04	< 0.04	NA	< 0.04	96%	50%	140%	78%	60%	130%	87%	50%	140%
n-Hexane	9685790		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	97%	60%	130%	88%	50%	140%

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

F1 (C6 to C10)	9685790		< 5	< 5	NA	< 5	85%	60%	130%	89%	85%	115%	88%	70%	130%
F2 (C10 to C16)	9680411		< 10	< 10	NA	< 10	104%	60%	130%	81%	80%	120%	103%	70%	130%
F3 (C16 to C34)	9680411		< 50	< 50	NA	< 50	103%	60%	130%	96%	80%	120%	106%	70%	130%
F4 (C34 to C50)	9680411		< 50	< 50	NA	< 50	98%	60%	130%	99%	80%	120%	94%	70%	130%

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).

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

Dichlorodifluoromethane	9716701		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	82%	50%	140%	85%	50%	140%
Vinyl Chloride	9716701		< 0.02	< 0.02	NA	< 0.02	98%	50%	140%	85%	50%	140%	93%	50%	140%
Bromomethane	9716701		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	102%	50%	140%	104%	50%	140%
Trichlorofluoromethane	9716701		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	113%	50%	140%	108%	50%	140%
Acetone	9716701		< 0.50	< 0.50	NA	< 0.50	115%	50%	140%	112%	50%	140%	114%	50%	140%
1,1-Dichloroethylene	9716701		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	95%	60%	130%	85%	50%	140%
Methylene Chloride	9716701		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	116%	60%	130%	116%	50%	140%
Trans- 1,2-Dichloroethylene	9716701		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	102%	60%	130%	85%	50%	140%
Methyl tert-butyl Ether	9716701		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	114%	60%	130%	108%	50%	140%
1,1-Dichloroethane	9716701		< 0.02	< 0.02	NA	< 0.02	80%	50%	140%	78%	60%	130%	100%	50%	140%
Methyl Ethyl Ketone	9716701		< 0.50	< 0.50	NA	< 0.50	107%	50%	140%	111%	50%	140%	84%	50%	140%
Cis- 1,2-Dichloroethylene	9716701		< 0.02	< 0.02	NA	< 0.02	98%	50%	140%	90%	60%	130%	80%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T406864

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Nov 14, 2018			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
Chloroform	9716701		< 0.04	< 0.04	NA	< 0.04	96%	50%	140%	93%	60%	130%	79%	50%	140%
1,2-Dichloroethane	9716701		< 0.03	< 0.03	NA	< 0.03	96%	50%	140%	88%	60%	130%	89%	50%	140%
1,1,1-Trichloroethane	9716701		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	78%	60%	130%	75%	50%	140%
Carbon Tetrachloride	9716701		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	79%	60%	130%	80%	50%	140%
Benzene	9716701		< 0.02	< 0.02	NA	< 0.02	108%	50%	140%	91%	60%	130%	82%	50%	140%
1,2-Dichloropropane	9716701		< 0.03	< 0.03	NA	< 0.03	80%	50%	140%	83%	60%	130%	92%	50%	140%
Trichloroethylene	9716701		< 0.03	< 0.03	NA	< 0.03	89%	50%	140%	90%	60%	130%	103%	50%	140%
Bromodichloromethane	9716701		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	110%	60%	130%	93%	50%	140%
Methyl Isobutyl Ketone	9716701		< 0.50	< 0.50	NA	< 0.50	107%	50%	140%	80%	50%	140%	88%	50%	140%
1,1,2-Trichloroethane	9716701		< 0.04	< 0.04	NA	< 0.04	114%	50%	140%	100%	60%	130%	87%	50%	140%
Toluene	9716701		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	118%	60%	130%	85%	50%	140%
Dibromochloromethane	9716701		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	80%	60%	130%	83%	50%	140%
Ethylene Dibromide	9716701		< 0.04	< 0.04	NA	< 0.04	91%	50%	140%	80%	60%	130%	92%	50%	140%
Tetrachloroethylene	9716701		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	118%	60%	130%	81%	50%	140%
1,1,1,2-Tetrachloroethane	9716701		< 0.04	< 0.04	NA	< 0.04	99%	50%	140%	78%	60%	130%	83%	50%	140%
Chlorobenzene	9716701		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	112%	60%	130%	81%	50%	140%
Ethylbenzene	9716701		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	112%	60%	130%	76%	50%	140%
m & p-Xylene	9716701		< 0.05	< 0.05	NA	< 0.05	118%	50%	140%	122%	60%	130%	87%	50%	140%
Bromoform	9716701		< 0.05	< 0.05	NA	< 0.05	72%	50%	140%	75%	60%	130%	78%	50%	140%
Styrene	9716701		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	90%	60%	130%	79%	50%	140%
1,1,2,2-Tetrachloroethane	9716701		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	100%	60%	130%	88%	50%	140%
o-Xylene	9716701		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	119%	60%	130%	85%	50%	140%
1,3-Dichlorobenzene	9716701		< 0.05	< 0.05	NA	< 0.05	118%	50%	140%	100%	60%	130%	75%	50%	140%
1,4-Dichlorobenzene	9716701		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	108%	60%	130%	76%	50%	140%
1,2-Dichlorobenzene	9716701		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	99%	60%	130%	80%	50%	140%
1,3-Dichloropropene	9716701		< 0.04	< 0.04	NA	< 0.04	78%	50%	140%	88%	60%	130%	88%	50%	140%
n-Hexane	9716701		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	115%	60%	130%	82%	50%	140%

Certified By:



Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T406864

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	pH METER
Sieve Analysis - 75 µm (retained)	INOR-93-6065	ASTM D1140	SIEVE
Sieve Analysis - 75 µm (passing)	INOR-93-6065	ASTM D1140	SIEVE

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T406864

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T406864

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE



Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: EXP Services Inc.
Contact: Leah Whittaker
Address: 220 Commerce Valley Dr W
Suite 110, Markham
905 695 3217 Fax: _____
Reports to be sent to:
1. Email: leah.whittaker@exp.com
2. Email: andrea.fernandes@exp.com

Project Information:

Project: MRK-00242474-A0-010
Site Location: _____
Sampled By: AF
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04

☐ Sewer Use

☐ Regulation 558

Table 3

Indicate One

☐ Ind/Com

☐ Sanitary

☐ CCME

☒ Res/Park

☐ Storm

☐ Prov. Water Quality Objectives (PWQO)

☐ Agriculture

Soil Texture (Check One)

Region

☐ Other

☐ Coarse

☐ MISA

Indicate One

☒ Fine

Is this submission for a
Record of Site Condition?

☐ Yes ☐ No

Report Guideline on
Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CrVI

0. Reg 153

Metals and Inorganics

☐ All Metals ☐ 153 Metals (excl. Hydrides)

☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN

☐ C²⁺ ☐ EC ☐ FOC ☐ Hg

☐ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKN

☐ NO₃ ☐ NO₂ ☐ NO₂+NO₃

Volatiles: ☒ VOC ☐ BTEX ☐ THM

PHCs F1 - F4

ABNs

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ Bi(a)P ☐ PCBs

Sewer Use

grain size

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Metals and Inorganics	Regulation/Custom Metals	Nutrients	Volatiles	PHCs F1 - F4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use	grain size
TH103-SS1	Nov 5/18	AM	1	S			X											
TH103-SS2		↓	1															
TH103-SS3		PM	2		on hold		X											
TH103-SS4			1															
TH103-SS8			1															
TH103-SS6			2															
TH103-SS7		↓	2		on hold													
TH1030-SS1		AM	1				X											
TH1030-SS2		↓	1															
TH1030-SS6		PM	2															
TH104-SS1	Nov 5/18	PM	2				X											

Samples Relinquished By (Print Name and Sign):

A. Fernandes

Samples Relinquished By (Print Name and Sign):

Leah Whittaker

Samples Relinquished By (Print Name and Sign):

Andrea Fernandes

Date: Nov 6/18

Time: 5:30pm

Date: Nov 7/18

Date: Nov 7/18

Date: Nov 7/18

Date: Nov 7/18

Samples Received By (Print Name and Sign):

R. G. R.

Samples Received By (Print Name and Sign):

R. G. R.

Samples Received By (Print Name and Sign):

R. G. R.

Date: Nov 7/18

Date: Nov 7/18

Date: Nov 7/18

Date: Nov 7/18

Date: Nov 7/18

Time: 10:30

Time: 10:30

Time: 10:30

Time: 10:30

Time: 10:30

Page i of 2

Nº: **T081187**

CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-00242474-A0-010

AGAT WORK ORDER: 18T407460

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Trace Organics Lab Manager

DATE REPORTED: Nov 14, 2018

PAGES (INCLUDING COVER): 13

VERSION*: 1

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

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V1)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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.

Page 1 of 13

Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request

Certificate of Analysis

AGAT WORK ORDER: 18T407460

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2018-11-08

DATE REPORTED: 2018-11-13

		SAMPLE DESCRIPTION:		TH102-SS1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-11-07
Parameter	Unit	G / S	RDL	9687801
Antimony	µg/g	7.5	0.8	<0.8
Arsenic	µg/g	18	1	1
Barium	µg/g	390	2	12
Beryllium	µg/g	5	0.5	<0.5
Boron	µg/g	120	5	<5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	160	2	4
Cobalt	µg/g	22	0.5	2.2
Copper	µg/g	180	1	4
Lead	µg/g	120	1	3
Molybdenum	µg/g	6.9	0.5	<0.5
Nickel	µg/g	130	1	4
Selenium	µg/g	2.4	0.4	<0.4
Silver	µg/g	25	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	23	0.5	<0.5
Vanadium	µg/g	86	1	8
Zinc	µg/g	340	5	10
Chromium VI	µg/g	10	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	1.8	0.10	<0.10
Electrical Conductivity	mS/cm	0.7	0.005	0.264
Sodium Adsorption Ratio	NA	5	NA	1.94
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.93

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9687801 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 18T407460

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-08

DATE REPORTED: 2018-11-13

		SAMPLE DESCRIPTION:		TH102-SS1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-11-07
Parameter	Unit	G / S	RDL	9687801
Naphthalene	µg/g	0.75	0.05	<0.05
Acenaphthylene	µg/g	0.17	0.05	<0.05
Acenaphthene	µg/g	58	0.05	<0.05
Fluorene	µg/g	69	0.05	<0.05
Phenanthrene	µg/g	7.8	0.05	<0.05
Anthracene	µg/g	0.74	0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05
Benz(a)anthracene	µg/g	0.63	0.05	<0.05
Chrysene	µg/g	7.8	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.48	0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05
Benzo(g,h,i)perylene	µg/g	7.8	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	3.4	0.05	<0.05
Moisture Content	%		0.1	19.9
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140		63

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9687801 Results are based on the dry weight of the soil.
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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T407460

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2018-11-08

DATE REPORTED: 2018-11-13

		SAMPLE DESCRIPTION:		TH102-SS2	TH102-SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-07	2018-11-07
Parameter	Unit	G / S	RDL	9687804	9687823
F1 (C6 to C10)	µg/g	65	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	65	5	<5	<5
F2 (C10 to C16)	µg/g	150	10	<10	<10
F3 (C16 to C34)	µg/g	1300	50	<50	<50
F4 (C34 to C50)	µg/g	5600	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	5600	50	NA	NA
Moisture Content	%		0.1	22.4	20.9
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		113	71

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9687804-9687823 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T407460

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-08

DATE REPORTED: 2018-11-13

Parameter	Unit	SAMPLE DESCRIPTION:		TH102-SS2	TH102-SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-07	2018-11-07
		G / S	RDL	9687804	9687823
Dichlorodifluoromethane	µg/g	25	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.022	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	5.8	0.05	<0.05	<0.05
Acetone	ug/g	28	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.96	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.75	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	1.4	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	11	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	44	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	30	0.02	<0.02	<0.02
Chloroform	ug/g	0.18	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	3.4	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.12	0.05	<0.05	<0.05
Benzene	ug/g	0.17	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.085	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.52	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	4.3	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	6	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	2.3	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.7	0.05	<0.05	<0.05
Ethylbenzene	ug/g	15	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T407460

PROJECT: MRK-00242474-A0-010

5835 COOPERS AVENUE
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-08

DATE REPORTED: 2018-11-13

		SAMPLE DESCRIPTION:		TH102-SS2	TH102-SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-07	2018-11-07
Parameter	Unit	G / S	RDL	9687804	9687823
Bromoform	ug/g	0.26	0.05	<0.05	<0.05
Styrene	ug/g	2.2	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	6	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.097	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	4.3	0.05	<0.05	<0.05
Xylene Mixture	ug/g	25	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.083	0.04	<0.04	<0.04
n-Hexane	µg/g	34	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		103	103
4-Bromofluorobenzene	% Recovery	50-140		90	92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil -

Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9687804-9687823 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T407460

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Soil Analysis															
RPT Date:			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) - Metals & Inorganics (Soil)															
Antimony	9691451		<0.8	<0.8	NA	< 0.8	118%	70%	130%	102%	80%	120%	93%	70%	130%
Arsenic	9691451		2	2	NA	< 1	117%	70%	130%	113%	80%	120%	112%	70%	130%
Barium	9691451		61	67	9.4%	< 2	109%	70%	130%	104%	80%	120%	105%	70%	130%
Beryllium	9691451		<0.5	<0.5	NA	< 0.5	113%	70%	130%	114%	80%	120%	116%	70%	130%
Boron	9691451		6	6	NA	< 5	86%	70%	130%	107%	80%	120%	105%	70%	130%
Boron (Hot Water Soluble)	9687801	9687801	<0.10	<0.10	NA	< 0.10	104%	60%	140%	100%	70%	130%	101%	60%	140%
Cadmium	9691451		<0.5	<0.5	NA	< 0.5	102%	70%	130%	102%	80%	120%	112%	70%	130%
Chromium	9691451		13	13	0.0%	< 2	97%	70%	130%	112%	80%	120%	110%	70%	130%
Cobalt	9691451		4.7	4.7	0.0%	< 0.5	95%	70%	130%	105%	80%	120%	108%	70%	130%
Copper	9691451		10	10	0.0%	< 1	94%	70%	130%	111%	80%	120%	112%	70%	130%
Lead	9691451		4	5	NA	< 1	114%	70%	130%	107%	80%	120%	105%	70%	130%
Molybdenum	9691451		<0.5	<0.5	NA	< 0.5	102%	70%	130%	103%	80%	120%	113%	70%	130%
Nickel	9691451		9	9	0.0%	< 1	96%	70%	130%	104%	80%	120%	102%	70%	130%
Selenium	9691451		<0.4	<0.4	NA	< 0.4	101%	70%	130%	108%	80%	120%	108%	70%	130%
Silver	9691451		<0.2	<0.2	NA	< 0.2	102%	70%	130%	109%	80%	120%	115%	70%	130%
Thallium	9691451		<0.4	<0.4	NA	< 0.4	99%	70%	130%	98%	80%	120%	103%	70%	130%
Uranium	9691451		<0.5	0.6	NA	< 0.5	114%	70%	130%	107%	80%	120%	111%	70%	130%
Vanadium	9691451		21	22	4.7%	< 1	102%	70%	130%	107%	80%	120%	119%	70%	130%
Zinc	9691451		25	25	0.0%	< 5	100%	70%	130%	110%	80%	120%	121%	70%	130%
Chromium VI	9692034		<0.2	<0.2	NA	< 0.2	78%	70%	130%	109%	80%	120%	110%	70%	130%
Cyanide	9687801	9687801	<0.040	<0.040	NA	< 0.040	102%	70%	130%	94%	80%	120%	99%	70%	130%
Mercury	9691451		<0.10	<0.10	NA	< 0.10	130%	70%	130%	112%	80%	120%	109%	70%	130%
Electrical Conductivity	9687801	9687801	0.264	0.287	8.3%	< 0.005	96%	90%	110%	NA			NA		
Sodium Adsorption Ratio	9687801	9687801	1.94	2.12	8.9%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	9687801	9687801	7.93	7.98	0.6%	NA	99%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:


Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T407460

PROJECT: MRK-00242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date:			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) - PAHs (Soil)

Naphthalene	9655282		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	95%	50%	140%	94%	50%	140%
Acenaphthylene	9655282		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	96%	50%	140%	93%	50%	140%
Acenaphthene	9655282		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	93%	50%	140%	89%	50%	140%
Fluorene	9655282		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	93%	50%	140%	89%	50%	140%
Phenanthrene	9655282		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	84%	50%	140%	86%	50%	140%
Anthracene	9655282		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	99%	50%	140%	85%	50%	140%
Fluoranthene	9655282		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	94%	50%	140%	82%	50%	140%
Pyrene	9655282		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	95%	50%	140%	81%	50%	140%
Benz(a)anthracene	9655282		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	89%	50%	140%	93%	50%	140%
Chrysene	9655282		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	87%	50%	140%	91%	50%	140%
Benzo(b)fluoranthene	9655282		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	90%	50%	140%	94%	50%	140%
Benzo(k)fluoranthene	9655282		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	88%	50%	140%	93%	50%	140%
Benzo(a)pyrene	9655282		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	98%	50%	140%	94%	50%	140%
Indeno(1,2,3-cd)pyrene	9655282		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	95%	50%	140%	85%	50%	140%
Dibenz(a,h)anthracene	9655282		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	99%	50%	140%	91%	50%	140%
Benzo(g,h,i)perylene	9655282		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	97%	50%	140%	89%	50%	140%
2-and 1-methyl Naphthalene	9655282		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	98%	50%	140%	97%	50%	140%

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

Dichlorodifluoromethane	9693092		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	82%	50%	140%	99%	50%	140%
Vinyl Chloride	9693092		< 0.02	< 0.02	NA	< 0.02	111%	50%	140%	120%	50%	140%	108%	50%	140%
Bromomethane	9693092		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	102%	50%	140%	84%	50%	140%
Trichlorofluoromethane	9693092		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	119%	50%	140%	91%	50%	140%
Acetone	9693092		< 0.50	< 0.50	NA	< 0.50	126%	50%	140%	110%	50%	140%	98%	50%	140%
1,1-Dichloroethylene	9693092		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	110%	60%	130%	102%	50%	140%
Methylene Chloride	9693092		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	90%	60%	130%	101%	50%	140%
Trans- 1,2-Dichloroethylene	9693092		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	89%	60%	130%	97%	50%	140%
Methyl tert-butyl Ether	9693092		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	117%	60%	130%	117%	50%	140%
1,1-Dichloroethane	9693092		< 0.02	< 0.02	NA	< 0.02	74%	50%	140%	105%	60%	130%	87%	50%	140%
Methyl Ethyl Ketone	9693092		< 0.50	< 0.50	NA	< 0.50	114%	50%	140%	107%	50%	140%	95%	50%	140%
Cis- 1,2-Dichloroethylene	9693092		< 0.02	< 0.02	NA	< 0.02	90%	50%	140%	93%	60%	130%	91%	50%	140%
Chloroform	9693092		< 0.04	< 0.04	NA	< 0.04	82%	50%	140%	98%	60%	130%	92%	50%	140%
1,2-Dichloroethane	9693092		< 0.03	< 0.03	NA	< 0.03	78%	50%	140%	81%	60%	130%	90%	50%	140%
1,1,1-Trichloroethane	9693092		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	108%	60%	130%	75%	50%	140%
Carbon Tetrachloride	9693092		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	108%	60%	130%	79%	50%	140%
Benzene	9693092		< 0.02	< 0.02	NA	< 0.02	77%	50%	140%	91%	60%	130%	92%	50%	140%
1,2-Dichloropropane	9693092		< 0.03	< 0.03	NA	< 0.03	107%	50%	140%	89%	60%	130%	82%	50%	140%
Trichloroethylene	9693092		< 0.03	< 0.03	NA	< 0.03	78%	50%	140%	92%	60%	130%	91%	50%	140%
Bromodichloromethane	9693092		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	94%	60%	130%	77%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T407460

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			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
Methyl Isobutyl Ketone	9693092		< 0.50	< 0.50	NA	< 0.50	87%	50%	140%	81%	50%	140%	85%	50%	140%
1,1,2-Trichloroethane	9693092		< 0.04	< 0.04	NA	< 0.04	84%	50%	140%	101%	60%	130%	103%	50%	140%
Toluene	9693092		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	118%	60%	130%	114%	50%	140%
Dibromochloromethane	9693092		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	118%	60%	130%	76%	50%	140%
Ethylene Dibromide	9693092		< 0.04	< 0.04	NA	< 0.04	90%	50%	140%	99%	60%	130%	91%	50%	140%
Tetrachloroethylene	9693092		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	99%	60%	130%	113%	50%	140%
1,1,1,2-Tetrachloroethane	9693092		< 0.04	< 0.04	NA	< 0.04	97%	50%	140%	109%	60%	130%	85%	50%	140%
Chlorobenzene	9693092		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	110%	60%	130%	110%	50%	140%
Ethylbenzene	9693092		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	111%	60%	130%	108%	50%	140%
m & p-Xylene	9693092		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	117%	60%	130%	114%	50%	140%
Bromoform	9693092		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	116%	60%	130%	73%	50%	140%
Styrene	9693092		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	95%	60%	130%	96%	50%	140%
1,1,2,2-Tetrachloroethane	9693092		< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	102%	60%	130%	100%	50%	140%
o-Xylene	9693092		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	114%	60%	130%	113%	50%	140%
1,3-Dichlorobenzene	9693092		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	99%	60%	130%	99%	50%	140%
1,4-Dichlorobenzene	9693092		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	105%	60%	130%	106%	50%	140%
1,2-Dichlorobenzene	9693092		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	95%	60%	130%	98%	50%	140%
1,3-Dichloropropene	9693092		< 0.04	< 0.04	NA	< 0.04	96%	50%	140%	86%	60%	130%	79%	50%	140%
n-Hexane	9693092		< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	94%	60%	130%	109%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 to C10)	9691561		< 5	< 5	NA	< 5	98%	60%	130%	89%	85%	115%	91%	70%	130%
F2 (C10 to C16)	9696878 9687823		< 10	< 10	NA	< 10	104%	60%	130%	81%	80%	120%	103%	70%	130%
F3 (C16 to C34)	9696878 9687823		< 50	< 50	NA	< 50	103%	60%	130%	96%	80%	120%	106%	70%	130%
F4 (C34 to C50)	9696878 9687823		< 50	< 50	NA	< 50	98%	60%	130%	99%	80%	120%	94%	70%	130%

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: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T407460

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T407460

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T407460

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-00242474-A0-010

AGAT WORK ORDER: 18T410344

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: Nov 21, 2018

PAGES (INCLUDING COVER): 13

VERSION*: 1

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

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V1)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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.

Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request



Certificate of Analysis

AGAT WORK ORDER: 18T410344

PROJECT: MRK-00242474-A0-010

5835 COOPERS AVENUE
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2018-11-15

DATE REPORTED: 2018-11-21

Parameter	Unit	SAMPLE DESCRIPTION:		TH109S-SS2	TH1090S-SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-14	2018-11-14
		G / S	RDL	9709760	9709763
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2
Barium	µg/g	390	2	173	134
Beryllium	µg/g	5	0.5	<0.5	<0.5
Boron	µg/g	120	5	8	7
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.14	0.14
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	2	27	23
Cobalt	µg/g	22	0.5	10.1	8.2
Copper	µg/g	180	1	20	19
Lead	µg/g	120	1	8	8
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	130	1	20	18
Selenium	µg/g	2.4	0.4	<0.4	<0.4
Silver	µg/g	25	0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	0.8	0.8
Vanadium	µg/g	86	1	35	30
Zinc	µg/g	340	5	58	46
Chromium VI	µg/g	10	0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040
Mercury	µg/g	1.8	0.10	<0.10	<0.10
Electrical Conductivity	mS/cm	0.7	0.005	0.578	0.516
Sodium Adsorption Ratio	NA	5	NA	2.00	2.02
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.77	7.95

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9709760-9709763 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T410344

PROJECT: MRK-00242474-A0-010

5835 COOPERS AVENUE
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-15

DATE REPORTED: 2018-11-21

Parameter	Unit	SAMPLE DESCRIPTION:		TH109S-SS1	TH1090S-SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-14	2018-11-14
		G / S	RDL	9709759	9709762
Naphthalene	µg/g	0.75	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.17	0.05	<0.05	<0.05
Acenaphthene	µg/g	58	0.05	<0.05	<0.05
Fluorene	µg/g	69	0.05	<0.05	<0.05
Phenanthrene	µg/g	7.8	0.05	<0.05	<0.05
Anthracene	µg/g	0.74	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.63	0.05	<0.05	<0.05
Chrysene	µg/g	7.8	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.48	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	7.8	0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	3.4	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140	95	85	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9709759-9709762 Results are based on the dry weight of the soil.

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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T410344

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2018-11-15

DATE REPORTED: 2018-11-21

		SAMPLE DESCRIPTION:		TH109S-SS1	TH1090S-SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-14	2018-11-14
Parameter	Unit	G / S	RDL	9709759	9709762
F1 (C6 to C10)	µg/g	65	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	65	5	<5	<5
F2 (C10 to C16)	µg/g	150	10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10
F3 (C16 to C34)	µg/g	1300	50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50
F4 (C34 to C50)	µg/g	5600	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	5600	50	NA	NA
Moisture Content	%		0.1	19.9	14.8
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		77	120

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9709759-9709762 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
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.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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:




Certificate of Analysis

AGAT WORK ORDER: 18T410344

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-15

DATE REPORTED: 2018-11-21

Parameter	Unit	SAMPLE DESCRIPTION:		TH109S-SS1	TH1090S-SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-14	2018-11-14
		G / S	RDL	9709759	9709762
Dichlorodifluoromethane	µg/g	25	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.022	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	5.8	0.05	<0.05	<0.05
Acetone	ug/g	28	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.96	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.75	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	1.4	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	11	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	44	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	30	0.02	<0.02	<0.02
Chloroform	ug/g	0.18	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	3.4	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.12	0.05	<0.05	<0.05
Benzene	ug/g	0.17	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.085	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.52	0.03	0.19	0.22
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	4.3	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	6	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	2.3	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.7	0.05	<0.05	<0.05
Ethylbenzene	ug/g	15	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By:

Pinkal Patel



Certificate of Analysis

AGAT WORK ORDER: 18T410344

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-15

DATE REPORTED: 2018-11-21

		SAMPLE DESCRIPTION:		TH109S-SS1	TH1090S-SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-14	2018-11-14
Parameter	Unit	G / S	RDL	9709759	9709762
Bromoform	ug/g	0.26	0.05	<0.05	<0.05
Styrene	ug/g	2.2	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	6	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.097	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	4.3	0.05	<0.05	<0.05
Xylene Mixture	ug/g	25	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.083	0.04	<0.04	<0.04
n-Hexane	µg/g	34	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		99	100
4-Bromofluorobenzene	% Recovery	50-140		102	100

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9709759-9709762 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T410344

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Soil Analysis															
RPT Date: Nov 21, 2018			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) - Metals & Inorganics (Soil)															
Antimony	9713864		<0.8	<0.8	NA	< 0.8	116%	70%	130%	99%	80%	120%	91%	70%	130%
Arsenic	9713864		2	2	NA	< 1	99%	70%	130%	102%	80%	120%	98%	70%	130%
Barium	9713864		97	94	3.1%	< 2	103%	70%	130%	101%	80%	120%	96%	70%	130%
Beryllium	9713864		<0.5	<0.5	NA	< 0.5	79%	70%	130%	114%	80%	120%	98%	70%	130%
Boron	9713864		<5	<5	NA	< 5	73%	70%	130%	115%	80%	120%	100%	70%	130%
Boron (Hot Water Soluble)	9710328		0.72	0.74	2.7%	< 0.10	98%	60%	140%	104%	70%	130%	102%	60%	140%
Cadmium	9713864		<0.5	<0.5	NA	< 0.5	102%	70%	130%	101%	80%	120%	93%	70%	130%
Chromium	9713864		45	43	4.5%	< 2	76%	70%	130%	92%	80%	120%	107%	70%	130%
Cobalt	9713864		7.8	8.5	8.6%	< 0.5	84%	70%	130%	96%	80%	120%	83%	70%	130%
Copper	9713864		21	22	4.7%	< 1	91%	70%	130%	103%	80%	120%	91%	70%	130%
Lead	9713864		5	5	0.0%	< 1	104%	70%	130%	94%	80%	120%	93%	70%	130%
Molybdenum	9713864		<0.5	<0.5	NA	< 0.5	100%	70%	130%	103%	80%	120%	92%	70%	130%
Nickel	9713864		25	27	7.7%	< 1	91%	70%	130%	94%	80%	120%	82%	70%	130%
Selenium	9713864		0.9	< 0.4	NA	< 0.4	94%	70%	130%	105%	80%	120%	98%	70%	130%
Silver	9713864		<0.2	<0.2	NA	< 0.2	99%	70%	130%	109%	80%	120%	95%	70%	130%
Thallium	9713864		<0.4	<0.4	NA	< 0.4	85%	70%	130%	100%	80%	120%	96%	70%	130%
Uranium	9713864		<0.5	<0.5	NA	< 0.5	96%	70%	130%	101%	80%	120%	99%	70%	130%
Vanadium	9713864		31	32	3.2%	< 1	88%	70%	130%	93%	80%	120%	84%	70%	130%
Zinc	9713864		31	34	9.2%	< 5	96%	70%	130%	107%	80%	120%	92%	70%	130%
Chromium VI	9705981		<0.2	<0.2	NA	< 0.2	80%	70%	130%	109%	80%	120%	126%	70%	130%
Cyanide	9707812		<0.040	<0.040	NA	< 0.040	109%	70%	130%	105%	80%	120%	105%	70%	130%
Mercury	9713864		<0.10	<0.10	NA	< 0.10	98%	70%	130%	97%	80%	120%	97%	70%	130%
Electrical Conductivity	9707125		0.471	0.487	3.3%	< 0.005	98%	90%	110%	NA			NA		
Sodium Adsorption Ratio	9704386		0.465	0.483	3.8%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	9705981		7.98	7.99	0.1%	NA	100%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:




Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T410344

PROJECT: MRK-00242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Nov 21, 2018			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) - VOCs (Soil)

Dichlorodifluoromethane	9714199		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	88%	50%	140%	83%	50%	140%
Vinyl Chloride	9714199		< 0.02	< 0.02	NA	< 0.02	106%	50%	140%	120%	50%	140%	86%	50%	140%
Bromomethane	9714199		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	105%	50%	140%	87%	50%	140%
Trichlorofluoromethane	9714199		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	120%	50%	140%	93%	50%	140%
Acetone	9714199		< 0.50	< 0.50	NA	< 0.50	113%	50%	140%	111%	50%	140%	108%	50%	140%
1,1-Dichloroethylene	9714199		< 0.05	< 0.05	NA	< 0.05	76%	50%	140%	111%	60%	130%	85%	50%	140%
Methylene Chloride	9714199		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	103%	60%	130%	117%	50%	140%
Trans- 1,2-Dichloroethylene	9714199		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	106%	60%	130%	88%	50%	140%
Methyl tert-butyl Ether	9714199		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	87%	60%	130%	103%	50%	140%
1,1-Dichloroethane	9714199		< 0.02	< 0.02	NA	< 0.02	73%	50%	140%	95%	60%	130%	81%	50%	140%
Methyl Ethyl Ketone	9714199		< 0.50	< 0.50	NA	< 0.50	112%	50%	140%	92%	50%	140%	97%	50%	140%
Cis- 1,2-Dichloroethylene	9714199		< 0.02	< 0.02	NA	< 0.02	78%	50%	140%	99%	60%	130%	86%	50%	140%
Chloroform	9714199		< 0.04	< 0.04	NA	< 0.04	84%	50%	140%	100%	60%	130%	84%	50%	140%
1,2-Dichloroethane	9714199		< 0.03	< 0.03	NA	< 0.03	90%	50%	140%	93%	60%	130%	90%	50%	140%
1,1,1-Trichloroethane	9714199		< 0.05	< 0.05	NA	< 0.05	79%	50%	140%	79%	60%	130%	78%	50%	140%
Carbon Tetrachloride	9714199		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	84%	60%	130%	85%	50%	140%
Benzene	9714199		< 0.02	< 0.02	NA	< 0.02	82%	50%	140%	100%	60%	130%	84%	50%	140%
1,2-Dichloropropane	9714199		< 0.03	< 0.03	NA	< 0.03	101%	50%	140%	89%	60%	130%	94%	50%	140%
Trichloroethylene	9714199		< 0.03	< 0.03	NA	< 0.03	77%	50%	140%	96%	60%	130%	79%	50%	140%
Bromodichloromethane	9714199		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	81%	60%	130%	88%	50%	140%
Methyl Isobutyl Ketone	9714199		< 0.50	< 0.50	NA	< 0.50	92%	50%	140%	84%	50%	140%	82%	50%	140%
1,1,2-Trichloroethane	9714199		< 0.04	< 0.04	NA	< 0.04	97%	50%	140%	106%	60%	130%	100%	50%	140%
Toluene	9714199		< 0.05	< 0.05	NA	< 0.05	76%	50%	140%	106%	60%	130%	91%	50%	140%
Dibromochloromethane	9714199		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	81%	60%	130%	78%	50%	140%
Ethylene Dibromide	9714199		< 0.04	< 0.04	NA	< 0.04	93%	50%	140%	96%	60%	130%	81%	50%	140%
Tetrachloroethylene	9714199		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	108%	60%	130%	99%	50%	140%
1,1,1,2-Tetrachloroethane	9714199		< 0.04	< 0.04	NA	< 0.04	76%	50%	140%	93%	60%	130%	77%	50%	140%
Chlorobenzene	9714199		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	116%	60%	130%	102%	50%	140%
Ethylbenzene	9714199		< 0.05	< 0.05	NA	< 0.05	76%	50%	140%	116%	60%	130%	95%	50%	140%
m & p-Xylene	9714199		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	124%	60%	130%	103%	50%	140%
Bromoform	9714199		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	76%	60%	130%	82%	50%	140%
Styrene	9714199		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	103%	60%	130%	86%	50%	140%
1,1,2,2-Tetrachloroethane	9714199		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	113%	60%	130%	101%	50%	140%
o-Xylene	9714199		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	104%	60%	130%	104%	50%	140%
1,3-Dichlorobenzene	9714199		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	108%	60%	130%	84%	50%	140%
1,4-Dichlorobenzene	9714199		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	114%	60%	130%	95%	50%	140%
1,2-Dichlorobenzene	9714199		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	106%	60%	130%	87%	50%	140%
1,3-Dichloropropene	9714199		< 0.04	< 0.04	NA	< 0.04	80%	50%	140%	82%	60%	130%	79%	50%	140%
n-Hexane	9714199		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	103%	60%	130%	107%	50%	140%

AGAT QUALITY ASSURANCE REPORT (V1)

Page 8 of 13

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.

Results relate only to the items tested and to all the items tested

Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T410344

PROJECT: MRK-00242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Nov 21, 2018			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) (Soil)

F1 (C6 to C10)	9700727	< 5	< 5	NA	< 5	84%	60%	130%	89%	85%	115%	77%	70%	130%
F2 (C10 to C16)	9701960	< 10	< 10	NA	< 10	104%	60%	130%	81%	80%	120%	103%	70%	130%
F3 (C16 to C34)	9701960	< 50	< 50	NA	< 50	103%	60%	130%	96%	80%	120%	106%	70%	130%
F4 (C34 to C50)	9701960	< 50	< 50	NA	< 50	98%	60%	130%	99%	80%	120%	94%	70%	130%

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

Naphthalene	9704045	< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	80%	50%	140%	88%	50%	140%
Acenaphthylene	9704045	< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	83%	50%	140%	85%	50%	140%
Acenaphthene	9704045	< 0.05	< 0.05	NA	< 0.05	107%	50%	140%	88%	50%	140%	83%	50%	140%
Fluorene	9704045	< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	83%	50%	140%	86%	50%	140%
Phenanthrene	9704045	< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	85%	50%	140%	81%	50%	140%
Anthracene	9704045	< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	95%	50%	140%	93%	50%	140%
Fluoranthene	9704045	< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	85%	50%	140%	88%	50%	140%
Pyrene	9704045	< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	85%	50%	140%	88%	50%	140%
Benz(a)anthracene	9704045	< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	92%	50%	140%	88%	50%	140%
Chrysene	9704045	< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	97%	50%	140%	100%	50%	140%
Benzo(b)fluoranthene	9704045	< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	85%	50%	140%	95%	50%	140%
Benzo(k)fluoranthene	9704045	< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	94%	50%	140%	93%	50%	140%
Benzo(a)pyrene	9704045	< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	91%	50%	140%	83%	50%	140%
Indeno(1,2,3-cd)pyrene	9704045	< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	85%	50%	140%	82%	50%	140%
Dibenz(a,h)anthracene	9704045	< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	91%	50%	140%	86%	50%	140%
Benzo(g,h,i)perylene	9704045	< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	85%	50%	140%	83%	50%	140%
2-and 1-methyl Naphthalene	9704045	< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	83%	50%	140%	88%	50%	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: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T410344

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T410344

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T410344

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS



Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: EXP Services Inc.
Contact: Leah Whittaker
Address: 220 Commerce Valley Dr W
Suite 110 Markham
Phone: 905 695 3217 Fax: _____
Reports to be sent to: leah.whittaker@exp.com
1. Email: andrea.fernandes@exp.com
2. Email: _____

Project Information:

Project: MRK-00242474-A0-010
Site Location: AF
Sampled By: _____
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04
Table 3 Indicate One
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture (Check One)
☐ Coarse
☒ Fine
☐ Sewer Use
☐ Sanitary
☐ Storm
Region _____ Indicate One
☐ MISA
☐ No Regulatory Requirement
☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a Record of Site Condition?

☒ Yes ☐ No

Report Guideline on Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CrVI

0. Reg 153

Metals and Inorganics

☐ All Metals ☐ 153 Metals (excl. Hydrides)
☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl ☐ CN
☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg
☐ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKN
☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂

Volatiles: ☒ VOC ☐ BTEX ☐ THM

PHCs F1 - F4

ABNs

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs

Sewer Use

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Metals and Inorganics	0. Reg 153	Full Metals Scan	Regulation/Custom Metals	Nutrients	Volatiles	PHCs F1 - F4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use
TH1095-SS1	Nov 14/18	AM	3	S															
TH1095-SS2			3		PHC/VOC on hold		X					X	X						
TH1095-SS3			2		on hold		X								X				
TH1095-SS1			3									X	X		X				
TH1095-SS2			1				X												

Samples Relinquished By (Print Name and Sign): <u>A. Fernandes</u> <u>Andrea</u>	Date: <u>Nov 15/18</u>	Time: <u>10:30 a.m.</u>	Samples Received By (Print Name and Sign): <u>2018/11/15</u>	Date: <u>2018/11/15</u>	Time: <u>10:30</u>
Samples Relinquished By (Print Name and Sign): <u>2018/11/15</u>	Date: <u>2018/11/15</u>	Time: <u>6:30</u>	Samples Received By (Print Name and Sign):	Date:	Time:
Samples Relinquished By (Print Name and Sign):	Date:	Time:	Samples Received By (Print Name and Sign):	Date:	Time:

Laboratory Use Only

Work Order #: 18T410344

Cooler Quantity: 6.1 6.2 6.2

Arrival Temperatures: 6.5 7.0 7.0

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: _____

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-242474-A0-010

AGAT WORK ORDER: 18T412872

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

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

DATE REPORTED: Dec 13, 2018

PAGES (INCLUDING COVER): 17

VERSION*: 2

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

***NOTES**

VERSION 2: Revised report issued December 12, 2018.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V2)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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.

Page 1 of 17

Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request

Certificate of Analysis

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2018-11-23

DATE REPORTED: 2018-12-13

Parameter	Unit	SAMPLE DESCRIPTION:		TH107 SS1	TH108 SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-22	2018-11-22
		G / S	RDL	9732562	9732585
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	3
Barium	µg/g	390	2	56	152
Beryllium	µg/g	5	0.5	<0.5	0.6
Boron	µg/g	120	5	5	10
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.23	0.31
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	2	11	29
Cobalt	µg/g	22	0.5	4.1	10.0
Copper	µg/g	180	1	12	23
Lead	µg/g	120	1	40	9
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	130	1	7	17
Selenium	µg/g	2.4	0.4	1.4	2.3
Silver	µg/g	25	0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	<0.5	0.7
Vanadium	µg/g	86	1	15	38
Zinc	µg/g	340	5	48	55
Chromium VI	µg/g	10	0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040
Mercury	µg/g	1.8	0.10	<0.10	<0.10
Electrical Conductivity	mS/cm	0.7	0.005	0.645	0.849
Sodium Adsorption Ratio	NA	5	NA	6.62	11.3
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.90	7.84

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9732562-9732585 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:






AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2018-11-23

DATE REPORTED: 2018-12-13

SAMPLE DESCRIPTION: TH107 SS3

SAMPLE TYPE: Soil

DATE SAMPLED: 2018-11-22

Parameter	Unit	G / S	RDL	9732582
Sodium Adsorption Ratio	NA	5	NA	1.11

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9732582 SAR was determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).
Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2018-11-23

DATE REPORTED: 2018-12-13

		SAMPLE DESCRIPTION:		TH108 SS2
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-11-22
Parameter	Unit	G / S	RDL	9732586
Electrical Conductivity	mS/cm	0.7	0.005	0.800
Sodium Adsorption Ratio	NA	5	NA	10.1

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9732586 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

5835 COOPERS AVENUE
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CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-23

DATE REPORTED: 2018-12-13

Parameter	Unit	SAMPLE DESCRIPTION:		TH107 SS1	TH107 SS3	TH108 SS1
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2018-11-22	2018-11-22	2018-11-22
		G / S	RDL	9732562	9732582	9732585
Naphthalene	µg/g	0.75	0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.17	0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	58	0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	69	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	7.8	0.05	0.51	<0.05	<0.05
Anthracene	µg/g	0.74	0.05	0.22	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	1.2	<0.05	0.05
Pyrene	µg/g	78	0.05	1.1	<0.05	0.05
Benz(a)anthracene	µg/g	0.63	0.05	0.46	<0.05	<0.05
Chrysene	µg/g	7.8	0.05	0.51	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.58	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	0.35	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	0.54	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.48	0.05	0.26	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	7.8	0.05	0.32	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	3.4	0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	16.5	15.2	21.1
Surrogate	Unit	Acceptable Limits				
Chrysene-d12	%	50-140		88	81	86

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9732562-9732585 Results are based on the dry weight of the soil.
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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:




Certificate of Analysis

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2018-11-23

DATE REPORTED: 2018-12-13

		SAMPLE DESCRIPTION:		TH107 SS2	TH108 SS4
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-22	2018-11-22
Parameter	Unit	G / S	RDL	9732581	9732587
F1 (C6 to C10)	µg/g	65	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	65	5	<5	<5
F2 (C10 to C16)	µg/g	150	10	<10	<10
F3 (C16 to C34)	µg/g	1300	50	<50	<50
F4 (C34 to C50)	µg/g	5600	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	5600	50	NA	NA
Moisture Content	%		0.1	25.7	18.6
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		97	79

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9732581-9732587 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-23

DATE REPORTED: 2018-12-13

Parameter	Unit	SAMPLE DESCRIPTION:		TH107 SS2	TH108 SS4
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-22	2018-11-22
		G / S	RDL	9732581	9732587
Dichlorodifluoromethane	µg/g	25	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.022	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	5.8	0.05	<0.05	<0.05
Acetone	ug/g	28	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.96	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.75	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	1.4	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	11	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	44	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	30	0.02	<0.02	<0.02
Chloroform	ug/g	0.18	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	3.4	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.12	0.05	<0.05	<0.05
Benzene	ug/g	0.17	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.085	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.52	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	4.3	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	6	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	2.3	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.7	0.05	<0.05	<0.05
Ethylbenzene	ug/g	15	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-23

DATE REPORTED: 2018-12-13

		SAMPLE DESCRIPTION:		TH107 SS2	TH108 SS4
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-22	2018-11-22
Parameter	Unit	G / S	RDL	9732581	9732587
Bromoform	ug/g	0.26	0.05	<0.05	<0.05
Styrene	ug/g	2.2	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	6	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.097	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	4.3	0.05	<0.05	<0.05
Xylene Mixture	ug/g	25	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.083	0.04	<0.04	<0.04
n-Hexane	µg/g	34	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		95	96
4-Bromofluorobenzene	% Recovery	50-140		90	96

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9732581-9732587 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Guideline Violation

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9732562	TH107 SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	5	6.62
9732562	TH107 SS1	ON T3 S RPI MFT	O. Reg. 153(511) - PAHs (Soil)	Benzo(a)pyrene	µg/g	0.3	0.54
9732562	TH107 SS1	ON T3 S RPI MFT	O. Reg. 153(511) - PAHs (Soil)	Fluoranthene	µg/g	0.69	1.2
9732585	TH108 SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.7	0.849
9732585	TH108 SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	5	11.3
9732586	TH108 SS2	ON T3 S RPI MFT	O. Reg. 153(511) - ORPs (Soil)	Electrical Conductivity	mS/cm	0.7	0.800
9732586	TH108 SS2	ON T3 S RPI MFT	O. Reg. 153(511) - ORPs (Soil)	Sodium Adsorption Ratio	NA	5	10.1

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T412872

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Soil Analysis

RPT Date: Dec 13, 2018			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) - Metals & Inorganics (Soil)															
Antimony	9732522		<0.8	<0.8	NA	< 0.8	94%	70%	130%	100%	80%	120%	84%	70%	130%
Arsenic	9732522		2	2	NA	< 1	124%	70%	130%	109%	80%	120%	111%	70%	130%
Barium	9732522		26	26	0.0%	< 2	99%	70%	130%	100%	80%	120%	96%	70%	130%
Beryllium	9732522		<0.5	<0.5	NA	< 0.5	97%	70%	130%	102%	80%	120%	99%	70%	130%
Boron	9732522		<5	<5	NA	< 5	81%	70%	130%	106%	80%	120%	95%	70%	130%
Boron (Hot Water Soluble)	9732585	9732585	0.31	0.29	NA	< 0.10	106%	60%	140%	104%	70%	130%	100%	60%	140%
Cadmium	9732522		<0.5	<0.5	NA	< 0.5	104%	70%	130%	101%	80%	120%	97%	70%	130%
Chromium	9732522		9	9	NA	< 2	107%	70%	130%	108%	80%	120%	106%	70%	130%
Cobalt	9732522		3.9	3.8	2.6%	< 0.5	110%	70%	130%	104%	80%	120%	101%	70%	130%
Copper	9732522		12	13	8.0%	< 1	106%	70%	130%	108%	80%	120%	99%	70%	130%
Lead	9732522		5	5	0.0%	< 1	98%	70%	130%	106%	80%	120%	94%	70%	130%
Molybdenum	9732522		<0.5	<0.5	NA	< 0.5	111%	70%	130%	107%	80%	120%	114%	70%	130%
Nickel	9732522		5	5	0.0%	< 1	105%	70%	130%	105%	80%	120%	97%	70%	130%
Selenium	9732522		2.9	3.1	6.7%	< 0.4	108%	70%	130%	107%	80%	120%	108%	70%	130%
Silver	9732522		<0.2	<0.2	NA	< 0.2	113%	70%	130%	112%	80%	120%	89%	70%	130%
Thallium	9732522		<0.4	<0.4	NA	< 0.4	100%	70%	130%	105%	80%	120%	97%	70%	130%
Uranium	9732522		<0.5	<0.5	NA	< 0.5	104%	70%	130%	97%	80%	120%	97%	70%	130%
Vanadium	9732522		16	16	0.0%	< 1	109%	70%	130%	100%	80%	120%	102%	70%	130%
Zinc	9732522		25	26	3.9%	< 5	107%	70%	130%	107%	80%	120%	112%	70%	130%
Chromium VI	9731392		<0.2	<0.2	NA	< 0.2	84%	70%	130%	110%	80%	120%	121%	70%	130%
Cyanide	9729233		<0.040	<0.040	NA	< 0.040	103%	70%	130%	98%	80%	120%	105%	70%	130%
Mercury	9732522		<0.10	<0.10	NA	< 0.10	102%	70%	130%	100%	80%	120%	93%	70%	130%
Electrical Conductivity	9732585	9732585	0.849	0.888	4.5%	< 0.005	95%	90%	110%	NA			NA		
Sodium Adsorption Ratio	9732585	9732585	11.3	13.7	19.2%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	9724402		7.18	7.23	0.7%	NA	99%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

O. Reg. 153(511) - ORPs (Soil)

Electrical Conductivity	9766669	1.03	1.12	8.4%	< 0.005	96%	90%	110%	NA		NA
Sodium Adsorption Ratio	9766669	9.71	9.71	0.0%	NA	NA			NA		NA

Comments: NA signifies Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Dec 13, 2018			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) - PAHs (Soil)

Naphthalene	9704045		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	80%	50%	140%	88%	50%	140%
Acenaphthylene	9704045		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	83%	50%	140%	85%	50%	140%
Acenaphthene	9704045		< 0.05	< 0.05	NA	< 0.05	107%	50%	140%	88%	50%	140%	83%	50%	140%
Fluorene	9704045		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	83%	50%	140%	86%	50%	140%
Phenanthrene	9704045		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	85%	50%	140%	81%	50%	140%
Anthracene	9704045		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	95%	50%	140%	93%	50%	140%
Fluoranthene	9704045		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	85%	50%	140%	88%	50%	140%
Pyrene	9704045		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	85%	50%	140%	88%	50%	140%
Benz(a)anthracene	9704045		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	92%	50%	140%	88%	50%	140%
Chrysene	9704045		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	97%	50%	140%	100%	50%	140%
Benzo(b)fluoranthene	9704045		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	85%	50%	140%	95%	50%	140%
Benzo(k)fluoranthene	9704045		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	94%	50%	140%	93%	50%	140%
Benzo(a)pyrene	9704045		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	91%	50%	140%	83%	50%	140%
Indeno(1,2,3-cd)pyrene	9704045		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	85%	50%	140%	82%	50%	140%
Dibenz(a,h)anthracene	9704045		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	91%	50%	140%	86%	50%	140%
Benzo(g,h,i)perylene	9704045		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	85%	50%	140%	83%	50%	140%
2-and 1-methyl Naphthalene	9704045		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	83%	50%	140%	88%	50%	140%

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

Dichlorodifluoromethane	9732671		< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	81%	50%	140%	90%	50%	140%
Vinyl Chloride	9732671		< 0.02	< 0.02	NA	< 0.02	99%	50%	140%	85%	50%	140%	84%	50%	140%
Bromomethane	9732671		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	95%	50%	140%	83%	50%	140%
Trichlorofluoromethane	9732671		< 0.05	< 0.05	NA	< 0.05	119%	50%	140%	108%	50%	140%	88%	50%	140%
Acetone	9732671		< 0.50	< 0.50	NA	< 0.50	103%	50%	140%	117%	50%	140%	88%	50%	140%
1,1-Dichloroethylene	9732671		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	85%	60%	130%	93%	50%	140%
Methylene Chloride	9732671		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	107%	60%	130%	100%	50%	140%
Trans- 1,2-Dichloroethylene	9732671		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	103%	60%	130%	93%	50%	140%
Methyl tert-butyl Ether	9732671		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	109%	60%	130%	99%	50%	140%
1,1-Dichloroethane	9732671		< 0.02	< 0.02	NA	< 0.02	101%	50%	140%	95%	60%	130%	82%	50%	140%
Methyl Ethyl Ketone	9732671		< 0.50	< 0.50	NA	< 0.50	99%	50%	140%	94%	50%	140%	84%	50%	140%
Cis- 1,2-Dichloroethylene	9732671		< 0.02	< 0.02	NA	< 0.02	92%	50%	140%	93%	60%	130%	93%	50%	140%
Chloroform	9732671		< 0.04	< 0.04	NA	< 0.04	97%	50%	140%	100%	60%	130%	86%	50%	140%
1,2-Dichloroethane	9732671		< 0.03	< 0.03	NA	< 0.03	88%	50%	140%	89%	60%	130%	87%	50%	140%
1,1,1-Trichloroethane	9732671		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	93%	60%	130%	80%	50%	140%
Carbon Tetrachloride	9732671		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	97%	60%	130%	83%	50%	140%
Benzene	9732671		< 0.02	< 0.02	NA	< 0.02	99%	50%	140%	89%	60%	130%	99%	50%	140%
1,2-Dichloropropane	9732671		< 0.03	< 0.03	NA	< 0.03	88%	50%	140%	89%	60%	130%	94%	50%	140%
Trichloroethylene	9732671		< 0.03	< 0.03	NA	< 0.03	86%	50%	140%	93%	60%	130%	104%	50%	140%
Bromodichloromethane	9732671		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	96%	60%	130%	74%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T412872

PROJECT: MRK-242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Dec 13, 2018			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
Methyl Isobutyl Ketone	9732671		< 0.50	< 0.50	NA	< 0.50	98%	50%	140%	88%	50%	140%	86%	50%	140%
1,1,2-Trichloroethane	9732671		< 0.04	< 0.04	NA	< 0.04	111%	50%	140%	107%	60%	130%	106%	50%	140%
Toluene	9732671		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	118%	60%	130%	116%	50%	140%
Dibromochloromethane	9732671		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	111%	60%	130%	104%	50%	140%
Ethylene Dibromide	9732671		< 0.04	< 0.04	NA	< 0.04	99%	50%	140%	100%	60%	130%	94%	50%	140%
Tetrachloroethylene	9732671		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	98%	60%	130%	111%	50%	140%
1,1,1,2-Tetrachloroethane	9732671		< 0.04	< 0.04	NA	< 0.04	95%	50%	140%	112%	60%	130%	109%	50%	140%
Chlorobenzene	9732671		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	116%	60%	130%	110%	50%	140%
Ethylbenzene	9732671		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	114%	60%	130%	114%	50%	140%
m & p-Xylene	9732671		< 0.05	< 0.05	NA	< 0.05	126%	50%	140%	122%	60%	130%	113%	50%	140%
Bromoform	9732671		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	111%	60%	130%	84%	50%	140%
Styrene	9732671		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	101%	60%	130%	96%	50%	140%
1,1,2,2-Tetrachloroethane	9732671		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	118%	60%	130%	109%	50%	140%
o-Xylene	9732671		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	101%	60%	130%	115%	50%	140%
1,3-Dichlorobenzene	9732671		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	108%	60%	130%	108%	50%	140%
1,4-Dichlorobenzene	9732671		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	118%	60%	130%	107%	50%	140%
1,2-Dichlorobenzene	9732671		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	106%	60%	130%	112%	50%	140%
1,3-Dichloropropene	9732671		< 0.04	< 0.04	NA	< 0.04	92%	50%	140%	95%	60%	130%	92%	50%	140%
n-Hexane	9732671		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	100%	60%	130%	80%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 to C10)	9732671		< 5	< 5	NA	< 5	80%	60%	130%	88%	85%	115%	76%	70%	130%
F2 (C10 to C16)	9724834		< 10	< 10	NA	< 10	80%	60%	130%	92%	80%	120%	84%	70%	130%
F3 (C16 to C34)	9724834		< 50	< 50	NA	< 50	98%	60%	130%	108%	80%	120%	89%	70%	130%
F4 (C34 to C50)	9724834		< 50	< 50	NA	< 50	86%	60%	130%	102%	80%	120%	108%	70%	130%
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).															
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	9741343		< 0.05	< 0.05	NA	< 0.05	110%	50%	140%	80%	50%	140%	88%	50%	140%
Acenaphthylene	9741343		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	83%	50%	140%	85%	50%	140%
Acenaphthene	9741343		< 0.05	< 0.05	NA	< 0.05	107%	50%	140%	88%	50%	140%	83%	50%	140%
Fluorene	9741343		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	83%	50%	140%	86%	50%	140%
Phenanthrene	9741343		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	85%	50%	140%	81%	50%	140%
Anthracene	9741343		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	95%	50%	140%	93%	50%	140%
Fluoranthene	9741343		< 0.05	< 0.05	NA	< 0.05	117%	50%	140%	85%	50%	140%	88%	50%	140%
Pyrene	9741343		< 0.05	< 0.05	NA	< 0.05	116%	50%	140%	85%	50%	140%	88%	50%	140%
Benz(a)anthracene	9741343		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	92%	50%	140%	88%	50%	140%
Chrysene	9741343		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	97%	50%	140%	100%	50%	140%
Benzo(b)fluoranthene	9741343		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	85%	50%	140%	95%	50%	140%
Benzo(k)fluoranthene	9741343		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	94%	50%	140%	93%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T412872

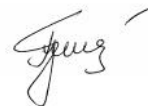
ATTENTION TO: Leah Whittaker

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Dec 13, 2018			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
Benzo(a)pyrene	9741343		< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	91%	50%	140%	83%	50%	140%
Indeno(1,2,3-cd)pyrene	9741343		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	85%	50%	140%	82%	50%	140%
Dibenz(a,h)anthracene	9741343		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	91%	50%	140%	86%	50%	140%
Benzo(g,h,i)perylene	9741343		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	85%	50%	140%	83%	50%	140%
2-and 1-methyl Naphthalene	9741343		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	83%	50%	140%	88%	50%	140%

Certified By:



Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T412872

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T412872

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T412872

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS



AGAT

Laboratories

med blue

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Leah Exp Services Inc
Contact: Leah Whitaker
Address: 220 Commerce Valley Dr W
MARKHAM, ON
905 695 3217 Fax: _____
Reports to be sent to: leah.whitaker@exp.com
1. Email: _____
2. Email: _____

Project Information:

Project: 242474-AP-010
Site Location: HN
Sampled By: _____
AGAT Quote #: _____ PO: _____

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04

Table 3 Indicate One
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture (Check One)

☐ Coarse

☒ Fine

☐ Sewer Use

☐ Sanitary

☐ Storm

Region _____ Indicate One

☐ MISA

☐ Regulation 558

☐ CCME

☐ Prov. Water Quality Objectives (PWQO)

☐ Other

Indicate One

Is this submission for a
Record of Site Condition?

☒ Yes ☐ No

Report Guideline on
Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CrVI

O. Reg 153

Metals and Inorganics
☐ All Metals ☐ 153 Metals (excl. Hydrides)
☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl ☐ CN
☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg
☐ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKN
☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂

Volatiles: ☒ VOC ☐ BTEX ☐ THM

PHCs F1 - F4

ABNs

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs

Sewer Use

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Metals and Inorganics	Full Metals Scan	Regulation/Custom Metals	Nutrients	Volatiles	PHCs F1 - F4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use
TH107 SS1	Nov 22/18	Am/pm	2	S			X											
TH107 SS2	Nov 22/18		3								X	X						
TH107 SS3	Nov 22/18		2		ON HOLD		X				X	X		X				
TH107	Nov 22/18		3															
TH108 SS1	Nov 21/18		2				X							X				
TH108 SS2	Nov 21/18		2		ON HOLD		X							X				
TH108 SS4	Nov 21/18		3															
TH108 SS7	Nov 21/18		3		ON HOLD						X	X						

Samples Relinquished By (Print Name and Sign):

Amy Nandakumar

Samples Relinquished By (Print Name and Sign):

Samples Relinquished By (Print Name and Sign):

Date

Nov 23/18

Date

Date

Time

Time

Time

Samples Received By (Print Name and Sign):

Sharnu Nov 23/18

Samples Received By (Print Name and Sign):

Samples Received By (Print Name and Sign):

Date

Nov 23/18

Date

Date

Time

4:00pm

Time

Time

Page 1 of 1

Nº: **T 082028**

CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-242474-A0-010

AGAT WORK ORDER: 18T414477

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Supervisor

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: Dec 11, 2018

PAGES (INCLUDING COVER): 23

VERSION*: 2

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

***NOTES**

VERSION 2: Revised report issued December 11, 2018.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

AGAT Laboratories (V2)

Member of: Association of Professional Engineers and Geoscientists of Alberta (APEGA)
Western Enviro-Agricultural Laboratory Association (WEALA)
Environmental Services Association of Alberta (ESAA)

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.

Page 1 of 23

Results relate only to the items tested and to all the items tested
All reportable information as specified by ISO 17025:2005 is available from AGAT Laboratories upon request

Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

Parameter	Unit	SAMPLE DESCRIPTION:		TH105 I SS1	TH106S SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-20	2018-11-23
		G / S	RDL	9744757	9744761
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2
Barium	µg/g	390	2	30	68
Beryllium	µg/g	5	0.5	<0.5	<0.5
Boron	µg/g	120	5	<5	5
Boron (Hot Water Soluble)	µg/g	1.5	0.10	0.83	0.50
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	2	7	12
Cobalt	µg/g	22	0.5	2.1	4.5
Copper	µg/g	180	1	6	12
Lead	µg/g	120	1	43	46
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	130	1	4	7
Selenium	µg/g	2.4	0.4	<0.4	<0.4
Silver	µg/g	25	0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	<0.5	<0.5
Vanadium	µg/g	86	1	11	16
Zinc	µg/g	340	5	24	60
Chromium VI	µg/g	10	0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040
Mercury	µg/g	1.8	0.10	0.16	0.11
Electrical Conductivity	mS/cm	0.7	0.005	0.566	1.15
Sodium Adsorption Ratio	NA	5	NA	2.99	9.97
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.74	9.41

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9744757-9744761 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

		SAMPLE DESCRIPTION: TH106S SS3	
		SAMPLE TYPE: Soil	
		DATE SAMPLED: 2018-11-23	
Parameter	Unit	G / S	RDL
			9744762
Electrical Conductivity	mS/cm	0.005	1.17
Sodium Adsorption Ratio	NA	NA	4.42

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

9744762 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

Parameter	Unit	SAMPLE DESCRIPTION:		TH105 I SS1	TH106S SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-20	2018-11-23
		G / S	RDL	9744757	9744761
Naphthalene	µg/g	0.75	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.17	0.05	<0.05	<0.05
Acenaphthene	µg/g	58	0.05	<0.05	<0.05
Fluorene	µg/g	69	0.05	<0.05	<0.05
Phenanthrene	µg/g	7.8	0.05	0.05	<0.05
Anthracene	µg/g	0.74	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	0.15	0.07
Pyrene	µg/g	78	0.05	0.14	0.07
Benz(a)anthracene	µg/g	0.63	0.05	<0.05	<0.05
Chrysene	µg/g	7.8	0.05	0.06	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	0.09	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.48	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	7.8	0.05	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	3.4	0.05	<0.05	<0.05
Moisture Content	%		0.1	6.9	18.8
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140	69	86	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9744757-9744761 Results are based on the dry weight of the soil.

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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:





Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

		SAMPLE DESCRIPTION:		TH105 I SS6
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-11-21
Parameter	Unit	G / S	RDL	9744759
F1 (C6 to C10)	µg/g	65	5	<5
F1 (C6 to C10) minus BTEX	µg/g	65	5	<5
F2 (C10 to C16)	µg/g	150	10	<10
F3 (C16 to C34)	µg/g	1300	50	<50
F4 (C34 to C50)	µg/g	5600	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	5600	50	NA
Moisture Content	%		0.1	19.9
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140		100

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9744759 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

		SAMPLE DESCRIPTION:		TH109S
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-11-26
Parameter	Unit	G / S	RDL	9744767
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	120
F3 (C16 to C34)	µg/L	500	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	97	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

9744767 The C6-C10 fraction is calculated using Toluene response factor.
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 indicated 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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

		SAMPLE DESCRIPTION:		TH106S SS1	
		SAMPLE TYPE:		Soil	
		DATE SAMPLED:		2018-11-23	
Parameter	Unit	G / S	RDL	9744761	
F1 (C6 to C10)	µg/g	65	5	<5	
F1 (C6 to C10) minus BTEX	µg/g	65	5	<5	
F2 (C10 to C16)	µg/g	150	10	<10	
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	
F3 (C16 to C34)	µg/g	1300	50	93	
F3 (C16 to C34) minus PAHs	µg/g		50	93	
F4 (C34 to C50)	µg/g	5600	50	<50	
Gravimetric Heavy Hydrocarbons	µg/g	5600	50	NA	
Moisture Content	%		0.1	18.8	
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		91	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9744761 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
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.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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:



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

		SAMPLE DESCRIPTION: TH106D SS8			
		SAMPLE TYPE: Soil			
		DATE SAMPLED: 2018-11-27			
Parameter	Unit	G / S	RDL	9744764	
Dichlorodifluoromethane	ug/g	25	0.05	<0.05	
Vinyl Chloride	ug/g	0.022	0.02	<0.02	
Bromomethane	ug/g	0.05	0.05	<0.05	
Trichlorofluoromethane	ug/g	5.8	0.05	<0.05	
Acetone	ug/g	28	0.50	<0.50	
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	
Methylene Chloride	ug/g	0.96	0.05	<0.05	
Trans- 1,2-Dichloroethylene	ug/g	0.75	0.05	<0.05	
Methyl tert-butyl Ether	ug/g	1.4	0.05	<0.05	
1,1-Dichloroethane	ug/g	11	0.02	<0.02	
Methyl Ethyl Ketone	ug/g	44	0.50	<0.50	
Cis- 1,2-Dichloroethylene	ug/g	30	0.02	<0.02	
Chloroform	ug/g	0.18	0.04	<0.04	
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	
1,1,1-Trichloroethane	ug/g	3.4	0.05	<0.05	
Carbon Tetrachloride	ug/g	0.12	0.05	<0.05	
Benzene	ug/g	0.17	0.02	<0.02	
1,2-Dichloropropane	ug/g	0.085	0.03	<0.03	
Trichloroethylene	ug/g	0.52	0.03	<0.03	
Bromodichloromethane	ug/g	13	0.05	<0.05	
Methyl Isobutyl Ketone	ug/g	4.3	0.50	<0.50	
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	
Toluene	ug/g	6	0.05	<0.05	
Dibromochloromethane	ug/g	9.4	0.05	<0.05	
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	
Tetrachloroethylene	ug/g	2.3	0.05	<0.05	
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	
Chlorobenzene	ug/g	2.7	0.05	<0.05	
Ethylbenzene	ug/g	15	0.05	<0.05	
m & p-Xylene	ug/g		0.05	<0.05	

Certified By:

Prakash Patel



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

SAMPLE DESCRIPTION: TH106D SS8				
SAMPLE TYPE: Soil				
DATE SAMPLED: 2018-11-27				
Parameter	Unit	G / S	RDL	9744764
Bromoform	ug/g	0.26	0.05	<0.05
Styrene	ug/g	2.2	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	6	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.097	0.05	<0.05
1,2-Dichlorobenzene	ug/g	4.3	0.05	<0.05
Xylene Mixture	ug/g	25	0.05	<0.05
1,3-Dichloropropene	µg/g	0.083	0.04	<0.04
n-Hexane	µg/g	34	0.05	<0.05
Moisture Content	%		0.1	16.2
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		101
4-Bromofluorobenzene	% Recovery	50-140		122

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9744764 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

5835 COOPERS AVENUE
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

Parameter	Unit	SAMPLE DESCRIPTION:		TH105 I SS6	TH106S SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-21	2018-11-23
		G / S	RDL	9744759	9744761
Dichlorodifluoromethane	µg/g	25	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.022	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	5.8	0.05	<0.05	<0.05
Acetone	ug/g	28	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.96	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.75	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	1.4	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	11	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	44	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	30	0.02	<0.02	<0.02
Chloroform	ug/g	0.18	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	3.4	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.12	0.05	<0.05	<0.05
Benzene	ug/g	0.17	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.085	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.52	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	13	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	4.3	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	6	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	9.4	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	2.3	0.05	1.9	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.7	0.05	<0.05	<0.05
Ethylbenzene	ug/g	15	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By:

Pinkal Patel



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

5835 COOPERS AVENUE
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

		SAMPLE DESCRIPTION:		TH105 I SS6	TH106S SS1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-11-21	2018-11-23
Parameter	Unit	G / S	RDL	9744759	9744761
Bromoform	ug/g	0.26	0.05	<0.05	<0.05
Styrene	ug/g	2.2	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	6	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.097	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	4.3	0.05	<0.05	<0.05
Xylene Mixture	ug/g	25	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.083	0.04	<0.04	<0.04
n-Hexane	µg/g	34	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		101	102
4-Bromofluorobenzene	% Recovery	50-140		112	110

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil -

Residential/Parkland/Institutional Property Use - Medium and Fine 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.

9744759-9744761 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

Parameter	Unit	SAMPLE DESCRIPTION:		TRIP BLANK	TH109S
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-11-20	2018-11-26
		G / S	RDL	9744766	9744767
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20
Vinyl Chloride	µg/L	1.7	0.17	<0.17	<0.17
Bromomethane	µg/L	56	0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	18
1,1-Dichloroethylene	µg/L	17	0.30	<0.30	<0.30
Methylene Chloride	µg/L	5500	0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	17	0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L	1400	0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	3100	0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	1500000	1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	17	0.20	<0.20	<0.20
Chloroform	µg/L	22	0.20	<0.20	1.1
1,2-Dichloroethane	µg/L	12	0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	6700	0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	8.4	0.20	<0.20	<0.20
Benzene	µg/L	430	0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	140	0.20	<0.20	<0.20
Trichloroethylene	µg/L	17	0.20	<0.20	<0.20
Bromodichloromethane	µg/L	85000	0.20	<0.20	0.51
Methyl Isobutyl Ketone	µg/L	580000	1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	30	0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.83	0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	17	0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	28	0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20	<0.20

Certified By:

Pinkal Patel



Certificate of Analysis

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-28

DATE REPORTED: 2018-12-11

		SAMPLE DESCRIPTION:		TRIP BLANK	TH109S
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-11-20	2018-11-26
Parameter	Unit	G / S	RDL	9744766	9744767
Bromoform	µg/L	770	0.10	<0.10	<0.10
Styrene	µg/L	9100	0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	15	0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	67	0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	45	0.30	<0.30	<0.30
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20
n-Hexane	µg/L	520	0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		91	85
4-Bromofluorobenzene	% Recovery	50-140		97	103

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9744761	TH106S SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity	mS/cm	0.7	1.15
9744761	TH106S SS1	ON T3 S RPI MFT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	NA	5	9.97

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T414477

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Soil Analysis

RPT Date: Dec 11, 2018			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) - Metals & Inorganics (Soil)															
Antimony	9742299		<0.8	<0.8	NA	< 0.8	105%	70%	130%	98%	80%	120%	101%	70%	130%
Arsenic	9742299		4	4	NA	< 1	121%	70%	130%	100%	80%	120%	107%	70%	130%
Barium	9742299		118	119	0.8%	< 2	100%	70%	130%	105%	80%	120%	99%	70%	130%
Beryllium	9742299		0.7	0.6	NA	< 0.5	97%	70%	130%	96%	80%	120%	103%	70%	130%
Boron	9742299		10	10	NA	< 5	77%	70%	130%	98%	80%	120%	95%	70%	130%
Boron (Hot Water Soluble)	9744757	9744757	0.83	0.89	7.0%	< 0.10	101%	60%	140%	98%	70%	130%	86%	60%	140%
Cadmium	9742299		<0.5	<0.5	NA	< 0.5	98%	70%	130%	99%	80%	120%	100%	70%	130%
Chromium	9742299		26	27	3.8%	< 2	99%	70%	130%	103%	80%	120%	100%	70%	130%
Cobalt	9742299		10.2	10.3	1.0%	< 0.5	105%	70%	130%	98%	80%	120%	101%	70%	130%
Copper	9742299		23	24	4.3%	< 1	100%	70%	130%	106%	80%	120%	92%	70%	130%
Lead	9742299		22	22	0.0%	< 1	106%	70%	130%	109%	80%	120%	110%	70%	130%
Molybdenum	9742299		<0.5	<0.5	NA	< 0.5	100%	70%	130%	100%	80%	120%	96%	70%	130%
Nickel	9742299		18	19	5.4%	< 1	103%	70%	130%	99%	80%	120%	96%	70%	130%
Selenium	9742299		<0.4	0.5	NA	< 0.4	127%	70%	130%	91%	80%	120%	87%	70%	130%
Silver	9742299		<0.2	<0.2	NA	< 0.2	90%	70%	130%	100%	80%	120%	83%	70%	130%
Thallium	9742299		<0.4	<0.4	NA	< 0.4	88%	70%	130%	99%	80%	120%	93%	70%	130%
Uranium	9742299		0.6	0.6	NA	< 0.5	111%	70%	130%	96%	80%	120%	101%	70%	130%
Vanadium	9742299		34	34	0.0%	< 1	104%	70%	130%	100%	80%	120%	108%	70%	130%
Zinc	9742299		55	55	0.0%	< 5	100%	70%	130%	101%	80%	120%	108%	70%	130%
Chromium VI	9743983		<0.2	<0.2	NA	< 0.2	113%	70%	130%	108%	80%	120%	118%	70%	130%
Cyanide	9743961		<0.040	<0.040	NA	< 0.040	106%	70%	130%	104%	80%	120%	107%	70%	130%
Mercury	9742299		<0.10	<0.10	NA	< 0.10	98%	70%	130%	95%	80%	120%	87%	70%	130%
Electrical Conductivity	9744757	9744757	0.566	0.561	0.9%	< 0.005	92%	90%	110%	NA			NA		
Sodium Adsorption Ratio	9744757	9744757	2.99	3.00	0.3%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	9743359		7.63	7.64	0.1%	NA	100%	80%	120%	NA			NA		

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

O. Reg. 153(511) - ORPs (Soil)

Electrical Conductivity	9765621	0.156	0.164	5.0%	< 0.005	96%	90%	110%	NA		NA
Sodium Adsorption Ratio	9765621	0.107	0.114	6.3%	NA	NA			NA		NA

Comments: NA signifies Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Dec 11, 2018			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) - PAHs (Soil)

Naphthalene	9743958		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	100%	50%	140%	96%	50%	140%
Acenaphthylene	9743958		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	99%	50%	140%	93%	50%	140%
Acenaphthene	9743958		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	98%	50%	140%	95%	50%	140%
Fluorene	9743958		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	98%	50%	140%	97%	50%	140%
Phenanthrene	9743958		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	88%	50%	140%	88%	50%	140%
Anthracene	9743958		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	99%	50%	140%	96%	50%	140%
Fluoranthene	9743958		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	95%	50%	140%	88%	50%	140%
Pyrene	9743958		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	95%	50%	140%	89%	50%	140%
Benz(a)anthracene	9743958		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	99%	50%	140%	86%	50%	140%
Chrysene	9743958		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	102%	50%	140%	85%	50%	140%
Benzo(b)fluoranthene	9743958		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	95%	50%	140%	98%	50%	140%
Benzo(k)fluoranthene	9743958		< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	105%	50%	140%	97%	50%	140%
Benzo(a)pyrene	9743958		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	111%	50%	140%	94%	50%	140%
Indeno(1,2,3-cd)pyrene	9743958		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	106%	50%	140%	86%	50%	140%
Dibenz(a,h)anthracene	9743958		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	106%	50%	140%	86%	50%	140%
Benzo(g,h,i)perylene	9743958		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	99%	50%	140%	90%	50%	140%
2-and 1-methyl Naphthalene	9743958		< 0.05	< 0.05	NA	< 0.05	107%	50%	140%	101%	50%	140%	101%	50%	140%

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

Dichlorodifluoromethane	9738741		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	81%	50%	140%	80%	50%	140%
Vinyl Chloride	9738741		< 0.02	< 0.02	NA	< 0.02	79%	50%	140%	91%	50%	140%	84%	50%	140%
Bromomethane	9738741		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	93%	50%	140%	87%	50%	140%
Trichlorofluoromethane	9738741		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	92%	50%	140%	95%	50%	140%
Acetone	9738741		< 0.50	< 0.50	NA	< 0.50	110%	50%	140%	113%	50%	140%	114%	50%	140%
1,1-Dichloroethylene	9738741		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	81%	60%	130%	82%	50%	140%
Methylene Chloride	9738741		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	115%	60%	130%	106%	50%	140%
Trans- 1,2-Dichloroethylene	9738741		< 0.05	< 0.05	NA	< 0.05	114%	50%	140%	93%	60%	130%	111%	50%	140%
Methyl tert-butyl Ether	9738741		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	106%	60%	130%	110%	50%	140%
1,1-Dichloroethane	9738741		< 0.02	< 0.02	NA	< 0.02	105%	50%	140%	86%	60%	130%	86%	50%	140%
Methyl Ethyl Ketone	9738741		< 0.50	< 0.50	NA	< 0.50	98%	50%	140%	101%	50%	140%	80%	50%	140%
Cis- 1,2-Dichloroethylene	9738741		< 0.02	< 0.02	NA	< 0.02	100%	50%	140%	91%	60%	130%	93%	50%	140%
Chloroform	9738741		< 0.04	< 0.04	NA	< 0.04	105%	50%	140%	98%	60%	130%	97%	50%	140%
1,2-Dichloroethane	9738741		< 0.03	< 0.03	NA	< 0.03	95%	50%	140%	86%	60%	130%	95%	50%	140%
1,1,1-Trichloroethane	9738741		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	84%	60%	130%	87%	50%	140%
Carbon Tetrachloride	9738741		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	87%	60%	130%	88%	50%	140%
Benzene	9738741		< 0.02	< 0.02	NA	< 0.02	107%	50%	140%	89%	60%	130%	93%	50%	140%
1,2-Dichloropropane	9738741		< 0.03	< 0.03	NA	< 0.03	92%	50%	140%	86%	60%	130%	81%	50%	140%
Trichloroethylene	9738741		< 0.03	< 0.03	NA	< 0.03	92%	50%	140%	94%	60%	130%	102%	50%	140%
Bromodichloromethane	9738741		< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	84%	60%	130%	75%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Dec 11, 2018			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
Methyl Isobutyl Ketone	9738741		< 0.50	< 0.50	NA	< 0.50	97%	50%	140%	81%	50%	140%	85%	50%	140%
1,1,2-Trichloroethane	9738741		< 0.04	< 0.04	NA	< 0.04	118%	50%	140%	108%	60%	130%	108%	50%	140%
Toluene	9738741		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	107%	60%	130%	104%	50%	140%
Dibromochloromethane	9738741		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	91%	60%	130%	90%	50%	140%
Ethylene Dibromide	9738741		< 0.04	< 0.04	NA	< 0.04	98%	50%	140%	96%	60%	130%	88%	50%	140%
Tetrachloroethylene	9738741		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	103%	60%	130%	114%	50%	140%
1,1,1,2-Tetrachloroethane	9738741		< 0.04	< 0.04	NA	< 0.04	100%	50%	140%	107%	60%	130%	82%	50%	140%
Chlorobenzene	9738741		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	97%	60%	130%	118%	50%	140%
Ethylbenzene	9738741		< 0.05	< 0.05	NA	< 0.05	107%	50%	140%	115%	60%	130%	114%	50%	140%
m & p-Xylene	9738741		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	116%	60%	130%	112%	50%	140%
Bromoform	9738741		< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	90%	60%	130%	87%	50%	140%
Styrene	9738741		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	93%	60%	130%	97%	50%	140%
1,1,2,2-Tetrachloroethane	9738741		< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	117%	60%	130%	103%	50%	140%
o-Xylene	9738741		< 0.05	< 0.05	NA	< 0.05	109%	50%	140%	84%	60%	130%	103%	50%	140%
1,3-Dichlorobenzene	9738741		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	104%	60%	130%	107%	50%	140%
1,4-Dichlorobenzene	9738741		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	115%	60%	130%	119%	50%	140%
1,2-Dichlorobenzene	9738741		< 0.05	< 0.05	NA	< 0.05	105%	50%	140%	100%	60%	130%	110%	50%	140%
1,3-Dichloropropene	9738741		< 0.04	< 0.04	NA	< 0.04	94%	50%	140%	90%	60%	130%	83%	50%	140%
n-Hexane	9738741		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	109%	60%	130%	77%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)															
F1 (C6 to C10)	9732425		< 5	< 5	NA	< 5	82%	60%	130%	89%	85%	115%	79%	70%	130%
F2 (C10 to C16)	9744761	9744761	< 10	< 10	NA	< 10	99%	60%	130%	92%	80%	120%	85%	70%	130%
F3 (C16 to C34)	9744761	9744761	93	85	NA	< 50	101%	60%	130%	103%	80%	120%	96%	70%	130%
F4 (C34 to C50)	9744761	9744761	< 50	< 50	NA	< 50	86%	60%	130%	108%	80%	120%	102%	70%	130%
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	9741229		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	89%	50%	140%	99%	50%	140%
Vinyl Chloride	9741229		< 0.17	< 0.17	NA	< 0.17	79%	50%	140%	76%	50%	140%	98%	50%	140%
Bromomethane	9741229		< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	79%	50%	140%	119%	50%	140%
Trichlorofluoromethane	9741229		< 0.40	< 0.40	NA	< 0.40	90%	50%	140%	79%	50%	140%	93%	50%	140%
Acetone	9741229		< 1.0	< 1.0	NA	< 1.0	111%	50%	140%	110%	50%	140%	106%	50%	140%
1,1-Dichloroethylene	9741229		< 0.30	< 0.30	NA	< 0.30	86%	50%	140%	74%	60%	130%	92%	50%	140%
Methylene Chloride	9741229		< 0.30	< 0.30	NA	< 0.30	102%	50%	140%	101%	60%	130%	102%	50%	140%
trans- 1,2-Dichloroethylene	9741229		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	78%	60%	130%	111%	50%	140%
Methyl tert-butyl ether	9741229		< 0.20	< 0.20	NA	< 0.20	110%	50%	140%	91%	60%	130%	96%	50%	140%
1,1-Dichloroethane	9741229		< 0.30	< 0.30	NA	< 0.30	90%	50%	140%	73%	60%	130%	77%	50%	140%
Methyl Ethyl Ketone	9741229		< 1.0	< 1.0	NA	< 1.0	75%	50%	140%	99%	50%	140%	90%	50%	140%
cis- 1,2-Dichloroethylene	9741229		< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	79%	60%	130%	85%	50%	140%
Chloroform	9741229		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	81%	60%	130%	85%	50%	140%
1,2-Dichloroethane	9741229		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	87%	60%	130%	85%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T414477

PROJECT: MRK-242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Dec 11, 2018			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
1,1,1-Trichloroethane	9741229		< 0.30	< 0.30	NA	< 0.30	72%	50%	140%	78%	60%	130%	79%	50%	140%
Carbon Tetrachloride	9741229		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	86%	60%	130%	87%	50%	140%
Benzene	9741229		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	81%	60%	130%	87%	50%	140%
1,2-Dichloropropane	9741229		< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	78%	60%	130%	84%	50%	140%
Trichloroethylene	9741229		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	78%	60%	130%	81%	50%	140%
Bromodichloromethane	9741229		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	82%	60%	130%	115%	50%	140%
Methyl Isobutyl Ketone	9741229		< 1.0	< 1.0	NA	< 1.0	83%	50%	140%	83%	50%	140%	84%	50%	140%
1,1,2-Trichloroethane	9741229		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	89%	60%	130%	98%	50%	140%
Toluene	9741229		< 0.20	< 0.20	NA	< 0.20	115%	50%	140%	107%	60%	130%	105%	50%	140%
Dibromochloromethane	9741229		< 0.10	< 0.10	NA	< 0.10	83%	50%	140%	83%	60%	130%	85%	50%	140%
Ethylene Dibromide	9741229		< 0.10	< 0.10	NA	< 0.10	111%	50%	140%	77%	60%	130%	83%	50%	140%
Tetrachloroethylene	9741229		< 0.20	< 0.20	NA	< 0.20	94%	50%	140%	99%	60%	130%	99%	50%	140%
1,1,1,2-Tetrachloroethane	9741229		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	86%	60%	130%	75%	50%	140%
Chlorobenzene	9741229		< 0.10	< 0.10	NA	< 0.10	108%	50%	140%	101%	60%	130%	101%	50%	140%
Ethylbenzene	9741229		< 0.10	< 0.10	NA	< 0.10	115%	50%	140%	103%	60%	130%	97%	50%	140%
m & p-Xylene	9741229		< 0.20	< 0.20	NA	< 0.20	115%	50%	140%	106%	60%	130%	103%	50%	140%
Bromoform	9741229		< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	80%	60%	130%	89%	50%	140%
Styrene	9741229		< 0.10	< 0.10	NA	< 0.10	83%	50%	140%	100%	60%	130%	83%	50%	140%
1,1,2,2-Tetrachloroethane	9741229		< 0.10	< 0.10	NA	< 0.10	114%	50%	140%	96%	60%	130%	106%	50%	140%
o-Xylene	9741229		< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	115%	60%	130%	114%	50%	140%
1,3-Dichlorobenzene	9741229		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	101%	60%	130%	92%	50%	140%
1,4-Dichlorobenzene	9741229		< 0.10	< 0.10	NA	< 0.10	112%	50%	140%	103%	60%	130%	99%	50%	140%
1,2-Dichlorobenzene	9741229		< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	90%	60%	130%	95%	50%	140%
1,3-Dichloropropene	9741229		< 0.30	< 0.30	NA	< 0.30	85%	50%	140%	111%	60%	130%	79%	50%	140%
n-Hexane	9741229		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	95%	60%	130%	88%	50%	140%

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

F1 (C6 - C10)	9749603		< 25	< 25	NA	< 25	80%	60%	140%	89%	60%	140%	87%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	87%	60%	140%	99%	60%	140%	85%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	87%	60%	140%	105%	60%	140%	88%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	96%	60%	140%	102%	60%	140%	96%	60%	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).

Imkhal Patel

Certified By:

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T414477

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T414477

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	ORG-91-5106	EPA SW-846 3541 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	GC / FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34) minus PAHs	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T414477

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T414477

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	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
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	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
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	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
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	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
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS



AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Exp Services Inc
Contact: Leah Whitaker
Address: 220 Commerce Valley Dr W
MARKHAM, ON
Phone: 905 605 3217 Fax: _____
Reports to be sent to: leah.whitaker@exp.com
1. Email: _____
2. Email: _____

Project Information:

Project: 242474-AP-010
Site Location: HN
Sampled By: _____
AGAT Quote #: _____ PO: _____

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04

Table 3

☐ Ind/Com

☐ Res/Park

☒ Agriculture

Soil Texture (Check One)

☐ Coarse

☒ Fine

☐ Sewer Use

☐ Sanitary

☐ Storm

Region _____

Indicate One

☐ MISA

☐ Regulation 558

☐ CCME

☐ Prov. Water Quality Objectives (PWQO)

☐ Other

Indicate One

Is this submission for a
Record of Site Condition?

☒ Yes ☐ No

Report Guideline on
Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CrVI

O. Reg 153

All Metals ☐ 153 Metals (excl. Hydrides)

Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl ☐ CN

☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg

☐ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKN

☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂

Volatiles: ☒ VOC ☐ BTEX ☐ THM

PHCs F1 - F4

ABNS

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNS ☐ B(a)P ☐ PCBs

Sewer Use

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Metals and Inorganics	Field Filtered - Metals, Hg, CrVI	O. Reg 153	Volatiles	PHCs F1 - F4	ABNS	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use
TH105 I SS1	Nov 20/12	AM/PM	1	S			X										
TH105 I SS3	Nov 20/12		1	S	ON HOLD		X										
TH105 I SS6	Nov 21/12		3	S													
TH105 I SS9	Nov 21/12		3	S	ON HOLD												
TH106 S SS1	Nov 23/12		1	S			X										
TH106 S SS3	Nov 23/12		1	S	ON HOLD		X										
TH106 S SS1	Nov 23/12		2	S													
TH106 S SS5	Nov 23/12		2	S	ON HOLD												
TH106 S SS8	Nov 23/12		3	S													
TH109 S	Nov 26/12		4	GW													
TRIP BLANK	Nov 26/12 - Nov 28/12		3	GW													

Samples Relinquished By (Print Name and Sign): <u>HARRY NAIDAKUMAR</u>	Date: <u>Nov 28/12</u>	Time: <u>1:15</u>	Samples Received By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Nov 28/12</u>	Time: <u>1:15</u>
Samples Relinquished By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Nov 28/12</u>	Time: <u>3:00</u>	Samples Received By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Nov 28/12</u>	Time: <u>3:00</u>
Samples Relinquished By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Nov 28/12</u>	Time: <u>3:00</u>	Samples Received By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Nov 28/12</u>	Time: <u>3:00</u>

Laboratory Use Only

Work Order #: 18T414477
Cooler Quantity: Model
Arrival Temperatures: 8.9 4.0 3.7
3.0 3.3 3.9
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: _____

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-00242474-A0-010

AGAT WORK ORDER: 18T407465

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

DATE REPORTED: Nov 14, 2018

PAGES (INCLUDING COVER): 9

VERSION*: 1

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

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T407465

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-11-08

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION:		TH103
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-11-07
Parameter	Unit	G / S	RDL	9687893
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	170
F3 (C16 to C34)	µg/L	500	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	68	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

9687893 The C6-C10 fraction is calculated using Toluene response factor.
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 indicated 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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T407465

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-08

DATE REPORTED: 2018-11-14

Parameter	Unit	SAMPLE DESCRIPTION:		TH103	Trip Blank
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-11-07	2018-11-07
		G / S	RDL	9687893	9687894
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20
Vinyl Chloride	µg/L	1.7	0.17	<0.17	<0.17
Bromomethane	µg/L	56	0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	17	0.30	<0.30	<0.30
Methylene Chloride	µg/L	5500	0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	17	0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L	1400	0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	3100	0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	1500000	1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	17	0.20	<0.20	<0.20
Chloroform	µg/L	22	0.20	1.4	<0.20
1,2-Dichloroethane	µg/L	12	0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	6700	0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	8.4	0.20	<0.20	<0.20
Benzene	µg/L	430	0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	140	0.20	<0.20	<0.20
Trichloroethylene	µg/L	17	0.20	0.39	<0.20
Bromodichloromethane	µg/L	85000	0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	580000	1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	30	0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	0.54	<0.20
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.83	0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	17	0.20	17	<0.20
1,1,1,2-Tetrachloroethane	µg/L	28	0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20	<0.20

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 18T407465

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

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SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-08

DATE REPORTED: 2018-11-14

		SAMPLE DESCRIPTION:		TH103	Trip Blank
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-11-07	2018-11-07
Parameter	Unit	G / S	RDL	9687893	9687894
Bromoform	µg/L	770	0.10	<0.10	<0.10
Styrene	µg/L	9100	0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	15	0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	67	0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	45	0.30	<0.30	<0.30
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20
n-Hexane	µg/L	520	0.20	0.44	<0.20
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		97	104
4-Bromofluorobenzene	% Recovery	50-140		108	95

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:




AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18T407465

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9687893	TH103	ON T3 NPGW MFT	O. Reg. 153(511) - PHCs F1 - F4 (-BTEx) (Water)	F2 (C10 to C16)	µg/L	150	170

Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T407465

PROJECT: MRK-00242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Nov 14, 2018			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) - VOCs (Water)															
Dichlorodifluoromethane	9688138		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	116%	50%	140%	88%	50%	140%
Vinyl Chloride	9688138		< 0.17	< 0.17	NA	< 0.17	91%	50%	140%	104%	50%	140%	77%	50%	140%
Bromomethane	9688138		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	109%	50%	140%	81%	50%	140%
Trichlorofluoromethane	9688138		< 0.40	< 0.40	NA	< 0.40	80%	50%	140%	88%	50%	140%	77%	50%	140%
Acetone	9688138		< 1.0	< 1.0	NA	< 1.0	116%	50%	140%	92%	50%	140%	113%	50%	140%
1,1-Dichloroethylene	9688138		< 0.30	< 0.30	NA	< 0.30	111%	50%	140%	88%	60%	130%	78%	50%	140%
Methylene Chloride	9688138		< 0.30	< 0.30	NA	< 0.30	101%	50%	140%	116%	60%	130%	101%	50%	140%
trans- 1,2-Dichloroethylene	9688138		< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	84%	60%	130%	79%	50%	140%
Methyl tert-butyl ether	9688138		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	98%	60%	130%	77%	50%	140%
1,1-Dichloroethane	9688138		< 0.30	< 0.30	NA	< 0.30	104%	50%	140%	83%	60%	130%	79%	50%	140%
Methyl Ethyl Ketone	9688138		< 1.0	< 1.0	NA	< 1.0	79%	50%	140%	93%	50%	140%	105%	50%	140%
cis- 1,2-Dichloroethylene	9688138		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	72%	60%	130%	85%	50%	140%
Chloroform	9688138		< 0.20	< 0.20	NA	< 0.20	79%	50%	140%	87%	60%	130%	80%	50%	140%
1,2-Dichloroethane	9688138		< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	97%	60%	130%	86%	50%	140%
1,1,1-Trichloroethane	9688138		< 0.30	< 0.30	NA	< 0.30	86%	50%	140%	73%	60%	130%	97%	50%	140%
Carbon Tetrachloride	9688138		< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	76%	60%	130%	97%	50%	140%
Benzene	9688138		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	87%	60%	130%	87%	50%	140%
1,2-Dichloropropane	9688138		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	90%	60%	130%	90%	50%	140%
Trichloroethylene	9688138		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	88%	60%	130%	80%	50%	140%
Bromodichloromethane	9688138		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	76%	60%	130%	78%	50%	140%
Methyl Isobutyl Ketone	9688138		< 1.0	< 1.0	NA	< 1.0	89%	50%	140%	83%	50%	140%	114%	50%	140%
1,1,2-Trichloroethane	9688138		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	97%	60%	130%	96%	50%	140%
Toluene	9688138		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	108%	60%	130%	84%	50%	140%
Dibromochloromethane	9688138		< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	80%	60%	130%	78%	50%	140%
Ethylene Dibromide	9688138		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	92%	60%	130%	78%	50%	140%
Tetrachloroethylene	9688138		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	100%	60%	130%	96%	50%	140%
1,1,1,2-Tetrachloroethane	9688138		< 0.10	< 0.10	NA	< 0.10	99%	50%	140%	87%	60%	130%	97%	50%	140%
Chlorobenzene	9688138		< 0.10	< 0.10	NA	< 0.10	104%	50%	140%	88%	60%	130%	94%	50%	140%
Ethylbenzene	9688138		< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	96%	60%	130%	105%	50%	140%
m & p-Xylene	9688138		< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	98%	60%	130%	79%	50%	140%
Bromoform	9688138		< 0.10	< 0.10	NA	< 0.10	90%	50%	140%	78%	60%	130%	84%	50%	140%
Styrene	9688138		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	99%	60%	130%	78%	50%	140%
1,1,2,2-Tetrachloroethane	9688138		< 0.10	< 0.10	NA	< 0.10	104%	50%	140%	96%	60%	130%	73%	50%	140%
o-Xylene	9688138		< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	102%	60%	130%	72%	50%	140%
1,3-Dichlorobenzene	9688138		< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	81%	60%	130%	87%	50%	140%
1,4-Dichlorobenzene	9688138		< 0.10	< 0.10	NA	< 0.10	91%	50%	140%	92%	60%	130%	82%	50%	140%
1,2-Dichlorobenzene	9688138		< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	90%	60%	130%	80%	50%	140%
n-Hexane	9688138		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	78%	60%	130%	98%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T407465

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Nov 14, 2018			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

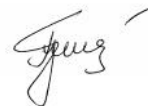
O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

F1 (C6 - C10)	9689612		< 25	< 25	NA	< 25	102%	60%	140%	106%	60%	140%	85%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	92%	60%	140%	78%	60%	140%	77%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	94%	60%	140%	105%	60%	140%	95%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	86%	60%	140%	101%	60%	140%	90%	60%	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:



Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T407465

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	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
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	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
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	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
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	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
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-00242474-A0-010

AGAT WORK ORDER: 18T408388

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: Nov 16, 2018

PAGES (INCLUDING COVER): 10

VERSION*: 1

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

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T408388

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY: A. Fernandes

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-11-12

DATE REPORTED: 2018-11-16

		SAMPLE DESCRIPTION:		TH104	TH101S	TH1010S
		SAMPLE TYPE:		Water	Water	Water
		DATE SAMPLED:		2018-11-09	2018-11-09	2018-11-09
Parameter	Unit	G / S	RDL	9696661	9696669	9696670
F1 (C6 - C10)	µg/L	750	25	<25	240	290
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	240	290
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	310	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA	NA
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140				
				78	86	79

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T408388

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY: A. Fernandes

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-11-12

DATE REPORTED: 2018-11-16

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

9696661 The C6-C10 fraction is calculated using Toluene response factor.
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 indicated 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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

9696669-9696670 The F1 result is due to the presence of three large individual unidentified compounds.
The C6-C10 fraction is calculated using Toluene response factor.
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 indicated 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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Certificate of Analysis

AGAT WORK ORDER: 18T408388

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY: A. Fernandes

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

DATE RECEIVED: 2018-11-12

DATE REPORTED: 2018-11-16

Parameter	Unit	SAMPLE DESCRIPTION:		TH104	TH101S	TH1010S	Trip Blank
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2018-11-09	2018-11-09	2018-11-09	2018-11-09
		G / S	RDL	9696661	9696669	9696670	9696672
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	1.7	0.17	<0.17	11	10	<0.17
Bromomethane	µg/L	56	0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	17	0.30	<0.30	5.4	4.8	<0.30
Methylene Chloride	µg/L	5500	0.30	<0.30	<0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	17	0.20	<0.20	240	270	<0.20
Methyl tert-butyl ether	µg/L	1400	0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	3100	0.30	<0.30	<0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	1500000	1.0	<1.0	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	17	0.20	<0.20	460	390	<0.20
Chloroform	µg/L	22	0.20	4.2	1.8	1.7	<0.20
1,2-Dichloroethane	µg/L	12	0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	6700	0.30	<0.30	<0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	8.4	0.20	<0.20	<0.20	<0.20	<0.20
Benzene	µg/L	430	0.20	<0.20	0.24	0.21	<0.20
1,2-Dichloropropane	µg/L	140	0.20	<0.20	<0.20	<0.20	<0.20
Trichloroethylene	µg/L	17	0.20	<0.20	650	620	<0.20
Bromodichloromethane	µg/L	85000	0.20	0.37	<0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	580000	1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	30	0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20	<0.20	<0.20
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.83	0.10	<0.10	<0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	17	0.20	6.7	140	180	<0.20
1,1,1,2-Tetrachloroethane	µg/L	28	0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T408388

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY: A. Fernandes

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

DATE RECEIVED: 2018-11-12

DATE REPORTED: 2018-11-16

		SAMPLE DESCRIPTION:		TH104	TH101S	TH1010S	Trip Blank
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2018-11-09	2018-11-09	2018-11-09	2018-11-09
Parameter	Unit	G / S	RDL	9696661	9696669	9696670	9696672
Bromoform	µg/L	770	0.10	<0.10	<0.10	<0.10	<0.10
Styrene	µg/L	9100	0.10	<0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	15	0.10	<0.10	<0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	67	0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	45	0.30	<0.30	<0.30	<0.30	<0.30
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20	<0.20	<0.20
n-Hexane	µg/L	520	0.20	<0.20	<0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits					
Toluene-d8	% Recovery	50-140		84	78	76	74
4-Bromofluorobenzene	% Recovery	50-140		105	98	97	105

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:




Guideline Violation

AGAT WORK ORDER: 18T408388

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9696669	TH101S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	Tetrachloroethylene	µg/L	17	140
9696669	TH101S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	Trichloroethylene	µg/L	17	650
9696669	TH101S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	Vinyl Chloride	µg/L	1.7	11
9696669	TH101S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	cis- 1,2-Dichloroethylene	µg/L	17	460
9696669	TH101S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	trans- 1,2-Dichloroethylene	µg/L	17	240
9696670	TH1010S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	Tetrachloroethylene	µg/L	17	180
9696670	TH1010S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	Trichloroethylene	µg/L	17	620
9696670	TH1010S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	Vinyl Chloride	µg/L	1.7	10
9696670	TH1010S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	cis- 1,2-Dichloroethylene	µg/L	17	390
9696670	TH1010S	ON T3 NPGW MFT	O. Reg. 153(511) - VOCs (Water)	trans- 1,2-Dichloroethylene	µg/L	17	270

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T408388

ATTENTION TO: Leah Whittaker

SAMPLED BY: A. Fernandes

Trace Organics Analysis

RPT Date: Nov 16, 2018			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) - VOCs (Water)															
Dichlorodifluoromethane	9684772		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	112%	50%	140%	84%	50%	140%
Vinyl Chloride	9684772		< 0.17	< 0.17	NA	< 0.17	77%	50%	140%	105%	50%	140%	73%	50%	140%
Bromomethane	9684772		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	113%	50%	140%	93%	50%	140%
Trichlorofluoromethane	9684772		< 0.40	< 0.40	NA	< 0.40	73%	50%	140%	88%	50%	140%	82%	50%	140%
Acetone	9684772		< 1.0	< 1.0	NA	< 1.0	109%	50%	140%	110%	50%	140%	109%	50%	140%
1,1-Dichloroethylene	9684772		< 0.30	< 0.30	NA	< 0.30	109%	50%	140%	107%	60%	130%	103%	50%	140%
Methylene Chloride	9684772		< 0.30	< 0.30	NA	< 0.30	105%	50%	140%	109%	60%	130%	103%	50%	140%
trans- 1,2-Dichloroethylene	9684772		< 0.20	< 0.20	NA	< 0.20	94%	50%	140%	86%	60%	130%	87%	50%	140%
Methyl tert-butyl ether	9684772		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	85%	60%	130%	81%	50%	140%
1,1-Dichloroethane	9684772		< 0.30	< 0.30	NA	< 0.30	100%	50%	140%	91%	60%	130%	80%	50%	140%
Methyl Ethyl Ketone	9684772		< 1.0	< 1.0	NA	< 1.0	96%	50%	140%	109%	50%	140%	107%	50%	140%
cis- 1,2-Dichloroethylene	9684772		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	76%	60%	130%	76%	50%	140%
Chloroform	9684772		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	89%	60%	130%	84%	50%	140%
1,2-Dichloroethane	9684772		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	88%	60%	130%	98%	50%	140%
1,1,1-Trichloroethane	9684772		< 0.30	< 0.30	NA	< 0.30	76%	50%	140%	89%	60%	130%	88%	50%	140%
Carbon Tetrachloride	9684772		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	72%	60%	130%	77%	50%	140%
Benzene	9684772		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	77%	60%	130%	86%	50%	140%
1,2-Dichloropropane	9684772		< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	92%	60%	130%	84%	50%	140%
Trichloroethylene	9684772		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	77%	60%	130%	85%	50%	140%
Bromodichloromethane	9684772		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	99%	60%	130%	81%	50%	140%
Methyl Isobutyl Ketone	9684772		< 1.0	< 1.0	NA	< 1.0	80%	50%	140%	86%	50%	140%	81%	50%	140%
1,1,2-Trichloroethane	9684772		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	99%	60%	130%	94%	50%	140%
Toluene	9684772		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	110%	60%	130%	107%	50%	140%
Dibromochloromethane	9684772		< 0.10	< 0.10	NA	< 0.10	77%	50%	140%	77%	60%	130%	76%	50%	140%
Ethylene Dibromide	9684772		< 0.10	< 0.10	NA	< 0.10	94%	50%	140%	94%	60%	130%	89%	50%	140%
Tetrachloroethylene	9684772		< 0.20	< 0.20	NA	< 0.20	110%	50%	140%	101%	60%	130%	106%	50%	140%
1,1,1,2-Tetrachloroethane	9684772		< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	84%	60%	130%	78%	50%	140%
Chlorobenzene	9684772		< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	101%	60%	130%	99%	50%	140%
Ethylbenzene	9684772		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	96%	60%	130%	95%	50%	140%
m & p-Xylene	9684772		< 0.20	< 0.20	NA	< 0.20	108%	50%	140%	101%	60%	130%	101%	50%	140%
Bromoform	9684772		< 0.10	< 0.10	NA	< 0.10	80%	50%	140%	77%	60%	130%	74%	50%	140%
Styrene	9684772		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	100%	60%	130%	100%	50%	140%
1,1,2,2-Tetrachloroethane	9684772		< 0.10	< 0.10	NA	< 0.10	78%	50%	140%	86%	60%	130%	98%	50%	140%
o-Xylene	9684772		< 0.10	< 0.10	NA	< 0.10	117%	50%	140%	108%	60%	130%	108%	50%	140%
1,3-Dichlorobenzene	9684772		< 0.10	< 0.10	NA	< 0.10	104%	50%	140%	95%	60%	130%	97%	50%	140%
1,4-Dichlorobenzene	9684772		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	95%	60%	130%	102%	50%	140%
1,2-Dichlorobenzene	9684772		< 0.10	< 0.10	NA	< 0.10	106%	50%	140%	95%	60%	130%	99%	50%	140%
1,3-Dichloropropene	9684772		< 0.30	< 0.30	NA	< 0.30	86%	50%	140%	97%	60%	130%	85%	50%	140%
n-Hexane	9684772		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	74%	60%	130%	103%	50%	140%

AGAT QUALITY ASSURANCE REPORT (V1)

Page 7 of 10

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.

Results relate only to the items tested and to all the items tested

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T408388

ATTENTION TO: Leah Whittaker

SAMPLED BY: A. Fernandes

Trace Organics Analysis (Continued)

RPT Date: Nov 16, 2018			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 (-BTEX) (Water)

F1 (C6 - C10)	9689612		< 25	< 25	NA	< 25	102%	60%	140%	106%	60%	140%	85%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	100%	60%	140%	65%	60%	140%	70%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	97%	60%	140%	118%	60%	140%	89%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	87%	60%	140%	115%	60%	140%	92%	60%	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:



Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T408388

ATTENTION TO: Leah Whittaker

SAMPLED BY: A. Fernandes

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	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
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	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
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	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
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	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
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-00242474-A0-010

AGAT WORK ORDER: 18T410339

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Nov 21, 2018

PAGES (INCLUDING COVER): 8

VERSION*: 1

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

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T410339

PROJECT: MRK-00242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-11-15

DATE REPORTED: 2018-11-21

Parameter	Unit	SAMPLE DESCRIPTION:		TH102	TH1020
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-11-14	2018-11-14
		G / S	RDL	9710069	9710070
F1 (C6 - C10)	µg/L	750	25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		112	120

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

9710069-9710070 The C6-C10 fraction is calculated using Toluene response factor.
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 indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of n-C50.
Total C6-C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
n-C6 and n-C10 response factors are within 30% of Toluene response factor.
n-C10, n-C16 and n-C34 response factors are within 10% of their average.
C50 response factor is within 70% of n-C10 + n-C16 n-C34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T410339

PROJECT: MRK-00242474-A0-010

5835 COOPERS AVENUE
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-15

DATE REPORTED: 2018-11-21

Parameter	Unit	SAMPLE DESCRIPTION:		TH102	TH1020	Trip Blank
		SAMPLE TYPE:		Water	Water	Water
		DATE SAMPLED:		2018-11-14	2018-11-14	
		G / S	RDL	9710069	9710070	9710071
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	1.7	0.17	0.84	0.91	<0.17
Bromomethane	µg/L	56	0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	17	0.30	<0.30	<0.30	<0.30
Methylene Chloride	µg/L	5500	0.30	<0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	17	0.20	3.8	3.9	<0.20
Methyl tert-butyl ether	µg/L	1400	0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	3100	0.30	<0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	1500000	1.0	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	17	0.20	6.6	6.8	<0.20
Chloroform	µg/L	22	0.20	0.28	0.29	<0.20
1,2-Dichloroethane	µg/L	12	0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	6700	0.30	<0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	8.4	0.20	<0.20	<0.20	<0.20
Benzene	µg/L	430	0.20	<0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	140	0.20	<0.20	<0.20	<0.20
Trichloroethylene	µg/L	17	0.20	3.5	3.5	<0.20
Bromodichloromethane	µg/L	85000	0.20	<0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	580000	1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	30	0.20	<0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20	<0.20	<0.20
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.83	0.10	<0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	17	0.20	1.6	1.6	<0.20
1,1,1,2-Tetrachloroethane	µg/L	28	0.10	<0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20	<0.20	<0.20

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T410339

PROJECT: MRK-00242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-11-15

DATE REPORTED: 2018-11-21

		SAMPLE DESCRIPTION:		TH102	TH1020	Trip Blank
		SAMPLE TYPE:		Water	Water	Water
		DATE SAMPLED:		2018-11-14	2018-11-14	
Parameter	Unit	G / S	RDL	9710069	9710070	9710071
Bromoform	µg/L	770	0.10	<0.10	<0.10	<0.10
Styrene	µg/L	9100	0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	15	0.10	<0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	67	0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	45	0.30	<0.30	<0.30	<0.30
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20	<0.20
n-Hexane	µg/L	520	0.20	<0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	50-140		100	95	101
4-Bromofluorobenzene	% Recovery	50-140		108	97	95

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T410339

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Trace Organics Analysis

RPT Date: Nov 21, 2018			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) - VOCs (Water)															
Dichlorodifluoromethane	9703609		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	78%	50%	140%	79%	50%	140%
Vinyl Chloride	9703609		< 0.17	< 0.17	NA	< 0.17	77%	50%	140%	89%	50%	140%	76%	50%	140%
Bromomethane	9703609		< 0.20	< 0.20	NA	< 0.20	82%	50%	140%	77%	50%	140%	89%	50%	140%
Trichlorofluoromethane	9703609		< 0.40	< 0.40	NA	< 0.40	94%	50%	140%	77%	50%	140%	75%	50%	140%
Acetone	9703609		< 1.0	< 1.0	NA	< 1.0	99%	50%	140%	111%	50%	140%	93%	50%	140%
1,1-Dichloroethylene	9703609		< 0.30	< 0.30	NA	< 0.30	97%	50%	140%	101%	60%	130%	101%	50%	140%
Methylene Chloride	9703609		< 0.30	< 0.30	NA	< 0.30	95%	50%	140%	101%	60%	130%	106%	50%	140%
trans- 1,2-Dichloroethylene	9703609		< 0.20	< 0.20	NA	< 0.20	72%	50%	140%	94%	60%	130%	85%	50%	140%
Methyl tert-butyl ether	9703609		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	80%	60%	130%	74%	50%	140%
1,1-Dichloroethane	9703609		< 0.30	< 0.30	NA	< 0.30	97%	50%	140%	90%	60%	130%	76%	50%	140%
Methyl Ethyl Ketone	9703609		< 1.0	< 1.0	NA	< 1.0	107%	50%	140%	94%	50%	140%	77%	50%	140%
cis- 1,2-Dichloroethylene	9703609		< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	79%	60%	130%	75%	50%	140%
Chloroform	9703609		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	76%	60%	130%	74%	50%	140%
1,2-Dichloroethane	9703609		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	89%	60%	130%	97%	50%	140%
1,1,1-Trichloroethane	9703609		< 0.30	< 0.30	NA	< 0.30	81%	50%	140%	77%	60%	130%	76%	50%	140%
Carbon Tetrachloride	9703609		< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	88%	60%	130%	75%	50%	140%
Benzene	9703609		< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	94%	60%	130%	82%	50%	140%
1,2-Dichloropropane	9703609		< 0.20	< 0.20	NA	< 0.20	82%	50%	140%	96%	60%	130%	74%	50%	140%
Trichloroethylene	9703609		< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	89%	60%	130%	93%	50%	140%
Bromodichloromethane	9703609		< 0.20	< 0.20	NA	< 0.20	82%	50%	140%	84%	60%	130%	76%	50%	140%
Methyl Isobutyl Ketone	9703609		< 1.0	< 1.0	NA	< 1.0	86%	50%	140%	89%	50%	140%	89%	50%	140%
1,1,2-Trichloroethane	9703609		< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	92%	60%	130%	93%	50%	140%
Toluene	9703609		< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	100%	60%	130%	93%	50%	140%
Dibromochloromethane	9703609		< 0.10	< 0.10	NA	< 0.10	99%	50%	140%	94%	60%	130%	76%	50%	140%
Ethylene Dibromide	9703609		< 0.10	< 0.10	NA	< 0.10	89%	50%	140%	105%	60%	130%	84%	50%	140%
Tetrachloroethylene	9703609		< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	101%	60%	130%	99%	50%	140%
1,1,1,2-Tetrachloroethane	9703609		< 0.10	< 0.10	NA	< 0.10	91%	50%	140%	102%	60%	130%	77%	50%	140%
Chlorobenzene	9703609		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	97%	60%	130%	96%	50%	140%
Ethylbenzene	9703609		< 0.10	< 0.10	NA	< 0.10	79%	50%	140%	103%	60%	130%	91%	50%	140%
m & p-Xylene	9703609		< 0.20	< 0.20	NA	< 0.20	108%	50%	140%	108%	60%	130%	96%	50%	140%
Bromoform	9703609		< 0.10	< 0.10	NA	< 0.10	101%	50%	140%	89%	60%	130%	76%	50%	140%
Styrene	9703609		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	98%	60%	130%	95%	50%	140%
1,1,2,2-Tetrachloroethane	9703609		< 0.10	< 0.10	NA	< 0.10	101%	50%	140%	109%	60%	130%	77%	50%	140%
o-Xylene	9703609		< 0.10	< 0.10	NA	< 0.10	117%	50%	140%	103%	60%	130%	100%	50%	140%
1,3-Dichlorobenzene	9703609		< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	103%	60%	130%	96%	50%	140%
1,4-Dichlorobenzene	9703609		< 0.10	< 0.10	NA	< 0.10	105%	50%	140%	94%	60%	130%	98%	50%	140%
1,2-Dichlorobenzene	9703609		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	102%	60%	130%	98%	50%	140%
1,3-Dichloropropene	9703609		< 0.30	< 0.30	NA	< 0.30	84%	50%	140%	79%	60%	130%	85%	50%	140%
n-Hexane	9703609		< 0.20	< 0.20	NA	< 0.20	91%	50%	140%	98%	60%	130%	74%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T410339

PROJECT: MRK-00242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Nov 21, 2018			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 (-BTEX) (Water)

F1 (C6 - C10)	9685024		< 25	< 25	NA	< 25	92%	60%	140%	91%	60%	140%	85%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	100%	60%	140%	73%	60%	140%	73%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	100%	60%	140%	80%	60%	140%	85%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	84%	60%	140%	103%	60%	140%	75%	60%	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:



Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-00242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T410339

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	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
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	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
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	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
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	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
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

CLIENT NAME: EXP Services Inc
220 Commerce Valley Drive West, Suite 500
Markham, ON, ON L3T0A8
(905) 695-3217

ATTENTION TO: Leah Whittaker

PROJECT: MRK-242474-A0-010

AGAT WORK ORDER: 18T416197

TRACE ORGANICS REVIEWED BY: Pinkal Patel, Report Reviewer

DATE REPORTED: Dec 06, 2018

PAGES (INCLUDING COVER): 11

VERSION*: 1

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

***NOTES**

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T416197

PROJECT: MRK-242474-A0-010

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

CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-12-03

DATE REPORTED: 2018-12-06

		SAMPLE DESCRIPTION:		TH105I	TH108
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-11-30	2018-11-30
Parameter	Unit	G / S	RDL	9754921	9754922
F1 (C6 - C10)	µg/L	750	25	33	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		82	85

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

9754921-9754922 The C6-C10 fraction is calculated using Toluene response factor.
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 indicated 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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T416197

PROJECT: MRK-242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2018-12-03

DATE REPORTED: 2018-12-06

		SAMPLE DESCRIPTION:		TH103
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-11-30
Parameter	Unit	G / S	RDL	9754920
Benzene	µg/L	430	0.20	<0.20
Toluene	µg/L	18000	0.20	<0.20
Ethylbenzene	µg/L	2300	0.10	<0.10
Xylene Mixture	µg/L	4200	0.20	<0.20
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
F3 (C16 to C34)	µg/L	500	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		92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

9754920 The C6-C10 fraction is calculated using Toluene response factor.
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 indicated 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 contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
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.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T416197

PROJECT: MRK-242474-A0-010

5835 COOPERS AVENUE
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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1/BTEX (Water)

DATE RECEIVED: 2018-12-03

DATE REPORTED: 2018-12-06

		SAMPLE DESCRIPTION:		TRIP BLANK
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-11-30
Parameter	Unit	G / S	RDL	9754925
F1 (C6 to C10)	µg/L	0.75	25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

9754925 The C6-C10 fraction is calculated using Toluene response factor.
Total C6-C10 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
Extraction and holding times were met for this sample.
NA = Not Applicable

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T416197

PROJECT: MRK-242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-12-03

DATE REPORTED: 2018-12-06

Parameter	Unit	SAMPLE DESCRIPTION:		TH105I	TH108	TRIP BLANK
		SAMPLE TYPE:		Water	Water	Water
		DATE SAMPLED:		2018-11-30	2018-11-30	2018-11-30
		G / S	RDL	9754921	9754922	9754925
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	1.7	0.17	<0.17	<0.17	<0.17
Bromomethane	µg/L	56	0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	17	0.30	<0.30	<0.30	<0.30
Methylene Chloride	µg/L	5500	0.30	<0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	17	0.20	<0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L	1400	0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	3100	0.30	<0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	1500000	1.0	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	17	0.20	<0.20	1.2	<0.20
Chloroform	µg/L	22	0.20	2.4	0.24	<0.20
1,2-Dichloroethane	µg/L	12	0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	6700	0.30	<0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	8.4	0.20	<0.20	<0.20	<0.20
Benzene	µg/L	430	0.20	<0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	140	0.20	<0.20	<0.20	<0.20
Trichloroethylene	µg/L	17	0.20	<0.20	0.81	<0.20
Bromodichloromethane	µg/L	85000	0.20	1.7	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	580000	1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	30	0.20	<0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	22	<0.20	<0.20
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.83	0.10	<0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	17	0.20	0.38	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	28	0.10	<0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20	<0.20	<0.20

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T416197

PROJECT: MRK-242474-A0-010

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CLIENT NAME: EXP Services Inc

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

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

DATE RECEIVED: 2018-12-03

DATE REPORTED: 2018-12-06

		SAMPLE DESCRIPTION:		TH105I	TH108	TRIP BLANK
		SAMPLE TYPE:		Water	Water	Water
		DATE SAMPLED:		2018-11-30	2018-11-30	2018-11-30
Parameter	Unit	G / S	RDL	9754921	9754922	9754925
Bromoform	µg/L	770	0.10	<0.10	<0.10	<0.10
Styrene	µg/L	9100	0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	15	0.10	<0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	67	0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	45	0.30	<0.30	<0.30	<0.30
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20	<0.20
n-Hexane	µg/L	520	0.20	<0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	50-140		77	89	86
4-Bromofluorobenzene	% Recovery	50-140		94	93	93

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Non-Potable Ground Water - All Types of Property Uses - Medium and Fine 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.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

Quality Assurance

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T416197

PROJECT: MRK-242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Dec 06, 2018			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 (Water)

Benzene	9755657		< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	95%	60%	130%	98%	50%	140%
Toluene	9755657		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	87%	60%	130%	100%	50%	140%
Ethylbenzene	9755657		< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	88%	60%	130%	95%	50%	140%
Xylene Mixture	9755657		< 0.20	< 0.20	NA	< 0.20	100%	50%	140%	86%	60%	130%	96%	50%	140%
F1 (C6 - C10)	9755657		< 25	< 25	NA	< 25	88%	60%	140%	87%	60%	140%	95%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	104%	60%	140%	82%	60%	140%	86%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	100%	60%	140%	96%	60%	140%	91%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	87%	60%	140%	104%	60%	140%	82%	60%	140%

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

Dichlorodifluoromethane	9746471		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	80%	50%	140%	73%	50%	140%
Vinyl Chloride	9746471		< 0.17	< 0.17	NA	< 0.17	80%	50%	140%	82%	50%	140%	85%	50%	140%
Bromomethane	9746471		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	85%	50%	140%	89%	50%	140%
Trichlorofluoromethane	9746471		< 0.40	< 0.40	NA	< 0.40	103%	50%	140%	88%	50%	140%	78%	50%	140%
Acetone	9746471		< 1.0	< 1.0	NA	< 1.0	109%	50%	140%	114%	50%	140%	120%	50%	140%
1,1-Dichloroethylene	9746471		< 0.30	< 0.30	NA	< 0.30	95%	50%	140%	103%	60%	130%	92%	50%	140%
Methylene Chloride	9746471		< 0.30	< 0.30	NA	< 0.30	111%	50%	140%	116%	60%	130%	99%	50%	140%
trans- 1,2-Dichloroethylene	9746471		< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	118%	60%	130%	106%	50%	140%
Methyl tert-butyl ether	9746471		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	116%	60%	130%	114%	50%	140%
1,1-Dichloroethane	9746471		< 0.30	< 0.30	NA	< 0.30	105%	50%	140%	108%	60%	130%	73%	50%	140%
Methyl Ethyl Ketone	9746471		< 1.0	< 1.0	NA	< 1.0	79%	50%	140%	87%	50%	140%	91%	50%	140%
cis- 1,2-Dichloroethylene	9746471		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	104%	60%	130%	80%	50%	140%
Chloroform	9746471		< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	105%	60%	130%	83%	50%	140%
1,2-Dichloroethane	9746471		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	95%	60%	130%	94%	50%	140%
1,1,1-Trichloroethane	9746471		< 0.30	< 0.30	NA	< 0.30	85%	50%	140%	94%	60%	130%	77%	50%	140%
Carbon Tetrachloride	9746471		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	95%	60%	130%	74%	50%	140%
Benzene	9746471		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	105%	60%	130%	78%	50%	140%
1,2-Dichloropropane	9746471		< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	95%	60%	130%	76%	50%	140%
Trichloroethylene	9746471		< 0.20	< 0.20	NA	< 0.20	94%	50%	140%	103%	60%	130%	76%	50%	140%
Bromodichloromethane	9746471		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	87%	60%	130%	75%	50%	140%
Methyl Isobutyl Ketone	9746471		< 1.0	< 1.0	NA	< 1.0	84%	50%	140%	82%	50%	140%	81%	50%	140%
1,1,2-Trichloroethane	9746471		< 0.20	< 0.20	NA	< 0.20	79%	50%	140%	98%	60%	130%	97%	50%	140%
Toluene	9746471		< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	114%	60%	130%	98%	50%	140%
Dibromochloromethane	9746471		< 0.10	< 0.10	NA	< 0.10	78%	50%	140%	80%	60%	130%	75%	50%	140%
Ethylene Dibromide	9746471		< 0.10	< 0.10	NA	< 0.10	73%	50%	140%	92%	60%	130%	86%	50%	140%
Tetrachloroethylene	9746471		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	116%	60%	130%	94%	50%	140%
1,1,1,2-Tetrachloroethane	9746471		< 0.10	< 0.10	NA	< 0.10	81%	50%	140%	93%	60%	130%	75%	50%	140%
Chlorobenzene	9746471		< 0.10	< 0.10	NA	< 0.10	84%	50%	140%	110%	60%	130%	96%	50%	140%
Ethylbenzene	9746471		< 0.10	< 0.10	NA	< 0.10	83%	50%	140%	110%	60%	130%	89%	50%	140%

Quality Assurance

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:

AGAT WORK ORDER: 18T416197

ATTENTION TO: Leah Whittaker

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Dec 06, 2018			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
m & p-Xylene	9746471		< 0.20	< 0.20	NA	< 0.20	88%	50%	140%	113%	60%	130%	97%	50%	140%
Bromoform	9746471		< 0.10	< 0.10	NA	< 0.10	80%	50%	140%	76%	60%	130%	71%	50%	140%
Styrene	9746471		< 0.10	< 0.10	NA	< 0.10	82%	50%	140%	92%	60%	130%	77%	50%	140%
1,1,2,2-Tetrachloroethane	9746471		< 0.10	< 0.10	NA	< 0.10	86%	50%	140%	106%	60%	130%	112%	50%	140%
o-Xylene	9746471		< 0.10	< 0.10	NA	< 0.10	88%	50%	140%	112%	60%	130%	99%	50%	140%
1,3-Dichlorobenzene	9746471		< 0.10	< 0.10	NA	< 0.10	83%	50%	140%	102%	60%	130%	89%	50%	140%
1,4-Dichlorobenzene	9746471		< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	108%	60%	130%	98%	50%	140%
1,2-Dichlorobenzene	9746471		< 0.10	< 0.10	NA	< 0.10	83%	50%	140%	101%	60%	130%	92%	50%	140%
1,3-Dichloropropene	9746471		< 0.30	< 0.30	NA	< 0.30	73%	50%	140%	89%	60%	130%	75%	50%	140%
n-Hexane	9746471		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	83%	60%	130%	76%	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).

Imkal Patel

Certified By:

Method Summary

CLIENT NAME: EXP Services Inc

PROJECT: MRK-242474-A0-010

SAMPLING SITE:
AGAT WORK ORDER: 18T416197

ATTENTION TO: Leah Whittaker

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Benzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Toluene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 - C10)	VOL-91- 5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
F1 (C6 to C10)	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	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
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	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
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	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

Method Summary

CLIENT NAME: EXP Services Inc

AGAT WORK ORDER: 18T416197

PROJECT: MRK-242474-A0-010

ATTENTION TO: Leah Whittaker

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	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
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS



Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water intended for human consumption)

Report Information:

Company: Exp Services Inc
Contact: Leah Whittaker
Address: 220 Commerce Valley Dr W
MARKHAM, ON
Phone: 905 895 3217 Fax: _____
Reports to be sent to: Leah Whittaker @ exp.com
1. Email: _____
2. Email: _____

Project Information:

Project: MRK-242474-AD-010
Site Location: HN
Sampled By: _____
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04

Table 3 Indicate One

☐ Ind/Com

☒ Res/Park

☐ Agriculture

Soil Texture (Check One)

☐ Coarse

☒ Fine

☐ Sewer Use

☐ Sanitary

☐ Storm

Region _____ Indicate One

☐ Regulation 558

☐ CCME

☐ Prov. Water Quality Objectives (PWQO)

☐ Other

Indicate One

Is this submission for a Record of Site Condition?

☒ Yes ☐ No

Report Guideline on Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CrVI

O. Reg 153

Metals and Inorganics

☐ All Metals ☐ 153 Metals (excl. Hydrides)

☐ Hydride Metals

ORPs: ☐ B-HWS ☐ Cl ☐ CN

☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg

☐ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKN

☐ NO₃ ☐ NO₂ ☐ NO₂+NO₃

Volatiles: ☒ VOC ☐ BTEX ☐ THM

COMET Fractions 1 to 4

ABNs

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs

Sewer Use

Fl PIC

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Metals and Inorganics	ORPs	Full Metals Scan	Regulation/Custom Metals	Nutrients	Volatiles	COMET Fractions 1 to 4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use
TH103	Nov 30/18	PM	4	GW															
TH105I	Nov 30/18	PM	4	GW															
TH108	Nov 30/18	PM	4	GW															
TH106D SS10	Nov 22/18	PM	2	S	O N HOLD														
TRIP BLANK	Nov 30-Dec 3/14	AM/PM	3	GW															

Samples Relinquished By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Nov 30/18</u>	Time: <u>3:00</u>	Samples Received By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Dec 3/18</u>	Time: <u>12:57</u>
Samples Relinquished By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Dec 3/18</u>	Time: <u>3:00</u>	Samples Received By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Dec 3/18</u>	Time: <u>12:57</u>
Samples Relinquished By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Dec 3/18</u>	Time: <u>3:00</u>	Samples Received By (Print Name and Sign): <u>[Signature]</u>	Date: <u>Dec 3/18</u>	Time: <u>12:57</u>

Laboratory Use Only

Work Order #: 18T416197
Cooler Quantity: Small
Arrival Temperatures: 3.6 | 5.8 | 3.3
32 | 28 | 25
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: _____

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

Appendix H: Phase Two Conceptual Site Model



Phase Two Conceptual Site Model

The Phase Two Conceptual Site Model (CSM) refers to the following figures:

- Figure 1: Locality Plan
- Figure 2A: Phase One Conceptual Site Model – PCAs
- Figure 2B: Phase One Conceptual Site Model – APECs
- Figure 2C: Phase One Conceptual Site Model – Site Plan
- Figure 3: Site Plan
- Figure 4: Cross Section Plan
- Figure 5A: Cross Section View A-A' – Soil Analytical Results – PHCs
- Figure 5B: Cross Section View A-A' – Soil Analytical Results – VOCs
- Figure 5C: Cross Section View A-A' – Soil Analytical Results – PAHs
- Figure 5D: Cross Section View A-A' – Soil Analytical Results – Metals, Hydride-Forming Metals and ORPs
- Figure 5E: Cross Section View A-A' – Soil Analytical Results – EC and SAR
- Figure 5F: Cross Section View A-A' – Ground Water Analytical Results – PHCs
- Figure 5G: Cross Section View A-A' – Ground Water Analytical Results – VOCs
- Figure 6A: Cross Section View B-B' – Soil Analytical Results – PHCs
- Figure 6B: Cross Section View B-B' – Soil Analytical Results – VOCs
- Figure 6C: Cross Section View B-B' – Soil Analytical Results – PAHs
- Figure 6D: Cross Section View B-B' – Soil Analytical Results – Metals, Hydride-Forming Metals and ORPs
- Figure 6E: Cross Section View B-B' – Soil Analytical Results – EC and SAR
- Figure 6F: Cross Section View B-B' – Ground Water Analytical Results – PHCs
- Figure 6G: Cross Section View B-B' – Ground Water Analytical Results – VOCs
- Figure 7A: Ground Water Contour Plan, Shallow Unit (January 14, 2019)
- Figure 7B: Ground Water Contour Plan, Deep Unit (January 14, 2019)
- Figure 8A: Soil Analytical Results – PHCs
- Figure 8B: Soil Analytical Results – VOCs
- Figure 8C: Soil Analytical Results – PAHs
- Figure 8D: Soil Analytical Results – Metals, Hydride-Forming Metals and ORPs
- Figure 8E: Soil Analytical Results – EC and SAR
- Figure 8F: Ground Water Analytical Results – PHCs
- Figure 8G: Ground Water Analytical Results – VOCs
- Figure 9: Ecological Conceptual Site Model
- Figure 10: Human Health Conceptual Site Model

1. Site Description and Background

The Phase Two property encompasses the properties municipally addressed as 11, 17, 19, and 21 Yorkville Avenue. The site is bounded by Yorkville Avenue to the north, a public laneway to the south and east, and 27 Yorkville Avenue to the west and measures approximately 0.29 hectares (0.72 acres) in area. The site location is shown on Figure 1.

The legal description and property identification number (PIN) for each municipal address encompassed by the Phase Two property are provided in the table below.

Table 1: Phase Two Property Summary

Legal Description	PIN
11 Yorkville Avenue: Lots 7 to 9, Plan 355 except Part 1, 64R15426	21197-0142 (LT)
17 Yorkville Avenue: Part of Lots 10 and 11, Plan 355 designated as Part 1, 66R21719	21197-0324 (LT)
19 Yorkville Avenue: Part of Lot 11, Plan 355 designated as Part 2, 63R3495	21197-0140 (LT)
21 Yorkville Avenue: Lot 12, Part of Lot 13, Plan 355 as in CA257819	21197-0139 (LT)

The Phase Two property is currently occupied for mixed commercial and residential use. The portion of the property municipally addressed as 11 Yorkville Avenue is occupied by an 11-storey apartment building with one level of underground parking which occupies the entire footprint of the property; there is commercial use at grade. The portions of the property municipally addressed as 17, 19, and 21 Yorkville Avenue are occupied by three- to four-storey buildings with partial basements.

The portion of the site municipally addressed as 11 to 17 Yorkville Avenue was developed prior to 1884 for residential use. The portion of the site municipally addressed as 19 to 21 Yorkville Avenue was first developed for residential use sometime between 1903 and 1913. Various changes occurred to the configuration of the site over the years. The existing residential tower at 11 Yorkville Avenue was constructed in the 1950s. The properties 17 and 19 Yorkville Avenue have historically been occupied for mixed commercial and residential use. As of 1939, 21 Yorkville Avenue was occupied by "Townsend Livery Limited" as a garage with two underground storage tanks (USTs) located to the north, in the roadway. By 1965, 21 Yorkville Avenue was occupied by Parkers Dye Works & Cleaners Ltd.". From the 1980s onwards, 21 Yorkville Avenue was occupied by various tenants included a restaurant and a beauty school.

The Phase Two property is intended to be redeveloped with a high-rise residential condominium with retail use at grade. Four levels of underground parking are planned.

1.1 Potentially Contaminating Activities and Areas of Potential Environmental Concern

The number presented in brackets beside each PCA is associated with the PCA number in Table 2, Schedule D of O. Reg. 153/04.

Six PCAs (S1 to S6), considered to contribute to APECs, were identified on the Phase One property:

- S1, S2, S3 – (28) Gasoline and Associated Products Storage in Fixed Tanks;
- S4 – (10) Commercial Autobody Shops;
- S5 – (30) Importation of Fill Material of Unknown Quality; and,
- S6 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).

PCA S1 (APEC A1): (28) Gasoline and Associated Products Storage in Fixed Tanks – A double-wall, steel AST with a capacity of 935 litres was observed in the basement of 11 Yorkville Avenue. The AST contains diesel for the operation of the back-up generator.

PCA S2 (APEC A2): (28) Gasoline and Associated Products Storage in Fixed Tanks – According to the EcoLog ERIS report, a historical tank was registered at 11 Yorkville Avenue with a permit dated 1920. The tank was associated with a public garage, located on the south portion of the property. The contents of the tank were not specified.

PCA S3 (APEC B1): (28) Gasoline and Associated Products Storage in Fixed Tanks – Two gasoline USTs, each with a capacity of approximately 2,273 litres, were shown to be located in the roadway immediately north of 21 to 25 Yorkville Avenue on fire insurance plans (FIPs) dated 1939, 1943, and 1965. In municipal directories dated 1905, 1915, 1925 and 1935 and on FIPs dated 1939 and 1943, 21 to 25 Yorkville Avenue was shown to be occupied by “Townsend Livery Limited”, a garage.

PCA S4 (APEC B2): (10) Commercial Autobody Shops – In the 1940s, according to the municipal directories, 21 Yorkville Avenue was occupied by “Swayze Trailer and Body Works”, an autobody shop.

PCA S5 (APEC C): (30) Importation of Fill Material of Unknown Quality – The potential for fill material of unknown quality to exist on the site, to the north of the public laneway, was identified based on borehole logs provided as part of previous investigations. According to the borehole logs provided by SPL as part of the *Environmental Soil & Groundwater Investigation* report (2015a), a layer of silty sand to sand fill up to 2.4 metres thick was encountered beneath the ground surface. This fill layer was noted to contain trace clay and trace brick fragments. Based on the borehole log provided as part of the *Preliminary Geo-Environmental Investigation* report conducted by McClymont and Rak Engineers, Inc. (MCR) (2016), a 1.5-metre-thick layer of sand and gravel fill with trace brick, coal, asphalt, and concrete pieces was encountered beneath the asphalt.

PCA S6 (APEC D1): (37) Operation of Dry Cleaning Equipment (where chemicals are used) – In the 1965 FIP, 21 and 25 Yorkville Avenue (along with the adjacent 27 Yorkville Avenue) are occupied by “Parkers Dye Works and Cleaners Ltd” for cleaning, dying and pressing.

Sixteen PCAs (S7 to S22), considered to contribute to APECs, were identified within the Phase One Study Area:

- S7 – (8) Chemical manufacturing, processing and bulk storage;
- S8 – (10) Commercial Autobody Shops;
- S9 to S13 – (37) Operation of Dry Cleaning Equipment (where chemicals are used);
- S14 – (10) Commercial Autobody Shops;
- S15 to S21 – (28) Gasoline and Associated Products Storage in Fixed Tanks; and,
- S22 – (37) Operation of Dry Cleaning Equipment (where chemicals are used).

PCA S7 (APEC D2): (8) Chemical Manufacturing, Processing and Bulk Storage – In the 1965 FIP, 26 and 28 Cumberland Street are shown to be occupied by a chemical manufacturer. In the 1957 and 1972 municipal directories, 26 and 28 Cumberland Street are listed as being occupied by Dodge Chemical Co. Ltd.

PCA S8 (APEC E): (10) Commercial Autobody Shops – In the 1925 municipal directory, 26 and 28 Cumberland Street are shown to be occupied by “Crown Jas, garage”. In the 1939 and 1943 FIPs, 26 and 28 Cumberland Street are shown to be occupied by “Sussex Auto Body”. In the 1957 and 1972 municipal directory listings, 22 Cumberland Street was listed as being occupied by Toronto Auto Collision Repairs.

PCAs S9 to S13 (APEC F1): (37) Operation of Dry Cleaning Equipment (where chemicals are used) – Based on the findings of the records review, historical dry cleaning operations were identified at 860

Yonge Street (per 1939 and 1943 FIP), 852 Yonge Street (EcoLog ERIS report), 9 Yorkville Avenue (1995 and 2002 municipal directories), 846 Yonge Street (1957 municipal directory), and 807 to 809 Yonge Street (1935, 1945, and 1972 municipal directories).

PCA S14 (APEC F2): (10) Commercial Autobody Shops – According to the 1945 and 1957 municipal directories, 5 Yorkville Avenue was historically occupied by Bayside Body and Fender Repairs, an autobody shop.

PCAs S15 to S21 (APEC G): (28) Gasoline and Associated Products Storage in Fixed Tanks – Based on the findings of the records review, historical USTs were identified at 34 Yorkville Avenue (EcoLog ERIS report) and 890 Yonge Street (EcoLog ERIS report). Historical service stations with USTs were identified at 34 to 38 Yorkville Avenue (1939 and 1943 FIPs; 1945 to 1995 municipal directories), 880 Yonge Street/1 Davenport Road (1939, 1943, and 1965 FIPs; 1945 and 1957 municipal directories), 745 Church Street/835 Yonge Street (EcoLog ERIS report), 837 Yonge Street (1965 FIP), and 32 Davenport Road (1939 and 1943 FIP; EcoLog ERIS report).

PCA S22 (APEC H): (37) Operation of Dry Cleaning Equipment (where chemicals are used) – According to the 1935 municipal directory and the 1939 FIP, 40 Yorkville Avenue was historically occupied by Ford Cleaners Limited.

All other PCAs identified within the Phase One Study Area (S23 through S64) are considered *de minimis*, and do not contribute to an APEC on-site. These PCAs are presented in Table 3 below with the rationale for their exclusion. Based on the inferred southwesterly ground water flow direction, PCAs S23 through S64 are located downgradient of the site, or cross-gradient and sufficiently distant from the site, that the risks associated with these potential sources are considered *de minimis*.

The locations of the PCAs are shown on Figure 2A. The locations of the APECs are shown on Figure 2B.

Table 2: Areas of Potential Environmental Concern

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on RSC Property	Potentially Contaminating Activity ¹	Location of PCA (on-site or off-site)	Contaminants of potential concern	Media potentially impacted (ground water, soil and/or sediment)
A1	East central portion of the site	S1: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs VOCs	Soil and ground water
A2		S2: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site		
B1	Northwest portion of the site	S3: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site	PHCs VOCs	Soil and ground water
B2		S4: (10) Commercial Autobody Shops	On-site	PHCs VOCs PAHs Metals	Soil
				PHCs VOCs	Ground water
C	Central portion of site, north of public laneway	S5: (30) Importation of Fill Material of Unknown Quality	On-site	PAHs Metals As, Sb, Se B-HWS, Hg, CN- EC SAR	Soil

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on RSC Property	Potentially Contaminating Activity ¹	Location of PCA (on-site or off-site)	Contaminants of potential concern	Media potentially impacted (ground water, soil and/or sediment)
D1	Western portion of the site	S6: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	On-site	VOCs	Soil and ground water
D2		S7: (8) Chemical Manufacturing, Processing, and Bulk Storage	On-site	PHCs VOCs PAHs Metals As, Sb, Se B-HWS, Hg, CN-	Soil
				PHCs VOCs	Ground Water
E	Central portion of site, north of public laneway	S8: (10) Commercial Autobody Shops	Off-site	PHCs VOCs	Ground water
F1	Eastern portion of the site	S9: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site	VOCs	Ground water
		S10: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site		
		S11: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site		
		S12: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site		
		S13: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site		

Area of Potential Environmental Concern	Location of Area of Potential Environmental Concern on RSC Property	Potentially Contaminating Activity ¹	Location of PCA (on-site or off-site)	Contaminants of potential concern	Media potentially impacted (ground water, soil and/or sediment)
F2		S14: (10) Commercial Autobody Shops	Off-site	PHCs VOCs	
G	Northern portion of the site	S15: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site	PHCs VOCs	Ground Water
		S16: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S17: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S18: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S19: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S20: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
		S21: (28) Gasoline and Associated Products Storage in Fixed Tanks	Off-site		
H	Western portion of the site	S22: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site	VOCs	Ground water

¹ Number indicated in brackets denotes the PCA item number as listed in O. Reg. 153/04. Where the activity is not listed, it is identified as "other".

PHCs = petroleum hydrocarbons

PAHs = polycyclic aromatic hydrocarbons

BTEX = benzene, toluene, ethylbenzene, xylenes

VOCs = volatile organic compounds

As, Se, Sb = arsenic, selenium, antimony

Hg = mercury

CN⁻ = free cyanide

CrVI = hexavalent chromium

HWS-B = hot water-soluble boron

EC and SAR = electrical conductivity and sodium adsorption ratio

Table 3. Rationale for PCAs considered to be of *de minimis* concern to the Site

Source Number	Address	Activity	PCA ¹	Rationale for Exclusion
S23	1290 Bay Street / 65 Scollard Street	Historical gasoline service station with four USTs.	(28) Gasoline and Associated Products Storage in Fixed Tanks	These PCAs are all located downgradient of the site based on the ground water flow direction in the shallow water-bearing unit, measured by EXP as part of the Phase Two ESA Update. Any ground water impacts associated with these properties would not be anticipated to migrate onto the site.
S24	1280 Bay Street	Historical gasoline service station with two USTs.		
S25	1257 Bay Street	Historical gasoline service station with three USTs.		
S26	1251 Bay Street	Historical gasoline service station with three USTs.		
S27	1241 Bay Street	Historical gasoline service station with two USTs.		
S28	1276 Bay Street	Historical UST in roadway.		
S29	63 Yorkville Avenue	Historical UST associated with an automotive dealership and taxi business.		
S30	74 Yorkville Avenue	Historical autobody shop.	(10) Commercial Autobody Shops	
S31	50 Cumberland Street	Historical dry cleaner.	(37) Operation of Dry Cleaning Equipment (where chemicals are used)	
S32	787 Yonge Street / Yonge Street and Asquith Avenue	R. Parker and Co. Dye Works Limited. Presence of historical UST.	(28) Gasoline and Associated Products Storage in Fixed Tanks	These PCAs are all located cross-gradient of the site based on the ground water flow direction in the shallow water-bearing unit, measured by EXP as part of the Phase Two ESA Update. Any ground water impacts associated with these properties would not be anticipated to migrate onto the site.
S33			(37) Operation of Dry Cleaning Equipment (where chemicals are used)	
S34			(17) Dye Manufacturing, Processing and Bulk Storage	
S35	820 Church Street	Historical service station. Number of historical USTs is unknown.	(28) Gasoline and Associated Products Storage in Fixed Tanks	Furthermore, given their distance over 65 metres northwest of the site and the inferred ground water flow velocity of 1.08 x 10 ⁻² metres (1 centimetre) per year in the silty sand to sandy silt, any ground water impacts associated with these properties would take over 1,000 years to migrate onto the site.
S36	720 Church Street	Historical gasoline service station with one UST.		
S37	15 Asquith Avenue	Historical fuel oil tank.		

Source Number	Address	Activity	PCA ¹	Rationale for Exclusion
S38	820 Yonge Street	Historical fuel oil tank.		These PCAs are all located downgradient of the site based on the ground water flow direction in the shallow water-bearing unit, measured by EXP as part of the Phase Two ESA Update. Any ground water impacts associated with these properties would not be anticipated to migrate onto the site.
S39	806 Yonge Street	Historical fuel oil tank.		
S40	804 Yonge Street	Historical fuel oil tank.		
S41	97 Cumberland Street	Historical fuel oil tank.		
S42	1240 Bay Street	Historical dry cleaner.	(37) Operation of Dry Cleaning Equipment (where chemicals are used)	
S43	1200 Bay Street	Historical dry cleaner.		
S44	1217 Bay Street	Tank in roadway.	(28) Gasoline and Associated Products Storage in Fixed Tanks	
S45	60 Bloor Street West	Historical dry cleaner.	(37) Operation of Dry Cleaning Equipment (where chemicals are used)	
S46	46 Bloor Street West	Historical fuel oil tank.	(28) Gasoline and Associated Products Storage in Fixed Tanks	
S47	38 Bloor Street West	Three historical fuel oil tanks.		
S48	28 Bloor Street West	Historical fuel oil tank.		
S49	20 Bloor Street West	Historical dry cleaner.	(37) Operation of Dry Cleaning Equipment (where chemicals are used)	
S50	18 Bloor Street West	Historical fuel oil tank.	(28) Gasoline and Associated Products Storage in Fixed Tanks	
S51	16 Bloor Street West	Historical fuel oil tank.		
S52	2 Bloor Street West	Historical dry cleaner.	(37) Operation of Dry Cleaning Equipment (where chemicals are used)	
S53	790 Yonge Street	Historical fuel oil tank.	28) Gasoline and Associated Products Storage in Fixed Tanks	
S54	8 Bloor Street East	Historical fuel oil tank.		
S55	18 Bloor Street East	Historical gasoline tank.		
S56	35 Bloor Street East	Historical fuel oil tank.		
S57	19 Bloor Street East	Historical service station with one UST.		
S58	776 Yonge Street	Historical fuel oil tank.		
S59	719 Yonge Street	Historical gasoline tank.		

Source Number	Address	Activity	PCA ¹	Rationale for Exclusion
S60	715 Yonge Street	Historical gasoline tank.		
S61	762 Yonge Street	Historical gasoline tank.		
S62	31 Bloor Street West	Historical dry cleaner.	(37) Operation of Dry Cleaning Equipment (where chemicals are used)	
S63	55 Bloor Street West	Historical dry cleaner.		
S64	1 Bellair Street	Historical gasoline tank.	(28) Gasoline and Associated Products Storage in Fixed Tanks	

¹PCA name and number as listed in Table 2 of Schedule D of O. Reg. 153/04.

2. Subsurface Structures and Utilities

The site building at 11 Yorkville has one level of underground parking that occupies the majority of the footprint of the property with the exception of a small strip of land beneath the northern portion of the building. The site buildings at 17, 19 and 21 Yorkville Avenue all have partial basements with varying footprints. There is the potential for building foundations to provide a preferential flow pathway for ground water.

Natural gas is supplied by Enbridge. Hydro is supplied by Toronto Hydro. Natural gas and hydro are supplied underground via Yorkville Avenue. The buildings are all serviced by municipal water and sewers. The City of Toronto obtains its potable water from Lake Ontario. Storm water catch basins were observed in the roadways along both Yorkville Avenue and Cumberland Street.

3. Physical Setting

2.1 Stratigraphy from Ground Surface to the Deepest Aquifer

Regional Geology

The site is located in the physiographic region known as the Iroquois Plain (Chapman and Putnam, 1984). The native surficial soils in this region are predominantly composed of older glacial ice deposits, typically silty clay to silt till (Chapman and Putnam, 1984). According to the Quaternary Geology of Toronto and Surrounding Area map, surficial soil in this region is characterized by shallow water deposits of sand and silty sand and deeper water deposits of silt and clay (Sharpe, 1980).

According to the Ontario Geological Survey map of the area, the underlying geology comprises the Georgian Bay Formation, Blue Mountain Formation, Billings Formation, Collingwood Member, and Eastview Member. Bedrock at the site consists of Upper Ordovician shale, limestone, siltstone, and dolostone (Ontario Geological Survey, 1991).

There are no water bodies on the site. The nearest surface water body is the Don River, located approximately 2 kilometres east of the site. The Don River flows south to Lake Ontario.

Local Geology

The geology observed beneath the underground parking garage at 11 Yorkville Avenue and beneath the basement at 21 Yorkville Avenue was generally a thin layer of sand over silty clay to a depth of approximately 7 metres below the floor slab. The silty clay was underlain by silty sand/sandy silt to a depth greater than 19.8 metres below the floor slab.

In the Preliminary Geo-Environmental Investigation conducted by MCR in 2016, shale bedrock was encountered at 38 mbgs, or 78 masl based on the survey ground elevation at BH1.

A cross section plan is provided as Figure 4. Cross sections illustrating the geology of the Phase Two property are presented on Figures 5A to 5G and 6A to 6G.

2.2 Approximate Depth to Bedrock

According to the map Quaternary Geology of Toronto and Surrounding Area, the bedrock elevation of the site is at approximately 80 metres above sea level (masl) (Sharpe, 1980). In the Preliminary Geo-Environmental Investigation conducted by MCR in 2016, shale bedrock was encountered at 38 mbgs, or 78 masl based on the survey ground elevation at BH1.

2.3 Hydrogeological Characteristics and Approximate Depth to Water Table

The ground water elevations were calculated based on static water level measurements documented during the Phase Two investigation using a Solinst Model 122 oil/water interface probe. The ground water elevation in the shallow monitoring wells ranged from 108.41 (TH107) to 113.94 (MW04) masl. The ground water elevation in the deeper monitoring wells ranged from 96.16 masl (BH1) to 108.80 masl (TH105I) masl.

A ground water contour plan was prepared using the measured elevations of the ground water table, as shown in Figures 7A and 7B. The ground water contours in the shallow ground water unit were determined based on ground water elevations calculated at monitoring wells TH101S, MW02, and BH15-3S. The ground water contours in the deep ground water unit were determined based on ground water elevations calculated at monitoring wells TH101D, TH105D, and TH106D. Based on the ground water contour plan, localized ground water flow across the site was determined to be southwest within the shallow water-bearing unit and west-northwest within the deeper water-bearing unit. The monitoring wells used to determine the ground water contours were selected based on their overlapping screen intervals and on a water table measurement that straddled the screen interval; any measurements that were believed to be outliers were excluded from the data set. The ground water table measurements at the site may be influenced by the presence of basements and by dewatering activities at nearby properties, and the ground water table may not have reached equilibrium within the newly installed wells. Additional monitoring events would be required to verify the ground water flow directions.

Results of ground water monitoring activities indicate a net on-site horizontal hydraulic gradient of 0.02 m/m to the southwest within the shallow water-bearing unit and of 6.7×10^{-3} m/m to the west-northwest within the deeper water-bearing unit, based on ground water contours developed from measurements obtained on January 14, 2019.

Based on a horizontal hydraulic gradient of 0.02 m/m, an average hydraulic conductivity of 3.44×10^{-7} cm/s measured by EXP (EXP, 2018c) and an effective porosity of 20% (McWhorter and Sunada, 1977), the ground water flow velocity was calculated to be 1.08×10^{-2} metres (1 centimetre) per year in the silty sand to sandy silt.

The vertical hydraulic gradients were calculated for in the clustered monitoring well pairs TH101S/TH101D, MW02/TH105D, and TH109S/TH109D based on depth to ground water table measurements collected on January 14, 2019. The vertical hydraulic gradient in these pairs ranged from 0.716 to 1.065 m/m in the downward direction with an average vertical hydraulic gradient of 0.995 mm downward.

2.4 Considerations with Respect to Section 41 or 43.1 of Regulation

The Phase Two property is not located on or within 30 metres of any areas of natural or scientific interest and the site is not considered an environmentally significant or sensitive area according to the City of

Toronto Official Plan.

Twelve soil samples were analyzed for pH. The pH of all soil samples collected from within 1.5 metres below the outdoor ground level was within the range of 5.0 to 9.0. The pH of all soil samples collected below 1.5 metres below the outdoor ground level was within the range of 5.0 to 11.0.

Section 43.1 of O. Reg. 153/04 defines restrictions in the application of Site Condition Standards (Standards for a shallow soil property or sites within 30 metres of a water body). Bedrock is present at a depth of greater than 2 mbgs. The nearest surface water body is the Don River West Branch, located approximately 2 kilometres east of the site. Therefore, the restrictions under Section 43.1 of O. Reg. 153/04 do not apply.

The absence of potable water use in the vicinity of the site, the absence of a surface water body within 30 metres of the site, the intended land use, the results of grain size analysis, and current field observations concerning soil texture support the use of Table 3 Standards for a residential/parkland/institutional land use with medium to fine textured soil.

2.5 Areas Where Soil Has Been Brought from Another Property

At the time of the Phase Two ESA, no soil had been brought to the Phase Two property from another property.

2.6 Approximate Locations of Proposed Buildings and Other Structures, if Any

The Phase Two property is intended to be redeveloped with a high-rise residential condominium tower with four levels of underground parking. A strip of land along the western portion of the site will be conveyed to the City for use as a parkland. It will be conveyed under stratified ownership, with the parking garage for the condominium located beneath the park.

4. Appropriate Standards Selection

As part of the Record of Site Condition (RSC) process, EXP determined the appropriate soil and ground water Site Condition Standards (SCS) for the screening of the potential contaminants of concern (pCOCs) across the Phase Two property based on the following information:

- The Phase Two property is intended for future residential use;
- No potable water wells were identified within the Phase One Study Area. The City of Toronto confirmed they had no objection to the application of the non-potable SCS at the site via letter issued February 13, 2018;
- Based on the results of grain size analyses reviewed alongside EXP's observations regarding soil stratigraphy, it is the opinion of the QP that two-thirds of the soil from the ground surface to the bedrock surface is medium to fine textured; and,
- As discussed in Section 2.4, Sections 41 and 43.1 of O. Reg. 153/04 do not apply to the Phase Two property.

Therefore, based on the above information, the appropriate SCS for the Phase Two property were determined to be the Table 3 Standards for a residential/parkland/institutional land use with medium to fine textured soil (Table 3 Standards), as listed in the MECP technical document *Soil, Ground Water and Sediment Standards for Use under Part XV.1 of the Environmental Protection Act* referenced by O. Reg.

153/04.

5. Assessment of Areas of Potential Environmental Concern

Three test holes (TH1 to TH3) were advanced at the Phase Two property as part of the Phase Two ESA; all three test holes were completed as monitoring wells (EXP, 2018a). As part of the Phase Two ESA Update, specialized interior drilling equipment was used to advance test holes in four locations within the underground parking garage at 11 Yorkville Avenue (TH106 to TH109), two locations within the basement at 21 Yorkville Avenue (TH101 and TH102), and three locations within the ground floor at 21 Yorkville Avenue (TH103 to TH105) (EXP, 2019). All the test holes were completed as monitoring wells; clustered pairs were installed in four locations (TH101S/TH101D, TH105I/TH105D, TH106S/TH106D, and TH109S/TH109D).

A summary of the assessment of APECs is provided in Table 4. Soil analytical results are presented in cross section view on Figures 5A to 5E and 6A to 6E and in plan view on Figures 8A to 8E. Ground water analytical results are presented in cross section view on Figures 5F to 5G and 6F to 6G and in plan view on Figure 8F to 8G.

The locations of the test holes relative to the APECs are shown on Figure 2C. Additional coverage is warranted within APEC A1 and APEC G following building demolition, once the areas become more accessible for drilling.

Table 3. Summary of the Assessment of APECs

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	pCOC and Media Affected	Phase Two Assessments	Current Status (Exceedances of SCS)
A1	East central portion of the site	S1: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site	<u>Soil</u> PHCs VOCs	Due to the presence of the ramp for the underground parking garage and the location of the existing aboveground storage tank (AST) within the underground parking garage, access for drilling within the APEC has been limited.	These APECs have not yet been assessed.
A2		S2: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site	<u>Ground Water</u> PHCs VOCs		
B1	Northwest portion of the site	S3: (28) Gasoline and Associated Products Storage in Fixed Tanks	On-site	<u>Soil</u> PHCs VOCs <u>Ground Water</u> PHCs VOCs	<u>Soil</u> TH101 to TH105 (EXP, 2019) MW03 (Pinchin, 2016) <u>Ground Water</u> TH101 to TH105 (EXP, 2019) MW04 (Pinchin, 2016)	No exceedances of these pCOCs were identified within this APEC.
B2		S4: (10) Commercial Autobody Shops	On-site	<u>Soil</u> PHCs VOCs PAHs Metals <u>Ground Water</u> PHCs VOCs	<u>Soil</u> TH101 to TH105 (EXP, 2019) MW01 to MW05 (Pinchin, 2016) <u>Ground Water</u> TH101 to TH105 (EXP, 2019) MW04 (Pinchin, 2016)	<u>Soil</u> VOC-impacted soil was identified in two locations (TH101S and MW02). Cadmium-impacted soil was identified in one location (TH103). <u>Ground Water</u> VOC-impacted ground water was identified in four locations (TH101S, MW01, MW02, and MW04).
C	Central portion of site, north of public laneway	S5: (30) Importation of Fill Material of Unknown Quality	On-site	<u>Soil</u> PAHs Metals As, Sb, Se B-HWS, Hg, CN- EC SAR	<u>Soil</u> TH1 to TH3 (EXP, 2018) BH1 (MCR, 2016) BH15-3, BH15-3S (SPL, 2015)	<u>Soil</u> PAH-impacted soil was identified in three locations (TH1, TH2, and BH1). Lead-impacted soil was identified in two locations (TH1 and TH3).

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	pCOC and Media Affected	Phase Two Assessments	Current Status (Exceedances of SCS)
D1	Western portion of the site	S6: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	On-site	<u>Soil</u> VOCs <u>Ground Water</u> VOCs	<u>Soil</u> TH101 to TH105 (EXP, 2019) MW03 (Pinchin, 2016) <u>Ground Water</u> TH101 to TH105 (EXP, 2019) MW04 (Pinchin, 2016)	<u>Soil</u> VOC-impacted soil was identified in two locations (TH101S and MW02). <u>Ground Water</u> VOC-impacted ground water was identified in four locations (TH101S, MW01, MW02, and MW04).
D2		S7: (8) Chemical Manufacturing, Processing, and Bulk Storage	On-site	<u>Soil</u> PHCs VOCs PAHs Metals As, Sb, Se B-HWS, Hg, CN- <u>Ground Water</u> PHCs VOCs	<u>Soil</u> TH101 to TH105 (EXP, 2019) MW01 to MW05 (Pinchin, 2016) <u>Ground Water</u> TH101 to TH105 (EXP, 2019) MW04 (Pinchin, 2016)	<u>Soil</u> VOC-impacted soil was identified in two locations (TH101S and MW02). Cadmium-impacted soil was identified in one location (TH103). <u>Ground Water</u> VOC-impacted ground water was identified in four locations (TH101S, MW01, MW02, and MW04).
E	Central portion of site, north of public laneway	S8: (10) Commercial Autobody Shops	Off-site	<u>Ground Water</u> PHCs VOCs	<u>Ground Water</u> TH2 and TH3 (EXP, 2018) BH1 (MCR, 2016) BH15-3, BH15-3S (SPL, 2015)	<u>Ground Water</u> VOC-impacted ground water was identified in two locations (TH2 and TH3).
F1	Eastern portion of the site	S9: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site	<u>Ground Water</u> VOCs	<u>Ground Water</u> TH106 to TH109 (EXP, 2019)	No exceedances of the pCOCs were identified within this APEC. Additional characterization of this APEC is warranted. Monitoring wells TH106S and TH107, installed by EXP, were both dry at the time of sampling.
F2		S10: (37) Operation of Dry Cleaning Equipment	Off-site	<u>Ground Water</u> PHCs VOCs	<u>Ground Water</u> TH106 to TH109 (EXP, 2019)	No exceedances of the pCOCs were identified within this APEC.

APEC	Location of APEC on Phase Two Property	PCA	Location of PCA	pCOC and Media Affected	Phase Two Assessments	Current Status (Exceedances of SCS)
		(where chemicals and used)				Additional characterization of this APEC is warranted. Monitoring wells TH106S and TH107, installed by EXP, were both dry at the time of sampling.
G	Northern portion of the site	S11: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site	<u>Ground Water</u> PHCs VOCs	<u>Ground Water</u> TH101, TH102, TH106, and TH107 (EXP, 2019) MW04 (Pinchin, 2016)	Additional characterization of this APEC is warranted. No monitoring wells have been installed along the northern portion of 17 and 19 Yorkville Avenue. Monitoring well TH106S and TH107, installed by EXP, were dry at the time of sampling.
H	Western portion of the site	S12: (37) Operation of Dry Cleaning Equipment (where chemicals and used)	Off-site	<u>Ground Water</u> VOCs	<u>Ground Water</u> TH101 to TH105 (EXP, 2019) MW01, MW02, and MW04 (Pinchin, 2016)	<u>Ground Water</u> VOC-impacted ground water was identified in four locations (TH101S, MW01, MW02, and MW04).

6. Current Site Status

5.1 Soil

As summarized in Table 4, based on the analytical results of the soil samples collected at the site during the Phase Two ESA (EXP, 2018_a) and the Phase Two ESA Update (EXP, 2019), the following COCs were identified:

- VOCs (PCE and TCE);
- PAHs (various PAH parameters);
- Metals (cadmium and lead); and,
- ORPs (EC and SAR).

Soil samples were collected from 15 locations and submitted for analysis of PHC fractions F1 to F4. All soil samples were within the Table 3 Standards for PHCs.

Soil samples were collected from 21 locations and submitted for analysis of VOCs. Soil in two locations (TH101S and MW02) exceeded the Table 3 Standards for tetrachloroethylene (PCE) and/or trichloroethylene (TCE). At TH101S, the soil sample collected from 0 to 0.6 metres below the basement floor slab exceeded the Table 3 Standards for PCE and TCE; the deeper sample collected from 1.8 to 2.4 metres below the basement floor slab was within the Table 3 Standards for PCE and TCE. At MW02, the soil sample collected from 3.05 to 3.66 metres below the ground floor slab exceeded the Table 3 Standards for PCE. A soil sample was collected from TH105I, installed within 1 metre of MW02, from a depth of 3.0 to 3.7 mbgs. The soil sample collected from TH105I was within the Table 3 Standards.

Soil samples were collected from 16 locations and submitted for analysis of PAHs. Soil in four locations (TH1, TH2, TH107, and BH1) exceeded the Table 3 Standards for one or more PAH parameters. Samples collected from 1.5 to 2.1 metres below the ground surface (mbgs) and from 2.3 to 2.8 mbgs at TH1 and BH1, respectively, were within the Table 3 Standards for PAHs. A sample collected from 1.2 to 1.8 metres below the basement floor slab at TH107 was within the Table 3 Standards for PAHs.

Soil samples were collected from 18 locations and submitted for analysis of metals, hydride-forming metals and ORPs. The soil sample collected from 0 to 0.6 mbgs at TH103 marginally exceeded the Table 3 Standards for cadmium, though the field duplicate soil sample collected from this location was within the Table 3 Standard for cadmium. The deeper soil sample collected from 1.2 to 1.8 mbgs was also within the Table 3 Standard for cadmium. The soil samples collected from TH1 and TH3 exceeded the Table 3 Standard for lead; the deeper soil sample collected from 1.5 to 2.1 mbgs at TH1 was within the Table 3 Standard for lead.

Soil samples were collected from 15 locations and submitted for analysis of EC and SAR. Soil in five locations (TH103, TH104, TH106S, TH107 and TH108) exceeded the Table 3 Standards for EC and/or SAR. At TH103 and TH104, deeper soil samples collected from 1.2 to 1.8 mbgs and 1.5 to 2.1 mbgs, respectively, were within the Table 3 Standards for EC. At TH107, a deeper soil sample collected from 1.2 to 1.8 metres below the basement floor slab, were within the Table 3 Standards for SAR. Vertical delineation was not achieved at TH106S and TH108.

Soil analytical results are presented in cross section view on Figures 5A to 5E and 6A to 6E and in plan view on Figures 8A to 8E.

5.2 Ground Water

As summarized in Table 4, based on the analytical results of the ground water samples collected at the site during the Phase Two ESA (EXP, 2018_a) and the Phase Two ESA Update (EXP, 2019), the following COCs were identified:

VOCs:

- cis-1,2-Dichloroethylene;
- PCE;
- trans-1,2-Dichloroethylene;
- TCE; and,
- Vinyl chloride.

Ground water samples were collected from thirteen locations and submitted to the laboratory for analysis of PHC fractions F1 to F4. All ground water samples were within the Table 3 Standards for PHC fractions F1 to F4.

Ground water samples were collected from eleven locations, screened within the shallow ground water-bearing unit and submitted to the laboratory for analysis of VOCs. Ground water in six locations (TH101S, TH2, TH3, MW01, MW02, and MW04) exceeded the Table 3 Standards for one or more VOC parameters. Ground water samples were collected from seven locations (TH101D, TH105I, TH105D, TH106D, TH109D, BH1, and BH15), screened deeper for vertical delineation purposes, and submitted to the laboratory for analysis of VOCs. All ground water samples collected from the deeper monitoring wells were within the Table 3 Standards for VOCs.

Ground water analytical results are presented in cross section view on Figures 5F to 5G and Figures 6F to 6G and 6F and 6I and in plan view on Figures 8F to 8G.

5.3 Sediment

No sediment was present at the Phase Two property.

5.4 Areas where Contaminants are Present

Soil analytical results are presented in cross section view on Figures 5A to 5E and 6A to 6E and in plan view on Figures 8A to 8E. VOC-impacted soil appears to be confined to the west portion of the site. PAH, metals and EC/SAR-impacts in soil appear to be sporadic, located in select areas across the site.

Ground water analytical results are presented in cross section view on Figures 5F to 5G and Figures 6F to 6G and 6F and 6I and in plan view on Figures 8F to 8G. Ground water with concentrations of VOC parameters in exceedance of the Table 3 Standards appears to be confined to the western portion of the site, although VOCs were detected on the eastern portion of the site. Monitoring wells TH106S and TH107 were dry at the time of sampling, additional characterization of ground water on the northeast portion of the site is recommended.

Discharge of Contaminants into the Natural Environment

The majority of the footprint of the site is occupied by building. Impacted soil beneath the site would not

be anticipated to migrate off-site. The nearest surface water body is the Don River, located approximately 2 kilometres east of the site. Ground water impacts would not be anticipated to migrate such a distance as to impact ground water quality within the Don River.

Migration of Contaminants from APECs, Identification of Preferential Pathways, If Any

The majority of the footprint of the site is occupied by the site building. Impacted soil beneath the site would not be anticipated to migrate. There is the potential for shallow ground water impacts to migrate to the southwest, based on the ground water contours determined by EXP. Based on an inferred ground water flow velocity of 1.08×10^{-2} metres (1 centimetre) per year in the sandy silt, significant migration of these impacts is not anticipated.

Influence of Climatic or Meteorological Conditions

The climatic and meteorological conditions at the Phase Two property are not believed to have an influence on contaminants or contamination migration. The majority of the footprint of the site is covered by buildings.

Vapour Intrusion Pathway Considerations

There is the potential for VOCs in soil and ground water to migrate into indoor air, particularly within the building at 21 Yorkville Avenue. A soil vapour assessment conducted at 21 Yorkville Avenue by Pinchin (2016) estimated indoor air concentrations based on measured sub-slab vapour concentrations. The estimated indoor air concentrations of all parameters analyzed were below the MECP health-based indoor air criteria for a commercial/industrial property use.

7. Receptors and Pathways

The Human Health and Ecological Conceptual Site Models (HHCSM and ECSM, respectively) provide diagrams showing the contaminant sources, release and transport mechanisms, exposure routes, and possible receptors. The CSMs identify the complete exposure pathways where receptors might make direct contact with the COCs identified in soil, or where they may indirectly be exposed to pCOCs in soil via vapour transport or other pathways. Additionally, the CSM identifies pathways considered insignificant or negligible because the pathways may be incomplete or blocked.

The selection of ecological receptors takes into consideration the location of the site in an urban area and the location of the Don River West Branch, approximately 2 kilometres east of the site. Relevant on-site receptors, as illustrated in the ECSM, consist of terrestrial valued ecological components (VECs) such as plants, soil invertebrates, mammals, and birds. On-site exposure routes include direct contact with soil and uptake of soil COCs by particulate inhalation, ingestion and dermal contact, in addition to plant root uptake. Ground water on-site is found beyond the depth at which plant root uptake is considered to be likely and therefore this pathway is considered incomplete.

Off-site ecological receptors consist of the same terrestrial receptors found on-site, in addition to aquatic species.

The selection of human receptors is based on the future mixed commercial/residential use of the site. Therefore, the receptors chosen for analysis are those standard receptors found at residential properties and include site residents (toddlers and adults), and child and adult visitor/ trespassers. Furthermore, a maintenance worker and indoor worker are also considered possible receptors. Construction/utility workers may also be present during redevelopment of the site.

Land use surrounding the Phase Two property is a mix of residential, commercial, and community use. Therefore, relevant off-site receptors include residents (toddlers and adults), property visitors, maintenance workers and indoor workers.

The ECSM and HHCSM provided as Figures 9 and 10, respectively, present the potential exposure pathways based on the current soil and ground water impacts present at the Phase Two property.

8. Uncertainty in the Phase Two Investigation

The investigation undertaken by EXP, and any conclusions or recommendations resulting from the work, reflect EXP's judgment based on the conditions observed at the time of EXP's inspections and on information available at the time of preparation of the work. EXP has confirmed neither the completeness nor the accuracy of the records that were provided by others; as such, the historical records review is identified as a potential source of uncertainty during the investigation. The CSM is developed using multiple lines of evidence, searches and source information to make every reasonable attempt to ensure that findings of environmental significance are captured.

To reduce uncertainty in the analytical results obtained during the Phase Two ESA, a documented quality assurance/quality control (QA/QC) program, including field QA/QC and laboratory QA/QC components, was implemented. Written field and laboratory sampling procedures for soil and ground water developed by EXP were used to ensure consistency in sample collection and preparation of samples for submission to the laboratory. The MECP document entitled *Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario* (1996) was used as a reference. Sampling analysis was performed using generally accepted principles and with appropriate sampling equipment. The staff involved in the field sampling have participated in regular, ongoing EXP training programs and were qualified and experienced in collecting, describing, and preparing environmental samples for laboratory analysis.

Data quality objectives for the parameters of concern were set to meet acceptable Reporting Detection Limits (RDLs) to achieve the goal of defining areas where such parameters are present at levels in excess of applicable generic Standards. A field QA/QC program of field duplicate samples and trip blank samples were implemented to reduce uncertainty related to the QA/QC. Relative percent differences (RPDs) were calculated for each of the sample/field duplicate sets and compared to acceptable alert limit criteria for each parameter. No exceedances of the alert criteria were measured, and no issues were identified during QA/QC checks that would increase uncertainty with respect to the findings of the environmental work.

Any uncertainty or absence of information in the records review, interviews, and site reconnaissance components of the Phase One investigation, or any uncertainty or absence of information within the Phase Two or subsequent investigations, are not anticipated to materially affect the validity of the Phase Two CSM.

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