PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
(ENHANCED)
1546 SCOTT STREET
OTTAWA, ONTARIO

Prepared for:
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Project No. 0394-05

EXECUTIVE SUMMARY

Phase 2 Environmental Site Assessment

COLESTAR Environmental Inc. was retained by *Starbank Developments 2000 Corp.* to conduct a Phase 2 Environmental Site Assessment (P2ESA) of the property (the “Site”, or the "Phase 2 Property") located at 1546 Scott Street in Ottawa, Ontario. The P2ESA is to support a Record of Site Condition and related Risk Assessment. The P2ESA was completed to satisfy the objectives and requirements described in *Ontario Regulation 153*, as amended ("Regulation 153"), including sections 32, 33, 33.1, and includes the components required, as described in section 33.2. The P2ESA was completed with a P2ESA conceptual site model in accordance with the requirements set out in Regulation 153. The P2ESA was conducted as a follow up to the July 2020 Phase 1 ESA report completed by COLESTAR, which concluded that further investigation is required to:

- assess fill quality across the site to ascertain if coal or burnt coal residuals have adversely affected soil and/or groundwater quality beneath the site;
- assess soil and groundwater quality in the area of the former building occupied by the construction company to establish if soil and groundwater quality has been adversely affected by potential equipment/vehicle repair operations conducted within the former garage portion of the building;
- assess groundwater quality on the east side of the site to ascertain if sources at offsite PCAs (service stations, auto service garages, auto-bodies, dry cleaner, tin product fabrication) have adversely affected groundwater quality beneath the site; and
- assess groundwater quality on the south side of the site to ascertain if sources at offsite PCAs (metal manufacturing plants/foundries, printing plants, service stations, auto service garages) have adversely affected groundwater quality beneath the site.

The P2ESA included the planning of the site investigation, the site investigation, a review and evaluation of the information gathered through the site investigation, and the preparation of this report, which was submitted to the owner of the Phase 2 Property. The P2ESA included the compilation and interpretation of soil and groundwater laboratory data and investigation data collected by COLESTAR in July and September 2020. The P2ESA, among other elements, included overburden and bedrock drilling and soil

sampling and analysis via twelve boreholes (MW1 to MW6, MW9 to MW11, BH12 to BH14) and groundwater monitoring, sampling and analysis via two existing monitoring wells (O-MW7, O-MW8) and nine new monitoring wells (MW1 to MW6, MW9 to MW11). The boreholes and wells were cited at various locations across the site to optimize APEC coverage in order to assess potential impacts (if any) to land and water quality attributed to the APECs and their associated PCAs. The assessment generally included the analysis of one to two soil samples from each investigation location for the contaminants of potential concern (COPCs) associated with the APECs (VOCs, BTEX, PHCs, PAHs, metals). Groundwater assessment included the analysis of representative groundwater samples from the monitoring wells for the COPCs (VOCs, BTEX, PHCs, PAHs, metals). Information from the P2ESA was compiled and interpreted, which resulted in the following conclusions:

- There is one area of soil contamination located within the limits of the site. It is located in the southeast corner of the site and is characterized by a concentration of PHC F1 in the soil sample obtained from 0.1 to 0.6 m bg at BH2 (Figures 6c, 8a and 8b).

- Benzene and chlorinated VOCs were detected above standards in groundwater within the bedrock formation at the site.

    - Benzene was detected in the groundwater sample from MW-10 located in the northeast corner of the site (Figures 7b, 9a and 9b). Benzene was detected at a concentration of 0.7 ug/L, which is only marginally above the standard (0.5 ug/L).

    - Chlorinated VOC constituents were detected above standards in groundwater samples from MW2, MW3, MW5, O-MW7, O-MW8, MW9 and MW10 situated on the east side of the site (Figures 7a, 10a to 10d). Chlorinated VOCs detected above standards include chloroform, c12-DCE, t12-DCE, PCE, TCE and vinyl chloride.

Risk Assessment, Risk Management and Remediation

A risk assessment, as described in Regulation 153, will be completed for the site to assess the risks that would be related to the presence of benzene and the chlorinated constituents (described herein) detected in the groundwater within the bedrock for the proposed mixed use high rise building (commercial/residential), which we understand

would include underground parking garage. The risk assessment will comply with all requirements in Regulation 153 (including section 44 and Schedule C), and will include, as necessary and appropriate, risk management measures (e.g., ventilated underground parking garage, first floor commercial use and, if necessary, vapour management system). In the circumstances, we expect the RSC and RA will be completed in approximately 18-24 months (depending on responses from the Ministry). For informational purposes, it is expected that the risk assessment will cost approximately $60-100,000, excluding HST. In the worst case, the RA may conclude that a vapour management system is required to mitigate risk. The estimated cost of a vapour management system (if required) consisting of a geomembrane and vapour extraction recovery piping around the perimeter of the subsurface structure or parking garage, and possibly a blower and treatment system., would be approximately $75-125,000, excluding HST.

It is expected that the RSC and RA processes will be straightforward and routine, given the nature and location of the concentrations detected. It is not unusual to find these types of contaminants in an urban setting. We do not expect they have caused or will cause any issue for the site occupants. The contamination will be addressed as part of the development, which is very typical. As such, it is expected that the proposed development will be able to proceed, and indeed will provide benefits, such as the removal and offsite disposal of PHC F1 soil contamination for the excavation of the underground parking garage, as well as the existence of underground parking that is an effective risk management measure. A soil remediation report documenting the contaminated soil removal to satisfy the standard will be prepared to support the RSC. This is part of this RSC P2ESA report, and will be prepared following the removal of the contaminated soil and appropriate testing. For informational purposes, it is expected that the estimated incremental cost to dispose of the contaminated soil will be up to $19,000, excluding HST. This assumes there will be approximately 100m3 (200 tonnes) of soil to remove, transport and dispose of, at a disposal rate of $95/tonne.

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1.0 INTRODUCTION

COLESTAR Environmental Inc. was retained by Starbank Developments 2000 Corp. to conduct a Phase 2 Environmental Site Assessment (P2ESA) of the property (the “Site”, or the "Phase 2 Property") located at 1546 Scott Street in Ottawa, Ontario. The P2ESA was recommended to investigate soil and groundwater quality at the APECs identified in the July 2020 P1ESA report prepared by COLESTAR. The P2ESA was completed as part of the process to file a Record of Site Condition ("RSC") for the Site, and as such, includes all of the components needed to satisfy the objectives and the requirements to do so, including as described in *Ontario Regulation 153/04, as amended ("*Regulation 153"). The objectives of the P2ESA, consistent with section 33.1 of Regulation 153, are:

- To determine the location and concentration of contaminants in land or water on, in or under the site (Phase 2 Property);
- To obtain information about environmental conditions in land or water in, on or under the site with respect to contaminants of concern, including as would be necessary to undertake a risk assessment in accordance with Regulation 153; and
- To determine if applicable standards for contaminants in, on or under the site were met as of the certification date.

As stipulated in Regulation 153, the qualified person must ensure the general objectives of a P2ESA are achieved, including by:

a) Developing an understanding of the geological and hydrogeological conditions at the site; and
b) Conducting one or more rounds of field sampling for all contaminants associated with any area of potential environmental concern identified in the Sampling and Analysis Plan and for any such contaminants identified during subsequent P2ESA activities and analyses of environmental conditions at the site.

As indicated, the P2ESA is to support a Record of Site Condition ("RSC") for the Site, and as such was completed in accordance with *Part XV.1* of the *Environmental Protection Act* and the requirements set out in *Regulation 153*.

In addition, the guidelines provided in the *“Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04”* publication issued by the *Ontario Ministry of the Environment (MOE)* in June 2011 were followed in the preparation of the P2ESA.

This report includes the results and findings of the P2ESA, as well as recommendations for the completion of a risk assessment (including risk management measures, if and as required, to address the contaminants detected in subsurface media to the extent necessary to allow for the change of use related to the proposed redevelopment of the site; namely, a mixed use (commercial and residential) multi storey building with underground parking.

This report is structured in accordance with prescribed section headings and reporting requirements described in Schedule E of Regulation 153. It includes the required components of the P2ESA organized as primary headings, as follows:

EXECUTIVE SUMMARY
1.0 INTRODUCTION
2.0 BACKGROUND
3.0 SCOPE OF INVESTIGATION
4.0 INVESTIGATION METHOD
5.0 REVIEW AND EVALUATION
6.0 CONCLUSIONS
7.0 REFERENCES

The report also includes the appendices required in the Regulation in the order specified, as follows:

Appendix A Sampling and Analysis Plan
Appendix B Borehole Logs
Appendix C Laboratory Certificates
Appendix D Plan of Survey

One additional appendix was added to this report, as follows:

Appendix E Qualifications of the Assessor

1.1 Site Description

A slab on grade building and parking lot, utilized by The Beer Store, occupy the site. The municipal address of the site is 1546 Scott Street, Ottawa, Ontario. The site area is approximately 0.25 hectares (0.62 Acres). The site is bordered by Scott Street to the north

and is situated approximately 80 m west of Parkdale Avenue. The site location is illustrated on Figure 1. A site plan is provided as Figure 3.

The Property Identification Number (PIN) of the site is PIN #04034-0023 (LT). The legal description of the site is "Part Lots 3 & 4, Plan 58 North Side of Bullman Street, South Side of Scott Street; Part Lots 1290 & 12902, Plan 157; Part Lot 1303 Plan 157; Parts of 6, 8 & 10 Plan 4R6192". A current plan of survey prepared and signed by an Ontario Land Surveyor is provided in Appendix D.

1.2 Property Ownership

The Phase 2 Property is owned by Starbank Developments 2000 Corp. The contact information for Starbank's representative is provided below:

Mr. Dung Lam
Starbank Developments 2000 Corp.
1918 Avenue Road
Toronto, Ontario
M5M 4A1
Tel.: (416) 922-2222
admin@starbank.ca

1.3 Current and Future Proposed Uses

A commercial building and an asphalt paved parking lot, both utilized by The Beer Store, occupy the site (Figures 2 and 3). The building is slab-on-grade and single storey. The parking lot borders the building to the east and south. A grassed/landscaped area resides within the central region of the parking lot in the southern half of the site.

The City of Ottawa Zoning By-Law (online 2020) designates the site as a Mixed Use Centre Zone (MC12).

The planned redevelopment of the site is mixed use (commercial and residential). The future plan for the site is redevelopment with a multiple storey mixed use building with underground parking. At the time of preparation of this report, drawings detailing the planned building and underground parking garage were not available.

A Record of Site Condition (RSC) is required under Section 168.3.1 of the Environmental Protection Act, to permit the change in land use from the current commercial usage (The Beer Store) to mixed use (commercial/residential) in the form of a multi storey building with underground parking.

1.4 Applicable Site Condition Standards

The standards deemed applicable to the site are the non-potable full depth soil and groundwater standards (Table 7) for residential sites with shallow coarse textured soil provided in the *"Ontario Ministry of the Environment, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act"* publication dated April 15, 2011. The rationale used to select these standards as applicable to the site is outlined below. Unless otherwise indicated, the source of the information used to support the rationale was the July 2020 P1ESA report prepared by COLESTAR.

- The site re-development plan consists of the redevelopment of the site with a mixed use building (residential/commercial). As a result, the more stringent residential based standards are deemed applicable.

- The non-potable standards were selected as applicable because the site and surrounding lands are within a region serviced by a municipal drinking water system that draws its source water from the Ottawa River.

- The standards for coarse textured soil were selected as applicable because the soil formation at the site includes sand and sand and gravel.

- The closest water body is the Ottawa River located approximately 810 m north of the site. As a result, standards that apply to sites that reside within 30 m of a water body are not deemed applicable to the site.

- On average, bedrock is less than 2 m below grade. As a result, the Table 7 standards for shallow soil sites were selected as applicable to the site.

- The pH of the soil formation falls within the required range of 5 to 9. It was measured within this range in the soil samples analyzed by COLESTAR in this P2ESA (Table 12).

- The site and study area are not located within or proximate to:

    - 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 as having provincial significance;

    - A wetland identified by the Ministry of Natural Resources as having provincial significance;

    - An area designated by a municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant. As per the City of Ottawa *Official Plan (online, 2020),* the site is not located in, or within 30 m of, an ANS.

    - 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 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 Area Act*.

2.0 BACKGROUND

2.1 Physical Setting

2.1.1 Topography and Services

The site surface elevation ranges from 62 to 63 metres above sea level (masl). Topography and site drainage at the site and in the study area generally trends towards the Ottawa River located approximately 810 and 1440 m to the north and west of the site, respectively. The surface water elevation in Ottawa River to the north and west of the site is approximately 56 masl.

The building is serviced with hydro-electricity and underground natural gas, water and sanitary sewer services. The water service is connected to a municipal water distribution system. The sanitary service connects to the municipal sanitary sewer system.

Site run-off is overland and generally trends inwards into catch-basins in the parking lot. Run-off collecting in the catch-basins is conveyed by underground piping to the municipal storm sewer system positioned beneath Scott Street.

2.1.2 Geology

According to *Map 2556, Quaternary Geology of Ontario, Southern Sheet; Ministry of Natural Resources (1991)*, the overburden geology in the vicinity of the study area consists of a thin layer of overburden. According to *Map 2544, Bedrock Geology of Ontario, Southern Sheet; Ministry of Natural Resources (1991)*, the site and study area are underlain by limestone, dolostone, shale, arkose and/or sandstone.

Logs for water wells situated within the study area indicate that the native soil stratigraphy generally consists of sand and/or sand and gravel overlying limestone bedrock encountered at 0.8 to 2.2 m bg.

2.1.3 Hydrology and Hydrogeology

The site is located in the Ottawa River Watershed (ORW) that consists of the Ottawa River and its tributaries. Surface drainage in the ORW is generally towards the River and its tributaries. Based on Record of Site Conditions and water well logs obtained on offsite

properties within 1.5 km of the site, limestone bedrock is encountered at shallow depths (1 to 2.2 m below grade) and the groundwater unit resides within the limestone bedrock formation. Groundwater flow is inferred as towards the Ottawa River at depths ranging from 5 to 7.9 m. Given that limestone bedrock in the area generally consists of numerous laterally continuous limestone beds or layers that are separated by horizontal fractures and or thin shale/silt interbeds, it is probable that the formation is imparting a degree of anisotropy, promoting largely horizontal confined groundwater flow along open bedding planes, layering fractures, and/or more permeable limestone layers.

2.1.4 Water Bodies and Areas of Natural Significance

The closest water body is the Ottawa River located approximately 810 and 1440 m to the north and west of the site, respectively. According to the topographical map of the site, the surface water elevation of the Ottawa River to the north and west of the site is 56 masl.

The site is not considered an Area of Natural Significance under O. Reg. 153 as it is not located in or within 30 m of:

- 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 as having provincial significance.
- A wetland identified by the Ministry of Natural Resources as having provincial significance.
- An area designated by a municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant. As per the City of Ottawa *Official Plan (online, 2020),* the site is not located in, or within 30 m of, an ANS.
- 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 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.
- An area set apart as a wilderness area under the *Wilderness Area Act*.

2.2 Past Investigations

2.2.1 Phase 1 Environmental Site Assessment

A Phase 1 Environmental Site Assessment, dated July 2020, and entitled *"Phase 1 Environmental Site Assessment (Enhanced), 1546 Scott Street, Ottawa, Ontario"* was prepared for the site by COLESTAR Environmental Inc. The Areas of Potential Environmental Concern (APECs) and associated Potentially Contaminating Activities (PCAs) and contaminants of potential environmental concern (COPCs) defined in the Phase 1 ESA are summarized in Table 1 and illustrated on Figures 2 and 4.

The Phase 1 ESA concluded that a P2ESA is required to:

- assess fill quality across the site to ascertain if coal or burnt coal residuals have adversely affected soil and/or groundwater quality beneath the site;
- assess soil and groundwater quality in the area of the former building occupied by the construction company to establish if soil and groundwater quality has been adversely affected by potential equipment/vehicle repair operations conducted within the former garage portion of the building;
- assess groundwater quality on the east side of the site to ascertain if sources at offsite PCAs (service stations, auto service garages, auto-bodies, dry cleaner, tin product fabrication) have adversely affected groundwater quality beneath the site; and
- assess groundwater quality on the south side of the site to ascertain if sources at offsite PCAs (metal manufacturing plants/foundries, printing plants, service stations, auto service garages) have adversely affected groundwater quality beneath the site.

3.0 SCOPE OF INVESTIGATION

3.1 Overview of Site Investigation

The P2ESA was carried out in accordance with the requirements set out in *Regulation 153*. As required by Regulation 153, the scope of the investigation included the following components:

- Planning the site investigation;
- Site investigation;
- Evaluation of information from the site investigation; and
- This report, which is submittted to the Owner of the Phase 2 Property

The planning of the site investigation involved the development of a Sampling and Analysis Plan (SAP) for soil and groundwater. A copy of the SAP is provided in Appendix A. As detailed in the SAP, the soil and groundwater sampling and analysis programs include data quality objectives, quality assurance/quality control measures, standard operating procedures for borehole drilling, soil sampling, field screening of soil samples, monitoring well installation, fluid level monitoring, monitoring well development and groundwater sampling. In addition, physical impediments and their effect on the execution of the SAP are considered.

The site investigation involved the following components:

- Site walkovers and lateral surveying on July 2, 2020 to layout the investigation locations;
- Borehole drilling and soil sampling via twelve (12) boreholes (MW1 to MW6, MW9, MW10, MW11, BH12, BH13, BH14) on July 2, 3, 8 and 9, 2020;
- Bedrock drilling using wet rotary at two borehole locations (MW3, MW9) on July 2, 2020;
- Bedrock drilling using air rotary at seven borehole locations (MW1, MW2, MW4, MW5, MW6, MW10, MW11) on July 8 and 9, 2020;
- Installation of nine monitoring wells (MW1 to MW6, MW9 to MW11) on July 2, 8 and 9, 2020;
- Fluid level monitoring of the wells, including two existing wells (O-MW7, O-MW-8), on July 9, 2020; July 20, 2020 and September 1, 2020;
- Development of the monitoring wells on July 2, 3, 8 and 9, 2020;

- Purging and groundwater sampling of the monitoring wells on July 3, 2020 and July 9, 2020;
- Vertical surveying of boreholes/monitoring wells on July 9, 2020;
- Laboratory analysis of groundwater and soil samples obtained from the boreholes/wells to assess subsurface quality for the COPCs attributed to the APECs and onsite and offsite PCAs; and
- Laboratory analysis of field duplicates for quality assurance/quality control purposes.

Information derived from the investigation was compiled and interpreted along with information from the P1ESA to identify confirmed areas of environmental concern warranting further action. This included an evaluation of the soil and groundwater laboratory data against the applicable site condition standards as well as an evaluation of sampling bias, quality, precision and reliability.

3.2 Media Investigated

The media investigated included soil and groundwater. Soil and groundwater quality was assessed to determine if subsurface contamination is present at the APECs. An assessment of sediment quality was not conducted as no water bodies are located within the limits of the site.

Soil sampling was carried out via twelve boreholes (MW1 to MW6, MW9 to MW11, BH12 to BH14) and groundwater monitoring and sampling was conducted via eleven (11) monitoring wells (MW1 to MW6, MW9 to MW11, O-MW7, O-MW8). The locations of the boreholes/wells placed as part of this P2ESA are illustrated on Figure 3. The rationale for the selection of the borehole locations and the soil and groundwater analytical programs executed at each investigation location are provided in Table 2.

3.3 Phase 1 Conceptual Site Model

3.3.1 Geology and Hydrogeology

The site is located in the Ottawa River Watershed (ORW) that consists of the Ottawa River and its tributaries. Surface drainage in the ORW is generally towards the River and its tributaries. Based on Record of Site Conditions and water well logs obtained on offsite properties within 1.5 km of the site, limestone bedrock is encountered at shallow depths

(1 to 2.2 m below grade) and the groundwater unit resides within the limestone bedrock formation. Groundwater flow is inferred as towards the Ottawa River at depths ranging from 5 to 7.9 m. Given that limestone bedrock in the area generally consists of numerous laterally continuous limestone beds or layers that are separated by horizontal fractures and or thin shale/silt interbeds, it is probable that the formation is imparting a degree of anisotropy, promoting largely horizontal confined groundwater flow along open bedding planes, layering fractures, and/or more permeable limestone layers.

The assumption relating to groundwater flow made in the P1ESA conceptual site model could not be validated in this P2ESA as the groundwater elevations had not attained static equilibrium. The stratigraphic layers and groundwater position defined in the P1ESA Conceptual Site Model were confirmed. Additional detail on subsequently acquired information relevant to the refinement of the conceptual site model is provided in Section 5.10, Phase 2 Conceptual Site Model.

3.3.2 Phase 1 ESA Study Area

The P1ESA study area includes the site as well as surrounding lands falling within a 250 m radius of the site boundaries. The aerial extent of coverage of the P1ESA study area is depicted on Figure 4. As illustrated, it generally extends to Hinchey Avenue to the east, Armstrong Street to the south, Huron Avenue to the west and Lyndale Avenue to the north. The search area focusses on the site and surrounding properties falling within the inferred up-gradient groundwater flow field (UGFF) of the study area. The UGFF is used throughout the records review process to define surrounding properties that may pose a potential concern to groundwater, and potentially soil, quality beneath the site. Specifically, the study area is used to define surrounding properties that may, in the event of a contaminant release, represent a concern with respect to contaminant migration towards the site via groundwater flow (advection) and other contaminant transport mechanisms (diffusion and dispersion).

3.3.3 Current, Historical and Future Site Uses

Collectively, the records indicate that the site was first developed in about 1902 with residential dwellings that were demolished and replaced with two commercial buildings and a parking lot in the late 1950s. The buildings resided in the northeast site quadrant and central part of the site and were occupied by Rene Goulet Construction Ltd. and Jordash Co. Ltd., and Brewers Retail, respectively. In the late 1980s, the commercial buildings were demolished and replaced with the current day building and parking lot

which have been utilized by The Beer Store and its prior affiliated company (Brewers Retail) since construction.

Limited information was found pertaining to details of the construction company (Rene Goulet Construction Ltd.) that operated in the former building in the northeast site quadrant. The information that was found suggests that this company may have been a design build construction company. Although no supporting information was found, it is presumed that this company may have used part of the building as a construction equipment repair and servicing garage.

Jordash Co. Ltd. is a restaurant equipment supply company and most likely used the former building at the site as a retail warehouse.

It is noted that the site was occupied during the coal burning era (1800s to 1930s) and as a result it is considered possible that coal and burnt coal residuals (cinder, clinker, ash) may have been deposited within the upper part of the soil profile beneath the site.

As per City of Ottawa Zoning By-Law (online 2020), the site is designated as a Mixed Use Centre Zone (MC12).

The planned redevelopment of the site is mixed use (commercial and residential). The future plan for the site is redevelopment with a multiple storey mixed use building with two to four levels of underground parking. At the time of preparation of this report, drawings detailing the planned building and underground parking garage were not available.

No domestic use water wells were identified within the study area and areas of natural environmental significance were not identified at, or within 30 m of, the site.

3.3.4 Onsite PCAs and APECs

Site uses and/or activities that include onsite PCAs were identified in the P1 ESA. The PCAs result in the APECs that are shown on Figure 2, defined in Table 1 and listed below:

APEC 1 - Potential Coal and Burnt Coal Deposition
APEC 2 – Potential Former Service Garage

Given that the site was occupied during the coal burning era, it is possible that the fill layer at the site may contain surplus coal and burnt coal residuals derived from the former

operation of coal fired furnaces, chimneys or boilers at, and in the area of, the site. The Contaminants of Potential Concern (COPCs) associated with coal and burnt coal residuals include petroleum hydrocarbons (PHCs), polycyclic aromatic hydrocarbons (PAHs) and metals.

Sources of concern at service garages include vehicle fluids – oil, engine coolant, transmission fluid, gasoline, diesel and waste fluids generated from maintenance and repair operations. COPCs associated with maintenance garages include volatile organic compounds (VOCs), PHCs, PAHs and metals.

3.3.5 Offsite PCAs and APECs

The inferred groundwater flow trend (west, northwest, north) of the shallow groundwater unit was used to define offsite properties residing within the up-gradient groundwater flow field that in the event of a contaminant release could affect groundwater quality beneath the site via groundwater flow and contaminant transport mechanisms. This assessment yielded the offsite PCAs that are illustrated on Figure 4, presented in Table 1, and summarized as follows:

- A former metal fabrication facility (Leslie P & Sons Tinsmiths) at 1536 Scott Street located to the immediate east of the site.
- A former auto service garage, auto body and potential fuel depot (Campbell Motors) at 1536 Scott Street located to the immediate east of the site.
- A former stove manufacturing plant/foundry (Beach Foundry Ltd.) situated approximately 15 m south of the site. The plant/foundry occupied land bounded by Spencer Avenue, Holland Avenue, Hamilton Avenue and Bullman Street and was complete with pickling vats, boilers and a spray room. Operations carried out in the foundry include forging, enamelling or plating, finishing, welding, sand blasting, grinding, crating and assembly. Numerous explosions and fires that resulted in foundry dust dispersion to surrounding properties occurred at the plant/foundry. Several of the explosions were derived from the explosion of tanks containing paint thinners and gasoline. [The Beach Foundry – A Kitchissippi Landmark; March 17, 2015].
- A former scientific instrument manufacturing plant (Instruments Ltd.) at 300 Parkdale Avenue located approximately 40 m southeast of the site.
- A former printing plant (MOM Printing) at 300 Parkdale Avenue located approximately 40 m southeast of the site.

- A former printing plant (Dominion Loose Leaf Co. Ltd.) at 320 Parkdale Avenue located approximately 85 m south-southeast of the site.
- A former dry cleaner (Comet Cleaners) at 275 Parkdale Avenue located approximately 105 m east of the site.
- A former auto service garage and auto body and potential fuel depot (Gervais Motors, Somerset Bridge Garage) at 255 Parkdale Avenue located approximately 110 m east-northeast of the site.
- A former motor service garage at 1484 Scott Street located approximately 120 m east-northeast of the site.
- A former gasoline UST at 45 Spencer Street located approximately 140 m south of the site.
- A former printing plant at 45 Spencer Street located approximately 140 m south of the site.
- A former service station/auto service garage at 1480 Scott Street located approximately 150 m east-northeast of the site.
- A former metal wire cloth (Capital Wire Cloth Manufacturing Co. Ltd.) manufacturing plant at 265 Armstrong Street located approximately 170 m south of the site.
- A former military equipment/instrument manufacturing plant (Sperry Gyroscope Ottawa Ltd.) at 3 Hamilton Avenue/ 340 Parkdale Avenue located approximately 175 m south-southeast of the site.
- A former metal product manufacturing plant/foundry (J. Robinson & Sons Foundry) with two gasoline USTs at 2 Hinton Avenue located approximately 175 m south of the site.
- A former service station/auto service garage with two gasoline USTs at 65 Holland Avenue located approximately 225 m south of the site.

The offsite PCAs were used to establish the onsite APECs illustrated on Figure 2 and presented in Table 1 that correspond to the direction of the offsite PCAs as follows:

APEC 3 – East Side of Site in Direction of Offsite PCAs (service stations, auto service garages, auto-bodies, dry cleaner, tin product fabrication)
APEC 4 – South Side of Site in Direction of Offsite PCAs (metal manufacturing plants/foundries, printing plants, service stations, auto service garages)

For the purposes of defining COPCs, the offsite PCAs are grouped as follows:

- Vehicle/Equipment Maintenance Garages
- Service Stations and Fuel Depots
- Autobody
- Dry Cleaning
- Metal Fabrication and Manufacturing
- Printing Plants

Sources of concern at vehicle/equipment maintenance garages include vehicle fluids – oil, engine coolant, transmission fluid, gasoline, diesel and waste fluids generated from maintenance and repair operations. COPCs associated with maintenance garages include volatile organic compounds (VOCs), PHCs, PAHs and metals.

The contaminant sources of concern at service stations and fuel depots are the fuels (gasoline, diesel) that are typically stored in underground storage tanks and conveyed by underground pipelines to fuel dispensers. COPCs associated with service stations/fuel depots include benzene, toluene, ethylbenzene and xylenes (BTEX), PHCs and lead.

Operations of potential environmental concern at auto body shops include sandblasting to remove paint and painting. COPCs associated with auto body shops include VOCs, PHCs, PAHs and metals.

The sources of concern at dry cleaning facilities are the solvents used in the process. These solvents include trichloroethylene and tetrachloroethlyene as well as the degradation by-products (ethenes, ethanes and vinyl chloride) produced in aerobic and anaerobic subsurface environments. COPCs associated with dry cleaners include VOCs.

Foundries and metal manufacturing plants utilize various process operations (melting, heat treating, molding, surface cleaning and degreasing, bending, shaping, forming, plating and finishing) and generate waste by products (slag, foundry sand) that could result in subsurface contamination. Given the era of operation of the metal product manufacturing plants/foundries it is likely that they utilized coal fired furnaces and/or boilers. COPCs associated with metal manufacturing/foundries include VOCs, PAHs, PHCs and metals.

The sources of concern at printing facilities are the inks that are typically stored in bulk and used in the printing process. There are a variety of liquid inks used in the printing industry. The primary types are aqueous based and solvent based inks. Aqueous based inks are a mixture of water, glycol and dyes or pigments. Solvent based inks are a mixture

of solvent and dyes or pigments. The primary contaminants of concern in inks are VOCs such as toluene, methyl ethyl ketone and xylenes, petroleum hydrocarbons and heavy metals (used as binders) such as lead, cadmium, copper and nickel. CoPCs associated with printing companies include metals, PHCs and VOCs.

3.3.6 Preferential Transport Pathways

Underground utilities within the limits of the site are not expected to act as preferential contaminant transport pathways because they reside within the overburden and according to RSCs and well records, groundwater beneath the site and study area generally resides within the underlying limestone bedrock formation. This disconnect prevents interaction between the utility corridors and the shallow groundwater unit and by extension eliminates the potential for preferential contaminant transport.

3.4 Deviations from Sampling and Analysis Plan

There were no deviations in the sampling and analysis plan.

3.5 Impediments

Full and unhindered access to the site was granted by the Owner for the execution of all elements of this P2ESA. As a result, the investigation program was not adversely affected by access restrictions.

There were no physical impediments present at the site at the time of execution of the investigation activities. As a result, physical impediments did not interfere with the execution of the P2ESA.

4.0 INVESTIGATION METHOD

4.1 General

The investigation methods executed for the various P2ESA components are outlined in the following sections. Where investigation methods deviated from standard operating procedures, the deviation is outlined along with supporting rationale in the applicable section. The deviations are also summarized in Section 3.4.

4.2 Drilling

Overburden drilling at MW1 to MW6, MW9 to MW11 and BH12 to BH14 and bedrock drilling at MW1 to MW6 and MW9 to MW11 was carried out by Canadian Environmental Drilling and Contractors Ltd. (CEDC) on July 2, 3, 8 and 9 2020. Overburden drilling was carried out using a rig equipped with hollow stem augers and split spoon samplers. Bedrock drilling was carried out using a wet rotary drill rig equipped with bedrock sampling cores at MW3 and MW9 and an air rotary rig equipped with a pneumatic hammer at MW1, MW2, MW4, MW5, MW6, MW10 and MW11. CEDC is licensed as a qualified environmental driller with the Ontario Ministry of the Environment, Conservation and Parks (MECP). The locations of the boreholes are illustrated on Figure 3.

As illustrated on the logs (Appendix B), soil samples from the boreholes were collected at regular depth intervals using 0.76 m (2.5 ft) split spoon samplers. Split spoon samples were acquired from near grade to the maximum depth of overburden drilling at each borehole location. The depth of drilling ranged from 0.8 to 2.9 m bg.

Split spoon samples were cleared of residual soil material and washed using water and a phosphate free detergent prior to use, and between sample locations, to minimize the potential for cross contamination. The wash water used was changed out between borehole locations and between sample intervals when anthropogenic organic contaminants were observed in soil samples during the drilling program.

Decontamination of the augers was carried out between borehole locations when anthropogenic contaminant impacts were encountered in the subsurface soils.

4.3 Soil Sampling

In-situ soil samples collected via the boreholes at regular depth intervals were split with half placed in a polyethylene bag with no headspace for possible laboratory analysis and the other half placed in a polyethylene bag with headspace for subsequent vapour screening, textural classification and assessment for visual and olfactory evidence of contaminant impact. Each sample was collected with a fresh pair of nitrile sample gloves discarded after use.

Soil assessment, contaminant screening and the selection and jarring of soil samples for laboratory analysis was completed for each investigation location over the duration of drilling and no later than 30 minutes following sample collection. During the assessment and screening process, interim soil samples for possible laboratory analysis were placed in an ice filled cooler designated for interim sample storage. Selected samples were subsequently jarred and placed in a separate ice filled cooler for preservation until delivery to the laboratory.

As illustrated on the logs (Appendix B), the soil stratigraphy encountered generally consists of sand or sand and gravel overlying limestone bedrock encountered at 0.8 to 2.9 m bg. Additional details on the stratigraphy encountered in the boreholes and test pits is provided in Section 5.1.

4.4 Field Screening Measurements

Petroleum hydrocarbon (combustible) vapour concentrations were measured in the headspace of bagged soil samples using an RKI Eagle vapour detector (Serial #E08Z093) operated in methane elimination mode. The detector was calibrated according to the manufacturers' specifications against hexane at a concentration of 15% for combustible gas measurement prior to and following use in July 2020. Calibration checks performed following the use of the detector indicated that no to minimal adjustments to the vapour detector were required. The combustible detector component of the unit has the capability to detect volatile and semi-volatile petroleum hydrocarbon vapours. The output of the unit is total PHC vapours with an accuracy ranging from +/-5% to +/-10% of the reading and the capability to measure concentrations in ppm and %LEL (Lower Explosive Limit).

In this P2ESA, one to two soil samples from each investigation location were selected and analyzed for the COPCs identified in the P1ESA. The analytes varied and included

inorganics (metals, pH) and organic constituents (VOCs, BTEX, PAHs, PHCs). Samples for analysis of volatiles (VOCs, BTEX and PHCs) were selected based on combustible vapour concentration measurements. Samples retained and analyzed for volatile constituents included those which exhibited the highest vapour concentrations from selected investigation locations. Soil samples were analyzed for inorganics/metals and/or selected organic constituents based on observations noted in the soil formations with the parameter suites analyzed established based on APEC and/or PCA (Table 1). A complete list of the analyzed soil samples is provided along with the sample selection rationale in Table 3.

Field duplicates were also acquired on the sampling dates for laboratory analysis for QA/QC purposes with the designated sample split in half with one half designated as the sample and the other designated as the duplicate. Sample splitting was conducted to optimize representativeness between the sample and the duplicate. The field duplicates analyzed are summarized in Table 4.

4.5 Groundwater: Monitoring Well Installation

Monitoring wells were installed into the bedrock formation in nine of the boreholes – MW1, MW2, MW3, MW4, MW5, MW6, MW9, MW10 and MW11. The monitoring wells were installed by CEDC. CEDC is a licensed environmental driller with the MECP. The MECP license allows CEDC to install monitoring wells for environmental purposes in Ontario.

Monitoring wells composed of 38 mm diameter PVC risers with 3.05 m screened intervals were placed within the limestone bedrock formation in the boreholes. The screens which consisted of vertical 0.25 um overlapping slots were placed to intercept the anticipated potentiometric surface of the groundwater unit at each borehole location. A sand pack was installed around the screen from the base of the borehole to approximately 0.3 to 0.6 m above the top of the well screen. The sand pack material used was No. 10 silica sand. The borehole annulus above the sand pack was in-filled with hydrated bentonite to the bedrock surface at each well location. Silica sand was placed atop the bentonite seal to a depth of 0.1 m below grade. Flush mount casings, encased in concrete at grade, were installed at the well locations.

The PVC well materials used were new and supplied sterile in manufacturer supplied bags. The well material was removed from the bags and installed directly into the open borehole annulus by the drillers using nitrile gloves. Sand pack material and bentonite used in the installations was conveyed directly into the borehole annulus from

manufacturer supplied bags. This well installation and construction method served to prevent cross contamination and the entry of foreign material into the borehole annulus during well installation.

Well development was carried out at each well using a bailer and/or peristaltic pump with downhole tubing. The bailer or downhole tubing used at each well location was new and dedicated. They were supplied sterile in polyethylene bags and were removed from the bags for subsequent use/installation using a new pair of nitrile gloves discarded after well development. The use of new and dedicated bailers, tubing and gloves served to eliminate the potential for cross contamination between well locations.

4.6 Groundwater: Field Measurement of Water Quality Parameters

Each monitoring well included in the groundwater sampling program was developed until the recovered groundwater was observed clear with no visible particulate matter and at least three successive sets of water quality parameters had attain stability. Water quality parameters were measured in the extracted groundwater from each well using a water quality meter calibrated prior to and following use and operated during the ongoing extraction of groundwater through a flow through cell. Prior to development, water levels were gauged in the wells using a solinst interface probe. Details of the well development events are provided in Table 5.

As documented in Table 5, development was carried out until sediment and particulate was generally removed from each well and the extracted groundwater was observed clear and stable with respect to water quality parameters.

4.7 Groundwater: Sampling

Each monitoring well in the groundwater sampling program was gauged for fluid levels and bottom of well depth using a solinst interface probe decontaminated prior to use and between well locations. Following gauging, each well in the groundwater sampling program was purged of at least one well volume and until the extracted groundwater was observed clear using a peristaltic pump with dedicated downhole tubing. After the groundwater was observed clear, purging was continued at each well location until measured water quality parameters in the extracted groundwater had attained stability on at least three consecutive water quality measurement events. Water quality parameters were measured in the extracted groundwater using a water quality meter calibrated prior to and following use and operated during the ongoing extraction of groundwater through

a flow through cell. The tubing, supplied sterile in a polyethylene bag, was removed from the bag for subsequent use/installation using a fresh pair of nitrile gloves discarded after purging. The use of new dedicated tubing and sampling gloves at each sampling location served to eliminate the potential for cross contamination between well locations.

Following purging and attainment of water quality parameter stabilization, groundwater samples were obtained on July 3 and 9, 2020 using a peristaltic pump with dedicated tubing. Samples were conveyed into sample jars provided with preservative (where required) by the laboratory. Once jarred, each sample was immediately placed and packed in an ice filled cooler pending delivery to the laboratory for subsequent analysis. Details of the purging and groundwater sampling activities for each well are outlined in Table 6.

Groundwater samples analyzed for metals were conveyed through dedicated 45 um field filters. A new sterile field filter was used for each sample location with the field filter removed from the supplier provided polyethylene bags and installed on the discharge end of the peristaltic pump tubing. Samples acquired for VOC and PHC analysis were obtained using the low flow method with the discharge rate on the pump maintained at no more than 100 mL/minute. At each well location and on each sampling date, groundwater samples were acquired using a new pair of nitrile gloves discarded after use.

Groundwater field duplicates were acquired for laboratory analysis for QA/QC purposes. At each duplicate sampling location, the sample and its duplicate were collected by splitting sample flow between the sample jar and duplicate jar at equal time intervals until the jars were filled. This process was carried out to optimize representativeness between the sample and the duplicate. The field duplicates are summarized in Table 7.

4.8 Sediment: Sampling

Sediment sampling was not carried out in this assessment.

4.9 Analytical Testing

Soil and groundwater samples were analyzed by Caduceon Environmental Laboratories (CEL) located in Richmond Hill, Ontario. CEL is accredited under CALA (Canadian Association for Laboratory Accreditation Inc.) for the COPCs analyzed in this investigation. Laboratory testing was performed in accordance with the procedures and protocols defined under Ontario Regulation 153 and its amendments as well as the

"*Ontario Ministry of the Environment, Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act*" publication, amended as of July 1, 2011. The soil and groundwater analytes tested in this investigation are defined in Sections 4.4 and 4.7, respectively.

4.10 Residue Management Procedures

Soil cuttings generated in the drilling program were placed in drums. The drums are stored at the site. Groundwater generated during well development and purging was discharged into the drums containing drill cuttings. The drums containing the cuttings/groundwater will be removed from the site at some future date.

4.11 Elevation Surveying

Investigation locations in the assessment were laid out laterally relative to the site building by COLESTAR. A vertical datum was selected and assigned an arbitrary elevation of 100.00 m and COLESTAR used this datum to establish top of well casing and/or grade elevations at each borehole/well location. The arbitrary grade and top of well casing elevations are presented in Table 8 and on the borehole logs in Appendix B.

4.12 Quality Assurance/Quality Control

The sample containers and preservatives used in the investigation program comply with the requirements set out in the "*Ontario Ministry of the Environment, Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act"* publication, amended as of July 1, 2011. A summary of the analytes tested are provided along with the sample jar sizes/types, preservatives used and holding times in Table 9.

Soil and groundwater samples acquired from investigation locations were labelled by COLESTAR according to the investigation location identifier (i.e. MW1), where MW = borehole/monitoring well, and 1 is a unique location identifier. Soil samples were identified by the location identifier and depth in feet where the analyzed soil sample was acquired (i.e. MW1, 0.5-2.5). Groundwater samples acquired from the wells were identified by the well identifier (i.e. MW1, MW2,).

Field quality control and quality assurance procedures and protocols executed during the investigation were as follows:

- The interface probe used to gauge fluid levels as part of well development, purging and groundwater monitoring was decontaminated prior to use and between well locations. The decontamination process was carried out twice to ensure decontamination success. The process in the order of application involved the rinsing of the probe and immersed portion of the measuring tape with distilled water, cleaning with dedicated paper towel, application of methanol, and rinsing with distilled water.
- The well materials (PVC screen and riser, caps, sand pack, bentonite) used to construct the wells were new and supplied in manufacturer supplied bags. Well materials were installed directly into the open borehole annulus by the drillers using nitrile gloves, discarded after use. This well installation and construction method served to prevent cross contamination and the entry of foreign material into the borehole annulus during well installation.
- Split spoon samples were cleared of residual soil material and washed using water and a phosphate free detergent prior to use, and between sample locations, to minimize the potential for cross contamination.
- Field vapour concentrations were measured using a vapour detector, calibrated prior to and following use. The calibration checks performed after use of the unit found no adjustment required; validating, the vapour measurements as reliable.
- Soil samples selected for laboratory analyses were generally jarred by COLESTAR personnel within 30 minutes of collection.
- Well development, purging and groundwater sampling was carried out using dedicated peristaltic pump tubing and bailers, supplied new and sterile in polyethylene bags.
- Groundwater samples analyzed for metals were conveyed through dedicated 45 um field filters, removed from sealed sterile polyethylene bags and installed on the discharge tubing of the pump.
- Groundwater samples acquired for VOC, BTEX and PHC F1 analysis were obtained using the low flow method with the discharge rate on the pump maintained at no more than 100 mL/minute.
- Each soil and groundwater sample acquired was collected using a new pair of nitrile gloves, discarded after use.
- Soil and groundwater field duplicates were jarred and analyzed at the required frequency (10% or greater) to allow for the assessment of data precision, accuracy

and reproducibility as well as an overall assessment of the field QA/QC procedures and protocols.

- Soil duplicate samples were collected as splits from designated soil samples.
- Groundwater duplicates were collected by splitting sample flow between the sample jar and duplicate jar at equal time intervals until the jars were filled. This process was carried out to optimize representativeness between the sample and the duplicate.
- Soil and groundwater samples were placed in designated sample jars, preserved (when required), as per the sample jar and preservation requirements set out in Table 9 and the MOE Analytical Protocol.
- Care was taken during sampling to ensure that the sample containers did not come into contact with any foreign objects or materials and that the preservative was contained within the sample bottle during collection.
- Soil and groundwater samples jarred for analysis were immediately packed in an ice filled cooler with each sample batch submitted to the laboratory within 48 hours of collection by COLESTAR personnel.

5.0 REVIEW AND EVALUATION

5.1 Geology

The soil stratigraphy encountered in the boreholes generally consists of sand and/or sand and gravel overlying limestone bedrock encountered at 0.8 to 2.9 m bg. Based on the bedrock cores acquired at MW3 and MW9, the upper 300 to 500 mm of the limestone bedrock formation is weathered and the underlying competent bedrock formation consists of numerous horizontal limestone layers that range in thickness from 50 to 600 mm. The limestone layers are separated by laterally continuous open fractures with apertures of up to 2 mm.

The stratigraphy apparent in the individual boreholes is defined on the logs provided in Appendix B.

5.2 Groundwater: Elevations and Flow Direction

Monitoring wells gauged in this investigation included two existing wells (O-MW7, O-MW8) and nine new wells (MW1 to MW6, MW9, MW10 and MW11). The locations of the wells are illustrated on Figure 3. The well locations were selected to determine groundwater flow across the site as well as establish if onsite APECs and offsite PCAs have affected groundwater quality beneath the site. The wells are screened to intercept the potentiometric surface of the groundwater unit that underlies the site. The screened intervals of the wells are defined in Table 10.

Each well was gauged using a solinst interface probe, decontaminated prior to use and between well locations. Gauging included the monitoring of the wells for water levels and light and dense non-aqueous phase liquids. The results of the monitoring events are presented along with calculated potentiometric elevations in Table 11.

Groundwater beneath the site resides within the limestone bedrock formation - it was encountered at depths and arbitrary elevations ranging from 4.3 to 11.3 m bg and 88.9 to 96.1 m on July 9, 2020; from 4.1 to 11.1 m bg and 89.4 to 96.3 m on July 20, 2020; and from 3.6 to 8.2 m bg and 92.1 to 96.8 m on September 1, 2020. The high variability in the water levels over time, particularly between the July and September events suggests that the groundwater formation as a whole has not attained static equilibrium and as such groundwater flow trends cannot be established at this time (Figure 5).

LNAPL was not apparent atop groundwater in the monitoring wells and DNAPL was not apparent in the base of the wells on the monitoring events.

Considerable deviations or temporal variations in the depth to the groundwater unit beneath the site are evident between the monitoring events and as such a determination of the general overall trend in groundwater flow or principal directions of groundwater flow could not be inferred at this time (i.e. groundwater levels had not attained equilibrium). Despite this limitation it is anticipated that groundwater flow beneath the site trends west, northwest and/or north towards the Ottawa River (as was inferred in the P1ESA).

Interactions between groundwater and underground utilities are not anticipated because known utility alignments do not vertically intersect known regions of soil or groundwater impact at the site. As a result, preferential pathways are not anticipated to alter or affect contaminant transport beneath the site.

5.3 Groundwater: Hydraulic Gradients

The horizontal hydraulic gradients could not be calculated because the groundwater formation beneath the site had not attained static equilibrium on the monitoring dates carried out in this P2ESA.

Groundwater beneath the site resides within the limestone bedrock formation and groundwater flow is largely horizontal, along laterally continuous bedding planes situated between rock beds. As a result, vertical hydraulic gradients were not determined.

5.4 Coarse Soil Texture

The overburden unit that underlies the site is composed of sand and/or sand and gravel. As a result, the coarse-grained soil texture was selected as applicable to the site.

5.5 Soil: Field Screening

Field screening carried out on soil samples collected from the boreholes included an assessment for visual and olfactory evidence of anthropogenic impact and the measurement of combustible vapour concentrations.

Visual and olfactory evidence of anthropogenic impact was not observed in the soil samples recovered from the boreholes. This included as assessment for coal and burnt coal residuals (i.e. ash, cinder, clinker) related to APEC 1. Specifically, coal and burnt coal residuals were not observed in the soil samples recovered from the boreholes.

Combustible vapour concentrations measured in the soil samples from the boreholes are presented in the logs provided in Appendix B. As presented, combustible vapour concentrations did not exceed 5 ppm. A representative subset of the soil samples with the highest measured combustible vapour concentrations were analyzed for BTEX, VOCs and/or PHCs in addition to other parameters.

5.6 Soil Quality

The laboratory results on the soil samples analyzed in this investigation are presented along with the applicable standards in Tables 12, 13 and 14. Copies of the laboratory certificates supporting the laboratory data are provided in Appendix C.

The soil testing program was designed to assess whether onsite soil quality has been adversely affected by onsite PCAs/APECs. To accomplish this objective, selected soil samples from the fill layer and native soil formation were analyzed for the COPCs associated with the APECs. A synopsis of the soil laboratory results is provided for the site in Table 15. Laboratory results at individual soil sample locations are illustrated in plan view on Figures 6a to 6e.

The soil laboratory results indicate that there is one area of subsurface soil contamination located within the limits of the site. It is located in the southeast corner of the site and is characterized by a concentration of PHC F1 (0.7 ug/L, which is marginally above the standard of 0.5 ug/L) in the soil sample obtained from 0.1 to 0.6 m bg at BH2 (Figures 6c, 8a and 8b).

The potential for the contaminants present in the subsurface soils to leach and impair groundwater quality was assessed in this investigation in the form of the groundwater sampling and analysis program, the results of which are provided in Section 5.7. Thus, soil source mass and its effects on groundwater quality are addressed in Section 5.7.

Given that the development plan entails the excavation and offsite disposal of subsurface soil, including the contamination detected here, including to accommodate the planned underground parking garage which will cover the site footprint and extend into bedrock,

biological and chemical transformations of the contaminants in subsurface soil were not required and have not been considered.

As detailed in Section 5.5, excluding PHC F1 at MW2, no visual or olfactory evidence of NAPL was observed in any of the soil samples collected and assessed in this investigation. The soil laboratory results verify this observation – specifically, with the exception of PHC F1 at MW2, organic constituents (VOCs, PHCs, PAHs) were either not detected or detected at concentrations falling well below free phase thresholds.

5.7 Groundwater Quality

The laboratory results on the groundwater samples analyzed in this investigation are presented along with the applicable standards in Tables 16, 17 and 18. Copies of the laboratory certificates supporting the results are provided in Appendix C. The groundwater laboratory testing program was designed to assess whether onsite or offsite PCAs have affected the quality of groundwater beneath the site. To accomplish this objective, groundwater samples were acquired for analysis of COPCs associated with the PCAs and APECs. A synopsis of the groundwater laboratory results is provided in Table 19 with the individual results at each sampling location/well for each analyzed parameter suite depicted in plan view on Figures 7a to 7e. As presented, two distinct contaminants were detected in groundwater within the bedrock formation beneath the site - benzene and chlorinated VOC constituents.

The benzene was detected in the groundwater sample taken from MW10, located in the northeast corner of the site. Benzene was detected at a concentration (0.7 ug/L), which is marginally above the applicable standard (0.5 ug/L) (Figures 7b, 9a and 9b).

The chlorinated constituents were detected in groundwater samples from MW2, MW3, MW5, O-MW7, O-MW8, MW9 and MW10 in the bedrock on the east side of the site (Figures 7a, 10a to 10d), characterized by concentrations above the groundwater standards for certain chlorinated VOCs (chloroform, c12-DCE, t12-DCE, PCE, TCE and vinyl chloride).

As outlined in Section 4.7, groundwater samples analyzed for metals were field filtered.

The groundwater laboratory results validate field observations relating to the absence of non-aqueous phase liquid (NAPL) – specifically, organic constituents (VOCs, PHCs, PAHs) were not detected at concentrations at or in excess of free phase thresholds.

5.8 Sediment Quality

An evaluation of sediment quality was not required, and as such was no carried out in this assessment.

5.9 Quality Assurance and Quality Control Results

5.9.1 Field QA/QC Sample Results

A number of quality assurance/quality control samples were collected and analyzed in this investigation. The samples analyzed included field duplicates on soil and groundwater, as defined in Sections 4.4 and 4.7. The results of the laboratory testing on the QA/QC samples are presented in Tables 12 to 14 and Tables 16 to 18. The following is gathered from a review of the QA/QC data:

Soil QA/QC

- The QA/QC sample set (MW9/DUP-S1) analyzed for PAHs exhibit the same results (i.e. not detected) and as a result did not yield measureable Relative Percent Differences (RPDs).
- The PHC results in the MW6/DUP-S2 QA/QC sample set, did not yield RPDs in excess of 26% which falls below the PHC threshold of 30% specified in the *MOE Analytical Protocol.*

Taking the above soil QA/QC items into consideration and considering that field QA/QC sample results were either the same or yielded RPDs that did not exceed the RPD laboratory thresholds, the soil laboratory results as a whole are considered to represent reasonable reproducibility, precision and accuracy suggesting that the field sampling methodology and associated field QA/QC protocols set out in Section 4.12 were executed in a manner which yielded a reliable data set.

Groundwater QA/QC

- The July 3, 2020 groundwater QA/QC sample set (sample and field duplicate (DUP-W1)) from O-MW8 analyzed for VOC, PHCs and PAHs exhibits the same results for all but four parameters. Detected parameters included four VOC

constituents and the RPDs on the detected constituents are tabulated at 6.5, 18.3, 6.8 and 30.8% with the highest RPD of 30.8% calculated for vinyl chloride. The MOE laboratory threshold for VOCs is 30% and all detected parameters but one exhibited RPDs below the threshold. The parameter set above the threshold exhibited concentrations that were the same order of magnitude with a mean deviation of 15.4% which is considered a reasonable deviation from a field QA/QC perspective.

Considering that field QA/QC sample results were the same and/or within a reasonable variance for a single parameter that slightly exceeded the laboratory based threshold for VOCs, the groundwater laboratory results as a whole are considered to represent reasonable reproducibility, precision and accuracy suggesting that the field sampling methodology and associated field QA/QC protocols set out in Section 4.12 were executed in a manner which yielded a reliable data set.

5.9.2 Laboratory QA/QC Results

Laboratory certificates for the analyses performed in this investigation are provided in Appendix C. Correspondence, including chain of custodies, between COLESTAR and the laboratory are also provided in Appendix C. The laboratory reports provide the analytical and QA/QC results for each analysis performed, all prepared and presented in accordance with the *MOE Analytical Protocol* requirements set out in the Regulation, and complete with the information required under the Regulation. As a result, the certificates of analysis and associated information has been prepared and provided in accordance with subsection 47(3) of the Regulation. A review of the laboratory certificates reveals the following with respect to laboratory QA/QC on the soil and groundwater samples and sample batches analysed in this investigation:

- All sample submissions to the laboratory were reported in good condition with temperatures measured at less than 10^{o}C.
- Extraction and holding times were not exceeded for any of the samples analyzed.
- Laboratory Control Standards were within acceptable limits for all parameters tested.
- RPDs calculated on the laboratory duplicates did not exceed the RPD thresholds set out in the *MOE Laboratory Protocol* for any of the parameters tested.
- Method blanks were reported as not detected for all analytes tested.
- Matrix spike recoveries were within acceptable limits for all parameters tested.

- Reference material measured values were within acceptable limits for all analytes tested.

The laboratory QA/QC data summarized above indicates that the individual sample results and results of batch analyses are consistent with generally accepted industry practices and, as such, indicate that the laboratory data as a whole represents satisfactory data reproducibility, precision and accuracy.

5.10 Phase 2 Conceptual Site Model

The P1ESA and associated conceptual site model identified onsite and offsite potentially contaminating activities (PCAs) that resulted in a number of Areas of Potential Environmental Concern (APECs) being identified at the site. Figures illustrating the site location, site facilities (current and former), study area, PCAs, APECs, subsurface stratigraphy, groundwater conditions, aquifer, aquitard, aerial and vertical extents of contamination, and receptor and receptor exposure pathways identified at the site are provided as Figures 1, 2, 3, 4, 5, 6a to 6e, 7a to 7e, 8a, 8b, 9a, 9b, 10a to 10d and 11. The figures serve to illustrate the various components of the P2ESA conceptual site model detailed in the sections below.

5.10.1 Site Setting and Use

A slab on grade building and parking lot, utilized by The Beer Store, occupy the site (Figures 2, 3). The municipal address of the site is 1546 Scott Street, Ottawa, Ontario. The site area is approximately 0.25 hectares (0.62 Acres). The site is bordered by Scott Street to the north and is situated approximately 80 m west of Parkdale Avenue.

Collectively, the records indicate that the site was first developed in about 1902 with residential dwellings that were demolished and replaced with two commercial buildings and a parking lot in the late 1950s. The buildings resided in the northeast site quadrant and central part of the site and were occupied by Rene Goulet Construction Ltd. and Jordash Co. Ltd., and Brewers Retail, respectively. In the late 1980s, the commercial buildings were demolished and replaced with the current day building and parking lot which have been utilized by The Beer Store and its prior affiliated company (Brewers Retail) since construction.

Limited information was found pertaining to details of the construction company (Rene Goulet Construction Ltd.) that operated in the former building in the northeast site quadrant. The information that was found suggests that this company may have been a design build construction company. Although no supporting information was found, it is presumed that this company may have used part of the building as a construction equipment repair and servicing garage.

Jordash Co. Ltd. is a restaurant equipment supply company and most likely used the former building at the site as a retail warehouse.

It is noted that the site was occupied during the coal burning era (1800s to 1930s) and as a result it is considered possible that coal and burnt coal residuals (cinder, clinker, ash) may have been deposited within the upper part of the soil profile beneath the site.

As per City of Ottawa Zoning By-Law (online 2020), the site is designated as a Mixed Use Centre Zone (MC12).

The planned redevelopment of the site is mixed use (commercial and residential). The future plan for the site is redevelopment with a multi-storey mixed use building with two to four levels of underground parking. At the time of preparation of this report, drawings detailing the planned building and underground parking garage were not available.

No domestic use water wells were identified within the study area and no areas of natural environmental significance were identified at, or within 30 m of, the site. As established via the P2ESA soil testing program, the soil pH at the site falls within the prescribed range (5 to 9) set out in O.Reg. 153.

5.10.2 APECs and PCAs

5.10.2.1 Onsite PCAs and APECs

Site uses and/or activities that include onsite PCAs were identified in the P1ESA. These PCAs result in the APECs that are shown on Figure 2, presented in Table 1, and summarized below:

APEC 1 - Potential Coal and Burnt Coal Deposition
APEC 2 – Potential Former Service Garage

For the purposes of defining contaminants of potential concern (COPCs), the onsite PCAs are grouped as follows:

- Imported fill of unknown quality
- Construction Equipment Service Garages

Given that the site was occupied during the coal burning era, it is possible that the fill layer at the site may contain surplus coal and burnt coal residuals derived from the former operation of coal fired furnaces, chimneys or boilers at, and in the area of, the site. The

Contaminants of Potential Concern (COPCs) associated with coal and burnt coal residuals include petroleum hydrocarbons (PHCs), polycyclic aromatic hydrocarbons (PAHs) and metals.

Sources of concern at service garages include vehicle fluids – oil, engine coolant, transmission fluid, gasoline, diesel and waste fluids generated from maintenance and repair operations. COPCs associated with maintenance garages include volatile organic compounds (VOCs), PHCs, PAHs and metals.

5.10.2.2 Offsite PCAs and APECs

The inferred groundwater flow trend (west, northwest and north) of the shallow groundwater unit was used to define offsite properties residing within the up-gradient groundwater flow field that in the event of a contaminant release could affect groundwater quality beneath the site via groundwater flow and contaminant transport mechanisms. This assessment yielded the offsite PCAs that are illustrated on Figure 4, presented in Table 1, and summarized as follows:

- A former metal fabrication facility (Leslie P & Sons Tinsmiths) at 1536 Scott Street located to the immediate east of the site.
- A former auto service garage, auto body and potential fuel depot (Campbell Motors) at 1536 Scott Street located to the immediate east of the site.
- A former stove manufacturing plant/foundry (Beach Foundry Ltd.) situated approximately 15 m south of the site. The plant/foundry occupied land bounded by Spencer Avenue, Holland Avenue, Hamilton Avenue and Bullman Street and was complete with pickling vats, boilers and a spray room. Operations carried out in the foundry include forging, enamelling or plating, finishing, welding, sand blasting, grinding, crating and assembly. Numerous explosions and fires that resulted in foundry dust dispersion to surrounding properties occurred at the plant/foundry. Several of the explosions were derived from the explosion of tanks containing paint thinners and gasoline. [The Beach Foundry – A Kitchissippi Landmark; March 17, 2015].
- A former scientific instrument manufacturing plant (Instruments Ltd.) at 300 Parkdale Avenue located approximately 40 m southeast of the site.
- A former printing plant (MOM Printing) at 300 Parkdale Avenue located approximately 40 m southeast of the site.
- A former printing plant (Dominion Loose Leaf Co. Ltd.) at 320 Parkdale Avenue located approximately 85 m south-southeast of the site.

- A former dry cleaner (Comet Cleaners) at 275 Parkdale Avenue located approximately 105 m east of the site.
- A former auto service garage and auto body and potential fuel depot (Gervais Motors, Somerset Bridge Garage) at 255 Parkdale Avenue located approximately 110 m east-northeast of the site.
- A former motor service garage at 1484 Scott Street located approximately 120 m east-northeast of the site.
- A former gasoline UST at 45 Spencer Street located approximately 140 m south of the site.
- A former printing plant at 45 Spencer Street located approximately 140 m south of the site.
- A former service station/auto service garage at 1480 Scott Street located approximately 150 m east-northeast of the site.
- A former metal wire cloth (Capital Wire Cloth Manufacturing Co. Ltd.) manufacturing plant at 265 Armstrong Street located approximately 170 m south of the site.
- A former military equipment/instrument manufacturing plant (Sperry Gyroscope Ottawa Ltd.) at 3 Hamilton Avenue/ 340 Parkdale Avenue located approximately 175 m south-southeast of the site.
- A former metal product manufacturing plant/foundry (J. Robinson & Sons Foundry) with two gasoline USTs at 2 Hinton Avenue located approximately 175 m south of the site.
- A former service station/auto service garage with two gasoline USTs at 65 Holland Avenue located approximately 225 m south of the site.

The offsite PCAs were used to establish the onsite APECs illustrated on Figure 2 and presented in Table 1 that correspond to the direction of the offsite PCAs as follows:

APEC 3 – East Side of Site in Direction of Offsite PCAs (service stations, auto service garages, auto-bodies, dry cleaner, tin product fabrication)
APEC 4 – South Side of Site in Direction of Offsite PCAs (metal manufacturing plants/foundries, printing plants, service stations, auto service garages)

For the purposes of defining the COPCs associated with APECs 3 and 4, the offsite PCAs are grouped as follows:

- Vehicle/Equipment Maintenance Garages

- Service Stations and Fuel Depots
- Autobody
- Dry Cleaning
- Metal Fabrication and Manufacturing
- Printing Plants

Sources of concern at vehicle/equipment maintenance garages include vehicle fluids – oil, engine coolant, transmission fluid, gasoline, diesel and waste fluids generated from maintenance and repair operations. COPCs associated with maintenance garages include volatile organic compounds (VOCs), PHCs, PAHs and metals.

The contaminant sources of concern at service stations and fuel depots are the fuels (gasoline, diesel) that are typically stored in underground storage tanks and conveyed by underground pipelines to fuel dispensers. COPCs associated with service stations/fuel depots include benzene, toluene, ethylbenzene and xylenes (BTEX), PHCs and lead.

Operations of potential environmental concern at auto body shops include sandblasting to remove paint and painting. COPCs associated with auto body shops include VOCs, PHCs, PAHs and metals.

The sources of concern at dry cleaning facilities are the solvents used in the process. These solvents include trichloroethylene and tetrachloroethlyene as well as the degradation by-products (ethenes, ethanes and vinyl chloride) produced in aerobic and anaerobic subsurface environments. COPCs associated with dry cleaners include VOCs.

Foundries and metal manufacturing plants utilize various process operations (melting, heat treating, molding, surface cleaning and degreasing, bending, shaping, forming, plating and finishing) and generate waste by products (slag, foundry sand) that could result in subsurface contamination. Given the era of operation of the metal product manufacturing plants/foundries it is likely that they utilized coal fired furnaces and/or boilers. COPCs associated with metal manufacturing/foundries include VOCs, PAHs, PHCs and metals.

The sources of concern at printing facilities are the inks that are typically stored in bulk and used in the printing process. There are a variety of liquid inks used in the printing industry. The primary types are aqueous based and solvent based inks. Aqueous based inks are a mixture of water, glycol and dyes or pigments. Solvent based inks are a mixture of solvent and dyes or pigments. The primary contaminants of concern in inks are VOCs

such as toluene, methyl ethyl ketone and xylenes, petroleum hydrocarbons and heavy metals (used as binders) such as lead, cadmium, copper and nickel. CoPCs associated with printing companies include metals, PHCs and VOCs.

5.10.3 Regional Geology and Hydrogeology

The site is located in the Ottawa River Watershed (ORW) that consists of the Ottawa River and its tributaries. Surface drainage in the ORW is generally towards the River and its tributaries. Based on Record of Site Conditions and water well logs obtained on offsite properties within 1.5 km of the site, limestone bedrock is encountered at shallow depths (1 to 2.2 m below grade) and the groundwater unit resides within the limestone bedrock formation. Groundwater flow is inferred as towards the Ottawa River at depths ranging from 5 to 7.9 m. Given that limestone bedrock in the area generally consists of numerous laterally continuous limestone beds or layers that are separated by horizontal fractures and or thin shale/silt interbeds, it is probable that the formation is imparting a degree of anisotropy, promoting largely horizontal confined groundwater flow along open bedding planes, layering fractures, and/or more permeable limestone layers.

Because the bedrock groundwater formation had not attained static equilibrium, the assumption relating to groundwater flow made in the P1ESA conceptual site model could not be validated at the time of issue of this P2ESA report. The stratigraphic layers and groundwater position defined in the P1ESA Conceptual Site Model were confirmed.

5.10.4 Local Geology and Hydrogeology

As illustrated on Figure 8a, 8b, 9a, 9b and 10a to 10d, the soil stratigraphy encountered in the boreholes generally consists of sand and/or sand and gravel overlying limestone bedrock encountered at 0.8 to 2.9 m bg. Based on the bedrock cores acquired at MW3 and MW9, the upper 300 to 500 mm of the limestone bedrock formation is weathered and the underlying competent bedrock formation consists of numerous horizontal limestone layers that range in thickness from 50 to 600 mm. The limestone layers are separated by laterally continuous open fractures with apertures of up to 2 mm.

Groundwater beneath the site resides within the limestone bedrock formation - it was encountered at depths and arbitrary elevations ranging from 4.3 to 11.3 m bg and 88.9 to 96.1 m on July 9, 2020; from 4.1 to 11.1 m bg and 89.4 to 96.3 m on July 20, 2020; and, from 3.6 to 8.2 m bg and 92.1 to 96.8 m on September 1, 2020. The high variability in the water levels over time, particularly between the July and September events suggests that

the groundwater formation as a whole has not attained static equilibrium and as such groundwater flow trends cannot be established at this time (Figure 5).

LNAPL was not apparent atop groundwater in the monitoring wells and DNAPL was not apparent in the base of the wells on the monitoring events.

Considerable deviations or temporal variations in the depth to the groundwater unit beneath the site are evident between the monitoring events and as such a determination of the general overall trend in groundwater flow or principal directions of groundwater flow could not be inferred at this time (i.e. groundwater levels had not attained equilibrium). Despite this limitation it is anticipated that groundwater flow beneath the site trends west, northwest and/or north towards the Ottawa River (as was inferred in the P1ESA).

The horizontal hydraulic gradients could not be calculated because the groundwater formation beneath the site had not attained static equilibrium on the monitoring dates carried out in this P2ESA.

Groundwater beneath the site resides within the limestone bedrock formation and groundwater flow is largely horizontal, along laterally continuous bedding planes situated between rock beds. As a result, vertical hydraulic gradients were not determined.

As it relates to contaminant transport, interactions between groundwater and underground utilities are not anticipated because the vertical positions of known utility alignments do not intersect the regions of subsurface soil and groundwater contamination identified in the P2ESA.

5.10.5 Site Assessment Standards

The standards deemed applicable to the site are the non-potable full depth soil and groundwater standards (Table 7) for residential sites with shallow coarse textured soil provided in the *"Ontario Ministry of the Environment, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act"* publication dated April 15, 2011. The rationale used to select these standards as applicable to the site is outlined below. Unless otherwise indicated, the source of the information used to support the rationale was the July 2020 P1ESA report prepared by COLESTAR.

- The site re-development plan consists of the redevelopment of the site with a mixed use building (residential/commercial). As a result, the more stringent residential based standards are deemed applicable.
- The non-potable standards were selected as applicable because the site and surrounding lands are within a region serviced by a municipal drinking water system that draws its source water from the Ottawa River.
- The standards for coarse textured soil were selected as applicable because the soil formation at the site includes sand and sand and gravel.
- The closest water body to the site is the Ottawa River located approximately 810 m north of the site. As a result, standards that apply to sites that reside within 30 m of a water body are not deemed applicable to the site.
- On average, bedrock is less than 2 m below grade. As a result, the Table 7 standards for shallow soil sites were selected as applicable to the site.
- The pH of the soil formation falls within the required range of 5 to 9. It was measured within this range in all of the soil samples analyzed by COLESTAR in this P2ESA (Table 12).
- The site and study area are not located within or proximate to:

    - 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 as having provincial significance;
    - A wetland identified by the Ministry of Natural Resources as having provincial significance;
    - An area designated by a municipality in its official plan as environmentally significant, however expressed, including designations of areas as environmentally sensitive, as being of environmental concern and as being ecologically significant. As per the City of Ottawa *Official Plan (online, 2020),* the site is not located in, or within 30 m of, an ANS.
    - 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 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 Area Act*.

5.10.6 Soil Quality

The soil laboratory results which are illustrated for each analyzed parameter suite on Figure 6a to 6e indicate that there is one area of subsurface soil contamination located within the limits of the site. It is located in the southeast corner of the site and is characterized by a concentration of PHC F1 in the soil sample above the standard, which was obtained from 0.1 to 0.6 m bg at BH2 (Figure 6c). Geological cross-sections that illustrate the location of the PHC F1 contamination are provided in Figures 8a and 8b.

Visual and olfactory evidence of anthropogenic impact was not observed in the soil samples recovered from the boreholes. This included as assessment for coal and burnt coal residuals (i.e. ash, cinder, clinker) related to APEC 1. Specifically, coal and burnt coal residuals were not observed in the soil samples recovered from the boreholes.

The potential for the contaminants present in the subsurface soils to leach and impair groundwater quality was assessed in this investigation in the form of the groundwater sampling and analysis program, the results of which indicate compliance with applicable standards for the soil COPC (PHC F1).

Given that the future site restoration plan entails the excavation and offsite disposal of subsurface soil contamination to the extent necessary to house the planned underground parking garage which will cover the site footprint and extend into bedrock, biological and chemical transformations of the contaminants in subsurface soil have not been considered.

As detailed in Section 5.5, no visual or olfactory evidence of NAPL was observed in any of the soil samples collected and assessed in this investigation. The soil laboratory results verify this observation – specifically, with the exception of PHC F1 at MW2, organic constituents (VOCs, PHCs, PAHs) were either not detected or detected at concentrations falling well below free phase thresholds.

The groundwater quality results suggest that water table, climatic and meteorological conditions such as water table fluctuations and pH variations are not affecting the mobility

or transport of the soil contaminants identified within the site limits. This hypothesis is supported by the groundwater results which did not identify COPCs in soil; including the contaminant of concern identified in impacted soil (PHC F1), at concentrations above applicable standards beneath the site.

5.10.7 Groundwater Quality

The laboratory results for the groundwater samples analyzed in this investigation for the COPCs associated with the onsite and offsite PCAs indicate that contaminants were detected in the groundwater in the bedrock at the site (Figures 7a to 7e). Benzene and chlorinated VOC constituents were detected in groundwater within the bedrock formation at the site.

The benzene was detected in the groundwater sample taken from MW10, in the northeast corner of the site (Figures 7b, 9a and 9b). It was detected at a concentration (0.7 ug/L) that marginally exceeds the applicable standard (0.5 ug/L).

The chlorinated constituents were detected in groundwater samples from MW2, MW3, MW5, O-MW7, O-MW8, MW9 and MW10 in the bedrock on the east side of the site (Figures 7a, 10a to 10d), characterized by concentrations above the groundwater standards for certain chlorinated VOCs (chloroform, c12-DCE, t12-DCE, PCE, TCE and vinyl chloride)..

Non-aqueous phase liquid (NAPL) was not observed atop groundwater or at the base of the water column in the monitoring wells on monitoring events carried out in 2020. Anthropogenic evidence of impact (odour, discolouration, NAPL) was not apparent in the groundwater samples; nor, was it observed in the groundwater extracted from the wells during well development and purging.

5.10.8 Preferential Pathways

Underground utilities within the limits of the site are not expected to act as preferential contaminant transport pathways because they reside within the overburden and according to RSCs and well records and information acquired in this P2ESA, groundwater beneath the site resides within the underlying limestone bedrock formation. This disconnect prevents interaction between the utility corridors and the shallow groundwater unit and by extension eliminates the potential for preferential contaminant transport.

5.10.9 Receptors and Exposure Pathways

Conceptualized receptors, exposure points and routes, and contaminant migration pathways associated with the contaminated soil identified in this P2ESA are illustrated for the residential land use settings on Figure 11. As illustrated, the soil to groundwater leachate pathway for the aquatic receptor (S-GW3) and ecological receptors pathways for mammals and birds and plants and soil invertebrates are considered, without further risk analysis, potentially active. In addition, the human health soil contact (S1, S2 and S3) and soil to indoor air vapour inhalation (S-IA) exposure pathways are deemed, without further risk analysis, potentially active. Human health soil to outdoor air inhalation (S-OA) and odour threshold (S-Nose) pathways are also potentially active.

Conceptualized receptors, exposure points and routes, and contaminant migration pathways associated with the contaminated groundwater that resides within the limestone bedrock formation are illustrated for the residential land use settings on Figure 11. As illustrated, the groundwater pathway for the aquatic receptor (GW3) is considered, without further risk analysis, potentially active. In addition, the human health groundwater to indoor air vapour inhalation (GW2) exposure pathway is deemed, without further risk analysis, potentially active. The human health groundwater to outdoor air inhalation (GW2 Odour) pathway is also potentially active.

5.10.10 Risk Assessment, Risk Management and Remediation

A risk assessment, as described in Regulation 153, will be completed for the site to assess the risks that would be related to presence of benzene and the chlorinated constituents (described herein) detected in the groundwater within the bedrock for the proposed mixed use high rise building (commercial/residential), which we understand would include underground parking garage. The risk assessment will comply with all requirements in Regulation 153 (including section 44 and Schedule C), and will include, as necessary and appropriate, risk management measures (e.g., ventilated underground parking garage, first floor commercial use). In the circumstances, we expect the RSC and RA will be completed in approximately 18-24 months (depending on responses from the Ministry). For informational purposes, it is expected that the risk assessment will cost approximately $60-100,000, excluding HST. Although it is unlikely that the Ministry will require a vapour management system as a risk management measures, given the use of underground parking. However, the estimated cost of a vapour management system, if required at all, would approximately $75-150,000, excluding HST, which could include a

geomembrane and vapour extraction recovery piping around the perimeter of the subsurface structure or parking garage, and possibly a blower and treatment system.

It is expected that the RSC and RA processes will be straightforward and routine, given the nature and location of the concentrations detected. It is not unusual to find these types of contaminants in an urban setting. We do not expect they have caused or will cause any issue for the site occupants. The contamination will be addressed as part of the development, which is very typical. As such, it is expected that the proposed development will be able to proceed, and indeed will provide benefits, such as the removal and offsite disposal of PHC F1 soil contamination for the excavation of the underground parking garage, as well as the existence of underground parking that is an effective risk management measure. A soil remediation report documenting the contaminated soil removal to satisfy the standard will be prepared to support the RSC. This is part of this RSC P2ESA report, and will be prepared following the removal of the contaminated soil and appropriate testing. For informational purposes, it is expected that the estimated incremental cost to dispose of the contaminated soil will be up to $19,000, excluding HST. This assumes there will be approximately 100m3 (200 tonnes) of soil to remove, transport and dispose of, at a disposal rate of $95/tonne.

6.0 CONCLUSIONS

6.1 Phase 2 ESA

The following is concluded from the information collected, compiled and interpreted in this P2ESA:

- There is one area of soil contamination located within the limits of the site. It is located in the southeast corner of the site and is characterized by a concentration of PHC F1 in the soil sample obtained from 0.1 to 0.6 m bg at BH2 (Figures 6c, 8a and 8b).

- Benzene and chlorinated VOCs were detected above standards in groundwater within the bedrock formation at the site.

    - Benzene was detected in the groundwater sample from MW-10 located in the northeast corner of the site (Figures 7b, 9a and 9b). Benzene was detected at a concentration of 0.7 ug/L, which is only marginally above the standard (0.5 ug/L).

    - Chlorinated VOC constituents were detected above standards in groundwater samples from MW2, MW3, MW5, O-MW7, O-MW8, MW9 and MW10 situated on the east side of the site (Figures 7a, 10a to 10d). Chlorinated VOCs detected above standards include chloroform, c12-DCE, t12-DCE, PCE, TCE and vinyl chloride.

6.2 Risk Assessment, Risk Management and Remediation

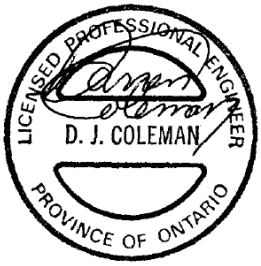
A risk assessment, as described in Regulation 153, will be completed for the site to assess the risks that would be related to presence of benzene and the chlorinated constituents (described herein) detected in the groundwater within the bedrock for the proposed mixed use high rise building (commercial/residential), which we understand would include underground parking garage. The risk assessment will comply with all requirements in Regulation 153 (including section 44 and Schedule C), and will include, as necessary and appropriate, risk management measures (e.g., ventilated underground parking garage, first floor commercial use and, if necessary, vapour management

system). In the circumstances, we expect the RSC and RA will be completed in approximately 18-24 months (depending on responses from the Ministry). For informational purposes, it is expected that the risk assessment will cost approximately $60-100,000, excluding HST. In the worst case, the RA may conclude that a vapour management system is required to mitigate risk. The estimated cost of a vapour management system (if required) consisting of a geomembrane and vapour extraction recovery piping around the perimeter of the subsurface structure or parking garage, and possibly a blower and treatment system., would be approximately $75-125,000, excluding HST.

It is expected that the RSC and RA processes will be straightforward and routine, given the nature and location of the concentrations detected. It is not unusual to find these types of contaminants in an urban setting. We do not expect they have caused or will cause any issue for the site occupants. The contamination will be addressed as part of the development, which is very typical. As such, it is expected that the proposed development will be able to proceed, and indeed will provide benefits, such as the removal and offsite disposal of PHC F1 soil contamination for the excavation of the underground parking garage, as well as the existence of underground parking that is an effective risk management measure. A soil remediation report documenting the contaminated soil removal to satisfy the standard will be prepared to support the RSC. This is part of this RSC P2ESA report, and will be prepared following the removal of the contaminated soil and appropriate testing. For informational purposes, it is expected that the estimated incremental cost to dispose of the contaminated soil will be up to $19,000, excluding HST. This assumes there will be approximately 100m3 (200 tonnes) of soil to remove, transport and dispose of, at a disposal rate of $95/tonne.

All aspects of the P2ESA including the development of soil and groundwater sampling plan, field program execution and reporting were completed and/or supervised by Mr. Darren Coleman, P.Eng., QP. Mr Coleman's Qualifications are outlined in the curriculum vitae provided in Appendix G. Please be advised that the limitations and general conditions outlined in Attachment 1 form part of this report. Should you have any questions, please do not hesitate to contact Mr. Darren Coleman at (905) 554-4156.

Yours truly,
COLESTAR Environmental Inc.



Darren J. Coleman, P.Eng., QP
President

7.0 REFERENCES

The following references and information sources were used in the development of this P2ESA:

- Part XV.1 of the Environmental Protection Act
- Ontario Regulation 153/04, filed June 1, 2004
- Ontario Regulation 269/11, filed on June 14, 2011
- Ontario Regulation 179/11, filed on May 26, 2011
- Ontario Regulation 245/10, filed on June 18, 2010
- Ontario Regulation 511/09, filed on December 29, 2009
- Ontario Regulation 266/08, filed on July 29, 2008
- Ontario Regulation 66/08, filed on March 31, 2008
- Ontario Regulation 366/05, filed on June 22, 2005
- Guide for Completing Phase Two Environmental Site Assessments under Ontario Regulation 153/04, Ontario Ministry of the Environment, June 2011
- Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act; Ontario Ministry of the Environment; April 15, 2011
- Phase 1 Environmental Site Assessment - Enhanced, 1546 Scott Street, Ottawa, Ontario; COLESTAR Environmental Inc., July 2020
- Provincial Parks and Conservation Reserves Act, 2006
- Niagara Escarpment Planning and Development Act
- Endangered Species Act, 2007
- Oak Ridges Moraine Conservation Act, 2001
- Wilderness Area Act
- Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.1 of the Environmental Protection Act; Ontario Ministry of the Environment; amended as of July 1, 2011
- Map 2556, Quaternary Geology of Ontario, Southern Sheet; Ministry of Natural Resources (1991)
- Map 2544, Bedrock Geology of Ontario, Southern Sheet; Ministry of Natural Resources (1991)

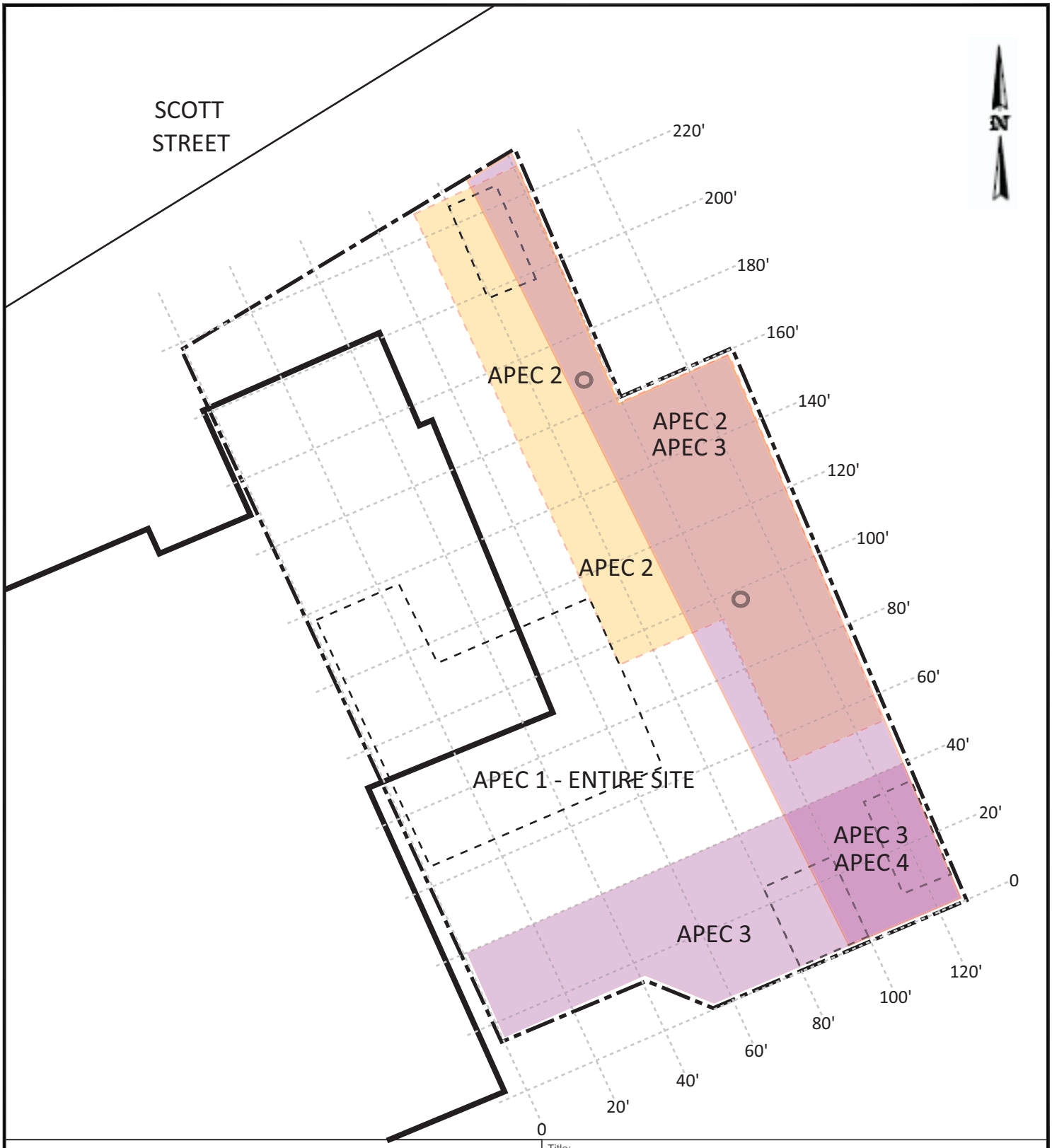
FIGURES

LEGEND

SOURCE: Ottawa Interactive Maps

Title:	SITE LOCATION
Project:	PHASE 2 ENVIRONMENTAL SITE ASSESSMENT 1546 SCOTT STREET, OTTAWA, ONTARIO
Project Number:	0394-05
Client:	STARBANK DEVELOPMENTS 2000 CORP.
NOT TO SCALE	Date: AUGUST 2020
	FIGURE 1

COLESTAR Environmental Inc.



LEGEND

- Site Boundary
- Former Building
- Building
- Exisiting Monitoring Well

SOURCE: Ottawa Interactive Maps

Title: AREAS OF POTENTIAL ENVIRONMENTAL CONCERN (APECs)

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

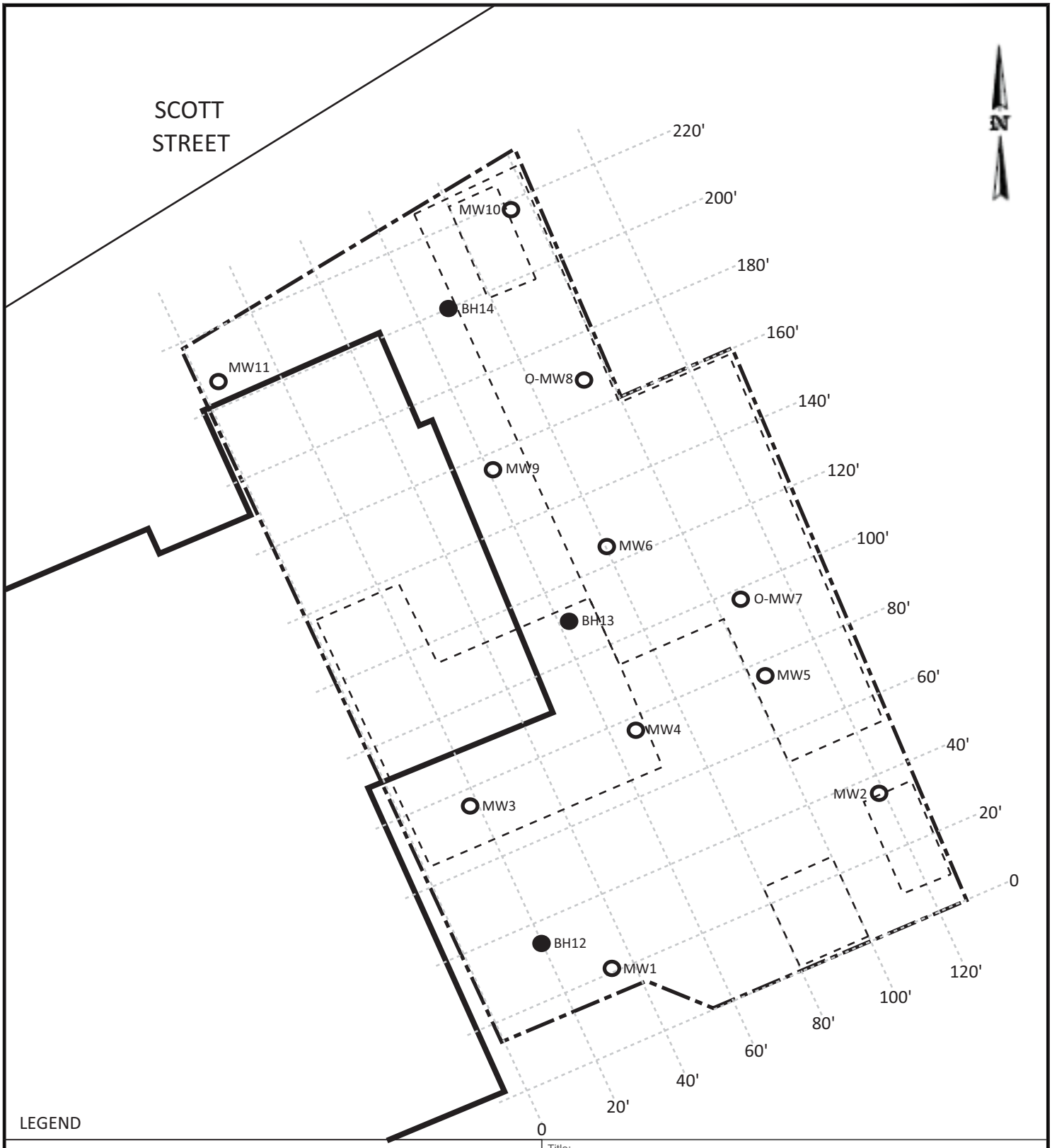
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 2



LEGEND

- Site Boundary
- Former Building
- Building
- Borehole/Monitoring Well
- Borehole

SOURCE: Ottawa Interactive Maps

Title: SITE PLAN

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

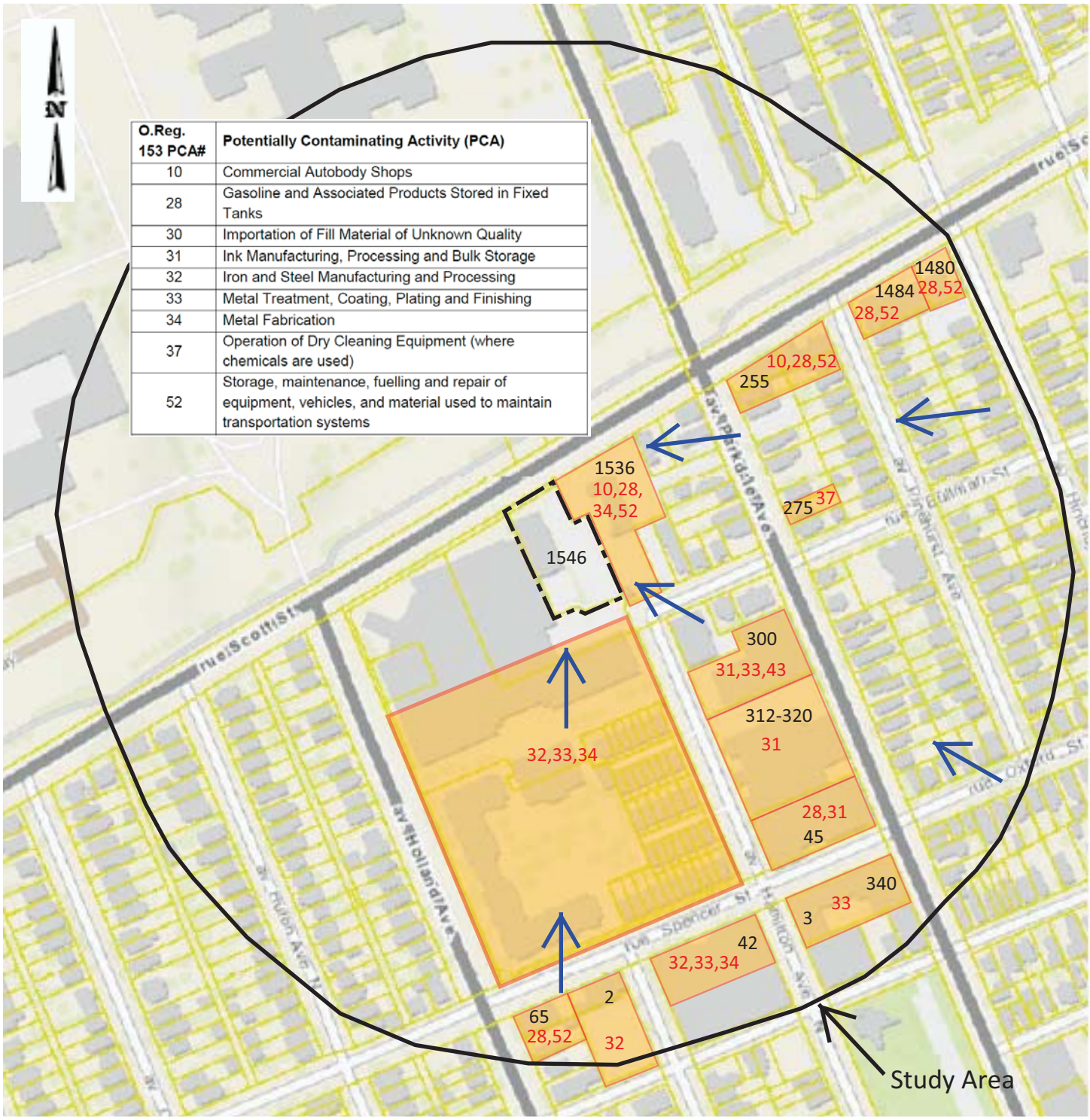
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0	20'	40'	60 ft
0	6.1	12.2	18.3 m

Date: AUGUST 2020

FIGURE 3



O.Reg. 153 PCA#	Potentially Contaminating Activity (PCA)
10	Commercial Autobody Shops
28	Gasoline and Associated Products Stored in Fixed Tanks
30	Importation of Fill Material of Unknown Quality
31	Ink Manufacturing, Processing and Bulk Storage
32	Iron and Steel Manufacturing and Processing
33	Metal Treatment, Coating, Plating and Finishing
34	Metal Fabrication
37	Operation of Dry Cleaning Equipment (where chemicals are used)
52	Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems

LEGEND

- Site Boundary
- 1546 Municipal Address
- 10 Offsite PCA and O.Reg. PCA Number
- Inferred Groundwater Flow Direction

SOURCE: Ottawa Interactive Maps

Title: STUDY AREA and OFFSITE PCAs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

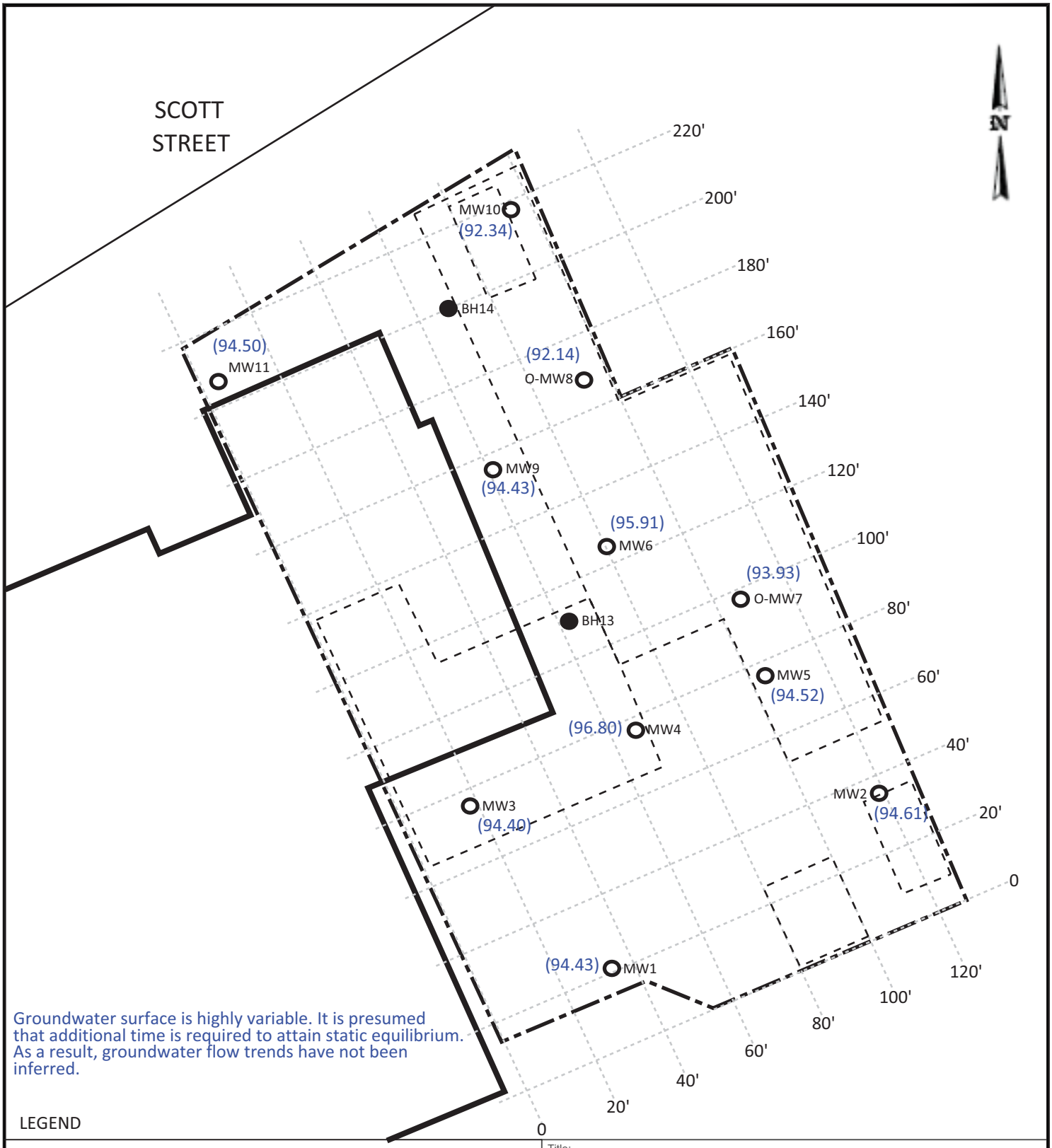
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 50 100 150 m

Date: AUGUST 2020

FIGURE 4



LEGEND

- Site Boundary
- Former Building
- Building
- Borehole/Monitoring Well
- Borehole
- (94.61) Potentiometric Elevation, arbitrary in metres (m)

SOURCE: Ottawa Interactive Maps

Title: POTENTIOMETRIC ELEVATIONS - SEPTEMBER 1, 2020

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

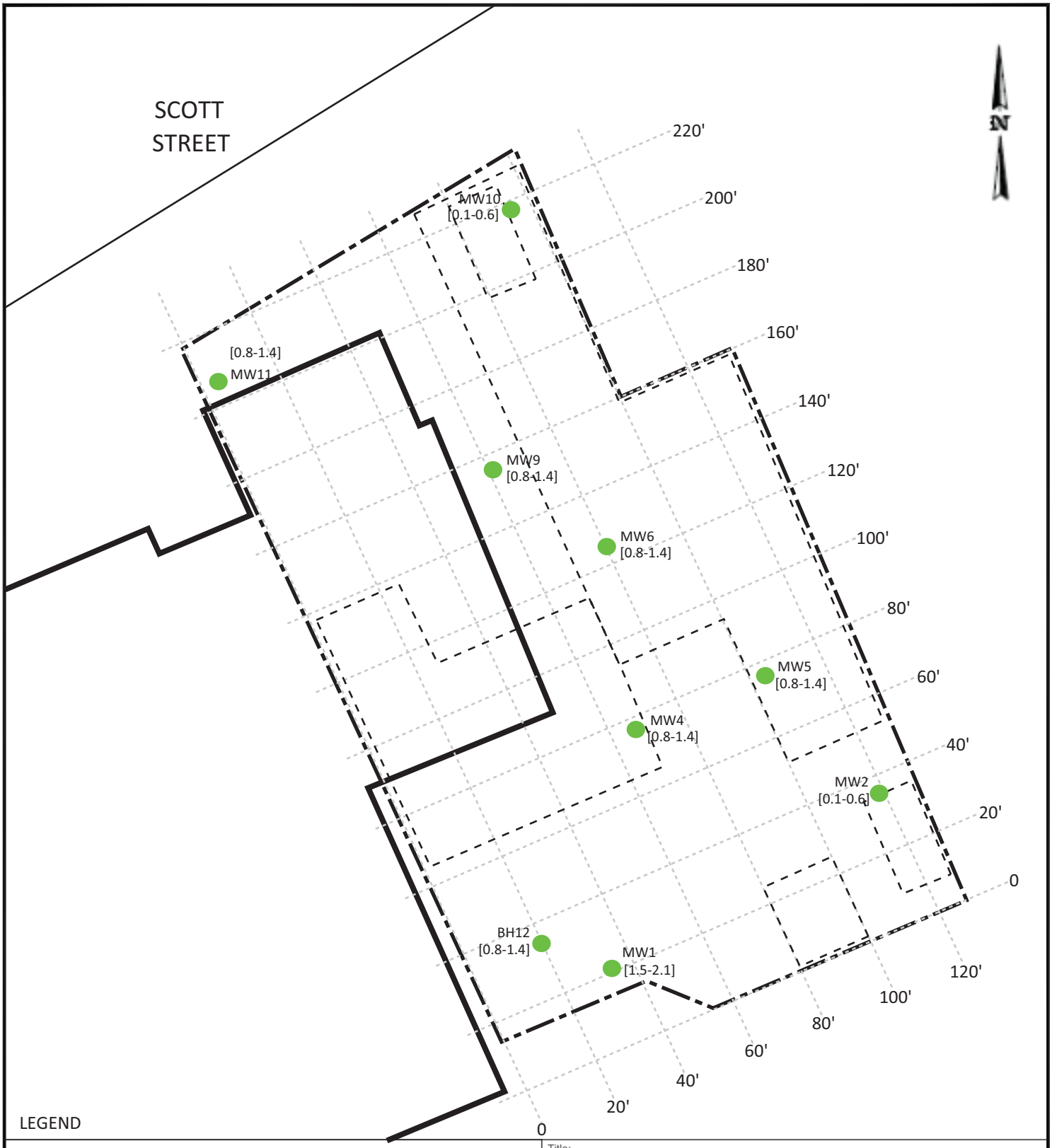
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 5



LEGEND

- Site Boundary
- Former Building
- Building
- Soil quality meets VOC Standards
- [0.1-0.6] Analyzed soil sample depth interval in metres (m)

SOURCE: Ottawa Interactive Maps

Title: SOIL QUALITY - VOCs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

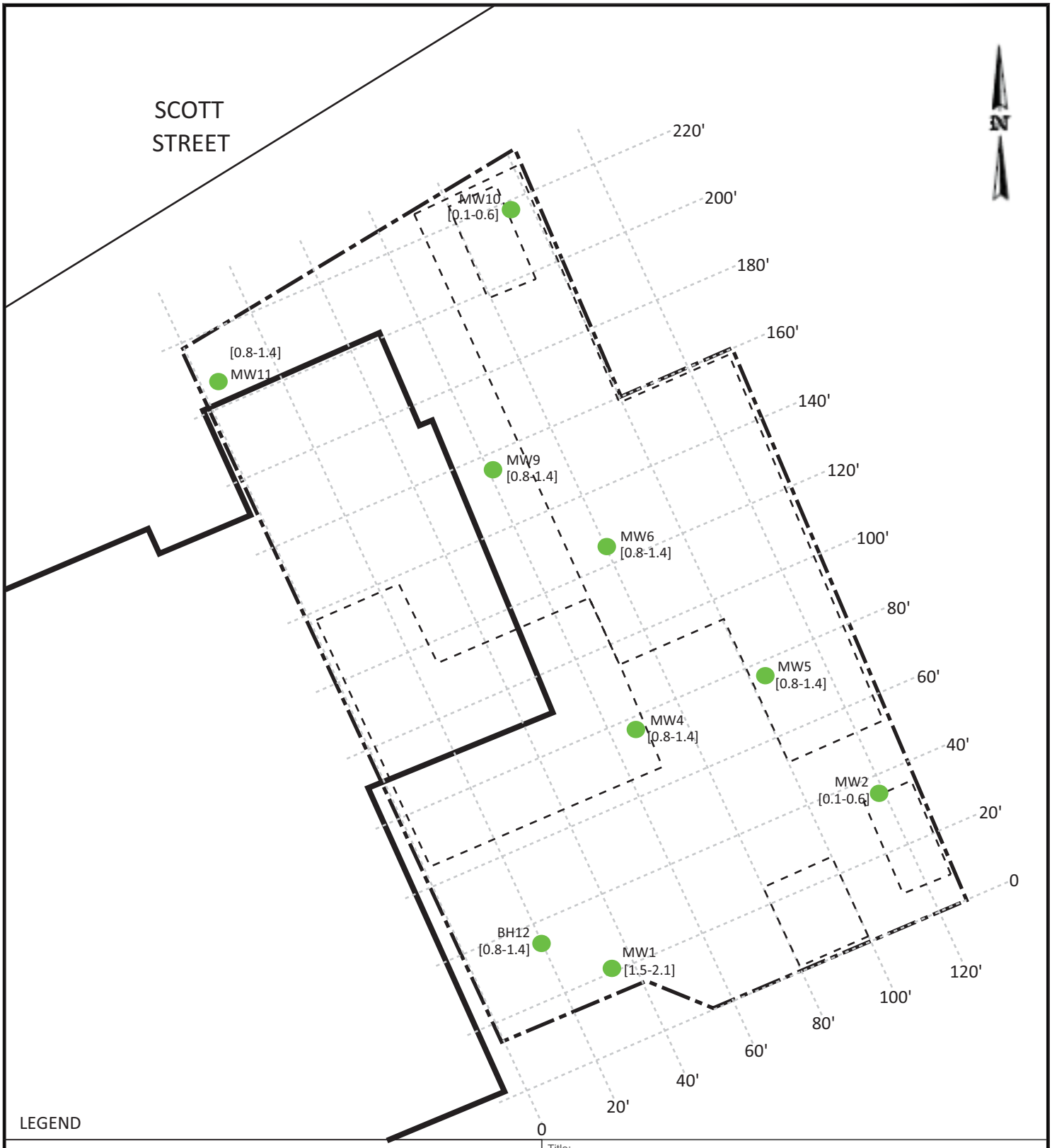
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 6a



LEGEND

- Site Boundary
- Former Building
- Building
- Soil quality meets BTEX Standards
- [0.1-0.6] Analyzed soil sample depth interval in metres (m)

SOURCE: Ottawa Interactive Maps

Title: SOIL QUALITY - BTEX

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

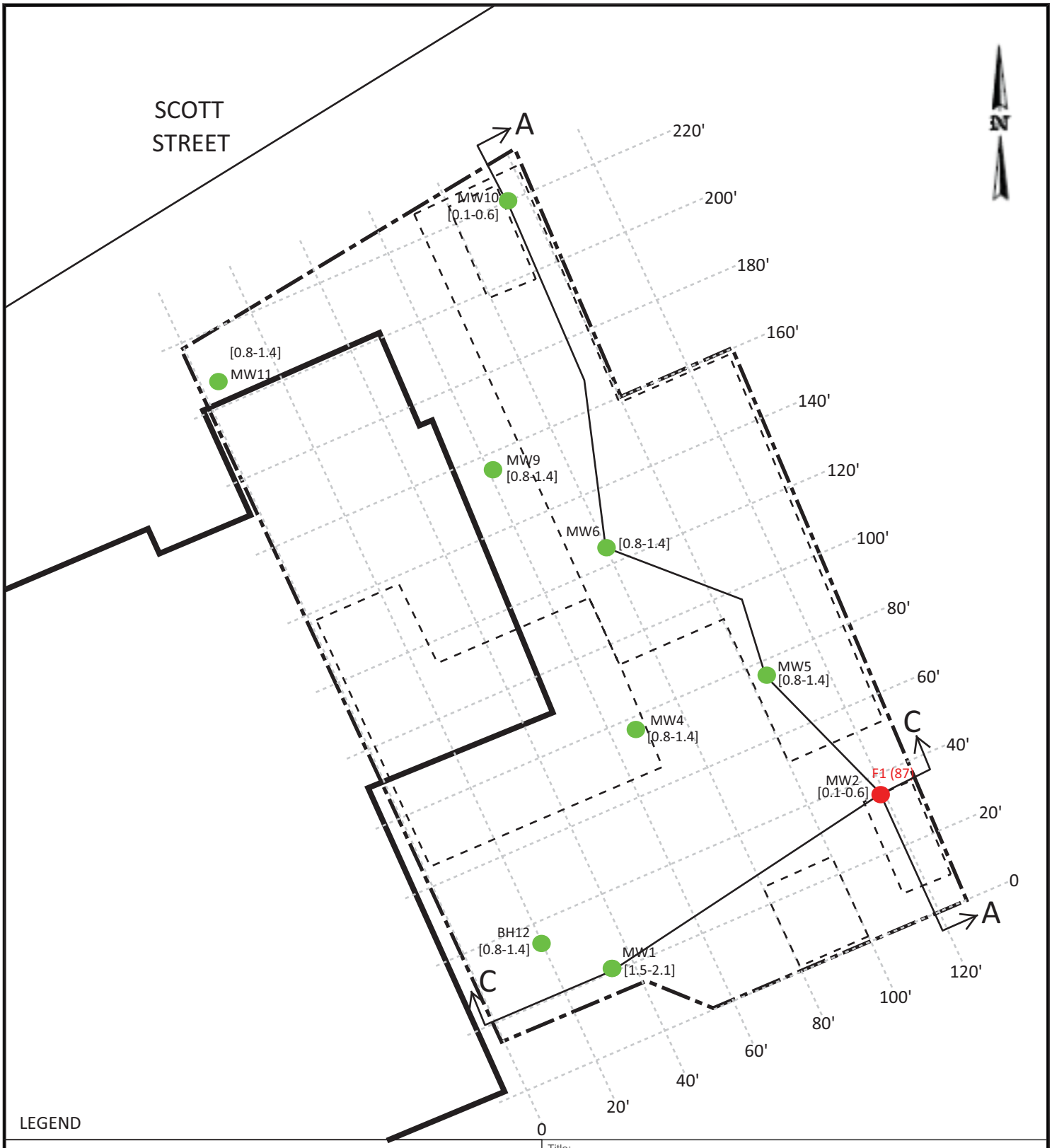
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 6b



LEGEND

- Site Boundary
- Former Building
- Building
- Soil quality meets PHC Standards
- [0.1-0.6] Analyzed soil sample depth interval in metres (m)
- Soil quality exceeds PHC F1 Standard (55 mg/kg)
- F1 (87) PHC F1 (concentration in mg/kg)

SOURCE: Ottawa Interactive Maps

Title: SOIL QUALITY - PHCs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

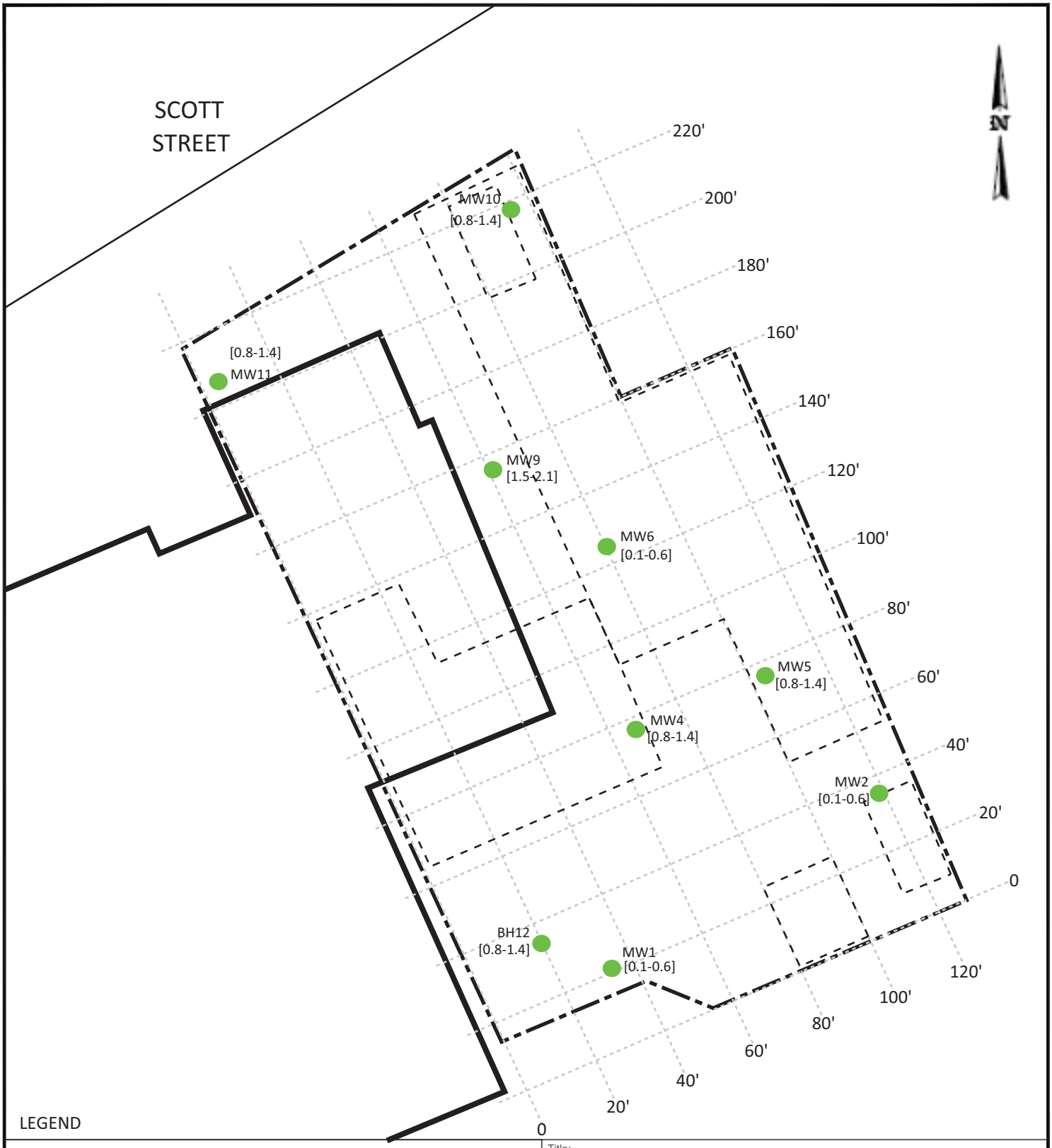
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 6c



LEGEND

- Site Boundary
- Former Building
- Building
- Soil quality meets PAH Standards
- [0.1-0.6] Analyzed soil sample depth interval in metres (m)

SOURCE: Ottawa Interactive Maps

Title: SOIL QUALITY - PAHs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

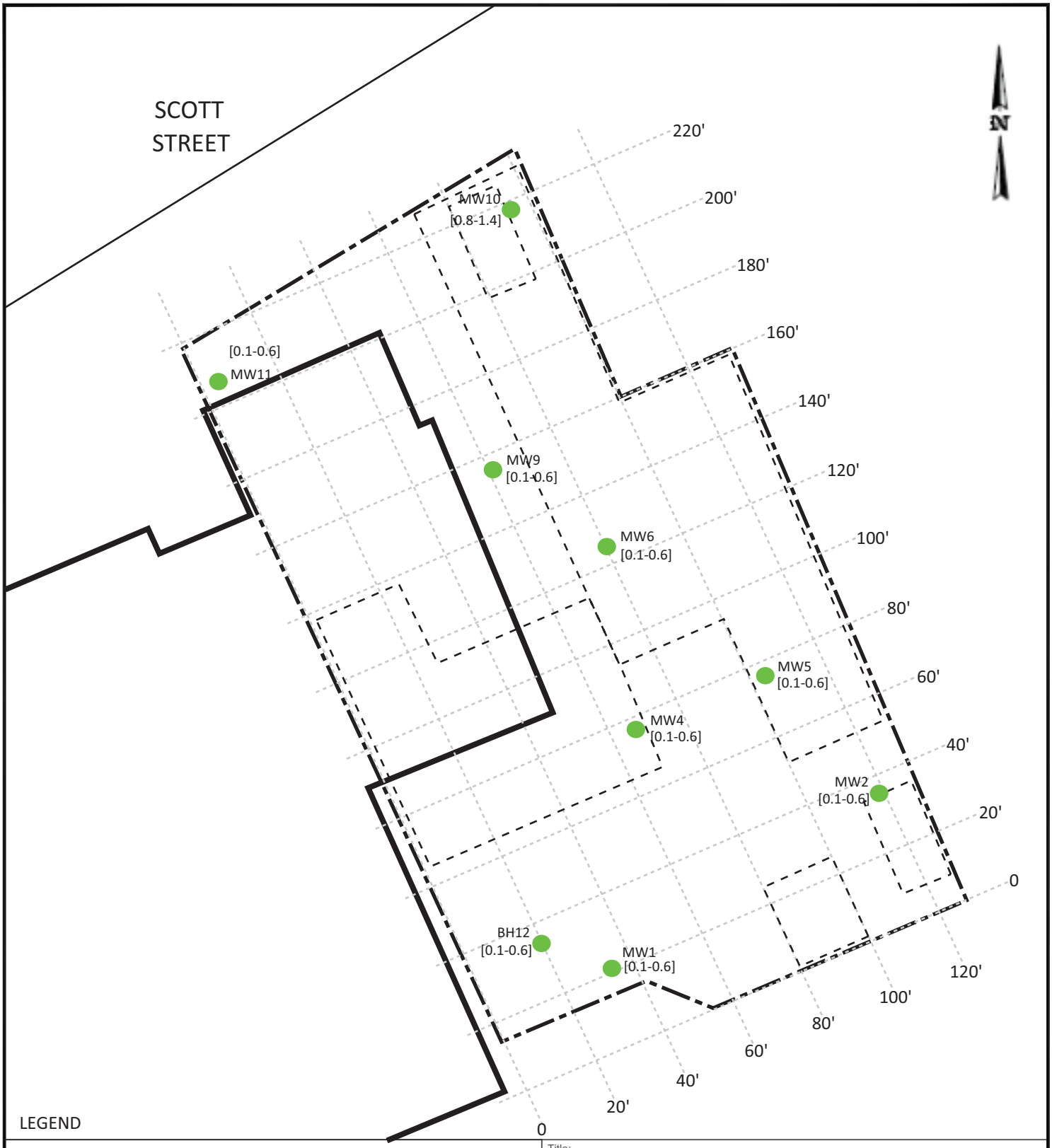
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 6d



LEGEND

- Site Boundary
- Former Building
- Building
- Soil quality meets Metals Standards
- [0.1-0.6] Analyzed soil sample depth interval in metres (m)

SOURCE: Ottawa Interactive Maps

Title: SOIL QUALITY - METALs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

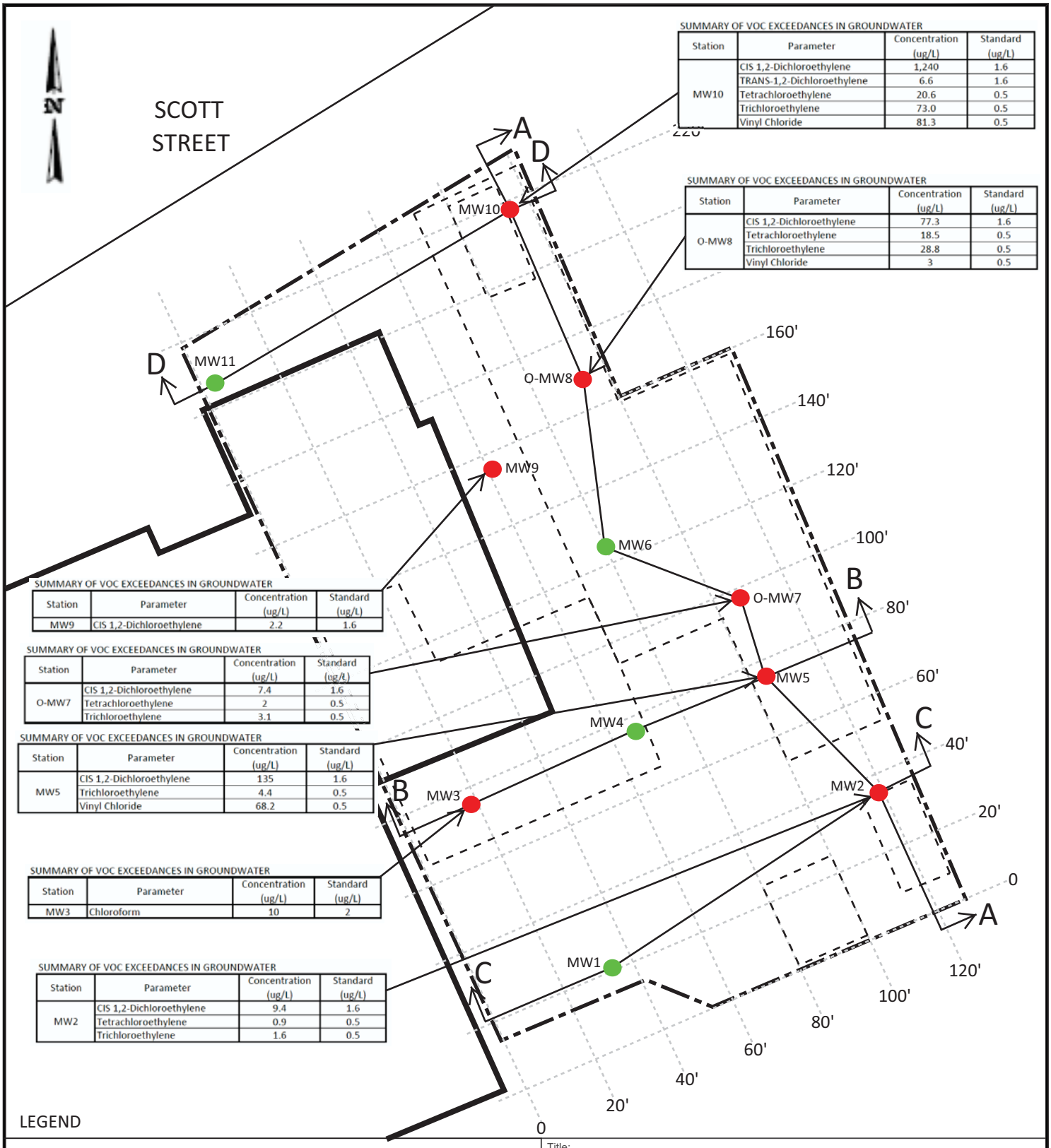
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 6e



SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
MW10	CIS 1,2-Dichloroethylene	1,240	1.6
	TRANS-1,2-Dichloroethylene	6.6	1.6
	Tetrachloroethylene	20.6	0.5
	Trichloroethylene	73.0	0.5
	Vinyl Chloride	81.3	0.5

SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
O-MW8	CIS 1,2-Dichloroethylene	77.3	1.6
	Tetrachloroethylene	18.5	0.5
	Trichloroethylene	28.8	0.5
	Vinyl Chloride	3	0.5

SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
MW9	CIS 1,2-Dichloroethylene	2.2	1.6

SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
O-MW7	CIS 1,2-Dichloroethylene	7.4	1.6
	Tetrachloroethylene	2	0.5
	Trichloroethylene	3.1	0.5

SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
MW5	CIS 1,2-Dichloroethylene	135	1.6
	Trichloroethylene	4.4	0.5
	Vinyl Chloride	68.2	0.5

SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
MW3	Chloroform	10	2

SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
MW2	CIS 1,2-Dichloroethylene	9.4	1.6
	Tetrachloroethylene	0.9	0.5
	Trichloroethylene	1.6	0.5

LEGEND

- Site Boundary
- Former Building
- Building
- Groundwater Quality meets VOC Standards
- Groundwater Quality exceeds Standards for one or more VOC constituents

SOURCE: Ottawa Interactive Maps

Title: GROUNDWATER QUALITY - VOCs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

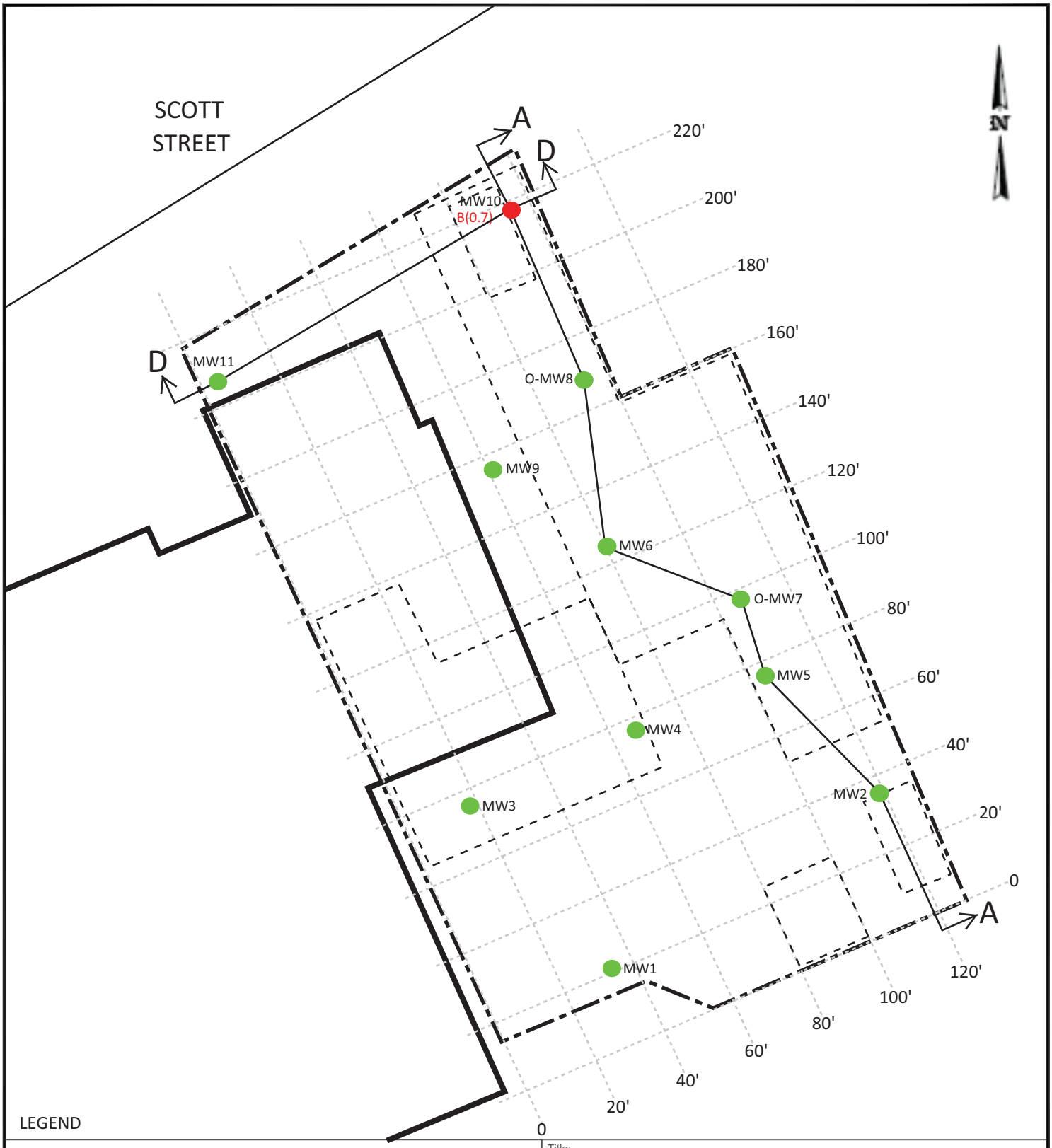
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 7a



LEGEND

- Site Boundary
- Former Building
- Building
- Groundwater Quality meets BTEX Standards
- Groundwater Quality exceeds Benzene Standard (0.5 ug/L)
- B(0.7) Benzene (Concentration in ug/L)

SOURCE: Ottawa Interactive Maps

Title: GROUNDWATER QUALITY - BTEX

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

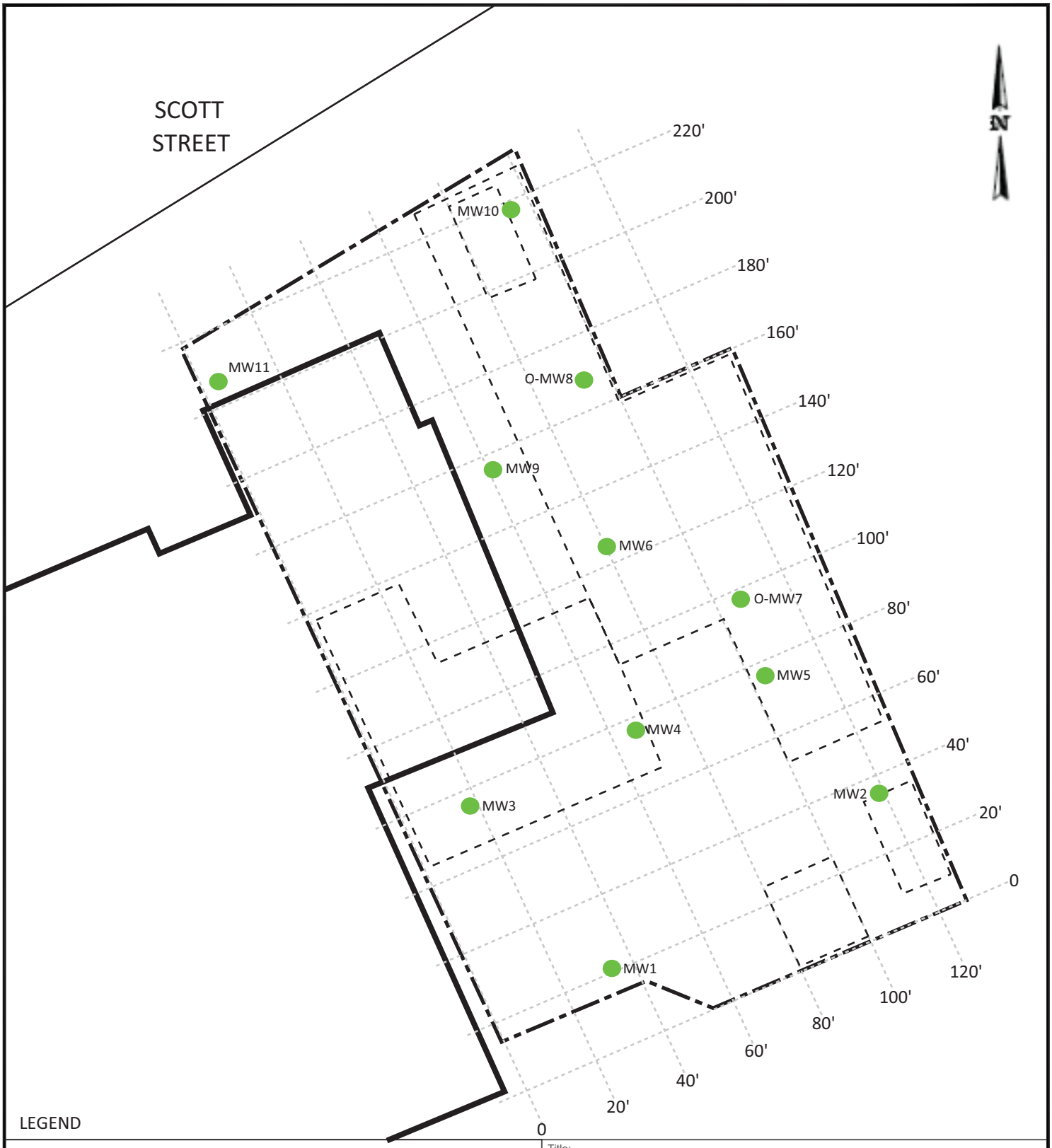
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0	20'	40'	60 ft
0	6.1	12.2	18.3 m

Date: AUGUST 2020

FIGURE 7b



LEGEND

- Site Boundary
- Former Building
- Building
- Groundwater Quality meets PHC Standards

SOURCE: Ottawa Interactive Maps

Title: GROUNDWATER QUALITY - PHCs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

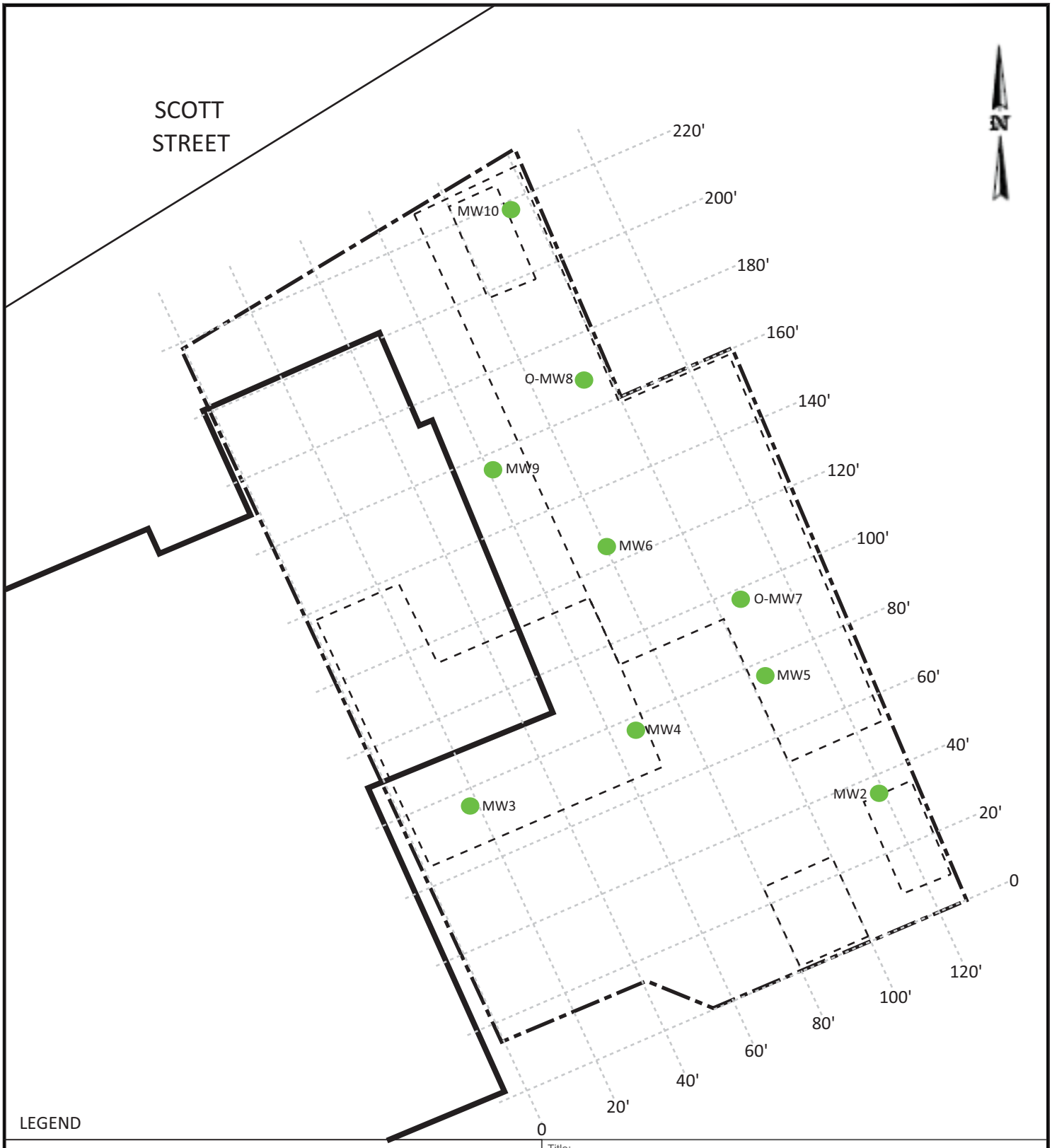
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0	20'	40'	60 ft
0	6.1	12.2	18.3 m

Date: AUGUST 2020

FIGURE 7c



Title: GROUNDWATER QUALITY - PAHs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

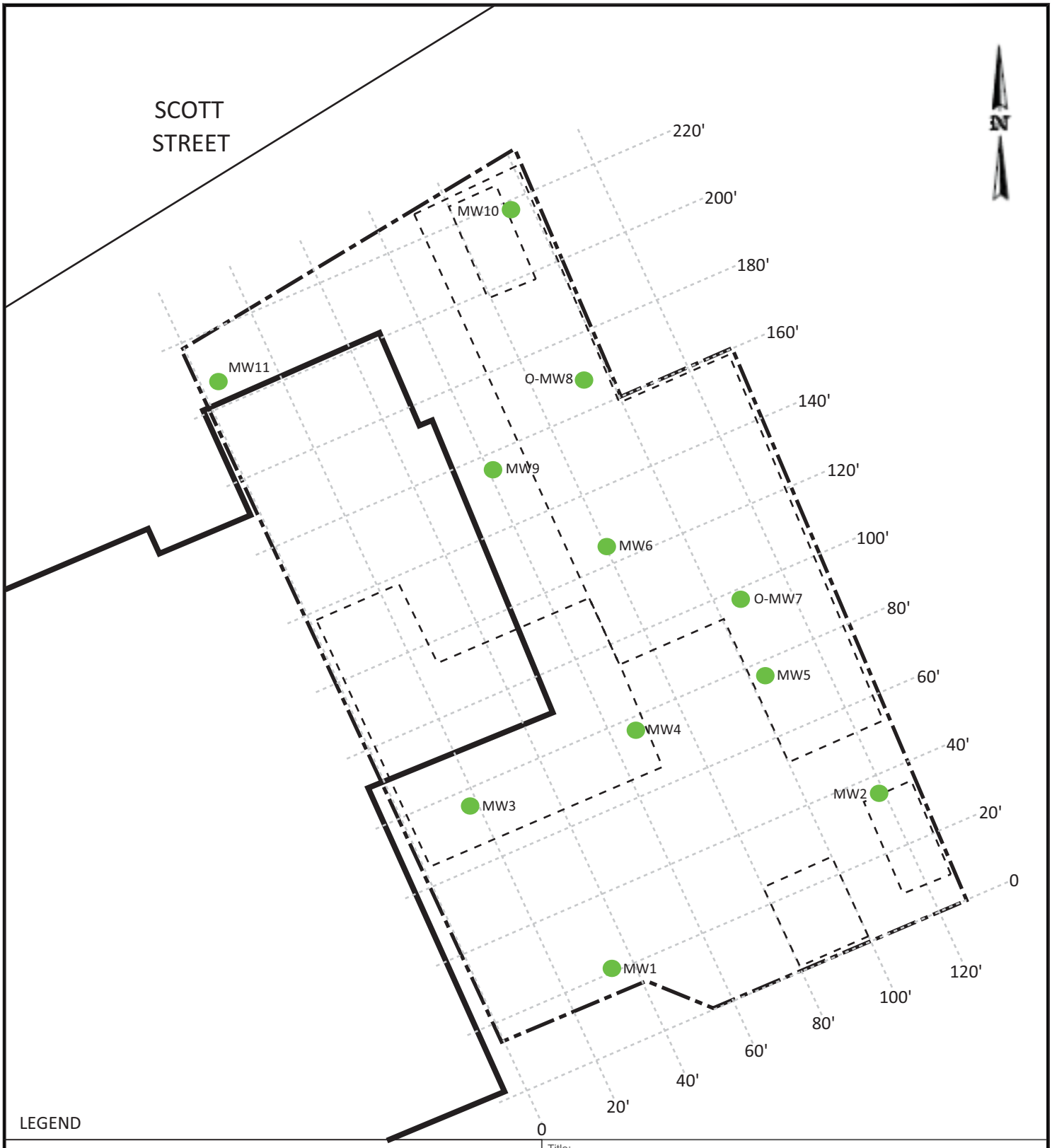
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0 20' 40' 60 ft
0 6.1 12.2 18.3 m

Date: AUGUST 2020

FIGURE 7d



LEGEND

- Site Boundary
- Former Building
- Building
- Groundwater Quality meets Metals Standards

SOURCE: Ottawa Interactive Maps

Title: GROUNDWATER QUALITY - METALs

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

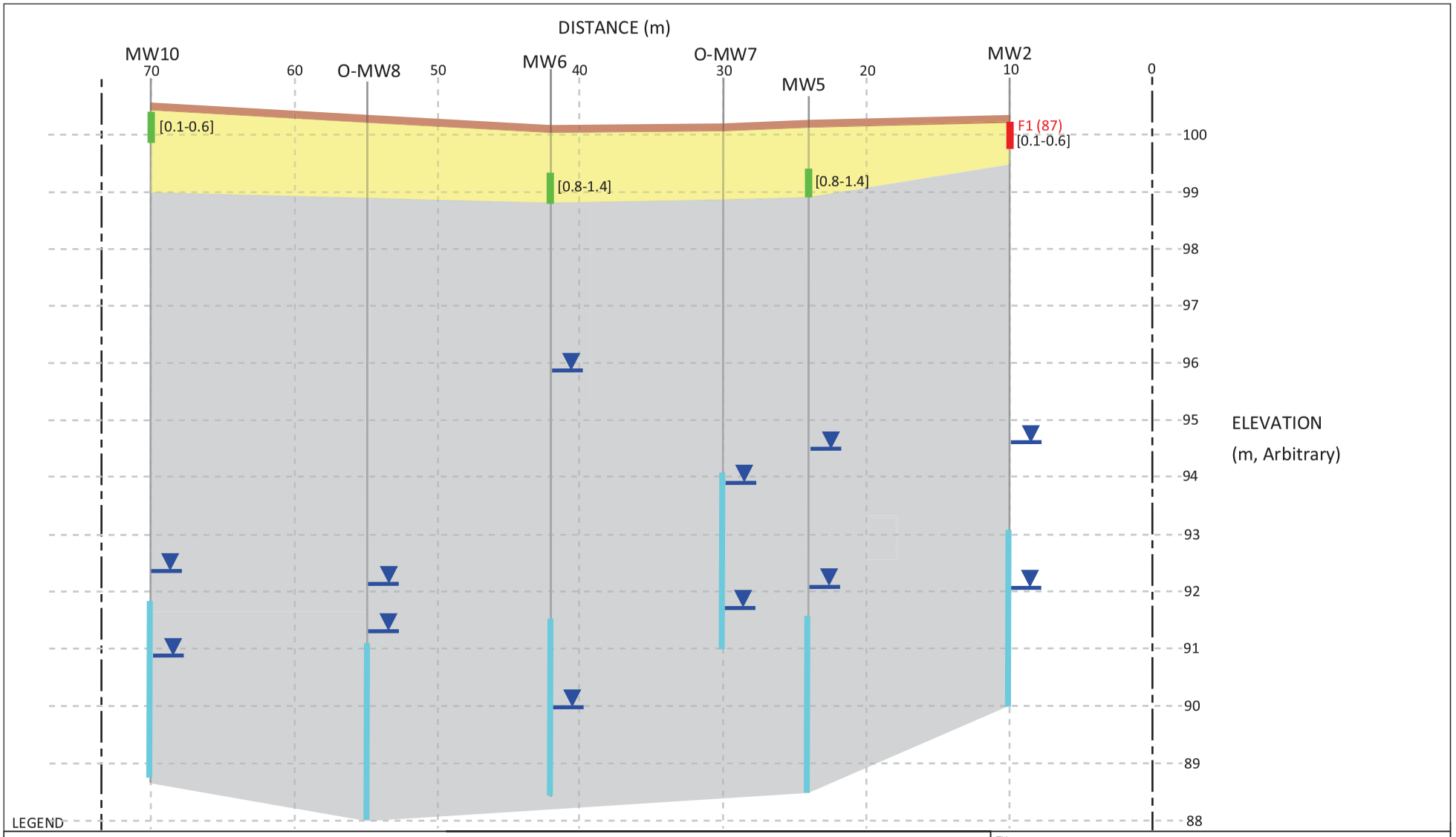
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

0	20'	40'	60 ft
0	6.1	12.2	18.3 m

Date: AUGUST 2020

FIGURE 7e



Title: SOIL QUALITY, PHCs - SECTION A-A

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

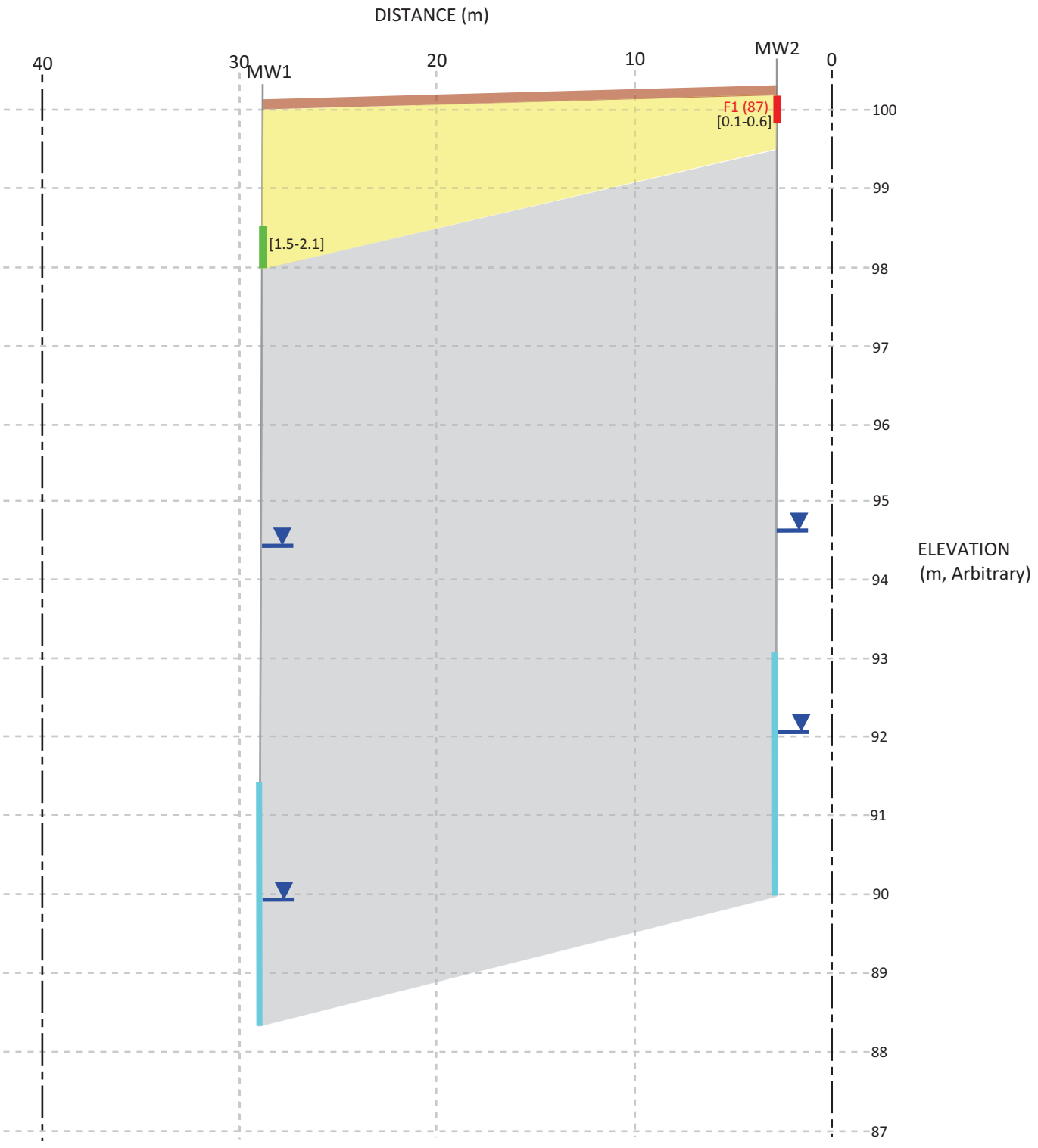
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

GRID SCALE, AS INDICATED.

Date:

FIGURE 8a



LEGEND

- Site Boundary
- Asphalt
- Sand or Sand & Gravel
- Limestone Bedrock (horizontal layers, 50 to 600 mm thick)
- Potentiometric Surface
- Well Screen
- Soil quality meets PHC Standards
- Soil quality exceeds PHC F1 Standard (55 mg/kg)
- F1 (87) — PHC F1 (concentration in mg/kg)
- [0.1-0.6] — Analyzed soil sample depth interval in metres (m)

Title: SOIL QUALITY PHCs - SECTION "C-C"

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

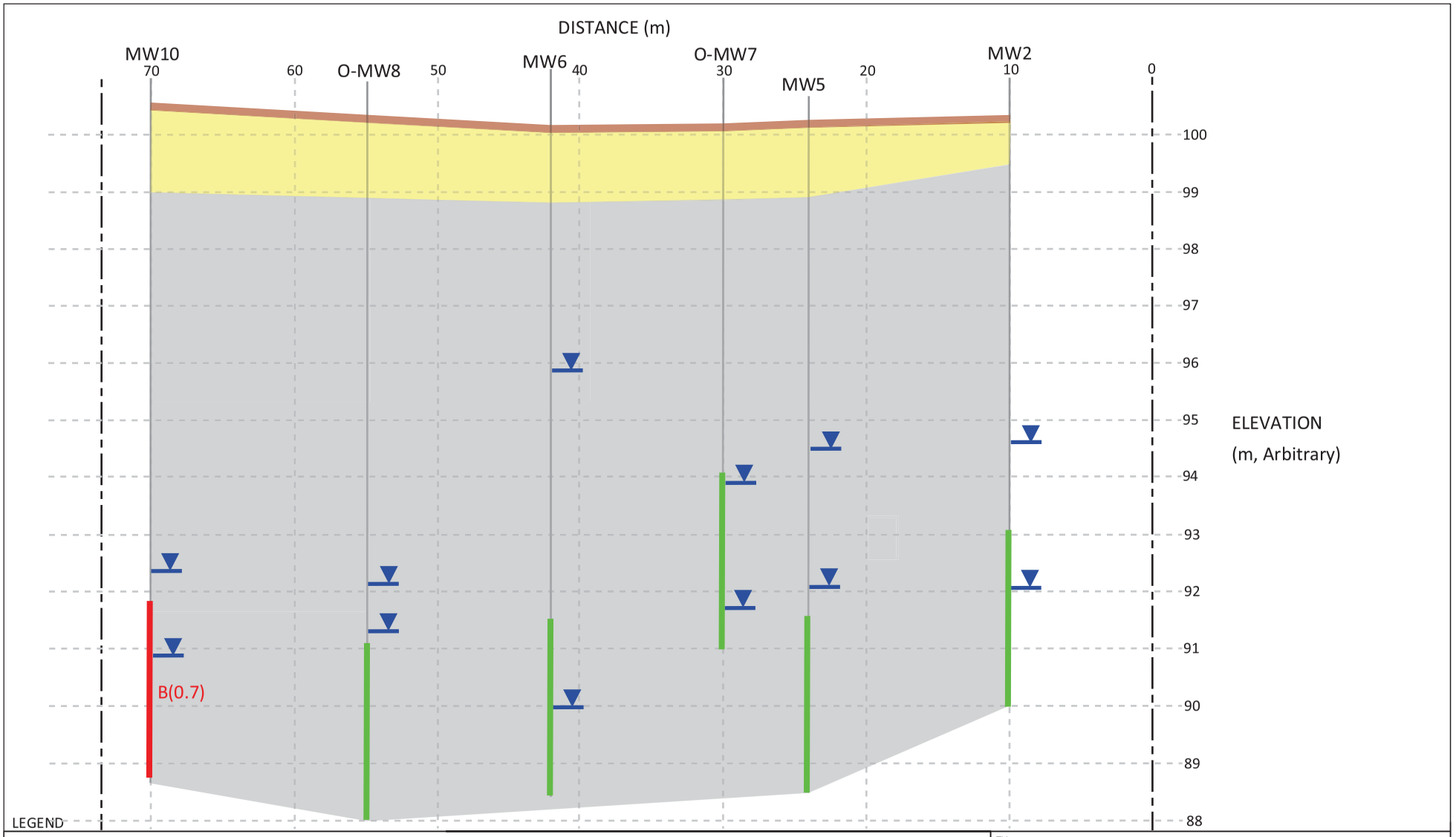
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

GRID SCALE, AS INDICATED

Date: AUGUST 2020

FIGURE 8b



Title: GROUNDWATER QUALITY, BTEX - SECTION A-A

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

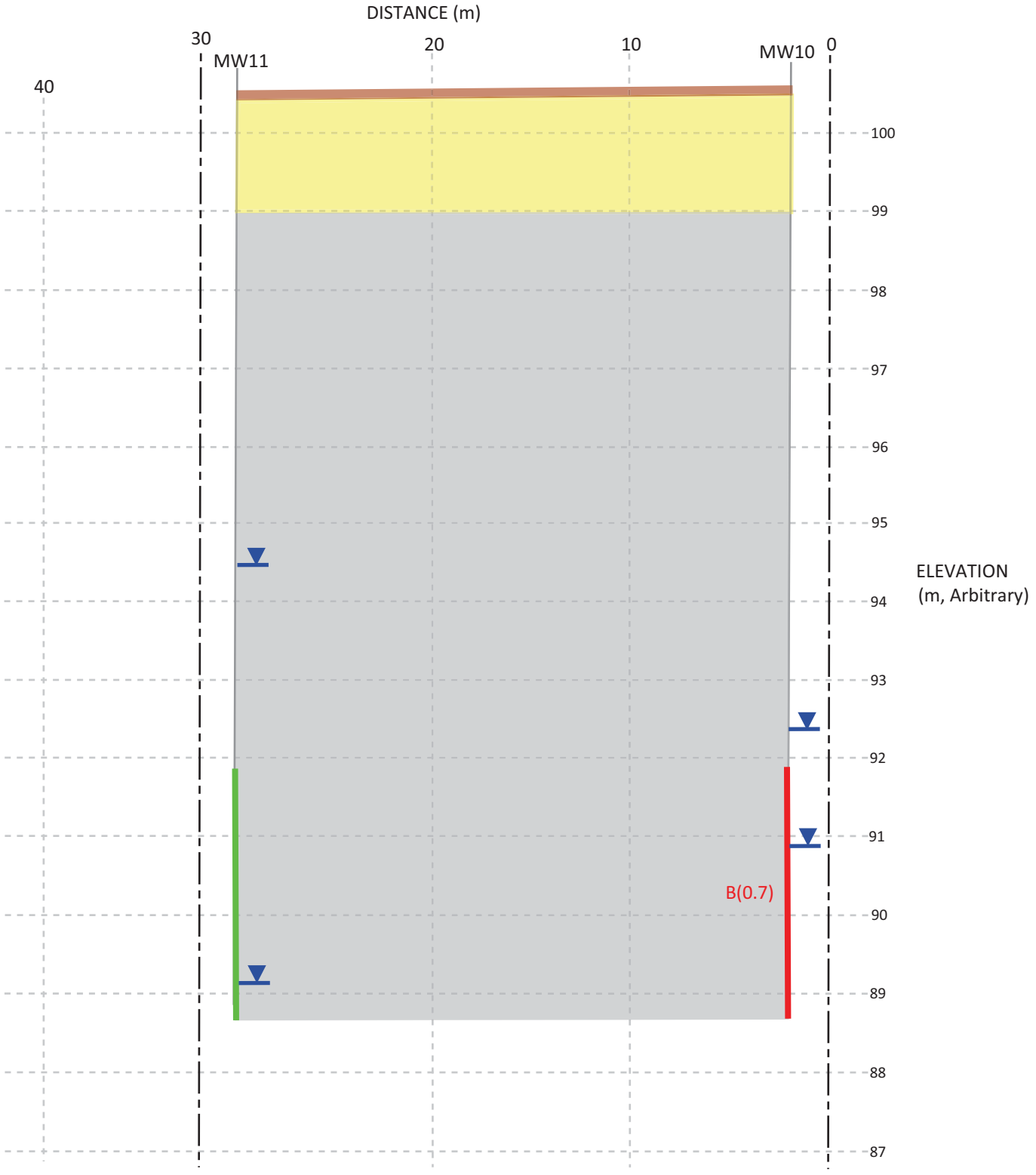
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

GRID SCALE, AS INDICATED.

Date:

FIGURE 9a



LEGEND

- Site Boundary
- Asphalt
- Sand or Sand & Gravel
- Limestone Bedrock (horizontal layers, 50 to 600 mm thick)
- Potentiometric Surface
- Groundwater Quality meets BTEX Standards
- Groundwater Quality exceeds Benzene Standard (0.5 ug/L)
- B(0.7) Benzene (Concentration in ug/L)

Title: GROUNDWATER QUALITY, BTEX - SECTION D-D

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

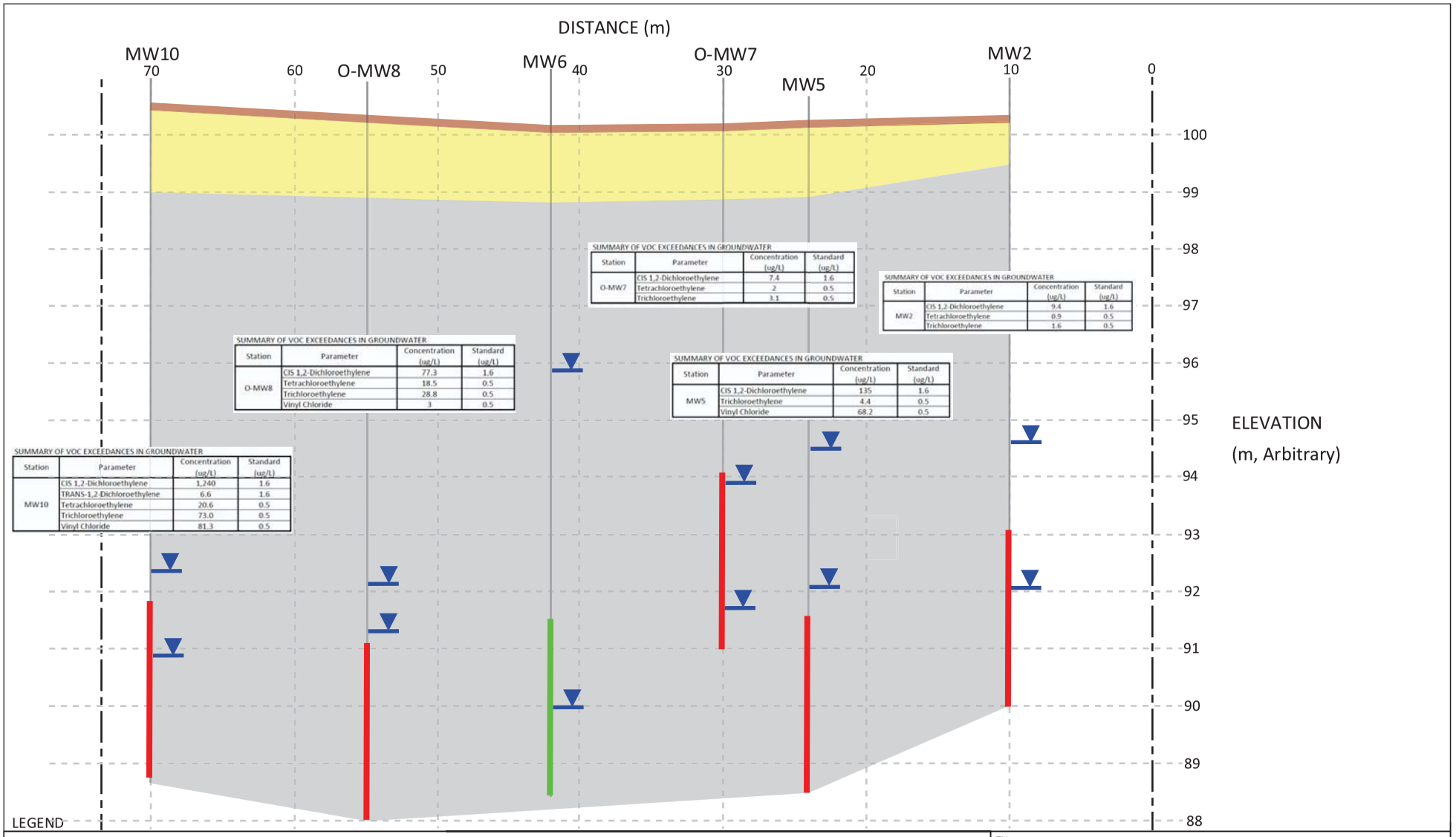
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

GRID SCALE, AS INDICATED

Date: AUGUST 2020

FIGURE 9b



Title: GROUNDWATER QUALITY, VOCs - SECTION A-A

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

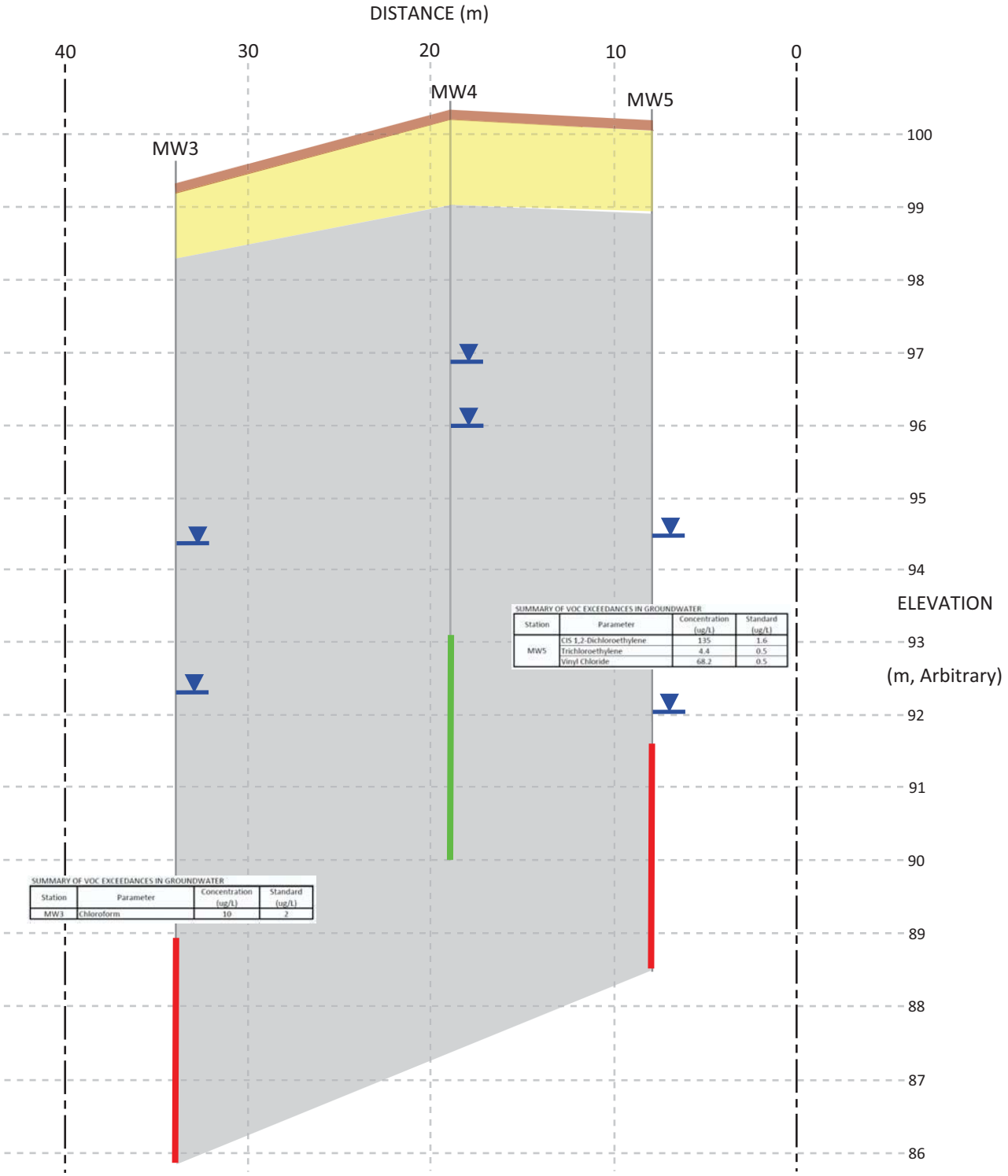
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

GRID SCALE, AS INDICATED.

Date:

FIGURE 10a



LEGEND

- Site Boundary
- Asphalt
- Sand or Sand & Gravel
- Limestone Bedrock (horizontal layers, 50 to 600 mm thick)
- Potentiometric Surface
- Groundwater Quality meets VOC Standards
- Groundwater Quality exceeds Standards for one or more chlorinated VOC constituents

Title: GROUNDWATER QUALITY, VOCs - SECTION "B-B"

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

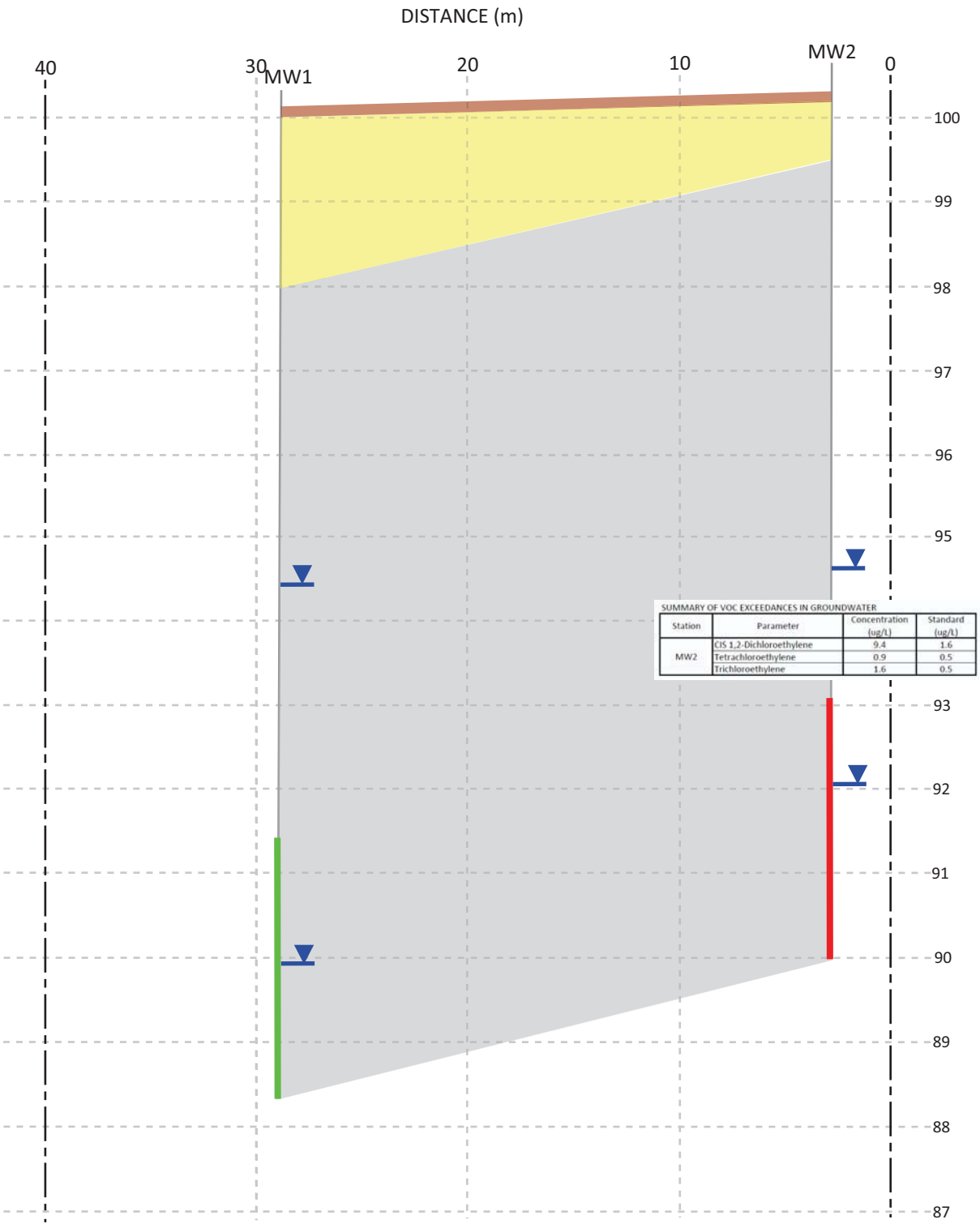
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

GRID SCALE, AS INDICATED

Date: AUGUST 2020

FIGURE 10b



SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
MW2	CIS 1,2-Dichloroethylene	9.4	1.6
	Tetrachloroethylene	0.9	0.5
	Trichloroethylene	1.6	0.5

LEGEND

- Site Boundary
- Asphalt
- Sand or Sand & Gravel
- Limestone Bedrock (horizontal layers, 50 to 600 mm thick)
- Potentiometric Surface
- Groundwater Quality meets VOC Standards
- Groundwater Quality exceeds Standards for one or more chlorinated VOC constituents

Title: GROUNDWATER QUALITY, VOCs - SECTION "C-C"

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

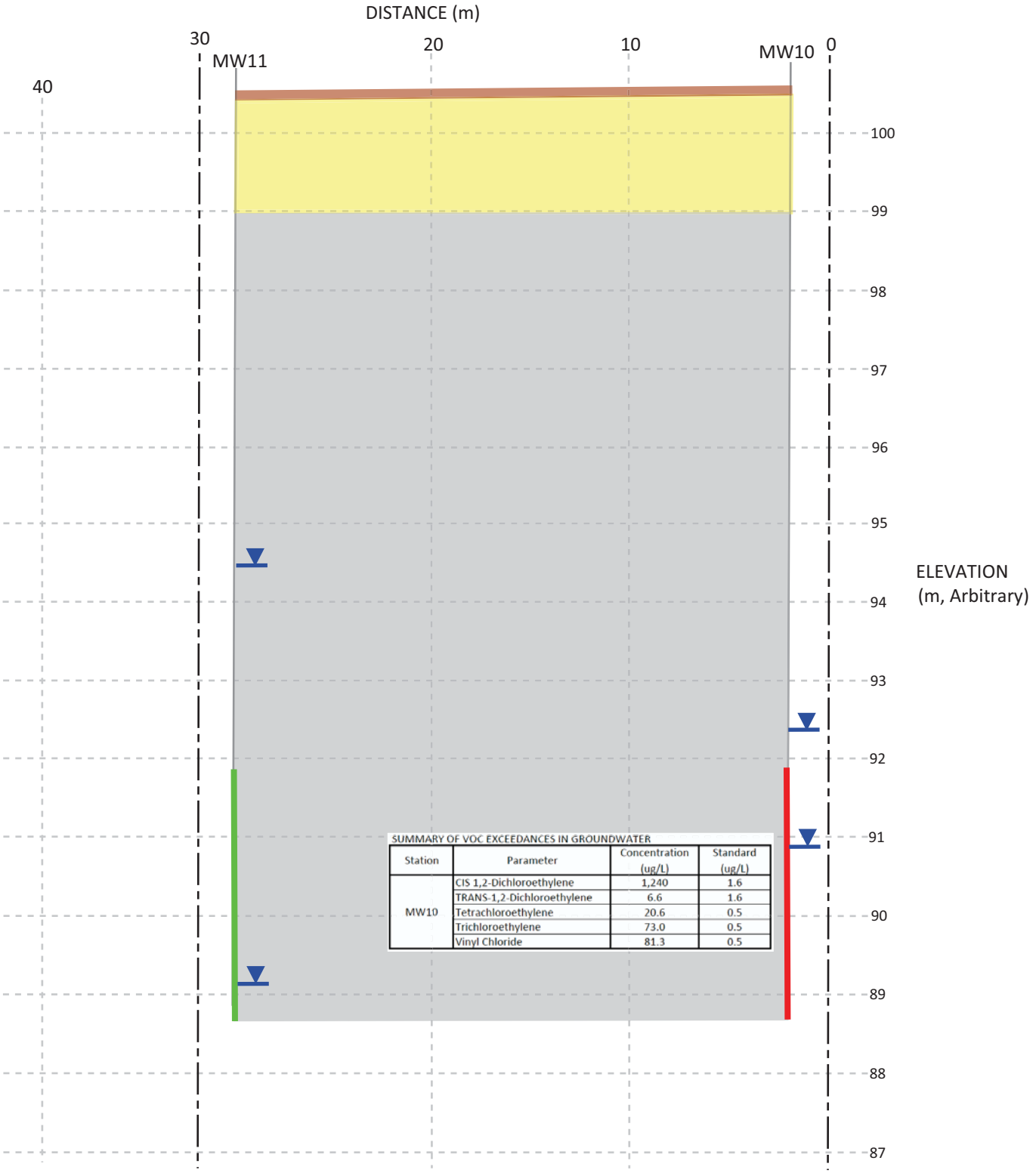
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

GRID SCALE, AS INDICATED

Date: AUGUST 2020

FIGURE 10c



SUMMARY OF VOC EXCEEDANCES IN GROUNDWATER

Station	Parameter	Concentration (ug/L)	Standard (ug/L)
MW10	CIS 1,2-Dichloroethylene	1,240	1.6
	TRANS-1,2-Dichloroethylene	6.6	1.6
	Tetrachloroethylene	20.6	0.5
	Trichloroethylene	73.0	0.5
	Vinyl Chloride	81.3	0.5

LEGEND

- Site Boundary
- Asphalt
- Sand or Sand & Gravel
- Limestone Bedrock (horizontal layers, 50 to 600 mm thick)
- Potentiometric Surface
- Groundwater Quality meets VOC Standards
- Groundwater Quality exceeds Standards for one or more chlorinated VOC constituents

Title: GROUNDWATER QUALITY, VOCs - SECTION D-D

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

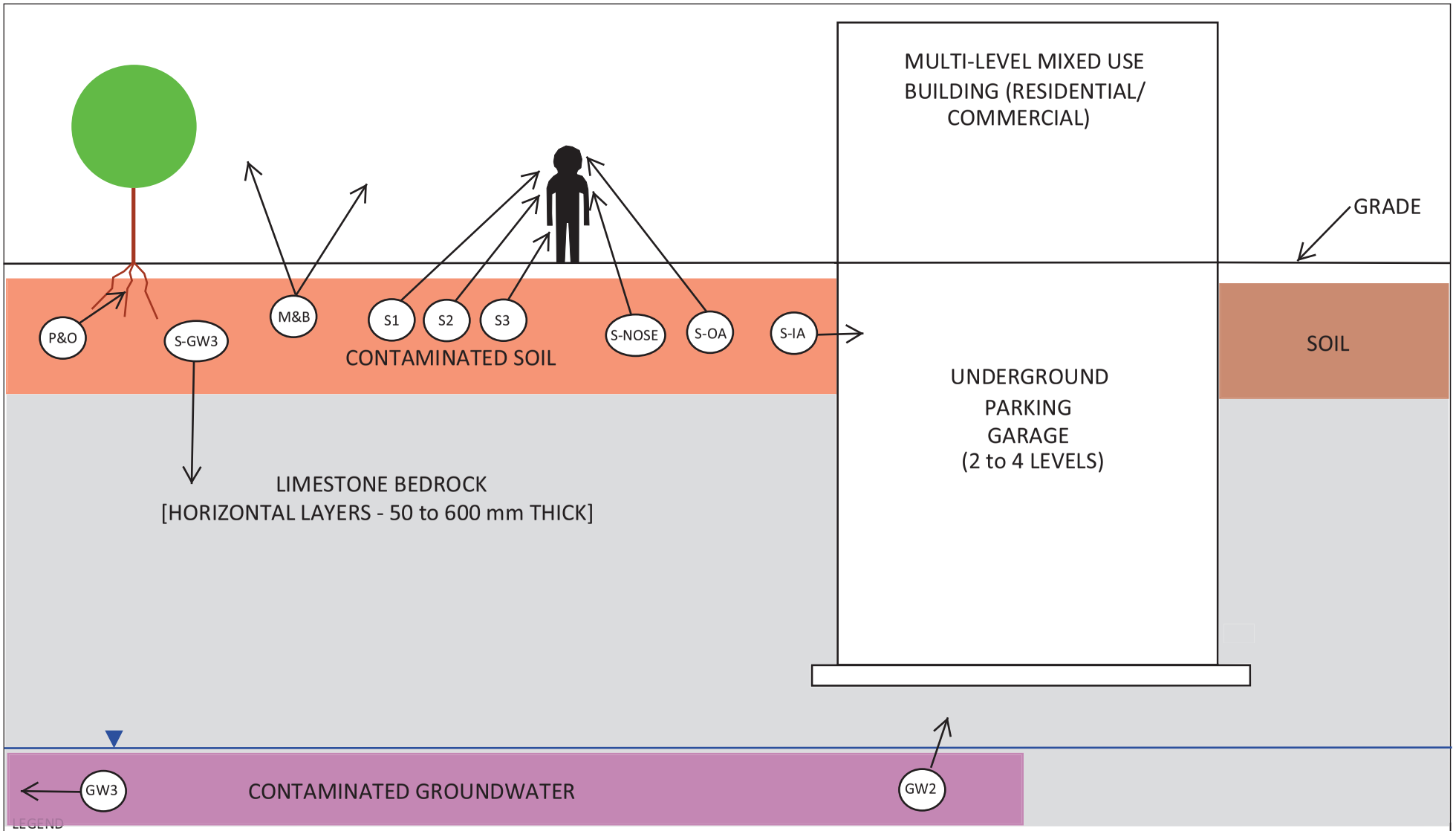
Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

GRID SCALE, AS INDICATED

Date: AUGUST 2020

FIGURE 10d



LEGEND

▼	Potentiometric Surface	S3	Human Health, Soil Ingestion and Dermal Exposure (Construction Worker)
P&O	Plants and Soil Invertebrates	S-NOSE	Odour Threshold, Soil to Nose
M&B	Mammals and Birds	S-IA	Vapour Inhalation, Soil to Indoor Air
S-GW3	Aquatic Life Protection, Soil Leachate to Groundwater to Surface Water	S-OA	Vapour Inhalation, Soil to Outdoor Air
S1	Human Health, Soil Ingestion and Dermal Exposure (Adults, Children and Pregnant Women)	GW3	Aquatic Life Protection, Groundwater to Surface Water
S2	Human Health, Soil Ingestion and Dermal Exposure (Adults)	GW2	Vapour Inhalation, Groundwater to Indoor Air

Title: RECEPTORS AND GENERIC EXPOSURE PATHWAYS

COLESTAR Environmental Inc.

Project: PHASE 2 ENVIRONMENTAL SITE ASSESSMENT
1546 SCOTT STREET, OTTAWA, ONTARIO

Project Number: 0394-05

Client: STARBANK DEVELOPMENTS 2000 CORP.

NOT TO SCALE

Date:

FIGURE 11

TABLES

Table 1
Areas of Potential Environmental Concern
1546 Scott Street, Ottawa, Ontario

Area of Potential Environmental Concern	Location of APEC on Phase One Property	Potentially Contaminating Activity	Location of PCA (onsite or off-site)	Contaminants of Potential Concern	Media Potentially Impacted
APEC 1 – Potential Coal and Burnt Coal Deposition	Entire Site	30 – Importation of Fill Material of Unknown Quality	Onsite	PHCs, PAHs, metals	Soil
APEC 2 – Potential Former Service Garage	Former building in northeast site quadrant	52- Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Onsite	VOCs, PHCs, PAHs, metals	Soil and Groundwater
APEC 3 – East Side of Site in Direction of Former Offsite PCAs (service stations, auto service garages, auto-bodies, dry cleaner, tin product fabrication)	Subsurface, proximate to site boundary in direction of offsite PCAs	10- Commercial Autobody Shops	Offsite, 0 m E & 110 m ENE	VOCs, PHCs, PAHs, metals	Groundwater
		28 – Gasoline and Associated Products Stored in Fixed Tanks	Offsite, 0 m E & 110 & 150 m ENE	BTEX, PHCs, Lead	
		52- Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Offsite, 0 m E & 110, 120 & 150 m ENE	VOCs, PHCs, PAHs, metals	
		34 – Metal Fabrication	Offsite, 0 m E	VOCs, PHCs, PAHs, metals	
		37 – Operation of Dry Cleaning Equipment (where chemicals are used)	Offsite, 105 m E	VOCs	
APEC 4 – South Side of Site in Direction of Former Offsite PCAs (metal manufacturing plants/foundries, printing plants, service stations, auto service garages)	Subsurface, proximate to site boundary in direction of offsite PCAs	28 – Gasoline and Associated Products Stored in Fixed Tanks	Offsite, 140 & 225 m S	BTEX, PHCs, Lead	Groundwater
		52- Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems	Offsite, 225 m S	VOCs, PHCs, PAHs, metals	
		31 – Ink Manufacturing, Processing and Bulk Storage	Offsite, 40 m SE, 85 m SSE, 140 m S	VOCs, PHCs, metals	
		32 – Iron and Steel Manufacturing and Processing	Offsite, 15, 170 & 175 m S, 40 m SE, & 175 m SSE	VOCs, PHCs, PAHs, metals	
		33- Metal Treatment, Coating, Plating and Finishing		VOCs, PHCs, PAHs, metals	
		34 – Metal Fabrications		VOCs, PHCs, PAHs, metals	

Table 2
Borehole Sampling and Analysis Program
Rationale and Analytes Tested
1546 Scott Street, Ottawa, Ontario

Station	Investigation Rationale/Objective	Soil Analytes	Groundwater Analytes
MW1	Assess subsurface quality attributed to APEC 1, 4	VOCs, BTEX, PHCs, PAHs, metals	VOCs, BTEX, PHCs, metals
MW2	Assess subsurface quality attributed to APEC 1, 3, 4	VOCs, BTEX, PHCs, PAHs, metals, pH	VOCs, BTEX, PHCs, PAHs, metals
MW3	Assess subsurface quality attributed to APEC 1	---	VOCs, BTEX, PHCs, PAHs, metals
MW4	Assess subsurface quality attributed to APEC 1	VOCs, BTEX, PHCs, PAHs, metals	VOCs, BTEX, PHCs, PAHs, metals
MW5	Assess subsurface quality attributed to APEC 1, 2, 3	VOCs, BTEX, PHCs, PAHs, metals	VOCs, BTEX, PHCs, PAHs, metals
MW6	Assess subsurface quality attributed to APEC 1, 2, 3	VOCs, BTEX, PHCs, PAHs, metals	VOCs, BTEX, PHCs, PAHs, metals
O-MW7	Assess subsurface quality attributed to APEC 1, 2, 3	---	VOCs, BTEX, PHCs, PAHs, metals
O-MW8	Assess subsurface quality attributed to APEC 1, 2, 3	---	VOCs, BTEX, PHCs, PAHs, metals
MW9	Assess subsurface quality attributed to APEC 1, 3	VOCs, BTEX, PHCs, PAHs, metals	VOCs, BTEX, PHCs, PAHs, metals
MW10	Assess subsurface quality attributed to APEC 1, 2	VOCs, BTEX, PHCs, PAHs, metals	VOCs, BTEX, PHCs, PAHs, metals
MW11	Assess subsurface quality attributed to APEC 1	VOCs, BTEX, PHCs, PAHs, metals, pH	VOCs, BTEX, PHCs, metals
BH12	Assess subsurface quality attributed to APEC 1	VOCs, BTEX, PHCs, PAHs, metals	---
BH13	Define bedrock depth and visually assess fill soil (APEC1)	---	---
BH14	Define bedrock depth and visually assess fill soil (APEC1)	---	---

Table 3
Analyzed Soil Samples
1546 Scott Street, Ottawa, Ontario

Station	Depth Interval (m)	Soil Unit	Analytes	Rationale for Selection
MW1	0.1-0.6	Sand & Gravel	Metals, PAHs	Assess subsurface quality attributed to APEC 1, 4
	1.5-2.1	Sand	VOCs, BTEX, PHCs	
MW2	0.1-0.6	Sand & Gravel	Metals, VOCs, BTEX, PHCs, PAHs, pH	Assess subsurface quality attributed to APEC 1, 3, 4
MW4	0.1-0.6	Sand & Gravel	Metals	Assess subsurface quality attributed to APEC 1
	0.8-1.4		VOCs, BTEX, PHCs, PAHs	
MW5	0.1-0.6	Sand & Gravel	Metals	Assess subsurface quality attributed to APEC 1, 2, 3
	0.8-1.4		VOCs, BTEX, PHCs, PAHs	
MW6	0.1-0.6	Sand & Gravel	Metals, PAHs	Assess subsurface quality attributed to APEC 1, 2, 3
	0.8-1.4		VOCs, BTEX, PHCs	
MW9	0.1-0.6	Sand & Gravel	Metals	Assess subsurface quality attributed to APEC 1, 3
	0.8-1.4	Sand	VOCs, BTEX, PHCs	
	1.5-2.1	Sand	PAHs	
MW10	0.1-0.6	Sand & Gravel	VOCs, BTEX, PHCs	Assess subsurface quality attributed to APEC 1, 2
	0.8-1.4	Sand	Metals, PAHs	
MW11	0.1-0.6	Sand & Gravel	Metals	Assess subsurface quality attributed to APEC 1
	0.8-1.4	Sand	VOCs, BTEX, PHCs, PAHs	
BH12	0.1-0.6	Sand & Gravel	Metals	Assess subsurface quality attributed to APEC 1
	0.8-1.4		VOCs, BTEX, PHCs, PAHs	

Table 4
QA/QC Soil Samples
1546 Scott Street, Ottawa, Ontario

QA/QC Identifier	Station/Sample Interval (m)	Analytes
DUP-S1	MW9/1.5-2.1 m	PAHs
DUP-S2	MW6/0.8-1.4 m	PHCs

Table 5
Well Development Details
1546 Scott Street, Ottawa, Ontario

Well	Date	BOW (m below TOC)	WL (m below TOC)	Development Duration (hours)		Groundwater Volume Extracted (Litres)	Comments and Observations
				Start	Stop		
MW1	July 9, 2020	11.65	11.11	10:00	10:30	10	Groundwater clear after development, no odour
MW2	July 9, 2020	10.10	8.10	11:00	11:30	20	Groundwater clear after development, no odour
MW3	July 2, 2020	13.12	8.66	14:30	15:30	55	Groundwater clear after development, no odour
MW4	July 8, 2020	9.65	4.63	14:30	15:30	60	Groundwater slightly murky after development, no odour
MW5	July 7, 2020	11.44	8.36	6:00	7:30	45	Groundwater clear after development, no odour
MW6	July 8, 2020	11.56	10.13	15:45	17:00	25	Groundwater clear after development, no odour
O-MW7	July 2, 2020	9.15	8.36	8:00	9:00	15	Groundwater clear after development, no odour
O-MW8	July 2, 2020	12.19	8.69	9:30	10:30	45	Groundwater clear after development, no odour
MW9	July 3, 2020	13.20	8.77	10:30	11:30	60	Groundwater clear after development, no odour
MW10	July 9, 2020	11.68	9.56	13:30	14:30	35	Groundwater clear after development, no odour
MW11	July 9, 2020	11.61	11.16	15:30	16:00	10	Groundwater clear after development, no odour
					Total Volume (Litres)	380	

BOW = bottom of well; TOC = top of well casing; WL = Water level

Table 6
Well Purging and Groundwater Sample Details and Analytes
1546 Scott Street, Ottawa, Ontario

Well	Date	Groundwater Purging Details				Groundwater Analytes
		BOW (m bg)	WL(m bg)	Volume (Litres)	Comments	
MW1	July 9, 2020	11.65	11.11	5	Water quality parameters stable; Clear; no odour; sampled at 10:45	VOCs, BTEX, PHCs, PAHs, metals
MW2	July 9, 2020	10.10	8.10	15	Water quality parameters stable; Clear; no odour; sampled at 12:00	VOCs, BTEX, PHCs, PAHs, metals
MW3	July 3, 2020	13.12	7.45	25	Water quality parameters stable; Clear; no odour; sampled at 8:00	VOCs, BTEX, PHCs, PAHs
MW3	July 9, 2020	13.12	7.15	28	Water quality parameters stable; Clear; no odour; sampled at 8:00	metals
MW4	July 9, 2020	9.65	4.22	30	Water quality parameters stable; slightly murky; no odour; sampled at 10:00	VOCs, BTEX, PHCs, PAHs, metals
MW5	July 9, 2020	11.44	8.00	15	Water quality parameters stable; Clear; no odour; sampled at 13:15	VOCs, BTEX, PHCs, PAHs, metals
MW6	July 9, 2020	11.56	9.96	12	Water quality parameters stable; Clear; no odour; sampled at 14:15	VOCs, BTEX, PHCs, PAHs, metals
O-MW7	July 3, 2020	9.15	8.37	6	Water quality parameters stable; Clear; no odour; sampled at 15:00	VOCs, BTEX, PHCs, PAHs, metals
O-MW8	July 3, 2020	12.19	8.86	18	Water quality parameters stable; Clear; no odour; sampled at 10:00	VOCs, BTEX, PHCs, PAHs, metals
MW9	July 9, 2020	13.20	8.10	28	Water quality parameters stable; Clear; no odour; sampled at 9:00	VOCs, BTEX, PHCs, PAHs, metals
MW10	July 9, 2020	11.68	9.56	15	Water quality parameters stable; Clear; no odour; sampled at 15:00	VOCs, BTEX, PHCs, PAHs, metals
MW11	July 9, 2020	11.61	11.16	5	Water quality parameters stable; Clear; no odour; sampled at 16:15	VOCs, BTEX, PHCs, PAHs, metals

BOW = bottom of well; mbg = metres below grade; WL = Water level

Table 7
QA/QC Groundwater Samples
1546 Scott Street, Ottawa, Ontario

QA/QC Identifier	Well Location	Sample Date	Analytes
DUP-W1	O-MW8	July 3, 2020	VOCs, PHCs, PAHs

Table 8
Vertical Elevations – Monitoring Wells and Boreholes
1546 Scott Street, Ottawa, Ontario
[Arbitrary expressed in metres (m)]

Station	Grade Elevation	Top of Well Casing
MW1	100.09	100.02
MW2	100.31	100.21
MW3	99.37	99.27
MW4	100.36	100.26
MW5	100.23	100.12
MW6	100.15	100.03
O-MW7	100.18	100.06
O-MW8	100.29	100.18
MW9	100.32	100.22
MW10	100.55	100.42
MW11	100.50	100.36

Station	Grade Elevation
BH12	99.74
BH13	100.27
BH14	100.39

Table 9
Analytes, Sample Jars, Preservatives and Holding Times
1546 Scott Street, Ontario

Analyte	Media	Bottle Size and Type	Preservative	Holding Time (days)
VOCs/PHC F1	Soil	40 mL, glass vial	Methanol	14
PHC F2 – F4	Soil	180 mL, amber glass jar, Teflon lined lid	None	14
PAHs	Soil	180 mL, amber glass jar, Teflon lined lid	None	60
Inorganics	Soil	250 mL, amber glass jar, Teflon lined lid	None	---
Cyanide	Soil	Acquired from inorganics jar	None	14
Cr6	Soil	Acquired from inorganics jar	None	30
Hg	Soil	Acquired from inorganics jar	None	28
Metals	Soil	Acquired from inorganics jar	None	180
EC	Soil	Acquired from inorganics jar	None	30
VOCs/PHC F1	Groundwater	40 mL glass vials (3)	NaHSO4 or HCl	14
PHC F2-F4	Groundwater	1 L, amber glass bottle, Teflon lined lid	NaHSO4 or HCl	40
PAHs	Groundwater	1 L, amber glass bottle, Teflon lined lid	None	14
Metals	Groundwater	125 mL, HDPE bottle	HNO3	60
Cr6	Groundwater	125 mL, HDPE bottle	(NH4)2SO4/NH4OH	28
Hg	Groundwater	125 mL, amber glass bottle	HCl	28
Cyanide	Groundwater	125 mL, HDPE bottle	NaOH	14

Table 10
Monitoring Wells – Screened Intervals
1546 Scott Street, Ottawa, Ontario

Monitoring Well	Screened Interval	
	m below grade	Arbitrary Elevation in metres
MW1	8.6 to 11.7	91.4 to 88.3
MW2	7.1 to 10.2	93.1 to 90
MW3	10.4 to 13.4	88.9 to 85.8
MW4	6.7 to 9.8	93.6 to 90.5
MW5	8.5 to 11.6	91.6 to 88.5
MW6	8.5 to 11.6	91.5 to 88.4
MW9	10.4 to 13.4	89.8 to 86.7
MW10	8.6 to 11.7	91.8 to 88.7
MW11	8.6 to 11.7	91.8 to 88.7

Table 11
Water Levels and Potentiometric Elevations
1546 Scott Street, Ottawa, Ontario

Well	TOC Elevation (masl) [1]	Grade Elevation (masl)	July 9, 2020				
			Water Level (m) [2]	Water Level (m bg)	LNAPL (mm)	DNAPL (mm)	PM Elevation (masl) [1-2]
MW1	100.02	100.09	11.11	11.18	0	0	88.91
MW2	100.21	100.31	8.10	8.20	0	0	92.11
MW3	99.27	99.37	7.15	7.24	0	0	92.13
MW4	100.26	100.36	4.22	4.32	0	0	96.05
MW5	100.12	100.23	8.00	8.11	0	0	92.12
MW6	100.03	100.15	9.96	10.08	0	0	90.07
O-MW7	100.06	100.18	8.37	8.49	0	0	91.69
O-MW8	100.18	100.29	8.86	8.97	0	0	91.32
MW9	100.22	100.32	8.10	8.20	0	0	92.12
MW10	100.42	100.55	9.56	9.70	0	0	90.86
MW11	100.36	100.50	11.16	11.30	0	0	89.20

Well	TOC Elevation (masl) [1]	Grade Elevation (masl)	July 20, 2020				
			Water Level (m) [2]	Water Level (m bg)	LNAPL (mm)	DNAPL (mm)	PM Elevation (masl) [1-2]
MW1	100.02	100.09	9.68	9.75	0	0	90.34
MW2	100.21	100.31	7.95	8.05	0	0	92.26
MW3	99.27	99.37	6.98	7.08	0	0	92.29
MW4	100.26	100.36	3.95	4.05	0	0	96.31
MW5	100.12	100.23	7.89	8.00	0	0	92.23
MW6	100.03	100.15	9.27	9.40	0	0	90.75
O-MW7	100.06	100.18	8.24	8.35	0	0	91.83
O-MW8	100.18	100.29	8.79	8.90	0	0	91.39
MW9	100.22	100.32	7.98	8.08	0	0	92.24
MW10	100.42	100.55	9.36	9.50	0	0	91.05
MW11	100.36	100.50	10.96	11.10	0	0	89.40

Elevations are in metres (m) above sea level (masl); Water levels are in metres (m) relative to TOC; TOC – Top of well Casing;
LNAPL – Light Non-Aqueous Phase Liquid; DNAPL – Dense Non-Aqueous Phase Liquid; PM – Potentiometric

Table 11 Continued
Water Levels and Potentiometric Elevations
1546 Scott Street, Ottawa, Ontario

Well	TOC Elevation (masl) [1]	Grade Elevation (masl)	September 1, 2020				
			Water Level (m) [2]	Water Level (m bg)	LNAPL (mm)	DNAPL (mm)	PM Elevation (masl) [1-2]
MW1	100.02	100.09	5.59	5.66	0	0	94.43
MW2	100.21	100.31	5.60	5.70	0	0	94.61
MW3	99.27	99.37	4.87	4.97	0	0	94.40
MW4	100.26	100.36	3.47	3.57	0	0	96.80
MW5	100.12	100.23	5.60	5.71	0	0	94.52
MW6	100.03	100.15	4.12	4.24	0	0	95.91
O-MW7	100.06	100.18	6.13	6.24	0	0	93.93
O-MW8	100.18	100.29	8.04	8.15	0	0	92.14
MW9	100.22	100.32	5.79	5.90	0	0	94.43
MW10	100.42	100.55	8.08	8.21	0	0	92.34
MW11	100.36	100.50	5.86	6.00	0	0	94.50

Elevations are in metres (m) above sea level (masl); Water levels are in metres (m) relative to TOC; TOC – Top of well Casing;
LNAPL – Light Non-Aqueous Phase Liquid; DNAPL – Dense Non-Aqueous Phase Liquid; PM - Potentiometric

TABLE 12

SOIL LABORATORY RESULTS - INORGANICS

BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO

(Expressed in mg/kg or ug/g unless noted otherwise)

Parameter	MOE Generic Standards (1)	MW1	MW2	MW4	MW5	MW6	MW9	MW10	MW11	BH12
		09-Jul-20	09-Jul-20	08-Jul-20	3-Jul-20	08-Jul-20	3-Jul-20	09-Jul-20	09-Jul-20	3-Jul-20
		0.1-0.6 m	0.1-0.6 m	0.1-0.6 m	0.1-0.6 m	0.1-0.6 m	0.1-0.6 m	0.8-1.4 m	0.1-0.6 m	0.1-0.6 m
		0.3-2 ft	0.3-2 ft	0.3-2 ft	0.3-2 ft	0.3-2 ft	0.3-2 ft	2.5-4.5 ft	0.3-2 ft	0.3-2 ft
	Residential	B20-19548-11	B20-19548-8	B20-19548-4	B20-18649-5	B20-19548-1	B20-18649-1	B20-19548-7	B20-19548-9	B20-18649-7
pH (pH units)	5 to 9	---	8.13	---	---	---	---	---	8.03	---
Antimony	7.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.5
Arsenic	18	1.6	2.2	1.2	1.3	1.2	1.2	1.1	0.8	1.3
Barium	390	154	181	240	104	144	206	158	39	160
Beryllium	4	0.2	0.3	0.2	<0.2	0.2	0.2	0.3	< 0.2	0.3
Boron	120	7.4	8.4	5.5	14.8	3.0	17.9	4.6	0.9	13
Cadmium	1.2	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.5
Chromium	160	9	8	7	8	11	6	13	9	9
Cobalt	22	4	4	3	5	4	4	5	4	5
Copper	140	8	11	6	8	9	6	9	8	6
Lead	120	9	32	14	23	12	10	9	< 5	20
Mercury	0.27	0.019	0.057	0.015	0.015	0.016	0.01	0.022	0.007	0.013
Molybdenum	6.9	< 1	< 1	< 1	<1	< 1	<1	< 1	< 1	<1
Nickel	100	11	13	10	8	11	8	10	6	9
Selenium	2.4	0.6	0.6	< 0.5	<0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.5
Silver	20	< 0.2	< 0.2	< 0.2	<0.2	< 0.2	<0.2	< 0.2	< 0.2	<0.2
Thallium	1	0.1	0.3	0.3	0.1	0.1	0.1	0.1	< 0.1	0.2
Uranium	23	0.8	0.7	0.4	0.4	0.5	0.5	0.6	0.4	0.4
Vanadium	86	9	7	5	11	15	6	18	20	9
Zinc	340	18	39	17	30	23	15	30	14	20

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Soil Standards for shallow soil sites with coarse grained soil in a non-potable groundwater setting.

Dates presented are sample dates

Depths provided are in metres (m) and feet (ft) and are relative to grade

'---' - not analyzed or no standard

B20-19548-11: laboratory sample identifier

TABLE 13

SOIL LABORATORY RESULTS - VOCs and PHCs

BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO

(Expressed in mg/kg or ug/g unless noted otherwise)

Parameter	MOE Generic Standards (1)	MW1	MW2	MW4	MW5	MW6
		09-Jul-20	09-Jul-20	08-Jul-20	3-Jul-20	08-Jul-20
		1.5-2.1 m	0.1-0.6 m	0.8-1.4 m	0.8-1.4 m	0.8-1.4 m
		5-7 ft	0.3-2 ft	2.5-4.5 ft	2.5-4.5 ft	2.5-4.5 ft
	Residential	B20-19548-12	B20-19548-8	B20-19548-5	B20-18649-6	B20-19548-2
Acetone	16	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	0.21	<0.02	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	13	<0.02	<0.02	<0.02	<0.02	<0.02
Bromoform	0.27	<0.02	<0.02	<0.02	<0.02	<0.02
Bromomethane	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	2.4	<0.02	<0.02	<0.02	<0.02	<0.02
Chloroform	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	9.4	<0.02	<0.02	<0.02	<0.02	<0.02
Dichlorobenzene, 1,2-	3.4	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorobenzene, 1,3-	4.8	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorobenzene, 1,4-	0.083	<0.05	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	16	<0.05	<0.05	<0.05	<0.05	<0.05
Dichloroethane, 1,1-	3.5	<0.02	<0.02	<0.02	<0.02	<0.02
Dichloroethane, 1,2-	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Dichloroethylene, 1,1-	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Dichloroethylene, 1,2-cis-	3.4	<0.02	<0.02	<0.02	<0.02	<0.02
Dichloroethylene, 1,2-trans-	0.084	<0.02	<0.02	<0.02	<0.02	<0.02
Dichloropropane, 1,2-	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Dichloropropene,1,3-	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	2	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Hexane (n)	2.8	< 0.02	0.98	< 0.02	0.68	< 0.02
Methyl Ethyl Ketone	16	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl Isobutyl Ketone	1.7	<0.5	<0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether (MTBE)	0.75	<0.05	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Styrene	0.7	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethane, 1,1,1,2-	0.058	<0.02	<0.02	<0.02	<0.02	<0.02
Tetrachloroethane, 1,1,2,2-	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.28	<0.05	<0.05	<0.05	<0.05	<0.05
Toluene	2.3	<0.2	<0.2	<0.2	<0.2	<0.2
Trichloroethane, 1,1,1-	0.38	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethane, 1,1,2-	0.05	<0.02	<0.02	<0.02	<0.02	<0.02
Trichloroethylene	0.061	<0.05	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	4	<0.02	<0.02	<0.02	<0.02	<0.02
Vinyl Chloride	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Xylene Mixture	3.1	< 0.03	0.23	< 0.03	<0.03	< 0.03
Petroleum Hydrocarbons F1	55	20	**87**	< 10	10	< 10
Petroleum Hydrocarbons F2	98	15	47	6	<5	< 5
Petroleum Hydrocarbons F3	300	43	56	69	36	40
Petroleum Hydrocarbons F4	2800	133	16	283	140	144
F4 Gravimetrics (2)	2800	480	---	930	490	480

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Soil Standards for shallow soil sites with coarse grained soil in a non-potable groundwater setting.

2 - analysis performed when PHCs do not descend to baseline

Dates presented are sample dates

Depths provided are in metres (m) and feet (ft) and are relative to grade

'---' - not analyzed or no standard

B20-19548-12: laboratory sample identifier

BOLD - value exceeds standard

DUP - field duplicate

TABLE 13

SOIL LABORATORY RESULTS - VOCs and PHCs

BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO

(Expressed in mg/kg or ug/g unless noted otherwise)

Parameter	MOE Generic Standards (1)	MW6	MW9	MW10	MW11	BH12
		08-Jul-20	3-Jul-20	09-Jul-20	09-Jul-20	3-Jul-20
		0.8-1.4 m	0.8-1.4 m	0.1-0.6 m	0.8-1.4 m	0.8-1.4 m
		2.5-4.5 ft	2.5-4.5 ft	0.3-2 ft	2.5-4.5 ft	2.5-4.5 ft
		DUP-S2				
	Residential	B20-19548-3	B20-18649-2	B20-19548-6	B20-19548-10	B20-18649-8
Acetone	16	---	<0.5	<0.5	<0.5	<0.5
Benzene	0.21	---	<0.02	<0.02	<0.02	<0.02
Bromodichloromethane	13	---	<0.02	<0.02	<0.02	<0.02
Bromoform	0.27	---	<0.02	<0.02	<0.02	<0.02
Bromomethane	0.05	---	<0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	0.05	---	<0.05	<0.05	<0.05	<0.05
Chlorobenzene	2.4	---	<0.02	<0.02	<0.02	<0.02
Chloroform	0.05	---	<0.02	<0.02	<0.02	<0.02
Dibromochloromethane	9.4	---	<0.02	<0.02	<0.02	<0.02
Dichlorobenzene, 1,2-	3.4	---	<0.05	<0.05	<0.05	<0.05
Dichlorobenzene, 1,3-	4.8	---	<0.05	<0.05	<0.05	<0.05
Dichlorobenzene, 1,4-	0.083	---	<0.05	<0.05	<0.05	<0.05
Dichlorodifluoromethane	16	---	<0.05	<0.05	<0.05	<0.05
Dichloroethane, 1,1-	3.5	---	<0.02	<0.02	<0.02	<0.02
Dichloroethane, 1,2-	0.05	---	<0.02	<0.02	<0.02	<0.02
Dichloroethylene, 1,1-	0.05	---	<0.02	<0.02	<0.02	<0.02
Dichloroethylene, 1,2-cis-	3.4	---	<0.02	<0.02	<0.02	<0.02
Dichloroethylene, 1,2-trans-	0.084	---	<0.02	<0.02	<0.02	<0.02
Dichloropropane, 1,2-	0.05	---	<0.02	<0.02	<0.02	<0.02
Dichloropropene,1,3-	0.05	---	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	2	---	<0.05	<0.05	<0.05	<0.05
Ethylene dibromide	0.05	---	<0.02	<0.02	<0.02	<0.02
Hexane (n)	2.8	---	2.45	0.64	0.78	<0.02
Methyl Ethyl Ketone	16	---	<0.5	<0.5	<0.5	<0.5
Methyl Isobutyl Ketone	1.7	---	<0.5	<0.5	<0.5	<0.5
Methyl tert-Butyl Ether (MTBE)	0.75	---	<0.05	<0.05	<0.05	<0.05
Methylene Chloride	0.1	---	<0.05	<0.05	<0.05	<0.05
Styrene	0.7	---	<0.05	<0.05	<0.05	<0.05
Tetrachloroethane, 1,1,1,2-	0.058	---	<0.02	<0.02	<0.02	<0.02
Tetrachloroethane, 1,1,2,2-	0.05	---	<0.05	<0.05	<0.05	<0.05
Tetrachloroethylene	0.28	---	<0.05	<0.05	<0.05	<0.05
Toluene	2.3	---	<0.2	<0.2	<0.2	<0.2
Trichloroethane, 1,1,1-	0.38	---	<0.02	<0.02	<0.02	<0.02
Trichloroethane, 1,1,2-	0.05	---	<0.02	<0.02	<0.02	<0.02
Trichloroethylene	0.061	---	<0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	4	---	<0.02	<0.02	<0.02	<0.02
Vinyl Chloride	0.02	---	<0.02	<0.02	<0.02	<0.02
Xylene Mixture	3.1	---	0.19	0.15	< 0.03	<0.03
Petroleum Hydrocarbons F1	55	---	39	40	20	<10
Petroleum Hydrocarbons F2	98	< 5	27	55	< 5	<5
Petroleum Hydrocarbons F3	300	31	66	69	< 10	23
Petroleum Hydrocarbons F4	2800	116	131	33	< 10	56
F4 Gravimetrics (2)	2800	370	130	120	---	<50

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Soil Standards for shallow soil sites with coarse grained soil in a non-potable groundwater setting.

2 - analysis performed when PHCs do not descend to baseline

Dates presented are sample dates

Depths provided are in metres (m) and feet (ft) and are relative to grade

'---' - not analyzed or no standard

B20-19548-3: laboratory sample identifier

DUP - field duplicate

TABLE 14

SOIL LABORATORY RESULTS - PAHs

BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO

(Expressed in mg/kg or ug/g unless noted otherwise)

Parameter	MOE Generic Standards (1)	MW1	MW2	MW4	MW5	MW6
		09-Jul-20	09-Jul-20	08-Jul-20	3-Jul-20	08-Jul-20
		0.1-0.6 m	0.1-0.6 m	0.8-1.4 m	0.8-1.4 m	0.1-0.6 m
		0.3-2 ft	0.3-2 ft	2.5-4.5 ft	2.5-4.5 ft	0.3-2 ft
	Residential	B20-19548-11	B20-19548-8	B20-19548-5	B20-18649-6	B20-19548-1
Acenaphthene	7.9	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	0.67	< 0.05	0.08	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	0.5	< 0.05	0.20	< 0.05	< 0.05	0.06
Benzo(a)pyrene	0.3	< 0.05	0.20	< 0.05	< 0.05	0.07
Benzo(b)fluoranthene	0.78	< 0.05	0.26	< 0.05	< 0.05	0.06
Benzo(g,h,i)perylene	6.6	< 0.05	0.12	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	0.78	< 0.05	0.09	< 0.05	< 0.05	< 0.05
Chrysene	7	< 0.05	0.20	< 0.05	< 0.05	0.06
Dibenzo(a,h)anthracene	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	0.69	< 0.05	0.46	< 0.05	0.06	0.10
Fluorene	62	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3,-cd)pyrene	0.38	< 0.05	0.14	< 0.05	< 0.05	< 0.05
Methylnaphthalene 2-(1-)	0.99	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	0.6	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	6.2	< 0.05	0.27	< 0.05	< 0.05	0.05
Pyrene	78	< 0.05	0.35	< 0.05	0.05	0.09

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Soil Standards for shallow soil sites with coarse grained soil in a non-potable groundwater setting.

Dates presented are sample dates

Depths provided are in metres (m) and feet (ft) and are relative to grade

'---' - not analyzed or no standard

B20-19548-11: laboratory sample identifier

TABLE 14

SOIL LABORATORY RESULTS - PAHs

BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO

(Expressed in mg/kg or ug/g unless noted otherwise)

Parameter	MOE Generic Standards (1)	MW9	MW9	MW10	MW11	BH12
		3-Jul-20	3-Jul-20	09-Jul-20	09-Jul-20	3-Jul-20
		1.5-2.1 m	1.5-2.1 m	0.8-1.4 m	0.8-1.4 m	0.8-1.4 m
		5-7 ft	5-7 ft	2.5-4.5 ft	2.5-4.5 ft	2.5-4.5 ft
			DUP-S1			
	Residential	B20-18649-3	B20-18649-4	B20-19548-7	B20-19548-10	B20-18649-8
Acenaphthene	7.9	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	0.67	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	0.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	0.3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	0.78	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(g,h,i)perylene	6.6	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	0.78	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzo(a,h)anthracene	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	0.69	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	62	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3,-cd)pyrene	0.38	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene 2-(1-)	0.99	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	0.6	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	6.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	78	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Soil Standards for shallow soil sites with coarse grained soil in a non-potable groundwater setting.

Dates presented are sample dates

Depths provided are in metres (m) and feet (ft) and are relative to grade

'---' - not analyzed or no standard

B20-18649-3: laboratory sample identifier

Table 15
Synopsis of Soil Laboratory Results
1546 Scott Street, Ottawa, Ontario

Station	Depth Interval (m)	Soil Unit	Parameters Analyzed	Parameters Above Applicable Standards
MW1	0.1-0.6	Sand & Gravel	Metals, PAHs	None
	1.5-2.1	Sand	VOCs, BTEX, PHCs	None
MW2	0.1-0.6	Sand & Gravel	Metals, VOCs, BTEX, PHCs, PAHs, pH	**PHC F1**
MW4	0.1-0.6	Sand & Gravel	Metals	None
	0.8-1.4		VOCs, BTEX, PHCs, PAHs	None
MW5	0.1-0.6	Sand & Gravel	Metals	None
	0.8-1.4		VOCs, BTEX, PHCs, PAHs	None
MW6	0.1-0.6	Sand & Gravel	Metals, PAHs	None
	0.8-1.4		VOCs, BTEX, PHCs	None
MW9	0.1-0.6	Sand & Gravel	Metals	None
	0.8-1.4	Sand	VOCs, BTEX, PHCs	None
	1.5-2.1	Sand	PAHs	None
MW10	0.1-0.6	Sand & Gravel	VOCs, BTEX, PHCs	None
	0.8-1.4	Sand	Metals, PAHs	None
MW11	0.1-0.6	Sand & Gravel	Metals	None
	0.8-1.4	Sand	VOCs, BTEX, PHCs, PAHs	None
BH12	0.1-0.6	Sand & Gravel	Metals	None
	0.8-1.4		VOCs, BTEX, PHCs, PAHs	None

TABLE 16
GROUNDWATER LABORATORY RESULTS - METALS
BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO
(Expressed in ug/L)

Parameter	MOE Generic Standards (1)	O-MW7	O-MW8	MW1	MW2	MW3	MW4	MW5
		3-Jul-20	3-Jul-20	09-Jul-20	09-Jul-20	09-Jul-20	09-Jul-20	09-Jul-20
		B20-18662-2	B20-18662-3	B20-19552-8	B20-19552-9	B20-19552-1	B20-19552-4	B20-19552-3
Antimony	16000	0.9	0.5	0.6	1.0	1.0	0.5	0.7
Arsenic	1500	0.1	0.2	0.3	0.3	0.4	0.5	0.2
Barium	23000	125	148	86	163	589	214	258
Beryllium	53	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Boron (total)	36000	384	237	949	466	327	287	356
Cadmium	2.1	0.016	<0.015	0.017	0.020	0.099	0.057	0.035
Chromium Total	640	<2	<2	2	< 2	< 2	< 2	< 2
Cobalt	52	0.4	1.4	1.5	2.8	1.6	10.9	1.2
Copper	69	<2	<2	< 2	< 2	< 2	< 2	< 2
Lead	20	0.05	0.08	0.13	0.07	0.18	0.24	0.14
Mercury	0.1	0.03	<0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02
Molybdenum	7300	4.1	1.5	16.8	9.0	47.3	4.4	3.4
Nickel	390	5.9	6.3	8.3	6.9	16.7	13.7	8.7
Selenium	50	1	1	1	1	2	3	2
Silver	1.2	<0.1	<0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Thallium	400	0.05	0.06	0.11	0.06	0.07	0.15	0.07
Uranium	330	1.94	1.67	0.19	0.88	1.61	4.75	5.06
Vanadium	200	0.2	0.3	0.1	0.2	0.3	0.2	0.2
Zinc	890	10	<5	< 5	< 5	19	7	< 5

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Groundwater Standards for shallow soil sites in a non-potable groundwater setting.

Dates presented are sample dates

B19-12359-2: laboratory sample identifier

TABLE 16
GROUNDWATER LABORATORY RESULTS - METALS
BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO
(Expressed in ug/L)

Parameter	MOE Generic Standards (1)	MW6	MW9	MW10	MW11
		09-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
		B20-19552-5	B20-19552-2	B20-19552-6	B20-19552-7
Antimony	16000	2.3	0.8	0.5	1.0
Arsenic	1500	0.6	0.3	0.2	0.3
Barium	23000	30	101	205	200
Beryllium	53	< 0.1	< 0.1	< 0.1	< 0.1
Boron (total)	36000	510	300	407	935
Cadmium	2.1	0.041	0.060	< 0.015	0.016
Chromium Total	640	2	< 2	< 2	3
Cobalt	52	4.0	1.8	4.2	0.1
Copper	69	< 2	< 2	< 2	< 2
Lead	20	0.17	0.36	0.11	0.12
Mercury	0.1	< 0.02	< 0.02	< 0.02	< 0.02
Molybdenum	7300	16.2	14.7	5.3	14.0
Nickel	390	20.9	8.2	9.9	1.4
Selenium	50	4	2	< 1	< 1
Silver	1.2	< 0.1	< 0.1	< 0.1	< 0.1
Thallium	400	0.33	< 0.05	< 0.05	0.06
Uranium	330	3.09	2.43	0.96	0.10
Vanadium	200	0.4	0.2	0.4	0.8
Zinc	890	6	19	< 5	< 5

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Groundwater Standards for shallow soil sites in a non-potable groundwater setting.

Dates presented are sample dates

B19-12359-2: laboratory sample identifier

TABLE 17

GROUNDWATER LABORATORY RESULTS - VOCS and PHCS

BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO

(Expressed in ug/L)

Parameter	MOE Generic Standards (1)	O-MW7	O-MW8	O-MW8	MW1	MW2
		3-Jul-20	3-Jul-20	3-Jul-20	09-Jul-20	09-Jul-20
				DUP-W1		
		B20-18662-2	B20-18662-3	B20-18662-4	B20-19552-8	B20-19552-9
Acetone	100000	< 30	< 30	< 30	< 30	< 30
Benzene	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	67000	< 2	< 2	< 2	< 2	< 2
Bromoform	5	< 5	< 5	< 5	< 5	< 5
Bromomethane	0.89	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorobenzene	140	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	2	< 1	< 1	< 1	< 1	< 1
Dibromochloromethane	65000	< 2	< 2	< 2	< 2	< 2
1,2-Dichlorobenzene	150	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	7600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	3500	< 2	< 2	< 2	< 2	< 2
1,1-Dichloroethane	11	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethylene	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
CIS 1,2-Dichloroethylene	1.6	**7.4**	**77.3**	**72.4**	< 0.5	**9.4**
TRANS-1,2-Dichloroethylene	1.6	< 0.5	1.1	0.9	< 0.5	< 0.5
1,2-Dichloropropane	0.58	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichloropropene (Cis + Trans)	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	54	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylene Dibromide	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Hexane	5	< 5	< 5	< 5	< 5	< 5
Methyl Ethyl Ketone	21000	< 20	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	5200	< 20	< 20	< 20	< 20	< 20
Methyl tert-butyl Ether	15	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	26	< 5	< 5	< 5	< 5	< 5
Styrene	43	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	1.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	0.5	**2**	**18.5**	**15.4**	< 0.5	**0.9**
Toluene	320	< 0.5	< 0.5	< 0.5	0.8	< 0.5
1,1,1-Trichloroethane	23	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	0.5	**3.1**	**28.8**	**26.9**	< 0.5	**1.6**
Trichlorofluoromethane	2000	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	0.5	< 0.2	**3**	**2.2**	< 0.2	< 0.2
Xylenes	72	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
F1 (C6-C10) - BTEX	420	< 50	< 50	< 50	< 50	< 50
F2 (C10-C16 Hydrocarbons)	150	< 50	< 50	< 50	< 50	< 50
F3 (C16-C34 Hydrocarbons)	500	< 400	< 400	< 400	< 400	< 400
F4 (C34-C50 Hydrocarbons)	500	< 400	< 400	< 400	< 400	< 400

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Groundwater Standards for shallow soil sites in a non-potable groundwater setting.

Dates presented are sample dates

'---' - not analyzed or no standard

BOLD - value exceeds standard

B20-18662-2: laboratory sample identifier

DUP - field duplicate

TABLE 17

GROUNDWATER LABORATORY RESULTS - VOCS and PHCS

BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO

(Expressed in ug/L)

Parameter	MOE Generic Standards (1)	MW3	MW4	MW5	MW6	MW9
		3-Jul-20	09-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
		B20-18662-1	B20-19552-4	B20-19552-3	B20-19552-5	B20-19552-2
Acetone	100000	< 30	< 30	< 30	150	< 30
Benzene	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	67000	< 2	< 2	< 2	< 2	< 2
Bromoform	5	< 5	< 5	< 5	< 5	< 5
Bromomethane	0.89	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chlorobenzene	140	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	2	**10**	< 1	< 1	< 1	1
Dibromochloromethane	65000	< 2	< 2	< 2	< 2	< 2
1,2-Dichlorobenzene	150	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichlorobenzene	7600	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,4-Dichlorobenzene	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	3500	< 2	< 2	< 2	< 2	< 2
1,1-Dichloroethane	11	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethylene	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
CIS 1,2-Dichloroethylene	1.6	1.2	< 0.5	**135**	< 0.5	**2.2**
TRANS-1,2-Dichloroethylene	1.6	< 0.5	< 0.5	0.7	< 0.5	< 0.5
1,2-Dichloropropane	0.58	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,3-Dichloropropene (Cis + Trans)	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	54	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylene Dibromide	0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
n-Hexane	5	< 5	< 5	< 5	< 5	< 5
Methyl Ethyl Ketone	21000	< 20	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	5200	< 20	< 20	< 20	< 20	< 20
Methyl tert-butyl Ether	15	< 2	< 2	< 2	< 2	< 2
Methylene Chloride	26	< 5	< 5	< 5	< 5	< 5
Styrene	43	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	1.1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	320	0.6	< 0.5	< 0.5	< 0.5	< 0.5
1,1,1-Trichloroethane	23	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	0.5	< 0.5	< 0.5	**4.4**	< 0.5	< 0.5
Trichlorofluoromethane	2000	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride	0.5	< 0.2	< 0.2	**68.2**	< 0.2	< 0.2
Xylenes	72	< 1.1	< 1.1	< 1.1	< 1.1	< 1.1
F1 (C6-C10) - BTEX	420	< 50	< 50	< 50	< 50	< 50
F2 (C10-C16 Hydrocarbons)	150	< 50	< 50	< 50	< 50	< 50
F3 (C16-C34 Hydrocarbons)	500	< 400	< 400	< 400	< 400	< 400
F4 (C34-C50 Hydrocarbons)	500	< 400	< 400	< 400	< 400	< 400

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Groundwater Standards for shallow soil sites in a non-potable groundwater setting.

Dates presented are sample dates

'---' - not analyzed or no standard

BOLD - value exceeds standard

B20-18662-1: laboratory sample identifier

DUP - field duplicate

TABLE 17
GROUNDWATER LABORATORY RESULTS - VOCS and PHCS
BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO
(Expressed in ug/L)

Parameter	MOE Generic Standards (1)	MW10	MW11
		09-Jul-20	09-Jul-20
		B20-19552-6	B20-19552-7
Acetone	100000	< 30	< 30
Benzene	0.5	**0.7**	< 0.5
Bromodichloromethane	67000	< 2	< 2
Bromoform	5	< 5	< 5
Bromomethane	0.89	< 0.5	< 0.5
Carbon Tetrachloride	0.2	< 0.2	< 0.2
Chlorobenzene	140	< 0.5	< 0.5
Chloroform	2	< 1	< 1
Dibromochloromethane	65000	< 2	< 2
1,2-Dichlorobenzene	150	< 0.5	< 0.5
1,3-Dichlorobenzene	7600	< 0.5	< 0.5
1,4-Dichlorobenzene	0.5	< 0.5	< 0.5
Dichlorodifluoromethane	3500	< 2	< 2
1,1-Dichloroethane	11	< 0.5	< 0.5
1,2-Dichloroethane	0.5	< 0.5	< 0.5
1,1-Dichloroethylene	0.5	< 0.5	< 0.5
CIS 1,2-Dichloroethylene	1.6	**1,240**	< 0.5
TRANS-1,2-Dichloroethylene	1.6	**6.6**	< 0.5
1,2-Dichloropropane	0.58	< 0.5	< 0.5
1,3-Dichloropropene (Cis + Trans)	0.5	< 0.5	< 0.5
Ethylbenzene	54	< 0.5	< 0.5
Ethylene Dibromide	0.2	< 0.2	< 0.2
n-Hexane	5	< 5	< 5
Methyl Ethyl Ketone	21000	< 20	< 20
Methyl Isobutyl Ketone	5200	< 20	< 20
Methyl tert-butyl Ether	15	< 2	< 2
Methylene Chloride	26	< 5	< 5
Styrene	43	< 0.5	< 0.5
1,1,1,2-Tetrachloroethane	1.1	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane	0.5	< 0.5	< 0.5
Tetrachloroethylene	0.5	**20.6**	< 0.5
Toluene	320	< 0.5	< 0.5
1,1,1-Trichloroethane	23	< 0.5	< 0.5
1,1,2-Trichloroethane	0.5	< 0.5	< 0.5
Trichloroethylene	0.5	**73.0**	< 0.5
Trichlorofluoromethane	2000	< 5	< 5
Vinyl Chloride	0.5	**81.3**	< 0.2
Xylenes	72	< 1.1	< 1.1
F1 (C6-C10) - BTEX	420	< 50	< 50
F2 (C10-C16 Hydrocarbons)	150	< 50	< 50
F3 (C16-C34 Hydrocarbons)	500	< 400	< 400
F4 (C34-C50 Hydrocarbons)	500	< 400	< 400

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Groundwater Standards for shallow soil sites in a non-potable groundwater setting.

Dates presented are sample dates

'---' - not analyzed or no standard

BOLD - value exceeds standard

B20-19552-6: laboratory sample identifier

DUP - field duplicate

TABLE 18

GROUNDWATER LABORATORY RESULTS - PAHs

BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO

(Expressed in ug/L unless noted otherwise)

Parameter	MOE Generic Standards (1)	O-MW7	O-MW8	O-MW8	MW2	MW3
		3-Jul-20	3-Jul-20	3-Jul-20	09-Jul-20	3-Jul-20
				DUP-W1		
		B20-18662-2	B20-18662-3	B20-18662-4	B20-19552-9	B20-18662-1
Acenaphthene	17	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	1.8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	0.81	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	0.75	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(g,h,i)perylene	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	0.7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzo(a,h)anthracene	0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	44	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	290	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3,-cd)pyrene	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene 2-(1-)	1500	< 1	< 1	< 1	< 1	< 1
Naphthalene	7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	380	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	5.7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Groundwater Standards for shallow soil sites in a non-potable groundwater setting.

Dates presented are sample dates

'---' - not analyzed or no standard

B20-18662-2: laboratory sample identifier

TABLE 18
GROUNDWATER LABORATORY RESULTS - PAHs
BEER STORE - 1546 SCOTT STREET STREET, OTTAWA, ONTARIO
(Expressed in ug/L unless noted otherwise)

Parameter	MOE Generic Standards (1)	MW4	MW5	MW6	MW9	MW10
		09-Jul-20	09-Jul-20	09-Jul-20	08-Jul-20	09-Jul-20
		B20-19552-4	B20-19552-3	B20-19552-5	B20-19552-2	B20-19552-6
Acenaphthene	17	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	1	< 0.05	< 0.05	< 0.05	< 0.05	0.05
Benzo(a)anthracene	1.8	< 0.05	< 0.05	< 0.05	< 0.05	0.06
Benzo(a)pyrene	0.81	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	0.75	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(g,h,i)perylene	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	0.7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzo(a,h)anthracene	0.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	44	< 0.05	< 0.05	< 0.05	< 0.05	0.50
Fluorene	290	< 0.05	< 0.05	< 0.05	< 0.05	0.08
Indeno(1,2,3,-cd)pyrene	0.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene 2-(1-)	1500	< 1	< 1	< 1	< 1	< 1
Naphthalene	7	< 0.05	< 0.05	0.05	< 0.05	< 0.05
Phenanthrene	380	< 0.05	< 0.05	< 0.05	< 0.05	0.18
Pyrene	5.7	< 0.05	< 0.05	< 0.05	< 0.05	0.77

1 - Soil, Sediment and Ground Water Standards for Use Under Part XV.1 of the Environmental Protection Act (2011), Ontario Ministry of the Environment - Table 7 Groundwater Standards for shallow soil sites in a non-potable groundwater setting.

Dates presented are sample dates

'---' - not analyzed or no standard

B20-19552-4: laboratory sample identifier

Table 19
Synopsis of Groundwater Laboratory Results
1546 Scott Street, Ottawa, Ontario

Well	Sample Depth Interval (m)	Sample Date	Parameters Analyzed	Parameters Above Table 7 Standards	Comments
MW1	Lower 2 m	July 9, 2020	VOCs, BTEX, PHCs, PAHs, metals	None	Groundwater samples clear, field parameters stable, and sample deemed representative of formation
MW2	Lower 2 m	July 9, 2020	VOCs, BTEX, PHCs, PAHs, metals	**c12-DCE, PCE, TCE**	
MW3	Lower 2 m	July 3, 2020	VOCs, BTEX, PHCs, PAHs	**Chloroform**	
MW3	Lower 2 m	July 9, 2020	metals	None	
MW4	Lower 2 m	July 9, 2020	VOCs, BTEX, PHCs, PAHs, metals	None	
MW5	Lower 2 m	July 9, 2020	VOCs, BTEX, PHCs, PAHs, metals	**c12-DCE, TCE, VC**	
MW6	Lower 2 m	July 9, 2020	VOCs, BTEX, PHCs, PAHs, metals	None	
O-MW7	Lower 2 m	July 3, 2020	VOCs, BTEX, PHCs, PAHs, metals	**c12-DCE, PCE, TCE**	
O-MW8	Lower 2 m	July 3, 2020	VOCs, BTEX, PHCs, PAHs, metals	**c12-DCE, PCE, TCE, VC**	
MW9	Lower 2 m	July 9, 2020	VOCs, BTEX, PHCs, PAHs, metals	**c12-DCE**	
MW10	Lower 2 m	July 9, 2020	VOCs, BTEX, PHCs, PAHs, metals	**c12-DCE, PCE, TCE, VC, t12-DCE, benzene**	
MW11	Lower 2 m	July 9, 2020	VOCs, BTEX, PHCs, PAHs, metals	None	

Appendix A

Sampling and Analysis Plan

Appendix B

Borehole Logs

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BOREHOLE LOG

BORING NO: **MW1**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig/Air Rotary

DATE EXCAVATED: July 9, 2020

GRADE ELEVATION: 100.09 m

TOC ELEVATION: 100.02 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	METRES	FEET	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
100.09		GROUND SURFACE	100.09	0.0	0	0				
		ASPHALT	99.99	0.10						
		SAND & GRAVEL (FILL) - brown, dry				3		0		Metals, PAHs
								0		
97.96			97.96	2.13		6		0		VOCs, BTEX, PHCs
		LIMESTONE BEDROCK				9				
						12				
						15				
94.43		Sept 1, 2020				18				
						21				
						24				
91.86						27				
91.41						30				
						33				
88.91		July 9, 2020				36				
88.36			88.36	11.73						
		End of Borehole				40				

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

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BOREHOLE LOG

BORING NO: **MW2**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

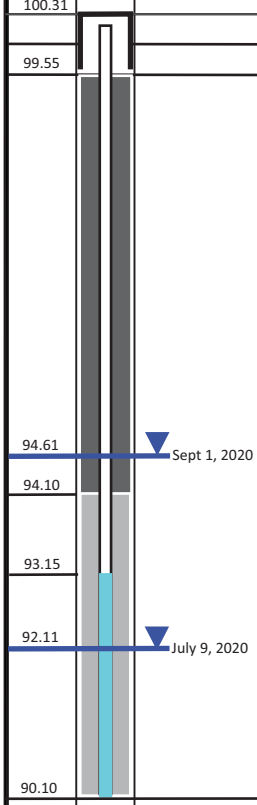
METHOD: Auger Rig/Air Rotary

DATE EXCAVATED: July 8, 2020

GRADE ELEVATION: 100.31 m

TOC ELEVATION: 100.21 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	METRES	FEET	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
100.31		GROUND SURFACE	100.31	0.0	0	0				
		ASPHALT	100.21	0.10						
99.55		SAND & GRAVEL (FILL) - brown, dry	99.55	0.76						
		LIMESTONE BEDROCK								
94.61		Sept 1, 2020								
94.10										
93.15										
92.11		July 9, 2020								
90.10			90.10	10.21						
		End of Borehole								



5

VOCs, BTEX, PHCs
Metals, PAHs, pH

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

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BOREHOLE LOG

BORING NO: **MW3**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig/Wet Rotary

DATE EXCAVATED: July 2, 2020

GRADE ELEVATION: 99.37 m

TOC ELEVATION: 99.27 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	METRES	FEET	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
99.37		GROUND SURFACE	99.37	0.0	0	0				
		ASPHALT	99.27	0.10						
98.30		SAND & GRAVEL (FILL) - brown, moist	98.30	1.07		3		0		
		LIMESTONE BEDROCK - grey, weathered to 1.5 m - horizontal beds/layers (50 to 600 mm) - lateral/open fractures between layers				6 9 12 15 18 21 24 27 30 33 36				
98.30		Sept 1, 2020								
94.40		July 9, 2020								
92.13										
89.00										
85.96			85.96	13.41		40				

End of Borehole

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

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BOREHOLE LOG

BORING NO: **MW4**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig/Air Rotary

DATE EXCAVATED: July 8, 2020

GRADE ELEVATION: 100.36 m

TOC ELEVATION: 100.26 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	METRES	FEET	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
100.36		GROUND SURFACE	100.36	0.0	0	0				
		ASPHALT	100.26	0.10						
		SAND & GRAVEL (FILL) - brown, dry						0		Metals
98.99			98.99	1.37		3		0		VOCs, BTEX, PHCs, PAHs
		LIMESTONE BEDROCK				6				
96.80		Sept 1, 2020				9				
96.05		July 9, 2020				12				
						15				
94.11						18				
93.65						21				
						24				
						27				
90.61			90.61	9.75		30				
		End of Borehole				33				
						36				
						40				

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

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BOREHOLE LOG

BORING NO: **MW5**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig/Air Rotary

DATE EXCAVATED: July 3, 2020

GRADE ELEVATION: 100.23 m

TOC ELEVATION: 100.12 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	METRES	FEET	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
100.23		GROUND SURFACE	100.23	0.0	0	0				
		ASPHALT	100.13	0.10						
		SAND & GRAVEL (FILL) - brown, dry						0		Metals
98.86			98.86	1.37		3		0		VOCs, BTEX, PHCs, PAHs
		LIMESTONE BEDROCK				6				
						9				
						12				
						15				
94.52		Sept 1, 2020				18				
						21				
92.12		July 9, 2020				24				
92.00						27				
91.70						30				
						33				
88.65			88.65	11.58		36				
		End of Borehole				40				

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

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BOREHOLE LOG

BORING NO: **MW6**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig/Air Rotary

DATE EXCAVATED: July 8, 2020

GRADE ELEVATION: 100.15 m

TOC ELEVATION: 100.03 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	METRES	FEET	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
100.15		GROUND SURFACE	100.15	0.0	0	0				
		ASPHALT	100.05	0.10						
		SAND & GRAVEL (FILL) - brown, dry						0		Metals, PAHs
98.78			98.78	1.37		3		0		VOCs, BTEX, PHCs
		LIMESTONE BEDROCK				6				
						9				
95.91		Sept 1, 2020				12				
						15				
						18				
						21				
						24				
92.13						27				
91.62						30				
90.07		July 9, 2020				33				
88.57			88.57	11.58		36				
		End of Borehole				40				

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

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BOREHOLE LOG

BORING NO: **MW9**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig/Wet Rotary

DATE EXCAVATED: July 2, 2020

GRADE ELEVATION: 100.32 m

TOC ELEVATION: 100.22 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	METRES	FEET	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
99.37		GROUND SURFACE	100.32	0.0	0	0				
		ASPHALT	100.22	0.10						
		SAND & GRAVEL (FILL) - brown, dry	99.41	0.91						
		SAND - brown, dry	98.19	2.13						
		LIMESTONE BEDROCK - grey, weathered to 2.4 m - horizontal beds/layers (50 to 600 mm) - lateral/open fractures between layers								
94.43		Sept 1, 2020								
92.12		July 9, 2020								
90.46										
89.96										
86.91		End of Borehole	86.91	13.41		40				

SAMPLE DEPTH	Comb/PID CONC. (ppm)	ANALYTES
3	0	Metals
3	0	VOCs, BTEX, PHCs
6	0	PAHs

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

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BOREHOLE LOG

BORING NO: **MW10**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig/Air Rotary

DATE EXCAVATED: July 9, 2020

GRADE ELEVATION: 100.55 m

TOC ELEVATION: 100.42 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	METRES	FEET	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
100.55		GROUND SURFACE	100.55	0.0	0	0				
		ASPHALT	100.45	0.10						
		SAND & GRAVEL (FILL) - brown, dry				3		0		VOCs, BTEX, PHCs
99.03			99.03	1.52				0		Metals, PAHs
		LIMESTONE BEDROCK				6				
						9				
						12				
						15				
						18				
						21				
						24				
92.34		Sept 1, 2020				27				
91.86										
90.86		July 9, 2020				30				
						33				
88.82			88.82	11.73		36				
		End of Borehole				40				

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

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BOREHOLE LOG

BORING NO: **MW11**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig/Air Rotary

DATE EXCAVATED: July 9, 2020

GRADE ELEVATION: 100.50 m

TOC ELEVATION: 100.36 m

ELEVATION (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (m)	SAMPLE DEPTH	Comb/PID CONC. (ppm)	SAMPLE ANALYZED	ANALYTES
100.50		GROUND SURFACE	100.50	0.0				
		ASPHALT	100.40	0.10				
		SAND & GRAVEL (FILL) - brown, dry				0		Metals
						0		VOCs, BTEX, PHCs, PAHs
98.98		LIMESTONE BEDROCK	98.98	1.52				
94.50		Sept 1, 2020						
92.34								
91.82								
89.20		July 9, 2020						
88.77			88.77	11.73				
		End of Borehole						

METRES: 0

FEET: 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 40

LEGEND

- Sand Pack
- Hydrated Bentonite
- Well Screen
- Potentiometric Surface
- Split Spoon Soil Sample

1.5 inch PVC monitoring well installed

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

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BOREHOLE LOG

BOREHOLE NO: **BH12**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig

DATE DRILLED: July 3, 2020

GRADE ELEVATION: 99.74 m

ELEVATION (m)	DEPTH (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (ft)	SAMPLE DEPTH	VAPOUR CONC. (ppm)		Analytes
	0.0		GROUND SURFACE	99.74	0.0				
			ASPHALT	99.64	0.10				
			SAND & GRAVEL (FILL) - brown, dry				0		Metals
							0		VOCs, BTEX, PHCs, PAHs
				98.52	1.22				
			Refusal at Limestone Bedrock						

METRES: 0, 2, 4, 6

FEET: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26

LEGEND

Split Spoon Soil Sample

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

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BOREHOLE LOG

BOREHOLE NO: **BH13**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig

DATE DRILLED: July 3, 2020

GRADE ELEVATION: 100.27 m

ELEVATION (m)	DEPTH (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (ft)	SAMPLE DEPTH	VAPOUR CONC. (ppm)		Analytes
	0.0		GROUND SURFACE	100.27	0.0				
			ASPHALT	100.17	0.10				
			SAND & GRAVEL (FILL) - brown, dry				0		
							0		
				98.75	1.52				
			Refusal at Limestone Bedrock						

METRES: 0, 2, 4, 6

FEET: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26

LEGEND

Split Spoon Soil Sample

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

PAGE 1 OF 1

BOREHOLE LOG

BOREHOLE NO: **BH14**

CLIENT: STARBANK DEVELOPMENTS 2000 CORP.

PROJECT NO: 0394-05

PROJECT: Phase 2 Environmental Site Assessment

SITE LOCATION: 1546 Scott Street, Ottawa, Ontario

CONTRACTOR: Canadian Environmental Drilling

METHOD: Auger Rig

DATE DRILLED: July 8, 2020

GRADE ELEVATION: 100.39 m

ELEVATION (m)	DEPTH (m)	SYMBOL	SOIL DESCRIPTION	ELEVATION (m)	DEPTH (ft)	SAMPLE DEPTH	VAPOUR CONC. (ppm)	Analytes
	0.0		GROUND SURFACE	100.39	0.0			
			ASPHALT	100.29	0.10			
			SAND & GRAVEL - brown, dry	99.48	0.91		0	
			SAND - brown, dry	98.26	2.13		0	
			SAND & GRAVEL - brown, dry	97.49	2.90		0	
			Refusal at Limestone Bedrock					

METRES: 0, 2, 4, 6

FEET: 0, 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26

LEGEND

Split Spoon Soil Sample

LOGGED BY: C. FRANKRUYTER

LOG PREPARED BY: C. SMITH

CHECKED BY: D. COLEMAN

COLESTAR Environmental Inc.

Appendix C

Laboratory Certificates

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18649 (i)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 10-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9, 4"-2'	MW5, 4"-2'	BH12, 4"-2'	
			Sample I.D.		B20-18649-1	B20-18649-5	B20-18649-7	
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Antimony	µg/g	0.5	EPA 6020	08-Jul-20/O	< 0.5	< 0.5	< 0.5	
Arsenic	µg/g	0.5	EPA 6020	08-Jul-20/O	1.2	1.3	1.3	
Barium	µg/g	1	EPA 6010	08-Jul-20/O	206	104	160	
Beryllium	µg/g	0.2	EPA 6010	08-Jul-20/O	0.2	< 0.2	0.3	
Boron	µg/g	0.5	EPA 6010	08-Jul-20/O	17.9	14.8	13.0	
Cadmium	µg/g	0.5	EPA 6010	08-Jul-20/O	< 0.5	< 0.5	< 0.5	
Chromium	µg/g	1	EPA 6010	08-Jul-20/O	6	8	9	
Cobalt	µg/g	1	EPA 6010	08-Jul-20/O	4	5	5	
Copper	µg/g	1	EPA 6010	08-Jul-20/O	6	8	6	
Lead	µg/g	5	EPA 6010	08-Jul-20/O	10	23	20	
Mercury	µg/g	0.005	EPA 7471A	08-Jul-20/O	0.010	0.015	0.013	
Molybdenum	µg/g	1	EPA 6010	08-Jul-20/O	< 1	< 1	< 1	
Nickel	µg/g	1	EPA 6010	08-Jul-20/O	8	8	9	
Selenium	µg/g	0.5	EPA 6020	08-Jul-20/O	< 0.5	< 0.5	< 0.5	
Silver	µg/g	0.2	EPA 6020	08-Jul-20/O	< 0.2	< 0.2	< 0.2	
Thallium	µg/g	0.1	EPA 6020	08-Jul-20/O	0.1	0.1	0.2	

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18649 (i)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 10-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9, 4"-2'	MW5, 4"-2'	BH12, 4"-2'	
			Sample I.D.		B20-18649-1	B20-18649-5	B20-18649-7	
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Uranium	µg/g	0.1	EPA 6020	08-Jul-20/O	0.5	0.4	0.4	
Vanadium	µg/g	1	EPA 6010	08-Jul-20/O	6	11	9	
Zinc	µg/g	3	EPA 6010	08-Jul-20/O	15	30	20	

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

Christine Burke
Lab Manager

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Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18649 (ii)**

Report To:

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178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 10-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9, 2.5-4.5'	MW5, 2.5-4.5'	BH12, 2.5-4.5'	
			Sample I.D.		B20-18649-2	B20-18649-6	B20-18649-8	
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acetone	µg/g	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	
Benzene	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Bromodichloromethane	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Bromoform	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Bromomethane	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Carbon Tetrachloride	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Monochlorobenzene (Chlorobenzene)	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Chloroform	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dibromochloromethane	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichlorobenzene,1,2-	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichlorobenzene,1,3-	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichlorobenzene,1,4-	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichlorodifluoromethane	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichloroethane,1,1-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18649 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 10-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9, 2.5-4.5'	MW5, 2.5-4.5'	BH12, 2.5-4.5'	
			Sample I.D.		B20-18649-2	B20-18649-6	B20-18649-8	
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Dichloroethane,1,2-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloroethylene,1,1-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloroethene, cis-1,2-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloroethene, trans-1,2-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloropropane,1,2-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloropropene, cis-1,3-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloropropene, trans-1,3-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloropropene 1,3-cis+trans	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Ethylbenzene	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dibromoethane,1,2-(Ethylene Dibromide)	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Hexane	µg/g	0.02	EPA 8260	06-Jul-20/R	2.45	0.68	< 0.02	
Methyl Ethyl Ketone	µg/g	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	
Methyl Isobutyl Ketone	µg/g	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	
Methyl-t-butyl Ether	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18649 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 10-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9, 2.5-4.5'	MW5, 2.5-4.5'	BH12, 2.5-4.5'	
			Sample I.D.		B20-18649-2	B20-18649-6	B20-18649-8	
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Dichloromethane (Methylene Chloride)	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Styrene	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Tetrachloroethane,1,1,1,2-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Tetrachloroethane,1,1,2,2-	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Tetrachloroethylene	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Toluene	µg/g	0.2	EPA 8260	06-Jul-20/R	< 0.2	< 0.2	< 0.2	
Trichloroethane,1,1,1-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Trichloroethane,1,1,2-	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Trichloroethylene	µg/g	0.05	EPA 8260	06-Jul-20/R	< 0.05	< 0.05	< 0.05	
Trichlorofluoromethane	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Vinyl Chloride	µg/g	0.02	EPA 8260	06-Jul-20/R	< 0.02	< 0.02	< 0.02	
Xylene, m,p-	µg/g	0.03	EPA 8260	06-Jul-20/R	0.19	< 0.03	< 0.03	
Xylene, o-	µg/g	0.03	EPA 8260	06-Jul-20/R	< 0.03	< 0.03	< 0.03	
Xylene, m,p,o-	µg/g	0.03	EPA 8260	06-Jul-20/R	0.19	< 0.03	< 0.03	

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

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Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 10-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9, 2.5-4.5'	MW5, 2.5-4.5'	BH12, 2.5-4.5'	
			Sample I.D.		B20-18649-2	B20-18649-6	B20-18649-8	
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
PHC F1 (C6-C10)	µg/g	10	CWS Tier 1	06-Jul-20/R	39	10	< 10	
PHC F1 - BTEX	µg/g	10	CWS Tier 1	06-Jul-20/R	39	10	< 10	
PHC F2 (>C10-C16)	µg/g	5	CWS Tier 1	08-Jul-20/K	27	< 5	< 5	
PHC F3 (>C16-C34)	µg/g	10	CWS Tier 1	08-Jul-20/K	66	36	23	
PHC F4 (>C34-C50)	µg/g	10	CWS Tier 1	08-Jul-20/K	131 [1]	140 [1]	56 [1]	
PHC F4 (Gravimetric)	µg/g	50	CWS Tier 1	10-Jul-20/K	130 [2]	490 [2]	< 50 [2]	
% moisture	%			06-Jul-20/R	3.3	2.2	3.8	

1 . F4 Gravimetric analysis required as chromats did not return to baseline.

2 . Sample silica cleaned to meet Table 1 requirements

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

Christine Burke
Lab Manager

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18649 (iii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 10-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9, 5-7	Dup S1	MW5, 2.5-4.5'	BH12, 2.5-4.5'
			Sample I.D.		B20-18649-3	B20-18649-4	B20-18649-6	B20-18649-8
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	03-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acenaphthene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b+k)fluoranthene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	0.06	< 0.05
Benzo(g,h,i)perylene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzo(a,h)anthracene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	0.06	< 0.05
Fluorene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3,-cd)pyrene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene,1-	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
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CERTIFICATE OF ANALYSIS

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Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 10-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9, 5-7	Dup S1	MW5, 2.5-4.5'	BH12, 2.5-4.5'
			Sample I.D.		B20-18649-3	B20-18649-4	B20-18649-6	B20-18649-8
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	03-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Methylnaphthalene,2-	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene 2-(1-)	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	µg/g	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	0.05	< 0.05

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

Christine Burke
Lab Manager

TESTING REQUIREMENTS

O.Reg 153 Table 1 ☐ Medium/Fine ☒ Coarse ☐ MISA Guidelines
☐ PWQO ☐ ICC ☐ Agricultural (O.Reg 153) ☐ O.Reg 558 Leachate Analysis
☐ Yes ☐ No Record of Site Condition (O.Reg 153) Disposal Site:
☐ Provincial Water Quality Objectives ☐ Landfill Monitoring
☐ Sewer Use By-Law: ☐ Other:

REPORT NUMBER (Lab Use): B20-18649

Are any samples to be submitted intended for Human Consumption under any Drinking Water Regulations? ☐ Yes ☒ No (If yes, submit all Drinking Water Samples on a Drinking Water Chain of Custody)

Indicate Laboratory Samples are submitted to: ☐ Kingston ☐ Ottawa ☒ Richmond Hill ☐ Windsor ☐ Barrie ☐ London

Organization: Colestar
Contact: Dave Coleman
Tel: 905 554 4156
Fax: -4157
Email: dcoleman@colestarenvironmental.com

Address and Invoicing Address (if different): 175 Enchain Ave, Markham, Ont. L3P 4B3
Quote No.: P19_Colestar
Project Name: 0394-02
P.O. No.:
Additional Info:

ANALYSES REQUESTED (Print Test in Boxes)

VOCs/F1	F2-F4	PAHs	Metals (SI)											Suspected Highly Contaminated

TURNAROUND SERVICE REQUESTED (see back page)

☐ Platinum 200% Surcharge
☐ Gold 100% Surcharge
☐ Silver 50% Surcharge
☐ Bronze 25% Surcharge
☒ Standard 5-7 days
☐ Specific Date:

* Sample Matrix Legend: WW=Waste Water, SW=Surface Water, GW=Groundwater, LS=Liquid Sludge, SS=Solid Sludge, S=Soil, Sed=Sediment, PC=Paint Chips, F=Filter, Oil = Oil

Lab No:	Sample Identification	S.P.L.	Sample Matrix*	Date Collected (yy-mm-dd)	Time Collected	Indicate Test For Each Sample By Using A Check Mark In The Box Provided	✓	Field pH	Field Temp.	# Bottles Sample	Field Filtered(Y/N)
	MW3		GW	Jul 3/20		X X X X				6	
	O-MW7					X X X X				6	
	O-MW5					X X X X				6	
	DUP-W1					X X X				4	
1	MW9, 4'-2'		S			X ~~X~~				1	
2	MW9, 2.5-4.5'					X X				3	
3	MW9, 5-7					X				1	
4	Dup S1					X				1	
5	MW5, 4'-2					X				1	
6	MW5, 2.5-4.5					X X X				4	
7	RH12, 4'-2'					X				1	
8	RH12, 2.5-4.5					X X X				4	
~~8~~	~~MW9, 4'-2'~~		S			~~X~~					

Sample #1 Per client email July 6/20

SAMPLE RECEIVING INFORMATION

Sampled by: Carl Frankruyter
Date (yy-mm-dd)/Time: July 3/20
Submitted by:
Date (yy-mm-dd)/Time:

Courier: Client's ☐ Caduceon's ☐ Drop Off A.H. ☒ Caduceon (Pick-up) ☐
Invoice: ☐ # of Pieces 1
Reporting: Report by Fax ☐ Report by Email ☒ Invoice by Email ☒ Invoice by Mail ☐

SAMPLE RECEIVING INFORMATION (LABORATORY USE ONLY)

Received By (print): SHERI Signature:
Date Received (yy-mm-dd): 20-07-06 Time Received: 8:00
Laboratory Prepared Bottles: ☒ Yes ☐ No
Sample Temperature °C: 5.3
Labeled by: HZ

Comments: K -> JAR# 2,3,4,6,8 O -> JAR# 1,5,7, RH -> VIALS

Page 1 of 1
G 94188

White: Lab Copy / Yellow: Invoicing Copy / Pink: Client Copy

Coll: May 2019 Revision No: 22

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18662 (i)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 09-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		O-MW7	O-MW8		
			Sample I.D.		B20-18662-2	B20-18662-3		
			Date Collected		03-Jul-20	03-Jul-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Antimony	µg/L	0.1	EPA 200.8	08-Jul-20/O	0.9	0.5		
Arsenic	µg/L	0.1	EPA 200.8	08-Jul-20/O	0.1	0.2		
Barium	µg/L	1	SM 3120	08-Jul-20/O	125	148		
Beryllium	µg/L	0.1	EPA 200.8	08-Jul-20/O	< 0.1	< 0.1		
Boron	µg/L	5	SM 3120	08-Jul-20/O	384	237		
Cadmium	µg/L	0.015	EPA 200.8	08-Jul-20/O	0.016	< 0.015		
Chromium	µg/L	2	SM 3120	08-Jul-20/O	< 2	< 2		
Cobalt	µg/L	0.1	EPA 200.8	08-Jul-20/O	0.4	1.4		
Copper	µg/L	2	SM 3120	08-Jul-20/O	< 2	< 2		
Lead	µg/L	0.02	EPA 200.8	08-Jul-20/O	0.05	0.08		
Mercury	µg/L	0.02	SM 3112 B	09-Jul-20/O	0.03	< 0.02		
Molybdenum	µg/L	0.1	EPA 200.8	08-Jul-20/O	4.1	1.5		
Nickel	µg/L	0.2	EPA 200.8	08-Jul-20/O	5.9	6.3		
Selenium	µg/L	1	EPA 200.8	08-Jul-20/O	1	1		
Silver	µg/L	0.1	EPA 200.8	08-Jul-20/O	< 0.1	< 0.1		
Thallium	µg/L	0.05	EPA 200.8	08-Jul-20/O	0.05	0.06		
Uranium	µg/L	0.05	EPA 200.8	08-Jul-20/O	1.94	1.67		
Vanadium	µg/L	0.1	EPA 200.8	08-Jul-20/O	0.2	0.3		
Zinc	µg/L	5	SM 3120	08-Jul-20/O	10	< 5		

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18662 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 09-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW3	O-MW7	O-MW8	DUP-W1
			Sample I.D.		B20-18662-1	B20-18662-2	B20-18662-3	B20-18662-4
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	03-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acetone	µg/L	30	EPA 8260	06-Jul-20/R	< 30	< 30	< 30	< 30
Benzene	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	2	EPA 8260	06-Jul-20/R	< 2	< 2	< 2	< 2
Bromoform	µg/L	5	EPA 8260	06-Jul-20/R	< 5	< 5	< 5	< 5
Bromomethane	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	0.2	EPA 8260	06-Jul-20/R	< 0.2	< 0.2	< 0.2	< 0.2
Monochlorobenzene (Chlorobenzene)	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	µg/L	1	EPA 8260	06-Jul-20/R	10	< 1	< 1	< 1
Dibromochloromethane	µg/L	2	EPA 8260	06-Jul-20/R	< 2	< 2	< 2	< 2
Dichlorobenzene,1,2-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene,1,3-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene,1,4-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	µg/L	2	EPA 8260	06-Jul-20/R	< 2	< 2	< 2	< 2
Dichloroethane,1,1-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane,1,2-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene,1,1-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	0.5	EPA 8260	06-Jul-20/R	1.2	7.4	77.3	72.4
Dichloroethene, trans-1,2-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	1.1	0.9
Dichloropropane,1,2-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene 1,3-cis+trans	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Christine Burke
Lab Manager

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18662 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 09-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

	Client I.D.	MW3	O-MW7	O-MW8	DUP-W1
	Sample I.D.	B20-18662-1	B20-18662-2	B20-18662-3	B20-18662-4
	Date Collected	03-Jul-20	03-Jul-20	03-Jul-20	03-Jul-20

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Dibromoethane,1,2- (Ethylene Dibromide)	µg/L	0.2	EPA 8260	06-Jul-20/R	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	µg/L	5	EPA 8260	06-Jul-20/R	< 5	< 5	< 5	< 5
Methyl Ethyl Ketone	µg/L	20	EPA 8260	06-Jul-20/R	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	20	EPA 8260	06-Jul-20/R	< 20	< 20	< 20	< 20
Methyl-t-butyl Ether	µg/L	2	EPA 8260	06-Jul-20/R	< 2	< 2	< 2	< 2
Dichloromethane (Methylene Chloride)	µg/L	5	EPA 8260	06-Jul-20/R	< 5	< 5	< 5	< 5
Styrene	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	2.0	18.5	15.4
Toluene	µg/L	0.5	EPA 8260	06-Jul-20/R	0.6	< 0.5	< 0.5	< 0.5
Trichloroethane,1,1,1-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane,1,1,2-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	3.1	28.8	26.9
Trichlorofluoromethane	µg/L	5	EPA 8260	06-Jul-20/R	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	0.2	EPA 8260	06-Jul-20/R	< 0.2	< 0.2	3.0	2.2
Xylene, m,p-	µg/L	1.0	EPA 8260	06-Jul-20/R	< 1.0	< 1.0	< 1.0	< 1.0
Xylene, o-	µg/L	0.5	EPA 8260	06-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Xylene, m,p,o-	µg/L	1.1	EPA 8260	06-Jul-20/R	< 1.1	< 1.1	< 1.1	< 1.1
PHC F1 (C6-C10)	µg/L	50	MOE E3421	06-Jul-20/R	< 50	< 50	< 50	< 50
PHC F1 - BTEX	µg/L	50	MOE E3421	06-Jul-20/R	< 50	< 50	< 50	< 50
PHC F2 (>C10-C16)	µg/L	50	MOE E3421	07-Jul-20/K	< 50	< 50	< 50	< 50
PHC F3 (>C16-C34)	µg/L	400	MOE E3421	07-Jul-20/K	< 400	< 400	< 400	< 400

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18662 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 09-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW3	O-MW7	O-MW8	DUP-W1
			Sample I.D.		B20-18662-1	B20-18662-2	B20-18662-3	B20-18662-4
			Date Collected		03-Jul-20	03-Jul-20	03-Jul-20	03-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
PHC F4 (>C34-C50)	µg/L	400	MOE E3421	07-Jul-20/K	< 400	< 400	< 400	< 400

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G94188 **REPORT No. B20-18662 (iii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 06-Jul-20
DATE REPORTED: 09-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

	Client I.D.	MW3	O-MW7	O-MW8	DUP-W1
	Sample I.D.	B20-18662-1	B20-18662-2	B20-18662-3	B20-18662-4
	Date Collected	03-Jul-20	03-Jul-20	03-Jul-20	03-Jul-20

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Acenaphthene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	µg/L	0.01	EPA 8270	08-Jul-20/K	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b+k)fluoranthene	µg/L	0.1	EPA 8270	08-Jul-20/K	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzo(a,h)anthracene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3,-cd)pyrene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene,1-	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene,2-	µg/L	0.08	EPA 8270	08-Jul-20/K	< 0.08	< 0.08	< 0.08	< 0.08
Methylnaphthalene 2-(1-)	µg/L	1	EPA 8270	08-Jul-20/K	< 1	< 1	< 1	< 1
Naphthalene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	µg/L	0.05	EPA 8270	08-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

TESTING REQUIREMENTS

- [x] O.Reg 153 — Table 1 — [ ] Medium/Fine — [x] Coarse — [ ] MISA Guidelines
- [ ] RPI — [ ] ICC — [ ] Agricultural (O.Reg 153) — [ ] O.Reg 558 Leachate Analysis
- [ ] Yes — [ ] No — Record of Site Condition (O.Reg 153) — Disposal Site: _____
- [ ] Provincial Water Quality Objectives — [ ] Landfill Monitoring
- [ ] Sewer Use By-Law: _____ — [ ] Other: _____

REPORT NUMBER (Lab Use): B20-18662

Are any samples to be submitted intended for Human Consumption under any Drinking Water Regulations? [ ] Yes [x] No (If yes, submit all Drinking Water Samples on a Drinking Water Chain of Custody)

Indicate Laboratory Samples are submitted to: [ ] Kingston [ ] Ottawa [x] Richmond Hill [ ] Windsor [ ] Barrie [ ] London

Organization: Colestar	Address and Invoicing Address (if different): 178 Fincham Ave, Markham, Ont. L3P 4B3
Contact: Darren Coleman	
Tel: 905-554-4156	
Fax: -4157	Quote No.: P19-Colestar
Email: dcoleman@colestarenvironmental.com	P.O. No.:
	Project Name: 0394-02
	Additional Info:

ANALYSES REQUESTED (Print Test in Boxes): VOCs/F1; F2-F4; PAHs; Metals (SI); Suspected Highly Contaminated

TURNAROUND SERVICE REQUESTED (see back page)

- [ ] Platinum — 200% Surcharge
- [ ] Gold — 100% Surcharge
- [ ] Silver — 50% Surcharge
- [ ] Bronze — 25% Surcharge
- [x] Standard — 5-7 days
- [ ] Specific Date: _____

* Sample Matrix Legend: WW=Waste Water, SW=Surface Water, GW=Groundwater, LS=Liquid Sludge, SS=Solid Sludge, S=Soil, Sed=Sediment, PC=Paint Chips, F=Filter, Oil = Oil

Lab No:	Sample Identification	S.P.L.	Sample Matrix *	Date Collected (yy-mm-dd)	Time Collected	Indicate Test For Each Sample By Using A Check Mark In The Box Provided	✓	Field pH	Field Temp.	# Bottles/ Sample	Field Filtered(Y/N)
1	MW3		GW	Jul 3/20		X X X X	→ NOT field filtered, sediment in bottles unable to process metals			6	client notified
2	O-MW7					X X X X				6	
3	O-MW8					X X X X				6	
4	DUP-W1					X X X				4	
5	MW9, 4'-2'		S			X				1	
6	MW9, 2.5'-4.5'					X X				3	
7	MW9, 5-7					X				1	
	DupS1					X				1	
	MW5, 4'-2'					X				1	
	MW5, 2.5-4.5					X X X				4	
	BH12, 4'-2'					X				1	
	BH12, 2.5-4.5					X X X				4	

SAMPLE SUBMISSION INFORMATION

	Sampled by:	Submitted by:
Print:	Carl Frankruyter	
Sign:		
Date (yy-mm-dd)/Time:	July 3/20	

SHIPPING INFORMATION

- [ ] Client's Courier
- [ ] Caduceon's Courier
- [x] Drop Off A.H.
- [ ] Caduceon (Pick-up)

Invoice: [ ] — # of Pieces: 1

REPORTING / INVOICING

- [ ] Report by Fax
- [x] Report by Email
- [x] Invoice by Email
- [ ] Invoice by Mail

SAMPLE RECEIVING INFORMATION (LABORATORY USE ONLY)

Received By (print): SHERI — Signature:
Date Received (yy-mm-dd): 20-07-06 — Time Received: 8:00
Laboratory Prepared Bottles: [x] Yes [ ] No
Sample Temperature °C: 5.3 — Labeled by: HZ

Comments: K → ambers O → metals, mercury R/H → VIALS

Page 1 of 1

G 94188

White: Lab Copy / Yellow: Invoicing Copy / Pink: Client Copy

CofC, May 2019, Revision No: 22

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88452 **REPORT No. B20-19548 (i)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW6, 4"-2'	MW4, 4"-2'	MW10, 2.5'-4.5'	MW2, 4"-2'
			Sample I.D.		B20-19548-1	B20-19548-4	B20-19548-7	B20-19548-8
			Date Collected		08-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
pH @25°C	pH Units		MOEE3530	13-Jul-20/R				8.13
Antimony	µg/g	0.5	EPA 6020	15-Jul-20/O	< 0.5	< 0.5	< 0.5	< 0.5
Arsenic	µg/g	0.5	EPA 6020	15-Jul-20/O	1.2	1.2	1.1	2.2
Barium	µg/g	1	EPA 6010	14-Jul-20/O	144	240	158	181
Beryllium	µg/g	0.2	EPA 6010	14-Jul-20/O	0.2	0.2	0.3	0.3
Boron	µg/g	0.5	EPA 6010	14-Jul-20/O	3.0	5.5	4.6	8.4
Cadmium	µg/g	0.5	EPA 6010	14-Jul-20/O	< 0.5	< 0.5	< 0.5	< 0.5
Chromium	µg/g	1	EPA 6010	14-Jul-20/O	11	7	13	8
Cobalt	µg/g	1	EPA 6010	14-Jul-20/O	4	3	5	4
Copper	µg/g	1	EPA 6010	14-Jul-20/O	9	6	9	11
Lead	µg/g	5	EPA 6010	14-Jul-20/O	12	14	9	32
Mercury	µg/g	0.005	EPA 7471A	16-Jul-20/O	0.016	0.015	0.022	0.057
Molybdenum	µg/g	1	EPA 6010	14-Jul-20/O	< 1	< 1	< 1	< 1
Nickel	µg/g	1	EPA 6010	14-Jul-20/O	11	10	10	13
Selenium	µg/g	0.5	EPA 6020	15-Jul-20/O	< 0.5	< 0.5	< 0.5	0.6

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

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P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW6, 4"-2'	MW4, 4"-2'	MW10, 2.5'-4.5'	MW2, 4"-2'
			Sample I.D.		B20-19548-1	B20-19548-4	B20-19548-7	B20-19548-8
			Date Collected		08-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Silver	µg/g	0.2	EPA 6020	15-Jul-20/O	< 0.2	< 0.2	< 0.2	< 0.2
Thallium	µg/g	0.1	EPA 6020	15-Jul-20/O	0.1	0.3	0.1	0.3
Uranium	µg/g	0.1	EPA 6020	15-Jul-20/O	0.5	0.4	0.6	0.7
Vanadium	µg/g	1	EPA 6010	14-Jul-20/O	15	5	18	7
Zinc	µg/g	3	EPA 6010	14-Jul-20/O	23	17	30	39

Christine Burke
Lab Manager

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SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW11, 4"-2'	MW1, 4"-2'		
			Sample I.D.		B20-19548-9	B20-19548-11		
			Date Collected		09-Jul-20	09-Jul-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
pH @25°C	pH Units		MOEE3530	13-Jul-20/R	8.03			
Antimony	µg/g	0.5	EPA 6020	15-Jul-20/O	< 0.5	< 0.5		
Arsenic	µg/g	0.5	EPA 6020	15-Jul-20/O	0.8	1.6		
Barium	µg/g	1	EPA 6010	14-Jul-20/O	39	154		
Beryllium	µg/g	0.2	EPA 6010	14-Jul-20/O	< 0.2	0.2		
Boron	µg/g	0.5	EPA 6010	14-Jul-20/O	0.9	7.4		
Cadmium	µg/g	0.5	EPA 6010	14-Jul-20/O	< 0.5	< 0.5		
Chromium	µg/g	1	EPA 6010	14-Jul-20/O	9	9		
Cobalt	µg/g	1	EPA 6010	14-Jul-20/O	4	4		
Copper	µg/g	1	EPA 6010	14-Jul-20/O	8	8		
Lead	µg/g	5	EPA 6010	14-Jul-20/O	< 5	9		
Mercury	µg/g	0.005	EPA 7471A	16-Jul-20/O	0.007	0.019		
Molybdenum	µg/g	1	EPA 6010	14-Jul-20/O	< 1	< 1		
Nickel	µg/g	1	EPA 6010	14-Jul-20/O	6	11		
Selenium	µg/g	0.5	EPA 6020	15-Jul-20/O	< 0.5	0.6		

Christine Burke
Lab Manager

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DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW11, 4"-2'	MW1, 4"-2'		
			Sample I.D.		B20-19548-9	B20-19548-11		
			Date Collected		09-Jul-20	09-Jul-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Silver	µg/g	0.2	EPA 6020	15-Jul-20/O	< 0.2	< 0.2		
Thallium	µg/g	0.1	EPA 6020	15-Jul-20/O	< 0.1	0.1		
Uranium	µg/g	0.1	EPA 6020	15-Jul-20/O	0.4	0.8		
Vanadium	µg/g	1	EPA 6010	14-Jul-20/O	20	9		
Zinc	µg/g	3	EPA 6010	14-Jul-20/O	14	18		

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

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Christine Burke
Lab Manager

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SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

	Client I.D.	MW6, 2.5'-4.5'	DUP-S2	MW4, 2.5'-4.5'	MW10, 4"-2'
	Sample I.D.	B20-19548-2	B20-19548-3	B20-19548-5	B20-19548-6
	Date Collected	08-Jul-20	08-Jul-20	08-Jul-20	09-Jul-20

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Acetone	µg/g	0.5	EPA 8260	10-Jul-20/R	< 0.5		< 0.5	< 0.5
Benzene	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Bromodichloromethane	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Bromoform	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Bromomethane	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Carbon Tetrachloride	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Monochlorobenzene (Chlorobenzene)	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Chloroform	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dibromochloromethane	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dichlorobenzene,1,2-	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Dichlorobenzene,1,3-	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Dichlorobenzene,1,4-	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Dichlorodifluoromethane	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Dichloroethane,1,1-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
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DATE RECEIVED: 10-Jul-20
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SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
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	Client I.D.	MW6, 2.5'-4.5'	DUP-S2	MW4, 2.5'-4.5'	MW10, 4"-2'
	Sample I.D.	B20-19548-2	B20-19548-3	B20-19548-5	B20-19548-6
	Date Collected	08-Jul-20	08-Jul-20	08-Jul-20	09-Jul-20

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Dichloroethane,1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dichloroethylene,1,1-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dichloroethene, cis-1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dichloroethene, trans-1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dichloropropane,1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dichloropropene, cis-1,3-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dichloropropene, trans-1,3-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Dichloropropene 1,3-cis+trans	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Ethylbenzene	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Dibromoethane,1,2-(Ethylene Dibromide)	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Hexane	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	0.64
Methyl Ethyl Ketone	µg/g	0.5	EPA 8260	10-Jul-20/R	< 0.5		< 0.5	< 0.5
Methyl Isobutyl Ketone	µg/g	0.5	EPA 8260	10-Jul-20/R	< 0.5		< 0.5	< 0.5
Methyl-t-butyl Ether	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05

Christine Burke
Lab Manager

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	Client I.D.				MW6, 2.5'-4.5'	DUP-S2	MW4, 2.5'-4.5'	MW10, 4"-2'
	Sample I.D.				B20-19548-2	B20-19548-3	B20-19548-5	B20-19548-6
	Date Collected				08-Jul-20	08-Jul-20	08-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Dichloromethane (Methylene Chloride)	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Styrene	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Tetrachloroethane,1,1,1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Tetrachloroethane,1,1,2,2-	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Tetrachloroethylene	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Toluene	µg/g	0.2	EPA 8260	10-Jul-20/R	< 0.2		< 0.2	< 0.2
Trichloroethane,1,1,1-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Trichloroethane,1,1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Trichloroethylene	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05		< 0.05	< 0.05
Trichlorofluoromethane	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Vinyl Chloride	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02		< 0.02	< 0.02
Xylene, m,p-	µg/g	0.03	EPA 8260	10-Jul-20/R	< 0.03		< 0.03	0.15
Xylene, o-	µg/g	0.03	EPA 8260	10-Jul-20/R	< 0.03		< 0.03	< 0.03
Xylene, m,p,o-	µg/g	0.03	EPA 8260	10-Jul-20/R	< 0.03		< 0.03	0.15

Christine Burke
Lab Manager

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SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

	Client I.D.	MW6, 2.5'-4.5'	DUP-S2	MW4, 2.5'-4.5'	MW10, 4"-2'
	Sample I.D.	B20-19548-2	B20-19548-3	B20-19548-5	B20-19548-6
	Date Collected	08-Jul-20	08-Jul-20	08-Jul-20	09-Jul-20

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
PHC F1 (C6-C10)	µg/g	10	CWS Tier 1	10-Jul-20/R	< 10		< 10	40
PHC F2 (>C10-C16)	µg/g	5	CWS Tier 1	14-Jul-20/K	< 5	< 5	6	55
PHC F3 (>C16-C34)	µg/g	10	CWS Tier 1	14-Jul-20/K	40	31	69	69
PHC F4 (>C34-C50)	µg/g	10	CWS Tier 1	14-Jul-20/K	144 [1]	116 [1]	283 [1]	33 [1]
PHC F4 (Gravimetric)	µg/g	50	CWS Tier 1	16-Jul-20/K	480 [2]	370 [2]	930 [2]	120 [2]
% moisture	%			10-Jul-20/R	3.6	7.8	3.6	3.0

1 . F4 Gravimetric analysis required as chromats did not return to baseline.

2 . Sample silica cleaned

Christine Burke
Lab Manager

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Attention: Darren Coleman

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110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW2, 4"-2'	MW11, 2.5'-4.5'	MW1, 5'-7'	
			Sample I.D.		B20-19548-8	B20-19548-10	B20-19548-12	
			Date Collected		09-Jul-20	09-Jul-20	09-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acetone	µg/g	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	
Benzene	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Bromodichloromethane	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Bromoform	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Bromomethane	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Carbon Tetrachloride	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Monochlorobenzene (Chlorobenzene)	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Chloroform	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dibromochloromethane	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichlorobenzene,1,2-	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichlorobenzene,1,3-	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichlorobenzene,1,4-	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichlorodifluoromethane	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichloroethane,1,1-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

CADUCEON™ ENVIRONMENTAL LABORATORIES
Client committed. Quality assured.

CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88452 **REPORT No. B20-19548 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

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110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
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DATE RECEIVED: 10-Jul-20
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SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW2, 4"-2'	MW11, 2.5'-4.5'	MW1, 5'-7'	
			Sample I.D.		B20-19548-8	B20-19548-10	B20-19548-12	
			Date Collected		09-Jul-20	09-Jul-20	09-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Dichloroethane,1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloroethylene,1,1-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloroethene, cis-1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloroethene, trans-1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloropropane,1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloropropene, cis-1,3-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloropropene, trans-1,3-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Dichloropropene 1,3-cis+trans	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Ethylbenzene	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dibromoethane,1,2-(Ethylene Dibromide)	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Hexane	µg/g	0.02	EPA 8260	10-Jul-20/R	0.98	0.78	< 0.02	
Methyl Ethyl Ketone	µg/g	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	
Methyl Isobutyl Ketone	µg/g	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88452 **REPORT No. B20-19548 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW2, 4"-2'	MW11, 2.5'-4.5'	MW1, 5'-7'	
			Sample I.D.		B20-19548-8	B20-19548-10	B20-19548-12	
			Date Collected		09-Jul-20	09-Jul-20	09-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Methyl-t-butyl Ether	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Dichloromethane (Methylene Chloride)	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Styrene	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Tetrachloroethane,1,1,1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Tetrachloroethane,1,1,2,2-	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Tetrachloroethylene	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Toluene	µg/g	0.2	EPA 8260	10-Jul-20/R	< 0.2	< 0.2	< 0.2	
Trichloroethane,1,1,1-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Trichloroethane,1,1,2-	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Trichloroethylene	µg/g	0.05	EPA 8260	10-Jul-20/R	< 0.05	< 0.05	< 0.05	
Trichlorofluoromethane	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Vinyl Chloride	µg/g	0.02	EPA 8260	10-Jul-20/R	< 0.02	< 0.02	< 0.02	
Xylene, m,p-	µg/g	0.03	EPA 8260	10-Jul-20/R	0.23	< 0.03	< 0.03	
Xylene, o-	µg/g	0.03	EPA 8260	10-Jul-20/R	< 0.03	< 0.03	< 0.03	

Christine Burke
Lab Manager

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Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88452 **REPORT No. B20-19548 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

	Client I.D.			MW2, 4"-2'	MW11, 2.5'-4.5'	MW1, 5'-7'	
	Sample I.D.			B20-19548-8	B20-19548-10	B20-19548-12	
	Date Collected			09-Jul-20	09-Jul-20	09-Jul-20	
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**			
Xylene, m,p,o-	µg/g	0.03	EPA 8260	10-Jul-20/R	0.23	< 0.03	< 0.03
PHC F1 (C6-C10)	µg/g	10	CWS Tier 1	10-Jul-20/R	87	20	20
PHC F2 (>C10-C16)	µg/g	5	CWS Tier 1	14-Jul-20/K	47	< 5	15
PHC F3 (>C16-C34)	µg/g	10	CWS Tier 1	14-Jul-20/K	56	< 10	43
PHC F4 (>C34-C50)	µg/g	10	CWS Tier 1	14-Jul-20/K	16	< 10	133 [1]
PHC F4 (Gravimetric)	µg/g	50	CWS Tier 1	16-Jul-20/K			480 [2]
% moisture	%			10-Jul-20/R	3.8	12.8	3.3

1 . F4 Gravimetric analysis required as chromats did not return to baseline.

2 . Sample silica cleaned

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
Uncertainty values available upon request

Christine Burke
Lab Manager

CADUCEON™ ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88452 **REPORT No. B20-19548 (iii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW6, 4"-2'	MW4, 2.5'-4.5'	MW10, 2.5'-4.5'	MW2, 4"-2'
			Sample I.D.		B20-19548-1	B20-19548-5	B20-19548-7	B20-19548-8
			Date Collected		08-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acenaphthene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	0.08
Benzo(a)anthracene	µg/g	0.05	EPA 8270	15-Jul-20/K	0.06	< 0.05	< 0.05	0.20
Benzo(a)pyrene	µg/g	0.05	EPA 8270	15-Jul-20/K	0.07	< 0.05	< 0.05	0.20
Benzo(b)fluoranthene	µg/g	0.05	EPA 8270	15-Jul-20/K	0.06	< 0.05	< 0.05	0.26
Benzo(b+k)fluoranthene	µg/g	0.05	EPA 8270	15-Jul-20/K	0.09	< 0.05	< 0.05	0.35
Benzo(g,h,i)perylene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	0.12
Benzo(k)fluoranthene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	0.09
Chrysene	µg/g	0.05	EPA 8270	15-Jul-20/K	0.06	< 0.05	< 0.05	0.20
Dibenzo(a,h)anthracene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/g	0.05	EPA 8270	15-Jul-20/K	0.10	< 0.05	< 0.05	0.46
Fluorene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3,-cd)pyrene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	0.14
Methylnaphthalene,1-	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05

Christine Burke
Lab Manager

R.L. = Reporting Limit
Site Analyzed: K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill,B-Barrie
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SAMPLE MATRIX: Soil

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P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW6, 4"-2'	MW4, 2.5'-4.5'	MW10, 2.5'-4.5'	MW2, 4"-2'
			Sample I.D.		B20-19548-1	B20-19548-5	B20-19548-7	B20-19548-8
			Date Collected		08-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Methylnaphthalene,2-	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene 2-(1-)	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/g	0.05	EPA 8270	15-Jul-20/K	0.05	< 0.05	< 0.05	0.27
Pyrene	µg/g	0.05	EPA 8270	15-Jul-20/K	0.09	< 0.05	< 0.05	0.35

Christine Burke
Lab Manager

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JOB/PROJECT NO.:
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WATERWORKS NO.

			Client I.D.		MW11, 2.5'-4.5'	MW1, 4"-2'		
			Sample I.D.		B20-19548-10	B20-19548-11		
			Date Collected		09-Jul-20	09-Jul-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acenaphthene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Acenaphthylene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Anthracene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Benzo(a)anthracene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Benzo(a)pyrene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Benzo(b)fluoranthene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Benzo(b+k)fluoranthene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	0.06		
Benzo(g,h,i)perylene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Benzo(k)fluoranthene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Chrysene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Dibenzo(a,h)anthracene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Fluoranthene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Fluorene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Indeno(1,2,3,-cd)pyrene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Methylnaphthalene,1-	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		

Christine Burke
Lab Manager

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SAMPLE MATRIX: Soil

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW11, 2.5'-4.5'	MW1, 4"-2'		
			Sample I.D.		B20-19548-10	B20-19548-11		
			Date Collected		09-Jul-20	09-Jul-20		
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Methylnaphthalene,2-	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Methylnaphthalene 2-(1-)	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Naphthalene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Phenanthrene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Pyrene	µg/g	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		

µg/g = micrograms per gram (parts per million) and is equal to mg/Kg
F1 C6-C10 hydrocarbons in µg/g, (F1-btex if requested)
F2 C10-C16 hydrocarbons in µg/g, (F2-napth if requested)
F3 C16-C34 hydrocarbons in µg/g, (F3-pah if requested)
F4 C34-C50 hydrocarbons in µg/g
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
Any deviations from the method are noted and reported for any particular sample.
nC6 and nC10 response factor is within 30% of response factor for toluene:
nC10,nC16 and nC34 response factors within 10% of each other:
C50 response factors within 70% of nC10+nC16+nC34 average:
Linearity is within 15%:
All results expressed on a dry weight basis.
Unless otherwise noted all chromatograms returned to baseline by the retention time of nC50.

Unless otherwise noted all extraction, analysis, QC requirements and limits for holding time were met.
If analyzed for F4 and F4G they are not to be summed but the greater of the two numbers are to be used in application to the CWS PHC
QC will be made available upon request.

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Lab Manager

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TESTING REQUIREMENTS

- [x] O.Reg 153 — Table 1 — [ ] Medium/Fine — [x] Coarse — [ ] MISA Guidelines
- [ ] RPI — [ ] ICC — [ ] Agricultural (O.Reg 153) — [ ] O.Reg 558 Leachate Analysis
- [x] Yes — [ ] No — Record of Site Condition (O.Reg 153) — Disposal Site: ____
- [ ] Provincial Water Quality Objectives — [ ] Landfill Monitoring
- [ ] Sewer Use By-Law: ____ — [ ] Other: ____

REPORT NUMBER (Lab Use): B20-19548

Are any samples to be submitted intended for Human Consumption under any Drinking Water Regulations? [ ] Yes [x] No (If yes, submit all Drinking Water Samples on a Drinking Water Chain of Custody)

Indicate Laboratory Samples are submitted to: [ ] Kingston [ ] Ottawa [x] Richmond Hill [ ] Windsor [ ] Barrie [ ] London

Organization:	Colestar
Contact:	Darren Coleman
Tel:	905-554-4156
Fax:	-4157
Email:	dcoleman@colestarenvironmental.com
Address and Invoicing Address (if different)	178 Fincham Ave, Markham, Ont. L3P 4B3
Quote No.:	119-Colestar
P.O. No.:	
Project Name:	0394-02
Additional Info:	

ANALYSES REQUESTED (Print Test in Boxes)

VOCs/F1 | F2-F4 | Metals (SI) | PAHs | pH | Suspected Highly Contaminated

TURNAROUND SERVICE REQUESTED (see back page)

- [ ] Platinum — 200% Surcharge
- [ ] Gold — 100% Surcharge
- [ ] Silver — 50% Surcharge
- [ ] Bronze — 25% Surcharge
- [x] Standard — 5-7 days
- [ ] Specific Date: ____

* Sample Matrix Legend: WW=Waste Water, SW=Surface Water, GW=Groundwater, LS=Liquid Sludge, SS=Solid Sludge, S=Soil, Sed=Sediment, PC=Paint Chips, F=Filter, Oil = Oil

Lab No:	Sample Identification	S.P.L.	Sample Matrix *	Date Collected (yy-mm-dd)	Time Collected	VOCs/F1	F2-F4	Metals (SI)	PAHs	pH	✓	Field pH	Field Temp.	# Bottles Sample	Field Filtered(Y/N)
1	MW6, 4"-2'		Soil	July 8/20				X	X					2	
2	MW6, 2.5'-4.5'		↓	↓		X	X							3	
3	DUP-S2		↓	↓			X							1	
4	MW4, 4"-2'		↓	↓				X						1	
5	MW4, 2.5'-4.5'		↓	↓		X	X		X					4	
6	MW10, 4"-2'		↓	July 9/20		X	X							3	
7	MW10, 2.5'-4.5'		↓	↓				X	X					2	
8	MW2, 4"-2'		↓	↓		X	X	X	X	X				5	
9	MW11, 4"-2'		↓	↓				X		X				1	
10	MW11, 2.5'-4.5'		↓	↓		X	X		X					4	
11	MW1, 4"-2'		↓	↓				X	X					2	
12	MW1, ~~2.5'-4.5'~~ 5'-7'		↓	↓		X	X							3	

SAMPLE SUBMISSION INFORMATION

	Sampled by:	Submitted by:
Print:	Carl Fraunfruyter	
Sign:		
Date (yy-mm-dd)/Time:	July 9/20	

SHIPPING INFORMATION

- [ ] Client's Courier
- [ ] Caduceon's Courier
- [x] Drop Off A.H.
- [ ] Caduceon (Pick-up)

Invoice: [ ]

# of Pieces: 1

REPORTING / INVOICING

- [ ] Report by Fax
- [x] Report by Email
- [x] Invoice by Email
- [ ] Invoice by Mail

SAMPLE RECEIVING INFORMATION (LABORATORY USE ONLY)

Received By (print): SHERI — Signature:

Date Received (yy-mm-dd): 20-07-10 — Time Received: 8:00

Laboratory Prepared Bottles: [x] Yes [ ] No

Sample Temperature °C: 7.4

Labeled by: SM

Comments: RSC site! K → #1,2,3,5,6,7,8,10,11,12
O → #1,4,7,8,9,11 RH→VIALS, JAR# 8, split #9 pH

Page 1 of 1

G88452

White: Lab Copy / Yellow: Invoicing Copy / Pink: Client Copy

CoC, May 2019, Revision No: 22

Quality Assurance Report

Report No: B20-19548

Report To:
Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

Date Submitted:	10-Jul-20	Job/Project No.:	
Samples Submitted By:	Carl Frankruyter	COC No.:	G88452
Samples Received By:	Sheri G.	P.O. Number:	0394-02
Date Reported:	17-Jul-20	Waterworks No.:	
Sample Matrix:	Soil	Quote No.:	
Temperature Upon Receipt		Invoice To:	

Analyses	Qty	Site Analyzed	Analyst Initials	Date Extracted	Date Analyzed	Time Analyzed	Date Approved	Lab Method	Method Reference
% Moisture	7	Richmond Hill	FAL	10-Jul-20	10-Jul-20	15:04	15-Jul-20	A-% moisture RH	
Mercury	6	Holly Lane	PBK	15-Jul-20	16-Jul-20	13:43	16-Jul-20	D-HG-01 (o)	EPA 7471A
Metals - ICP-MS	6	Holly Lane	TPR	15-Jul-20	15-Jul-20	10:00	15-Jul-20	D-ICPMS-01 (o)	EPA 6020
Metals - ICP-OES	6	Holly Lane	JGC	14-Jul-20	14-Jul-20	15:48	15-Jul-20	D-ICP-02 (o)	EPA 6010
pH	2	Richmond Hill	HAZ	13-Jul-20	13-Jul-20	13:16	13-Jul-20	A-pH-02 (rh)	MOEE3530
PHC(F1)	7	Richmond Hill	JE	10-Jul-20	10-Jul-20	07:06	15-Jul-20	C-VPHS-01 (rh)	CWS Tier 1
PHC(F2-F4)	7	Kingston	KPR	14-Jul-20	14-Jul-20	17:24	16-Jul-20	C-PHC-S-001 (k)	CWS Tier 1
SVOC	6	Kingston	sge	14-Jul-20	15-Jul-20	11:02	16-Jul-20	C-NAB-S-001 (k)	EPA 8270
VOC's	7	Richmond Hill	FAL	10-Jul-20	10-Jul-20	07:04	15-Jul-20	C-VOC-02 (rh)	EPA 8260

CADUCEON ENVIRONMENTAL LABORATORIES
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Quality Assurance Report

REPORT No. B20-19548 (i)

PARAMETERS	R.L.	QC DATA								
		LCS Sample (% Rec.)		Duplicate				Lab	Matrix Spike (% Recovery)	
		Found	Limits	Result 1	Result 2	R.P.D.	Limits (%)	Blank	Found	Limits
pH		0.02	0.2 pH units	8.10	8.11	0.01	0.3 pH units	< R.L.	NA	-
Antimony	0.5	94	80-120	< R.L.	< R.L.	NC	30	< R.L.	92	70-130
Arsenic	0.5	103	80-120	2.2	2.3	NC	30	< R.L.	101	70-130
Barium	1	105	80-120	300	301	0.3	30	< R.L.	105	70-130
Beryllium	0.2	96	80-120	0.8	0.8	NC	30	< R.L.	93	70-130
Boron	0.5	96	80-120	4.6	5.4	NC	30	< R.L.	83	70-130
Cadmium	0.5	99	80-120	< R.L.	< R.L.	NC	30	< R.L.	102	70-130
Chromium	1	96	80-120	43	42	2.4	30	< R.L.	95	70-130
Cobalt	1	96	80-120	13	14	7.4	30	< R.L.	93	70-130
Copper	1	98	80-120	26	26	0	30	< R.L.	101	70-130
Lead	5	101	80-120	8	8	NC	30	< R.L.	98	70-130
Mercury	0.005	98	80-120	0.028	0.028	NC	30	< R.L.	101	70-130
Molybdenum	1	95	80-120	< R.L.	< R.L.	NC	30	< R.L.	94	70-130
Nickel	1	101	80-120	32	30	6.5	30	< R.L.	102	70-130
Selenium	0.5	82	80-120	0.6	0.5	NC	30	< R.L.	112	70-130
Silver	0.2	108	80-120	< R.L.	< R.L.	NC	30	0.2	101	70-130
Thallium	0.1	106	80-120	0.3	0.3	NC	30	< R.L.	104	70-130
Uranium	0.1	106	80-120	0.5	0.6	NC	30	< R.L.	108	70-130
Vanadium	1	96	80-120	53	54	1.9	30	< R.L.	95	70-130
Zinc	3	100	80-120	70	71	1.4	30	< R.L.	100	70-130

All values expressed as µg/g unless stated otherwise
LCS = Laboratory Control Standard
R.P.D. = Relative Percent Difference of Duplicate Pairs at > 10 x's M.D.L.
M.D.L. = Method Detection Limit

NC = Not Calculated
- = Not Requested/Analyzed
NA = Not Applicable

CADUCEON ENVIRONMENTAL LABORATORIES
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Quality Assurance Report

Report No: B20-19548 (ii)

Parameter	MDL	QC Data								
		LCS Sample (% Rec.)		Duplicate				Lab Blank	Matrix Spike (% Rec.)	
		Found	Limits	Result 1	Result 2	R.P.D.	Limits (%)		Found	Limits
Acetone	0.5	105 [2]	50-140	<MDL	<MDL [2]	NC	50	<MDL [2]	103 [2]	50-140
Benzene	0.02	100 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	86 [2]	50-140
Bromodichloromethane	0.02	118 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	106 [2]	50-140
Bromoform	0.02	99 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	97 [2]	50-140
Bromomethane	0.05	133 [2]	50-140	<MDL	<MDL [2]	NC	50	<MDL [2]	92 [2]	50-140
Carbon Tetrachloride	0.05	118 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	101 [2]	50-140
Monochlorobenzene (Chlorobenzene)	0.02	116 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	102 [2]	50-140
Chloroform	0.02	124 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	106 [2]	50-140
Dibromochloromethane	0.02	129 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	123 [2]	50-140
Dichlorobenzene,1,2-	0.05	118 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	108 [2]	50-140
Dichlorobenzene,1,3-	0.05	118 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	104 [2]	50-140
Dichlorobenzene,1,4-	0.05	132 [2]	60-130	<MDL	<MDL [2]	NC	50	0.2 [2]	117 [2]	50-140
Dichlorodifluoromethane	0.05	73 [2]	50-140	<MDL	<MDL [2]	NC	50	<MDL [2]	51 [2]	50-140
Dichloroethane,1,1-	0.02	117 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	92 [2]	50-140
Dichloroethane,1,2-	0.02	119 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	115 [2]	50-140
Dichloroethylene,1,1-	0.02	125 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	86 [2]	50-140
Dichloroethene, cis-1,2-	0.02	108 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	88 [2]	50-140
Dichloroethene, trans-1,2-	0.02	128 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	92 [2]	50-140
Dichloropropane,1,2-	0.02	90 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	78 [2]	50-140
Dichloropropene, cis-1,3-	0.02	103 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	92 [2]	50-140
Dichloropropene, trans-1,3-	0.02	128 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	121 [2]	50-140
Ethylbenzene	0.05	109 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	92 [2]	50-140
Dibromoethane,1,2- (Ethylene Dibromide)	0.02	123 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	114 [2]	50-140
Hexane	0.02	105 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	82 [2]	50-140
Methyl Ethyl Ketone	0.5	68 [2]	50-140	<MDL	<MDL [2]	NC	50	<MDL [2]	78 [2]	50-140
Methyl Isobutyl Ketone	0.5	81 [2]	50-140	<MDL	<MDL [2]	NC	50	<MDL [2]	99 [2]	50-140
Methyl-t-butyl Ether	0.05	108 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	101 [2]	50-140

CADUCEON ENVIRONMENTAL LABORATORIES
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Quality Assurance Report

Report No: B20-19548 (ii)

Parameter	MDL	QC Data								
		LCS Sample (% Rec.)		Duplicate				Lab Blank	Matrix Spike (% Rec.)	
		Found	Limits	Result 1	Result 2	R.P.D.	Limits (%)		Found	Limits
Dichloromethane (Methylene Chloride)	0.05	125 [2]	60-130	<MDL	<MDL [2]	NC	50	0.2 [2]	93 [2]	50-140
Styrene	0.05	107 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	93 [2]	50-140
Tetrachloroethane,1,1,1,2-	0.02	108 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	93 [2]	50-140
Tetrachloroethane,1,1,2,2-	0.05	72 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	75 [2]	50-140
Tetrachloroethylene	0.05	114 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	94 [2]	50-140
Toluene	0.2	98 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	91 [2]	50-140
Trichloroethane,1,1,1-	0.02	115 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	97 [2]	50-140
Trichloroethane,1,1,2-	0.02	117 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	111 [2]	50-140
Trichloroethylene	0.05	118 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	102 [2]	50-140
Trichlorofluoromethane	0.02	113 [2]	50-140	<MDL	<MDL [2]	NC	50	<MDL [2]	NC [2]	50-140
Vinyl Chloride	0.02	103 [2]	50-140	<MDL	<MDL [2]	NC	50	<MDL [2]	71 [2]	50-140
Xylene, m,p-	0.03	110 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	91 [2]	50-140
Xylene, o-	0.03	113 [2]	60-130	<MDL	<MDL [2]	NC	50	<MDL [2]	97 [2]	50-140
PHC F1 (C6-C10)	10	103 [3]	80-120	<MDL	<MDL [3]	NC	50	<MDL [3]	108 [3]	60-140
PHC F2 (>C10-C16)	5	88 [4]	80-120	66.0	59.0 [4]	NC	50	<MDL [4]	89 [4]	60-140
PHC F3 (>C16-C34)	10	98 [4]	80-120	357	322 [4]	10	50	<MDL [4]	98 [4]	60-140
PHC F4 (>C34-C50)	10	92 [4]	80-120	316	286 [4]	5	50	<MDL [4]	86 [4]	60-140
PHC F4 (Gravimetric)	50	96 [5]	80-120	80.0	60.0 [5]	NC	50	<MDL [5]	60 [1]	60-140

Soil results are expressed in µg/g unless otherwise stated
Water results are expressed in mg/L, except SVOC and VOC are in µg/L, unless otherwise stated
LCS = Laboratory Control Standard
R.P.D. = Relative Percent Difference of Duplicate Pairs at > 10x M.D.L.
SS = Surrogate Standard
MDL = Method Detection Limit

NC = Not Calculated
-- = Not Requested / Analyzed
NA = Not Applicable

CADUCEON ENVIRONMENTAL LABORATORIES
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Quality Assurance Report

Report No: B20-19548 (iii)

Parameter	MDL	QC Data								
		LCS Sample (% Rec.)		Duplicate				Lab Blank	Matrix Spike (% Rec.)	
		Found	Limits	Result 1	Result 2	R.P.D.	Limits (%)		Found	Limits
Acenaphthene	0.05	97 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	110 [5]	50-140
Acenaphthylene	0.05	97 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	106 [5]	50-140
Anthracene	0.05	97 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	113 [5]	50-140
Benzo(a)anthracene	0.05	104 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	115 [5]	50-140
Benzo(a)pyrene	0.05	109 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	125 [5]	50-140
Benzo(b)fluoranthene	0.05	109 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	123 [5]	50-140
Benzo(g,h,i)perylene	0.05	107 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	119 [5]	50-140
Benzo(k)fluoranthene	0.05	108 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	119 [5]	50-140
Chrysene	0.05	107 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	119 [5]	50-140
Dibenzo(a,h)anthracene	0.05	110 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	127 [5]	50-140
Fluoranthene	0.05	105 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	111 [5]	50-140
Fluorene	0.05	95 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	110 [5]	50-140
Indeno(1,2,3,-cd)pyrene	0.05	112 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	125 [5]	50-140
Methylnaphthalene,2-	0.05	87 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	119 [5]	50-140
Naphthalene	0.05	88 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	103 [5]	50-140
Phenanthrene	0.05	98 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	111 [5]	50-140
Pyrene	0.05	109 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [6]	113 [5]	50-140

Soil results are expressed in µg/g unless otherwise stated
Water results are expressed in mg/L, except SVOC and VOC are in µg/L, unless otherwise stated
LCS = Laboratory Control Standard
R.P.D. = Relative Percent Difference of Duplicate Pairs at > 10x M.D.L.
SS = Surrogate Standard
MDL = Method Detection Limit

NC = Not Calculated
-- = Not Requested / Analyzed
NA = Not Applicable

CADUCEON ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (i)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW3	MW9	MW5	MW4
			Sample I.D.		B20-19552-1	B20-19552-2	B20-19552-3	B20-19552-4
			Date Collected		08-Jul-20	08-Jul-20	08-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Antimony	µg/L	0.1	EPA 200.8	13-Jul-20/O	1.0	0.8	0.7	0.5
Arsenic	µg/L	0.1	EPA 200.8	13-Jul-20/O	0.4	0.3	0.2	0.5
Barium	µg/L	1	SM 3120	14-Jul-20/O	589	101	258	214
Beryllium	µg/L	0.1	EPA 200.8	13-Jul-20/O	< 0.1	< 0.1	< 0.1	< 0.1
Boron	µg/L	5	SM 3120	14-Jul-20/O	327	300	356	287
Cadmium	µg/L	0.015	EPA 200.8	13-Jul-20/O	0.099	0.060	0.035	0.057
Chromium	µg/L	2	SM 3120	14-Jul-20/O	< 2	< 2	< 2	< 2
Cobalt	µg/L	0.1	EPA 200.8	13-Jul-20/O	1.6	1.8	1.2	10.9
Copper	µg/L	2	SM 3120	14-Jul-20/O	< 2	< 2	< 2	< 2
Lead	µg/L	0.02	EPA 200.8	13-Jul-20/O	0.18	0.36	0.14	0.24
Mercury	µg/L	0.02	SM 3112 B	14-Jul-20/O	< 0.02	< 0.02	< 0.02	< 0.02
Molybdenum	µg/L	0.1	EPA 200.8	14-Jul-20/O	47.3	14.7	3.4	4.4
Nickel	µg/L	0.2	EPA 200.8	13-Jul-20/O	16.7	8.2	8.7	13.7
Selenium	µg/L	1	EPA 200.8	13-Jul-20/O	2	2	2	3
Silver	µg/L	0.1	EPA 200.8	13-Jul-20/O	< 0.1	< 0.1	< 0.1	< 0.1
Thallium	µg/L	0.05	EPA 200.8	13-Jul-20/O	0.07	< 0.05	0.07	0.15
Uranium	µg/L	0.05	EPA 200.8	13-Jul-20/O	1.61	2.43	5.06	4.75
Vanadium	µg/L	0.1	EPA 200.8	13-Jul-20/O	0.3	0.2	0.2	0.2
Zinc	µg/L	5	SM 3120	14-Jul-20/O	19	19	< 5	7

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (i)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW6	MW10	MW11	MW1
			Sample I.D.		B20-19552-5	B20-19552-6	B20-19552-7	B20-19552-8
			Date Collected		09-Jul-20	09-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Antimony	µg/L	0.1	EPA 200.8	13-Jul-20/O	2.3	0.5	1.0	0.6
Arsenic	µg/L	0.1	EPA 200.8	13-Jul-20/O	0.6	0.2	0.3	0.3
Barium	µg/L	1	SM 3120	14-Jul-20/O	30	205	200	86
Beryllium	µg/L	0.1	EPA 200.8	13-Jul-20/O	< 0.1	< 0.1	< 0.1	< 0.1
Boron	µg/L	5	SM 3120	14-Jul-20/O	510	407	935	949
Cadmium	µg/L	0.015	EPA 200.8	13-Jul-20/O	0.041	< 0.015	0.016	0.017
Chromium	µg/L	2	SM 3120	14-Jul-20/O	2	< 2	3	2
Cobalt	µg/L	0.1	EPA 200.8	13-Jul-20/O	4.0	4.2	0.1	1.5
Copper	µg/L	2	SM 3120	14-Jul-20/O	< 2	< 2	< 2	< 2
Lead	µg/L	0.02	EPA 200.8	13-Jul-20/O	0.17	0.11	0.12	0.13
Mercury	µg/L	0.02	SM 3112 B	14-Jul-20/O	< 0.02	< 0.02	< 0.02	< 0.02
Molybdenum	µg/L	0.1	EPA 200.8	14-Jul-20/O	16.2	5.3	14.0	16.8
Nickel	µg/L	0.2	EPA 200.8	13-Jul-20/O	20.9	9.9	1.4	8.3
Selenium	µg/L	1	EPA 200.8	13-Jul-20/O	4	< 1	< 1	1
Silver	µg/L	0.1	EPA 200.8	13-Jul-20/O	< 0.1	< 0.1	< 0.1	< 0.1
Thallium	µg/L	0.05	EPA 200.8	13-Jul-20/O	0.33	< 0.05	0.06	0.11
Uranium	µg/L	0.05	EPA 200.8	13-Jul-20/O	3.09	0.96	0.10	0.19
Vanadium	µg/L	0.1	EPA 200.8	13-Jul-20/O	0.4	0.4	0.8	0.1
Zinc	µg/L	5	SM 3120	14-Jul-20/O	6	< 5	< 5	< 5

Christine Burke
Lab Manager

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Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

CADUCEON™ ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (i)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW2			
			Sample I.D.		B20-19552-9			
			Date Collected		09-Jul-20			
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Antimony	µg/L	0.1	EPA 200.8	13-Jul-20/O	1.0			
Arsenic	µg/L	0.1	EPA 200.8	13-Jul-20/O	0.3			
Barium	µg/L	1	SM 3120	14-Jul-20/O	163			
Beryllium	µg/L	0.1	EPA 200.8	13-Jul-20/O	< 0.1			
Boron	µg/L	5	SM 3120	14-Jul-20/O	466			
Cadmium	µg/L	0.015	EPA 200.8	13-Jul-20/O	0.020			
Chromium	µg/L	2	SM 3120	14-Jul-20/O	< 2			
Cobalt	µg/L	0.1	EPA 200.8	13-Jul-20/O	2.8			
Copper	µg/L	2	SM 3120	14-Jul-20/O	< 2			
Lead	µg/L	0.02	EPA 200.8	13-Jul-20/O	0.07			
Mercury	µg/L	0.02	SM 3112 B	14-Jul-20/O	< 0.02			
Molybdenum	µg/L	0.1	EPA 200.8	14-Jul-20/O	9.0			
Nickel	µg/L	0.2	EPA 200.8	13-Jul-20/O	6.9			
Selenium	µg/L	1	EPA 200.8	13-Jul-20/O	1			
Silver	µg/L	0.1	EPA 200.8	13-Jul-20/O	< 0.1			
Thallium	µg/L	0.05	EPA 200.8	13-Jul-20/O	0.06			
Uranium	µg/L	0.05	EPA 200.8	13-Jul-20/O	0.88			
Vanadium	µg/L	0.1	EPA 200.8	13-Jul-20/O	0.2			
Zinc	µg/L	5	SM 3120	14-Jul-20/O	< 5			

Christine Burke
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9	MW5	MW4	MW6
			Sample I.D.		B20-19552-2	B20-19552-3	B20-19552-4	B20-19552-5
			Date Collected		08-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acetone	µg/L	30	EPA 8260	10-Jul-20/R	< 30	< 30	< 30	150
Benzene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	2	EPA 8260	10-Jul-20/R	< 2	< 2	< 2	< 2
Bromoform	µg/L	5	EPA 8260	10-Jul-20/R	< 5	< 5	< 5	< 5
Bromomethane	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	0.2	EPA 8260	10-Jul-20/R	< 0.2	< 0.2	< 0.2	< 0.2
Monochlorobenzene (Chlorobenzene)	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	µg/L	1	EPA 8260	10-Jul-20/R	1	< 1	< 1	< 1
Dibromochloromethane	µg/L	2	EPA 8260	10-Jul-20/R	< 2	< 2	< 2	< 2
Dichlorobenzene,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene,1,3-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene,1,4-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	µg/L	2	EPA 8260	10-Jul-20/R	< 2	< 2	< 2	< 2
Dichloroethane,1,1-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene,1,1-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	2.2	135	< 0.5	< 0.5
Dichloroethene, trans-1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	0.7	< 0.5	< 0.5
Dichloropropane,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene 1,3-cis+trans	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5

Christine Burke
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9	MW5	MW4	MW6
			Sample I.D.		B20-19552-2	B20-19552-3	B20-19552-4	B20-19552-5
			Date Collected		08-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Dibromoethane,1,2- (Ethylene Dibromide)	µg/L	0.2	EPA 8260	10-Jul-20/R	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	µg/L	5	EPA 8260	10-Jul-20/R	< 5	< 5	< 5	< 5
Methyl Ethyl Ketone	µg/L	20	EPA 8260	10-Jul-20/R	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	20	EPA 8260	10-Jul-20/R	< 20	< 20	< 20	< 20
Methyl-t-butyl Ether	µg/L	2	EPA 8260	10-Jul-20/R	< 2	< 2	< 2	< 2
Dichloromethane (Methylene Chloride)	µg/L	5	EPA 8260	10-Jul-20/R	< 5	< 5	< 5	< 5
Styrene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane,1,1,1-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane,1,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	4.4	< 0.5	< 0.5
Trichlorofluoromethane	µg/L	5	EPA 8260	10-Jul-20/R	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	0.2	EPA 8260	10-Jul-20/R	< 0.2	68.2	< 0.2	< 0.2
Xylene, m,p-	µg/L	1.0	EPA 8260	10-Jul-20/R	< 1.0	< 1.0	< 1.0	< 1.0
Xylene, o-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Xylene, m,p,o-	µg/L	1.1	EPA 8260	10-Jul-20/R	< 1.1	< 1.1	< 1.1	< 1.1
PHC F1 (C6-C10)	µg/L	50	MOE E3421	10-Jul-20/R	< 50	< 50	< 50	< 50
PHC F2 (>C10-C16)	µg/L	50	MOE E3421	13-Jul-20/K	< 50	< 50	< 50	< 50
PHC F3 (>C16-C34)	µg/L	400	MOE E3421	13-Jul-20/K	< 400	< 400	< 400	< 400
PHC F4 (>C34-C50)	µg/L	400	MOE E3421	13-Jul-20/K	< 400	< 400	< 400	< 400

Christine Burke
Lab Manager

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CADUCEON™ ENVIRONMENTAL LABORATORIES
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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW10	MW11	MW1	MW2
			Sample I.D.		B20-19552-6	B20-19552-7	B20-19552-8	B20-19552-9
			Date Collected		09-Jul-20	09-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acetone	µg/L	30	EPA 8260	10-Jul-20/R	< 30	< 30	< 30	< 30
Benzene	µg/L	0.5	EPA 8260	10-Jul-20/R	0.7	< 0.5	< 0.5	< 0.5
Bromodichloromethane	µg/L	2	EPA 8260	10-Jul-20/R	< 2	< 2	< 2	< 2
Bromoform	µg/L	5	EPA 8260	10-Jul-20/R	< 5	< 5	< 5	< 5
Bromomethane	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride	µg/L	0.2	EPA 8260	10-Jul-20/R	< 0.2	< 0.2	< 0.2	< 0.2
Monochlorobenzene (Chlorobenzene)	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform	µg/L	1	EPA 8260	10-Jul-20/R	< 1	< 1	< 1	< 1
Dibromochloromethane	µg/L	2	EPA 8260	10-Jul-20/R	< 2	< 2	< 2	< 2
Dichlorobenzene,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene,1,3-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorobenzene,1,4-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	µg/L	2	EPA 8260	10-Jul-20/R	< 2	< 2	< 2	< 2
Dichloroethane,1,1-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethane,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethylene,1,1-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloroethene, cis-1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	1240	< 0.5	< 0.5	9.4
Dichloroethene, trans-1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	6.6	< 0.5	< 0.5	< 0.5
Dichloropropane,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, cis-1,3-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene, trans-1,3-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Dichloropropene 1,3-cis+trans	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5

Christine Burke
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (ii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
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DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW10	MW11	MW1	MW2
			Sample I.D.		B20-19552-6	B20-19552-7	B20-19552-8	B20-19552-9
			Date Collected		09-Jul-20	09-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Dibromoethane,1,2- (Ethylene Dibromide)	µg/L	0.2	EPA 8260	10-Jul-20/R	< 0.2	< 0.2	< 0.2	< 0.2
Hexane	µg/L	5	EPA 8260	10-Jul-20/R	< 5	< 5	< 5	< 5
Methyl Ethyl Ketone	µg/L	20	EPA 8260	10-Jul-20/R	< 20	< 20	< 20	< 20
Methyl Isobutyl Ketone	µg/L	20	EPA 8260	10-Jul-20/R	< 20	< 20	< 20	< 20
Methyl-t-butyl Ether	µg/L	2	EPA 8260	10-Jul-20/R	< 2	< 2	< 2	< 2
Dichloromethane (Methylene Chloride)	µg/L	5	EPA 8260	10-Jul-20/R	< 5	< 5	< 5	< 5
Styrene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane,1,1,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethane,1,1,2,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Tetrachloroethylene	µg/L	0.5	EPA 8260	10-Jul-20/R	20.6	< 0.5	< 0.5	0.9
Toluene	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	0.8	< 0.5
Trichloroethane,1,1,1-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethane,1,1,2-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethylene	µg/L	0.5	EPA 8260	10-Jul-20/R	73.0	< 0.5	< 0.5	1.6
Trichlorofluoromethane	µg/L	5	EPA 8260	10-Jul-20/R	< 5	< 5	< 5	< 5
Vinyl Chloride	µg/L	0.2	EPA 8260	10-Jul-20/R	81.3	< 0.2	< 0.2	< 0.2
Xylene, m,p-	µg/L	1.0	EPA 8260	10-Jul-20/R	< 1.0	< 1.0	< 1.0	< 1.0
Xylene, o-	µg/L	0.5	EPA 8260	10-Jul-20/R	< 0.5	< 0.5	< 0.5	< 0.5
Xylene, m,p,o-	µg/L	1.1	EPA 8260	10-Jul-20/R	< 1.1	< 1.1	< 1.1	< 1.1
PHC F1 (C6-C10)	µg/L	50	MOE E3421	10-Jul-20/R	< 50	< 50	< 50	< 50
PHC F2 (>C10-C16)	µg/L	50	MOE E3421	13-Jul-20/K	< 50	< 50	< 50	< 50
PHC F3 (>C16-C34)	µg/L	400	MOE E3421	13-Jul-20/K	< 400	< 400	< 400	< 400
PHC F4 (>C34-C50)	µg/L	400	MOE E3421	13-Jul-20/K	< 400	< 400	< 400	< 400

Christine Burke
Lab Manager

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (iii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW9	MW5	MW4	MW6
			Sample I.D.		B20-19552-2	B20-19552-3	B20-19552-4	B20-19552-5
			Date Collected		08-Jul-20	08-Jul-20	09-Jul-20	09-Jul-20
Parameter	**Units**	**R.L.**	**Reference Method**	**Date/Site Analyzed**				
Acenaphthene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	µg/L	0.01	EPA 8270	15-Jul-20/K	< 0.01	< 0.01	< 0.01	< 0.01
Benzo(b)fluoranthene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b+k)fluoranthene	µg/L	0.1	EPA 8270	15-Jul-20/K	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(g,h,i)perylene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzo(a,h)anthracene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3,-cd)pyrene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene,1-	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene,2-	µg/L	0.08	EPA 8270	15-Jul-20/K	< 0.08	< 0.08	< 0.08	< 0.08
Methylnaphthalene 2-(1-)	µg/L	1	EPA 8270	15-Jul-20/K	< 1	< 1	< 1	< 1
Naphthalene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	0.05
Phenanthrene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05	< 0.05	< 0.05

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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CERTIFICATE OF ANALYSIS

Final Report

C.O.C.: G88451 **REPORT No. B20-19552 (iii)**

Report To:

Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

DATE RECEIVED: 10-Jul-20
DATE REPORTED: 17-Jul-20
SAMPLE MATRIX: Groundwater

JOB/PROJECT NO.:
P.O. NUMBER: 0394-02
WATERWORKS NO.

			Client I.D.		MW10	MW2		
			Sample I.D.		B20-19552-6	B20-19552-9		
			Date Collected		09-Jul-20	09-Jul-20		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Acenaphthene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Acenaphthylene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Anthracene	µg/L	0.05	EPA 8270	15-Jul-20/K	0.05	< 0.05		
Benzo(a)anthracene	µg/L	0.05	EPA 8270	15-Jul-20/K	0.06	< 0.05		
Benzo(a)pyrene	µg/L	0.01	EPA 8270	15-Jul-20/K	< 0.01	< 0.01		
Benzo(b)fluoranthene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Benzo(b+k)fluoranthene	µg/L	0.1	EPA 8270	15-Jul-20/K	< 0.1	< 0.1		
Benzo(g,h,i)perylene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Benzo(k)fluoranthene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Chrysene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Dibenzo(a,h)anthracene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Fluoranthene	µg/L	0.05	EPA 8270	15-Jul-20/K	0.50	< 0.05		
Fluorene	µg/L	0.05	EPA 8270	15-Jul-20/K	0.08	< 0.05		
Indeno(1,2,3,-cd)pyrene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Methylnaphthalene,1-	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Methylnaphthalene,2-	µg/L	0.08	EPA 8270	15-Jul-20/K	< 0.08	< 0.08		
Methylnaphthalene 2-(1-)	µg/L	1	EPA 8270	15-Jul-20/K	< 1	< 1		
Naphthalene	µg/L	0.05	EPA 8270	15-Jul-20/K	< 0.05	< 0.05		
Phenanthrene	µg/L	0.05	EPA 8270	15-Jul-20/K	0.18	< 0.05		
Pyrene	µg/L	0.05	EPA 8270	15-Jul-20/K	0.77	< 0.05		

Christine Burke
Lab Manager

R.L. = Reporting Limit
Test methods may be modified from specified reference method unless indicated by an *
Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

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TESTING REQUIREMENTS

- [x] O.Reg 153 — Table 1 — [ ] Medium/Fine — [x] Coarse
- [ ] RPI — [ ] ICC — [ ] Agricultural (O.Reg 153)
- [x] Yes — [ ] No — Record of Site Condition (O.Reg 153)
- [ ] Provincial Water Quality Objectives
- [ ] Sewer Use By-Law: _____
- [ ] MISA Guidelines
- [ ] O.Reg 558 Leachate Analysis
- Disposal Site: _____
- [ ] Landfill Monitoring
- [ ] Other: _____

REPORT NUMBER (Lab Use): B20-19552

Are any samples to be submitted intended for Human Consumption under any Drinking Water Regulations? [ ] Yes [x] No (If yes, submit all Drinking Water Samples on a Drinking Water Chain of Custody)

Indicate Laboratory Samples are submitted to: [ ] Kingston [ ] Ottawa [x] Richmond Hill [ ] Windsor [ ] Barrie [ ] London

Organization: Colestar	Address and Invoicing Address (if different): 178 Fincham Ave, Markham, Ont. L3P 4B3
Contact: Darren Coleman	
Tel: 905-554-4156	
Fax: -4157	Quote No.: 19-Colestar
Email: dcoleman@colestarenvironmental.com	P.O. No.:
	Project Name: 0394-02
	Additional Info:

ANALYSES REQUESTED (Print Test in Boxes)

VOCs/F1-F4 | Metals (si) | PAHs | Suspected Highly Contaminated

TURNAROUND SERVICE REQUESTED (see back page)

- [ ] Platinum — 200% Surcharge
- [ ] Gold — 100% Surcharge
- [ ] Silver — 50% Surcharge
- [ ] Bronze — 25% Surcharge
- [x] Standard — 5-7 days
- [ ] Specific Date: _____

* Sample Matrix Legend: WW=Waste Water, SW=Surface Water, GW=Groundwater, LS=Liquid Sludge, SS=Solid Sludge, S=Soil, Sed=Sediment, PC=Paint Chips, F=Filter, Oil = Oil

Lab No:	Sample Identification	S.P.L.	Sample Matrix *	Date Collected (yy-mm-dd)	Time Collected	VOCs/F1-F4	Metals (si)	PAHs	✓	Field pH	Field Temp.	# Bottles Sample	Field Filtered(Y/N)
1	MW3		Water	July 8/20			X					2	
2	MW9					X	X	X				6	
3	MW5					X	X	X				6	
4	MW4			July 9/20		X	X	X				6	
5	MW6					X	X	X				6	
6	MW10					X	X	X				6	
7	MW11					X	X	X				5	
8	MW1					X	X	X				5	
9	MW2					X	X	X				6	
	K → 500ml ambers												
	O → metals, mercury												
	RH → vials												

SAMPLE SUBMISSION INFORMATION

	Sampled by:	Submitted by:
Print:	Carl Frankruyter	
Sign:		
Date (yy-mm-dd)/Time:	July 9/20	

SHIPPING INFORMATION

- [ ] Client's Courier
- [ ] Caduceon's Courier
- [x] Drop Off A.H.
- [ ] Caduceon (Pick-up)

Invoice: [ ]

# of Pieces: 1

REPORTING / INVOICING

- [ ] Report by Fax
- [x] Report by Email
- [x] Invoice by Email
- [ ] Invoice by Mail

SAMPLE RECEIVING INFORMATION (LABORATORY USE ONLY)

Received By (print): SHERI Signature:

Date Received (yy-mm-dd): 20-07-10 Time Received: 8:00

Laboratory Prepared Bottles: [x] Yes [ ] No

Sample Temperature °C: 7.4

Labeled by: SM

Comments: RSC Site!

Page 1 of 1

G 88451

White: Lab Copy / Yellow: Invoicing Copy / Pink: Client Copy

CofC, May 2019, Revision No: 22

Quality Assurance Report

Report No: B20-19552

Report To:
Colestar Environmental
178 Fincham Ave,
Markham ON L3P 4B3
Attention: Darren Coleman

Caduceon Environmental Laboratories
110 West Beaver Creek Rd Unit 14
Richmond Hill ON L4B 1J9
Tel: 289-475-5442
Fax: 289-562-1963

Date Submitted:	10-Jul-20	Job/Project No.:	
Samples Submitted By:	Carl Frankruyter	COC No.:	G88451
Samples Received By:	Sheri G.	P.O. Number:	0394-02
Date Reported:	17-Jul-20	Waterworks No.:	
Sample Matrix:	Groundwater	Quote No.:	
Temperature Upon Receipt		Invoice To:	

Analyses	Qty	Site Analyzed	Analyst Initials	Date Extracted	Date Analyzed	Time Analyzed	Date Approved	Lab Method	Method Reference
Mercury	9	Holly Lane	PBK	14-Jul-20	14-Jul-20	15:29	14-Jul-20	D-HG-02 (o)	SM 3112 B
Metals - ICP-MS	9	Holly Lane	JGC	13-Jul-20	13-Jul-20	12:25	14-Jul-20	D-ICPMS-01 (o)	EPA 200.8
Metals - ICP-OES	9	Holly Lane	AHM	14-Jul-20	14-Jul-20	11:34	14-Jul-20	D-ICP-01 (o)	SM 3120
PHC(F1)	8	Richmond Hill	JE	10-Jul-20	10-Jul-20	17:23	15-Jul-20	C-VPHW-01 (rh)	MOE E3421
PHC(F2-F4)	8	Kingston	KPR	13-Jul-20	13-Jul-20	16:07	16-Jul-20	C-PHC-W-001 (k)	MOE E3421
SVOC	6	Kingston	sge	14-Jul-20	15-Jul-20	10:08	15-Jul-20	C-NAB-W-001 (k)	EPA 8270
VOC's	8	Richmond Hill	JE	10-Jul-20	10-Jul-20	14:48	14-Jul-20	C-VOC-02 (rh)	EPA 8260

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Quality Assurance Report

REPORT No. B20-19552 (i)

PARAMETERS	R.L.	QC DATA								
		LCS Sample (% Rec.)		Duplicate				Lab	Matrix Spike (% Recovery)	
		Found	Limits	Result 1	Result 2	R.P.D.	Limits (%)	Blank	Found	Limits
Antimony	0.1	104	80-120	1.0	1.0	0	30	< R.L	89	70-130
Arsenic	0.1	104	80-120	0.4	0.5	NC	30	< R.L	116	70-130
Barium	1	106	80-120	< R.L	< R.L	NC	30	< R.L	82	70-130
Beryllium	0.1	96	80-120	< R.L	< R.L	NC	30	< R.L	105	70-130
Boron	5	106	70-130	12	12	NC	30	< R.L	106	60-140
Cadmium	0.015	98	80-120	0.099	0.067	NC	30	< R.L	95	70-130
Chromium	2	103	80-120	< R.L	< R.L	NC	30	< R.L	108	70-130
Cobalt	0.1	94	80-120	1.6	1.6	0	30	< R.L	94	70-130
Copper	2	112	80-120	< R.L	< R.L	NC	30	< R.L	117	70-130
Lead	0.02	96	80-120	0.18	0.16	NC	30	< R.L	87	70-130
Mercury	0.02	103	80-120	< R.L	< R.L	NC	30	< R.L	100	70-130
Molybdenum	0.1	102	80-120	47.3	48.9	3.3	30	< R.L	89	70-130
Nickel	0.2	94	80-120	16.7	16.3	2.4	30	< R.L	91	70-130
Selenium	1	86	80-120	2	2	NC	30	< R.L	90	70-130
Silver	0.1	94	80-120	0.02	< R.L	NC	30	< R.L	88	70-130
Thallium	0.05	98	80-120	0.07	< R.L	NC	30	< R.L	87	70-130
Uranium	0.05	93	80-120	1.61	1.58	1.9	30	< R.L	78	70-130
Vanadium	0.1	100	80-120	0.3	0.4	NC	30	< R.L	110	70-130
Zinc	5	107	80-120	< R.L	< R.L	NC	30	< R.L	113	70-130

All values expressed as µg/L unless stated otherwise
LCS = Laboratory Control Standard
R.P.D. = Relative Percent Difference of Duplicate Pairs at > 10 x's M.D.L.
M.D.L. = Method Detection Limit

NC = Not Calculated
- = Not Requested/Analyzed
NA = Not Applicable

CADUCEON ENVIRONMENTAL LABORATORIES
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Quality Assurance Report

Report No: B20-19552 (ii)

Parameter	MDL	QC Data								
		LCS Sample (% Rec.)		Duplicate				Lab Blank	Matrix Spike (% Rec.)	
		Found	Limits	Result 1	Result 2	R.P.D.	Limits (%)		Found	Limits
Acetone	30	71 [5]	50-140	<MDL	<MDL [3]	NC	50	<MDL [5]	100 [5]	50-140
Benzene	0.5	93 [5]	60-130	271	255 [5]	6	50	<MDL [5]	88 [5]	50-140
Bromodichloromethane	2	108 [5]	60-140	<MDL	<MDL [3]	NC	50	<MDL [5]	102 [5]	50-140
Bromoform	5	111 [5]	50-140	<MDL	<MDL [3]	NC	50	<MDL [5]	70 [5]	50-140
Bromomethane	0.5	75 [5]	50-140	<MDL	<MDL [3]	NC	50	<MDL [5]	56 [5]	50-140
Carbon Tetrachloride	0.2	103 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	94 [5]	50-140
Monochlorobenzene (Chlorobenzene)	0.5	110 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	92 [5]	50-140
Chloroform	1	91 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	94 [5]	50-140
Dibromochloromethane	2	119 [1]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	116 [5]	50-140
Dichlorobenzene,1,2-	0.5	112 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	94 [5]	50-140
Dichlorobenzene,1,3-	0.5	122 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	73 [5]	50-140
Dichlorobenzene,1,4-	0.5	112 [5]	60-130	<MDL	<MDL [5]	NC	50	<MDL [5]	100 [5]	50-140
Dichlorodifluoromethane	2	51 [5]	50-140	<MDL	<MDL [3]	NC	50	<MDL [5]	NC [5]	50-140
Dichloroethane,1,1-	0.5	81 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	73 [5]	50-140
Dichloroethane,1,2-	0.5	108 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	109 [5]	50-140
Dichloroethylene,1,1-	0.5	78 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	77	50-140
Dichloroethene, cis-1,2-	0.5	83 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	76 [5]	50-140
Dichloroethene, trans-1,2-	0.5	82 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	70 [5]	50-140
Dichloropropane,1,2-	0.5	90 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	75 [5]	50-140
Dichloropropene, cis-1,3-	0.5	103 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	70 [5]	50-140
Dichloropropene, trans-1,3-	0.5	121 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	62 [5]	50-140
Ethylbenzene	0.5	104 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	78 [5]	50-140
Dibromoethane,1,2- (Ethylene Dibromide)	0.2	131 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	106 [5]	50-140
Hexane	5	83 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	64 [5]	50-140
Methyl Ethyl Ketone	20	76 [5]	50-140	<MDL	<MDL [3]	NC	50	<MDL [5]	60 [5]	50-140
Methyl Isobutyl Ketone	20	107 [5]	50-140	<MDL	<MDL [3]	NC	50	<MDL [5]	60 [5]	50-140
Methyl-t-butyl Ether	2	87 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	80 [5]	50-140

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Quality Assurance Report

Report No: B20-19552 (ii)

Parameter	MDL	QC Data								
		LCS Sample (% Rec.)		Duplicate				Lab Blank	Matrix Spike (% Rec.)	
		Found	Limits	Result 1	Result 2	R.P.D.	Limits (%)		Found	Limits
Dichloromethane (Methylene Chloride)	5	73 [5]	60-130	<MDL	<MDL [5]	NC	50	<MDL [5]	87	50-140
Styrene	0.5	100 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	66 [5]	50-140
Tetrachloroethane,1,1,1,2-	0.5	115 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	82 [5]	50-140
Tetrachloroethane,1,1,2,2-	0.5	98 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	54 [5]	50-140
Tetrachloroethylene	0.5	117 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	93 [5]	50-140
Toluene	0.5	111 [5]	60-130	110	92.3 [5]	17	50	<MDL [5]	84 [5]	50-140
Trichloroethane,1,1,1-	0.5	99 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	84 [5]	50-140
Trichloroethane,1,1,2-	0.5	115 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	103 [5]	50-140
Trichloroethylene	0.5	109 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	94 [5]	50-140
Trichlorofluoromethane	5	85 [5]	50-140	<MDL	<MDL [3]	NC	50	<MDL [5]	58 [5]	50-140
Vinyl Chloride	0.2	60 [5]	50-140	<MDL	<MDL [5]	NC	50	<MDL [5]	70 [5]	50-140
Xylene, m,p-	1.0	109 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	70 [5]	50-140
Xylene, o-	0.5	109 [5]	60-130	<MDL	<MDL [3]	NC	50	<MDL [5]	70 [5]	50-140
PHC F1 (C6-C10)	50	91 [2]	80-120	<MDL	<MDL [6]	NC	50	<MDL [6]	94 [6]	60-140
PHC F2 (>C10-C16)	50	66 [4]	60-140	750	910 [4]	19	50	<MDL [4]	81 [4]	60-110
PHC F3 (>C16-C34)	400	92 [4]	60-140	2700	2800 [4]	NC	50	<MDL [4]	92 [4]	60-140
PHC F4 (>C34-C50)	400	66 [4]	60-140	<MDL	<MDL [4]	NC	50	<MDL [4]	61 [4]	60-140

Soil results are expressed in µg/g unless otherwise stated
Water results are expressed in mg/L, except SVOC and VOC are in µg/L, unless otherwise stated
LCS = Laboratory Control Standard
R.P.D. = Relative Percent Difference of Duplicate Pairs at > 10x M.D.L.
SS = Surrogate Standard
MDL = Method Detection Limit

NC = Not Calculated
-- = Not Requested / Analyzed
NA = Not Applicable

CADUCEON ENVIRONMENTAL LABORATORIES
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Quality Assurance Report

Report No: B20-19552 (iii)

Parameter	MDL	QC Data								
		LCS Sample (% Rec.)		Duplicate				Lab Blank	Matrix Spike (% Rec.)	
		Found	Limits	Result 1	Result 2	R.P.D.	Limits (%)		Found	Limits
Acenaphthene	0.05	114 [2]	50-140	11.2	11.1 [2]	0.897	50	<MDL [3]	108 [2]	50-140
Acenaphthylene	0.05	115 [2]	50-140	11.2	11.1 [2]	0.897	50	<MDL [3]	114 [2]	50-140
Anthracene	0.05	109 [2]	50-140	10.6	10.7 [2]	0.939	50	<MDL [3]	100 [2]	50-140
Benzo(a)anthracene	0.05	111 [2]	50-140	10.9	10.9 [2]	0.000	50	<MDL [3]	106 [2]	50-140
Benzo(a)pyrene	0.01	119 [2]	50-140	11.5	11.6 [2]	0.866	50	<MDL [3]	116 [2]	50-140
Benzo(b)fluoranthene	0.05	116 [2]	50-140	11.4	11.2 [2]	1.77	50	<MDL [3]	126 [2]	50-140
Benzo(g,h,i)perylene	0.05	114 [2]	50-140	11.1	11.2 [2]	0.897	50	<MDL [3]	112 [2]	50-140
Benzo(k)fluoranthene	0.05	114 [2]	50-140	11.0	11.3 [2]	2.69	50	<MDL [3]	112 [2]	50-140
Chrysene	0.05	114 [2]	50-140	11.5	11.3 [2]	1.75	50	<MDL [3]	128 [2]	50-140
Dibenzo(a,h)anthracene	0.05	117 [2]	50-140	11.3	11.4 [2]	0.881	50	<MDL [3]	112 [2]	50-140
Fluoranthene	0.05	113 [2]	50-140	11.2	11.1 [2]	0.897	50	<MDL [3]	114 [2]	50-140
Fluorene	0.05	107 [2]	50-140	10.5	10.5 [2]	0.000	50	<MDL [3]	100 [2]	50-140
Indeno(1,2,3,-cd)pyrene	0.05	117 [2]	50-140	11.4	11.6 [2]	1.74	50	<MDL [3]	108 [2]	50-140
Methylnaphthalene,2-	0.08	104 [2]	50-140	10.2	10.1 [2]	0.985	50	<MDL [3]	100 [2]	50-140
Naphthalene	0.05	110 [2]	50-140	10.8	10.7 [2]	0.930	50	<MDL [3]	104 [2]	50-140
Phenanthrene	0.05	110 [2]	50-140	10.8	10.8 [2]	0.000	50	<MDL [3]	100 [2]	50-140
Pyrene	0.05	117 [2]	50-140	11.5	11.5 [2]	0.000	50	<MDL [3]	112 [2]	50-140

Soil results are expressed in µg/g unless otherwise stated
Water results are expressed in mg/L, except SVOC and VOC are in µg/L, unless otherwise stated
LCS = Laboratory Control Standard
R.P.D. = Relative Percent Difference of Duplicate Pairs at > 10x M.D.L.
SS = Surrogate Standard
MDL = Method Detection Limit

NC = Not Calculated
-- = Not Requested / Analyzed
NA = Not Applicable

Appendix D

Plan of Survey

Appendix E

Qualifications of the Assessor

Darren J. Coleman, P.Eng.

Position: Project Director, Project Manager and Senior Environmental Engineer

BIOGRAPHY

Mr. Coleman has 25 years of experience in environmental site assessments, hydrogeology, risk assessment, risk management, remediation and site closures. He is the president of COLESTAR Environmental Inc. and has led teams of environmental professionals, both at COLESTAR as well as with other companies. He is geographically diverse with experience in nine Canadian provinces/territories. Mr. Coleman has experience with a wide array of contaminants (PHCs, PAHs, cVOCs, pesticides, fertilizers, PCBs and metals) in various media (soil, groundwater, soil gas, sediment and surface water). His projects involve detailed phase 1, 2 & 3 investigations, risk assessment and management, evaluation of remedial/risk management (RRMs) options, development of RRM plans, design and implementation of RRM systems, permitting, Certificates of Approvals, Records of Site Conditions, regulatory compliance, site closures, among other services. Over the years, Mr. Coleman and his team have designed and implemented a number of site assessment and remedial programs that have resulted in successful site closures. These RRMs/remedial programs have included air sparging, soil vapour extraction, bioventing, pump-and-treat, passive and active subsurface vapour collection, venting and treatment systems, barriers, MPE, DPE, biopiles, landfarms, vapour management systems, remedial excavations and engineered caps and containment cells.

REGISTRATIONS/ASSOCIATIONS

Professional Engineer (P.Eng.) – PEO Ontario
Professional Engineer (P.Eng.) – APEGBC British Columbia
Professional Engineer (P.Eng.) – APEGA Alberta
Professional Engineer (P.Eng.) – APEGS Saskatchewan
Professional Engineer (P.Eng.) – APEGM Manitoba
Qualified Person Under O. Reg 153 – ESAs, RAs and TRNs
PEO C of A No. 100140463, COLESTAR Environmental Inc., Responsible Practitioner – D. Coleman, P.Eng.
APEGA Permit to Practise P11799, COLESTAR Environmental Inc., Responsible Practitioner – D. Coleman, P.Eng.
APEGM C of A No. 5200, COLESTAR Environmental Inc., Responsible Practitioner – D. Coleman, P.Eng.
APEGS C of A No. 24384, COLESTAR Environmental Inc., Responsible Practitioner – D. Coleman, P.Eng.
APEGBC C of A, COLESTAR Environmental Inc., Responsible Practitioner – D. Coleman, P.Eng.

ACADEMIC BACKGROUND

B.A.Sc. (1994), Civil Engineering, University of Waterloo, Waterloo, Ontario
Diploma (1989), Civil Engineering Technology, Conestoga College, Kitchener, Ontario

EXPERIENCE HISTORY

COLESTAR Environmental Inc., Markham, Ontario (2008+) – President, Senior Environmental Engineer
Franz Environmental Inc. Mississauga, Ontario (2006 – 2008) – Manager, Mississauga Office
Franz Environmental Inc. Mississauga, Ontario (2000 – 2006) – Project Manager
O'Connor Associates Environmental Inc., Edmonton, AB (1997 – 2000) – Manager, Edmonton Office
O'Connor Associates Environmental Inc., Oakville, ON (1994 – 1997) – Project Manager
Conestoga Rovers and Associates (1991 - 1994)

PROJECT COORDINATION and PROJECT EXPERIENCE

- **Prime Consultant and Project Manager** responsible for the provision of environmental services under a sole source arrangement to large bus company **(Greyhound/First Student)** at sites across Canada. Services have been provided since 2010 at over 250 school bus/coach bus maintenance and fuelling facilities. Services provided include Phase 1, 2 and 3 ESAs, review of programs proposed by others, remediation options analysis, development and implementation of risk management/remedial action plans, screening level risk

assessments, waste characterization and management plans, environmental liability assessments, and remediation/risk management site closures.

- **Project Manager** responsible for the provision of environmental services to Walmart through a paretenership arrangement with another consulting firm Services have been provided since 2018 at over 25 Walmart lube service facilities in western Canada (Saskatchewan, Manitoba, Alberta and British Columbia). Services provided include Phase 1, 2 and 3 ESAs, review of programs proposed by others, remediation options analysis, development and implementation of risk management/remedial action plans and screening level risk assessments.

- **Prime Consultant and Project Manager** providing environmental services [since 2006] to several property developers in Toronto and Brantford. Services have been provided at various sites (brownfields, industrial and commercial properties) and have included a range of contaminants (PHCs, PAHs, metals, PCBs, inorganics). Services provided included Phase 1-3 ESAs, peer reviews, remedial/risk management (RRM) options development and analysis, development and implementation of RRM action plans, risk assessment, acquisition of RSCs and CofAs, permitting, RRM and remediation site closures, among other services. RRMs implemented have included engineered caps, engineered containment cells, passive and active soil gas venting systems, groundwater and vapour barriers, in-situ treatment using MPE, SVE and AS. Some of the RSCs acquired for these clients by Mr. Coleman which included site assessment and remediation are as follows: **RSC 206326, RSC 223589, RSC 223368, RSC 224315 and RSC 224638.**

- **Prime Consultant and Project Manager** responsible for the provision of environmental services under a sole source arrangement to a property developer in Toronto. Services have been provided since 2006 at over 40 sites (Brownfields, waste disposal facilities, tanneries, manufacturing plants and facilities, commercial properties) for a wide range of contaminants (PHCs, PAHs, metals, PCBs, inorganics). Services provided include Phase 1, 2 and 3 ESAs, review of programs proposed by others, remediation options analysis, development and implementation of risk management/remedial action plans, risk assessment, waste characterization and management plans, environmental liability assessments, assistance in acquisition of Brownfield remediation funding, acquisition of RSCs, and remediation/risk management site closures. Remedial and risk management measures implemented at the sites have included remedial excavations, containment of contaminated soil within engineered cells, passive and active soil gas venting/treatment systems beneath future buildings, groundwater and contaminant barriers, groundwater remedial systems, in-situ treatment using MPE, SVE and AS.

- **Project Director, Manager and Prime Consultant** responsible for the management of environmental issues at a power plant (**Ontario Power Generation**) in Ontario since 2003. Mr. Coleman has completed a wide array of projects at this facility, including detailed environmental assessments, landfill monitoring and CofA compliance, risk assessments (human and ecological based) and remedial system and risk management/abatement system design. He has been responsible for the development of remedial options and detailed remedial and risk management plans. Mr. Coleman has designed a number of remedial/risk management systems which are currently in operation at the power plant. He has also conducted detailed treatability studies on existing plant treatment facilities and has carried out risk assessments on wastewater and effluent discharges to a local water body. He was the lead in the design and execution of a number of large scale hydrogeological studies to assess hydraulic trap conditions in the vicinity of contaminant plumes and assess the integrity of large treatment ponds in operation at the plant. He also conducted a large scale naturally occuring contaminant and hydrogeological study at the power plant that demonstarted that petroleum constituents are present naturally in bitumnuous shale inclusions within the limestone bedrock formation that underlies the plant property. The study has been reviewed and accepted by the regulators (TSSA and MOECP) and has been utilized to eliminate the need for further remedial action on unexpected detections of petroleum constitnuents at concentrations above generic standards in bedrock groundwater at

various locations on the plant property.

- **Senior Engineer** responsible for the completion of screening level risk assessments at numerous downstream service station and petroleum bulk plant sites for a large consulting firm in Ontario. The RAs were completed for a petroleum company and included exposure pathway analysis and tabulation of site specific remedial targets/objectives for constituents found at concentrations above generic standards in soil and groundwater. Several of the projects also included soil gas probe installations, soil gas monitoring, tabulation of risk based soil gas objectives and the development and evaluation of RRMs. The RAs followed provincial guidelines and also used the framework set out in federal guidelines for ecological and human health RAs (i.e. Health Canada's HHPQRA and ERE guidelines). Mr. Coleman was responsible for all aspects of the RAs and RRMs, including design, development and implementation and reporting.

- **Senior Remediation Engineer** responsible for the development and analysis of remedial/risk management options for several property parcels located at the Oshawa Harbour. The work was done for a large consulting firm working on behalf of PWGSC and included the development of the preferred options into a detailed remedial action plan. Mr. Coleman was responsible for the RRM component of this study (including reporting).

- **Senior Remediation Engineer** responsible for the development and analysis of lagoon closure options for a wastewater treatment plant located in Niagara-On-The-Lake, Ontario. The work was done for a large consulting firm working on behalf of PWGSC and included the development of numerous options with one selected as preferred and incorporated into a detailed remedial action/lagoon closure plan. Mr. Coleman was responsible for all aspects of this study, including reporting.

- **Prime Consultant and Project Manager** acting to resolve environmental claims for an insurance company. Mr. Coleman has serviced this client since 2006 and has to date successfully restored or remediated a number of sites to the extent necessary to achieve closure of the claims. Services provided have included expert environmental advice, environmental site assessment and investigation, risk assessment/management and remediation, peer review of programs proposed by others (for third parties), environmental liability assessments, air quality studies and site closures. Technologies implemented to restore the sites have included soil vapour extraction, air sparging with SVE as well as ex-situ methods (i.e. excavation with offsite disposal of contaminated media).

- **Project Director and Manager** for the Goose Bay Remediation Project (GBRP) on which Mr. Coleman's former firm (FRANZ) was acting as a sub-consultant. Mr. Coleman served as the project director on the GBRP from 2005 to 2008 and was responsible for all elements of this project. This included the management of a team of environmental professionals including project managers, risk assessment professionals, geologists, hydrogeologists, technicians and technologists. Mr. Coleman oversaw and executed an array of large scale hydrogeological, natural attenuation, remedial and risk management design, and detailed contaminant plume and soil gas assessment projects. He was responsible for the development of remedial/risk management options and the design of detailed remedial/risk management plans. He has also been involved in the modelling of soil gas transport and associated risk assessment of exposure (human) to contaminants in the vapour phase at several area buildings. On past studies at this Base, Mr. Coleman was the lead on groundwater modelling and contaminant transport studies and several risk assessments.

- **Project Manager and Remediation Design Engineer** for the investigation and remediation of offsite and onsite gasoline contamination for a large development company at a Brownfields site in Toronto, Ontario. Offsite remediation was achieved in-situ using a soil vapour extraction/air sparging system that was designed by Mr. Coleman. Mr. Coleman also supervised the construction and operation of the system as well as the pre- and post- remediation investigation programs. Offsite remediation was succesful and to the satisfaction

of both the regulator and the City of Toronto. Mr. Coleman also managed the investigation and remediation of onsite contamination and obtained site closures through the acquisition of four acknowledged Records of Site Conditions corresponding to the development phases (areas/sites) of property. Two of the RSCs were audited by the MOE and both were deemed compliant with the requirements set out under O. Reg 153/04.

- **Project Manager and Senior Remediation Design Engineer** responsible for the design and construction oversight of a 750 m Passive Phase Seperator along SW No. 4 in Goose Bay, Newfoundland and Labrador. The separator was designed to cut-off petroleum hydrocarbon sheens and reduce/eliminate contaminant load to SW4, a surface water body. The separator was designed as a shoreline extension of the water body atop an abandoned dump site, located along the toe of a 35 m high escarpment. The design was cost effective as it eliminated the need for costly geotechnical shoring of the escarpment slope and contaminated waste excavation, handling and disposal. Further, the trench system was designed to act as an in-situ phase separator complete with cofferdam, barrier wall, head load stabilizers, horizontal collection pipe and recovery and monitoring well infrastructure. This passive phase separator design reduced future operation and maintenance costs. The existing three dimensional groundwater flow model for Goose Bay was used by Mr. Coleman in the phase separator design. Simulations were run using this model to establish ideal head load stabilizer positions, i.e., positions which would through natural drawdown optimize sheen capture and containment. The design also included the capture of overland fuel seeps with the resulting flow directed into the trench system via a surface drainage collection system. As part of this work, Mr. Coleman designed high flow treatment systems complete with infrastructure to handle dewatering fluids and sediment. This included pumping systems and fluid/sediment transfer piping, the design of a large phase separator/settling treatment tank using existing infrastructure, and a large sediment containment facility (SCF) complete with liner and leachate collection system. Mr. Coleman oversaw and produced the construction tender documents. Mr. Coleman and the project team also oversaw and supervised the construction of the Works (trench, dewatering system and sediment containment facility). The design was commissioned in March 2006 and the Works constructed by the end of November 2006. The SCF has since been converted into a potential containment/treatment facility for contaminated soil generated at 5 Wing, the design/construction amendments of which were provided by Mr. Coleman's engineering team.

- **Project Manager and Senior Remediation Design Engineer** for a detailed Phase 2 investigation, remediation and risk assessment of petroleum hydrocarbon and hot water soluble boron impacts for a private developer at a Brownfields site in Brantford, Ontario. The remediation and risk assessment/management measures implored at this site included the placement of the HWS boron impacted soil in an engineered containment cell designed by Mr. Coleman. The risk assessment and risk management measures were approved by the Ontario Ministry of the Environment with a Record of Site Condition and Certificate of Property Use issued for the site.

- **Project Manager and Senior Remediation Engineer** responsible for the restoration of a former bulk fuel marine terminal, deemed a Brownfield site, on behalf of a large petroleum company. Contaminants of concern included petroleum hydrocarbons, PAHs (coal tar) and lead. The project consisted of: review of previous investigations, soil waste characterization remedial plan development; acquisition of Certificates of Approval to operate a Waste Management and Waste Disposal Site, remedial excavation, contaminated soil management & treatment, design of soil & groundwater treatment systems (biopiles, soil screening & aeration, oil-water separation, soil washing), and site closure complete with acknowledged Record of Site Condition (**RSC 3566)** and subsequent Transition Notice (**TRN 3397**) into Ontario Regulation 153/04. The RSC was audited by the MOE and was deemed compliant with the requirements set out under O. Reg 153/04.

- **Senior Environmental Engineer and Project Manager** responsible for the soil remediation program at the Fort Nelson Airport in British Columbia from 2001 to 2005. This project involved the site assessment and contaminant delineation of numerous sites situated within the airport, remedial excavation of numerous

contaminated sub-sites, excavation dewatering and treatment, soil staging and management, soil bio-treatability assessments, bio-treatment of petroleum hydrocarbon contaminated soil at the Soil Treatment Facility and landfill assessment, monitoring and permit compliance. Process soil volumes ranged from 15,000 to 30,000 m^3 per annum. Groundwater treatment volumes ranged from 25,000 Litres to 5 Million Litres per annum. Mr. Coleman led the team on this project, designed the groundwater treatment system that was used to treat excavation dewatering fluid (LNAPL and groundwater), and oversaw and managed the site investigations, remedial excavations, soil staging operations and soil bio-treatment processes.

- **Project Manager & Senior Remediation Engineer** for environmental site assessment and remediation of lead and benzo(a)pyrene contamination in soils at a former skeet shooting range at Toronto's Pearson Airport. Conducted gap analysis, designed work plan to collect data required for remediation screening, remedial option evaluation, developed remedial action plan using on-site soil stabilization, and conducted stabilization/solidification treatability studies.

- **Project Manager & Senior Remediation Engineer** for the free product recovery optimization study performed on subsurface LNAPL plumes (4.5 million Litres) at the Upper Tank Farm, 5 Wing Goose Bay. The study was comprehensive and looked at pressure differential and capillary fringe effects on product recovery and included the monitoring of LNAPL plume distributions and the development of methods to optimize LNAPL recovery using existing and alternate infrastructure/technology.

- **Project Manager** responsible for environmental studies carried out at 12 federal prisons across Canada (NB, NS, QC, ON, MB, AB, BC). The study, carried out for Correctional Services Canada, focussed on hydrocarbon and metals contamination and involved Phase II&III ESAs to delineate subsurface contamination, SSRA to assess risks to humans and the environment and the development of remedial options.

- **Project Manager** responsible for the delineation and groundwater/contaminant transport modelling of contamination arising from two light non-aqueous phase plumes present in the subsurface on Moose Factory Island, Ontario.

- **Project Manager** responsible for the environmental study of the former ammunition, ordnance and hazardous material storage depots at a military base in Labrador, Newfoundland. The study involved: a Phase I study; historical hydro-chemical data evaluation; phase II investigation; groundwater and contaminant transport/fate modelling; particle tracking; risk assessment and remedial option development and screening. The contaminants considered in the study included VOCs, cVOCs, PAHs and metals.

- **Project Manager and Remediation Engineer** for the environmental assessment, investigation and remediation of numerous industrial sites located in Saskatchewan and Alberta for a large liquid/solid commodity transport company. The work involved several different media (soil, sediment, soil gas, groundwater and surface water) and an array of contaminants; including, petroleum hydrocarbons, polycyclic aromatic hydrocarbons, chlorinated organic compounds, chlorides, metals and nitrates.

- **Project Manager** responsible for the management of Phase I assessments, Phase II investigations, environmental liability assessments, third party impact assessments, and remediation of numerous commercial and industrial sites in Alberta and Saskatchewan for several large real estate corporations. The sites included paint storage and packaging facilities; truck maintenance and fuelling yards; vehicle maintenance, repair and service complexes; and, commercial malls with dry-cleaners and service stations. Assessments involved soil and groundwater media and one, several or all of the following contaminants; petroleum hydrocarbons, chlorinated volatile organic compounds, polycyclic aromatic hydrocarbons and heavy metals. Remediation activities included remedial excavations with onsite treatment (biopiles/landfarms) or offsite disposal and in-situ treatment (air sparging, vapour extraction, multi-phase

extraction, barrier walls, pump and treat, LNAPL recovery, etc.).

- **Project Manager** responsible for an environmental evaluation of a Printing Facility in Ontario. The project included a detailed Phase I assessment/compliance audit; a vapour and light non-aqueous phase liquid migration pathway(s) assessment; and, development of a remedial work plan.

- **Project Manager** responsible for the investigation and remediation of over 100 petroleum hydrocarbon contaminated sites (bulk plants, marine terminals and service stations) in Ontario, British Columbia, Alberta, Saskatchewan, Manitoba and the Northwest Territories for several large petroleum companies. A number of the sites were in the Canadian north with permafrost conditions. Responsibilities, included: detailed intrusive investigations to delineate free product plumes and soil and groundwater contamination; development and evaluation of remedial options; remedial action plans; remediation system design, tendering, construction and operation; permitting, certificates of approvals and site closures. Remedial systems designed and put in-place at these sites included liners, passive vapour management systems, active vapour management systems, an in-situ phase separator, and pump and treat, LNAPL recovery, multi-phase extraction, vapour extraction, air sparging and soil vapour extraction systems, enhanced bioremediation, natural attenuation, biopiles and landfarming).

- **Project Manager** responsible for a detailed Phase I Environmental Assessment and follow-up Phase II investigation for a large steel pressure vessel manufacturing facility in Alberta. Assessment involved soil and groundwater media and petroleum hydrocarbon and heavy metal contaminants.

- **Project Manager** responsible for the assessment of subsurface salinity impacts associated with four large Brine Ponds for a Petroleum Fractionation facility in Alberta. The assessment involved a review of investigation activities carried out by others as well as the development of Phase II investigation activities designed to ascertain whether saline groundwater may be impacting a nearby freshwater river. The work also included the development of several preliminary remedial/risk management options complete with order of magnitude cost estimates to mitigate the worst case scenario; plume migration towards and into the River.

ATTACHMENT 1

GENERAL CONDITIONS AND LIMITATIONS

COLESTAR ENVIRONMENTAL INC.

GENERAL CONDITIONS AND LIMITATIONS

1. This report has been prepared in accordance with generally accepted engineering and environmental practices for the exclusive use of the client named in the report preceding these limitations. This report is based on the information obtained while conducting authorized environmental assessment, investigation and/or remediation activities at the property or subject site.

2. The findings and conclusions presented in this report are based exclusively on the field parameters measured and the chemical parameters tested at specific locations. It should be recognized that subsurface conditions between and beyond the sample locations may vary. COLESTAR cannot expressly guarantee that subsurface conditions between and beyond the sample locations do not vary from the results determined at the sample locations. Notwithstanding these limitations, this report is believed to provide a reasonable representation of the environmental conditions apparent at the site on the dates of measurement and chemical testing.

3. The contents of this report are based on the information collected during assessment, investigation and/or remediation activities, our understanding of the actual site conditions, and our professional opinion according to the information available at the time of preparation of this report. This report gives a professional opinion and, by consequence, no guarantee is attached to the conclusions or expert advice depicted in this report. This report does not provide a legal opinion in regards to Regulations and applicable Laws.

4. Any use of this report by a third party and any decision made based on the information contained in this report by the third party is the sole responsibility of that third party. COLESTAR will not accept any responsibility for damages resulting from a decision or an action made by a third party based on the information contained in this report.

5. Third party information reviewed and used to develop the opinions and conclusions contained in this report is assumed to be complete and correct. COLESTAR used this information in good faith and will not accept any responsibility for deficiencies, mis-interpretation or incompleteness of the information contained in documents prepared by third parties.

6. The services performed and outlined in this report were based, in part, upon visual observations of the site and attendant structures. Our opinion cannot be extended to portions of the site which were unavailable for direct observation, reasonably beyond our control.

7. The objective of this report was to assess environmental conditions at the site, within the context of the agreed scope of work and existing environmental regulations within the applicable jurisdiction. Evaluating compliance of past or future owners with applicable local, provincial and federal government laws and regulations was not included in our contract for services.