PHASE II ENVIRONMENTAL SITE ASSESSMENT

No Name Gas

2911 Barton St. S, Hamilton, Ontario

Prepared for:

ACME Oil & Gas

Prepared by:

Plan B Environmental
301 James St S
Hamilton, Ontario
Canada

Report Date: 2023-02-21
Project No.: PN12345

2023-02-21
Ref. No. PN12345

ACME Oil & Gas
350, 55th Street
Houston, Texas
United States 78654

Attention: ACME Oil & Gas

Re: **Phase II Environmental Site Assessment Report**
No Name Gas
2911 Barton St. S, Hamilton, Ontario

Plan B Environmental is pleased to submit our report describing the findings of the Phase II Environmental Site Assessment of No Name Gas. This assessment was prepared in general accordance with the National Standard of Canada: Phase II Environmental Site Assessments (CSA Standard Z769-00).

The purpose of the Phase II ESA was to confirm the presence of and characterize the substances of concern at the property for the purpose of providing sufficient information regarding the nature and extent of contamination to assist in making informed business decisions about the property.

If you have any questions or require further clarification of the report findings, please contact the undersigned at your convenience. Thank you for the opportunity to be of service to ACME Oil & Gas.

Yours very truly,

Plan B Environmental

John Smith, P.Eng.
Sr. Environmental Engineer

David Doe, P.Eng.
Engineering Manager

TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY

ACME Oil & Gas engaged Plan B Environmental to conduct a Phase II Environmental Site Assessment (ESA) of the property No Name Gas located at 2911 Barton St. S, Hamilton, Ontario subsequently referred to in this report as "the property". This assessment was prepared in general accordance with the National Standard of Canada: Phase II Environmental Site Assessment (CSA Standard Z769-00) dated 2000 and reaffirmed in 2018.

1.1 Statement of Objectives

The purpose of conducting this Phase II ESA is to acquire and evaluate information sufficient to achieve the objectives set forth below.

- Provide information for a liability assessment of a proposed acquisition.

The Phase II ESA is intended as a stand-alone study.

1.2 Absence, Presence, and Extent of Substances of Concern

Based on the results of this assessment, the following impacted soil in exceedance of applicable guidelines or criteria was identified:

- Impacted soil from petroleum hydrocarbons was found on the north side of the underground storage tanks.

Based on the results of this assessment, the following impacted groundwater in exceedance of applicable guidelines or criteria was identified:

- Impacted groundwater from petroleum hydrocarbons was found in monitoring wells on the north side of the underground storage tanks.

1.3 Conclusions and Recommendations

There was evidence of the substances of concern in excess of applicable guidelines and criteria as discussed below.

- Impacted soil and groundwater from petroleum hydrocarbons on the north side of the underground storage tanks. Impacted soil and groundwater from petroleum hydrocarbons on the north side of the underground storage tanks.

Based on the results of this assessment the following further work is recommended:

- Additional borings and monitoring wells to delineate the extend of the impacted soil and groundwater on the north side of the underground storage tanks.

2.0 INTRODUCTION

ACME Oil & Gas engaged Plan B Environmental to conduct a Phase II Environmental Site Assessment (ESA) of the property No Name Gas located at 2911 Barton St. S, Hamilton, Ontario subsequently referred to in this report as "the subject property". The location of the subject property is shown in Appendix I.

This assessment was prepared in general accordance with the National Standard of Canada: Phase II Environmental Site Assessment (CSA Standard Z769-00) dated 2000 and reaffirmed in 2018.

The Phase II ESA was authorized by the Client on 2023-01-24.

2.1 Statement of Objectives

The purpose of conducting this Phase II ESA is to acquire and evaluate information sufficient to achieve the objectives set forth below.

- Provide information for a liability assessment of a proposed acquisition.

2.2 Site Description

The subject property is located at 2911 Barton St. S, Hamilton, Ontario and consists of gasoline dispensing station and convenience store. It is approximately 1.1 acres in size and rectangular in shape. The legal description of the subject property is Section 17, Lot 643, Parcel 23. The area is zoned as C1. A site plan for the subject property is provided in Appendix I.

2.3 Property Ownership

The contact information for the property owner is provided in the table below.

	Property Owner
Name:	No Name Gas Inc.
Address:	2911 Barton St. S, Hamilton, Ontario
Contact:	D. Duck
Telephone:	
Email:	

2.4 Current and Proposed Future Uses

The subject property is currently used for a gasoline dispensing station and convenience store.

The proposed future use of the subject property is as gasoline dispensing station and convenience store.

2.5 Applicable Site Condition Standards

The applicable site condition standard applied in this Phase II ESA was selected based on the following information:

- The Site is located within 30 m of a water body.
- The Site is intended for commercial use.
- The pH values tested in the subsurface soil samples during this Phase Two ESA are within the acceptable range of 5 to 11.
- The pH values tested in the surface soil samples during this Phase II ESA are within the acceptable range of 5 to 9.
- The Site is not considered to be a shallow soil property.
- Based on well records, there are no potable water wells located at the Site or within 250 m radius of the Site.

Based on the above information the applicable site condition standard selected was Ontario MECP "Soil, ground water and sediment standards for use under PART XV.1 of the Environmental Protection Act, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition".

3.0 BACKGROUND

3.1 Physical Setting

The topography of the property is relatively flat with a moderate slope to the north. The topography of the surrounding area is slightly rolling with a gentle slope to the north.

Soil in the Hamilton area is predominately derived from glacial drift (glaciolacustrine sediments in the lower city; glacial tills in the upper city) and from limestone and shale erosion.

Groundwater flow is generally towards the southeast. Lake Ontario is approximately 2 km to the southeast of the property.

3.2 Site History and Land Use

The buildings and structures located on the subject property are provided in the table below.

Buildings and Structures

Age (years)	Stories	Usage	Construction
21	1	Convenience store	The building foundation is concrete slab-on-grade.

The history of the site is farmland until 1946 then it was used for a gasoline dispensing station.

3.3 Adjacent and Vicinity Property Use

The current adjacent property uses are provided in the table below.

Adjacent Property Use

North:	Offices
South:	Gasoline dispensing station
East:	Offices
West:	Restaurant

The general area of the property is used for commercial and industrial.

3.4 Summary of Previous Assessments

The following previous assessments were reviewed for the property:

Phase I ESA by Plan B Environmental dates 2022-12-20.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of the Site Investigation

The scope of work for this assessment was in general accordance with the National Standard of Canada: Phase II Environmental Site Assessment (CSA Standard Z769-00). This standard is intended to provide a consistent framework and minimum requirements for conducting Phase II ESAs that can accommodate broader regulatory and liability requirements, as well as address pertinent site-specific requirements.

Specifically, the scope of work may include the following tasks:

- Review of readily available previous reports.
- Preparation of a sampling and analysis plan (SAP).
- Clearance of public and private underground utility services prior to the commencement of the subsurface investigation.
- Drilling of boreholes.
- Installation of monitoring wells.
- Conduct elevation survey of boreholes and monitoring wells.
- Conduct soil sampling and field screening to optimize sample selection for chemical analyses at an accredited laboratory.
- Carry out groundwater level measurements in the monitoring wells to determine the groundwater elevation and establish the local groundwater flow direction.
- Collection of groundwater samples from monitoring wells for chemical analysis at an accredited laboratory.
- Collection of surface water and/or sediment samples, if surface water is present for chemical analysis at an accredited laboratory.

- Interpretation and evaluation of results of the Investigation.
- Preparation of a report detailing the findings and recommendations of the Phase II ESA.

4.2 Sampling and Analysis Plan

Soil, groundwater, and where applicable surface water and sediments within the previously identified areas of potential environmental concern (APECs) were investigated as part of this Phase II ESA.

The sampling and analysis plan (SAP) was designed to achieve reproducible chemical testing results for the substances of concern in samples of collected from locations likely to have the highest concentrations. The SAP included tests which provide quality assurance (QA) and techniques that provide quality control (QC) over the chemical analysis. A completed chain of custody record accompanied each sample shipment to the analytical laboratory. Chain of custody records provide written documentation regarding sample collection and handling, identify the persons involved in the chain of sample possession, and a written record of requested analytical parameters.

The SAP consisted of soil and/or groundwater samples collected from boreholes and monitoring wells as shown in Appendix I. Where applicable surface water and sediment samples were also collected, and their locations are shown in Appendix I.

4.3 Conceptual Site Model

The conceptual site model describes the substances of concern likely to be present and where the substances of concern are likely to be located now, considering the of the environmental behaviour, fate, and transport characteristics of the particular contaminant and all reasonably ascertainable information about their presence of likely presence.

Based on the reported substance usage, generation or presence and potential for spatial and temporal dynamics influenced by environmental and anthropogenic factors, and upon a professional understanding of the substances typically used and generated in current and historical operations and activities, the substances of concern that have or may have been released on the property are petroleum hydrocarbons.

The substances of concern would likely have entered the environment from a leak during the piping system upgrade in 1995.

This assumption is based on knowledge of the characteristics of engineered structures, features, and containers present or known or inferred to have been present at the site, from which or through which the target analytes may have been released or dispersed on the site.

The previously identified areas of potential environmental concern are provided in the table below.

Areas of Potential Environmental Concern

APEC	Location of APEC	PCA	Location of PCA	COPCs	Media Impacted
Two USTs	South side of property	Gasoline and Associated Products Storage in Fixed Tanks	On-site	Petroleum Hydrocarbons	Soil and Groundwater
USTs	South adjoining property	Gasoline and Associated Products Storage in Fixed Tanks	Off-site	Petroleum Hydrocarbons	Soil and Groundwater

A drawing of the conceptual site model showing areas of potential environmental concern is provided in Appendix I.

4.4 Deviations from the Sampling and Analysis Plan

The sampling and analyses were completed generally according to the Sampling and Analysis Plan prepared for the Phase Two ESA. No significant deviations from the Sampling and Analysis Plan that affected the sampling and data quality objectives were reported.

4.5 Impediments

There were no impediments or denial of access that prevented the completion of the scope of the investigation.

5.0 INVESTIGATION METHOD

5.1 General

The Phase II ESA followed the methodology outlined in the following documents:

• Ontario Ministry of the Environment "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario" (1996).

Unless otherwise stated, the methods used in the Phase II ESA investigation did not differ from the associated standard operating procedures.

5.2 Borehole Drilling and Sampling

5.2.1 Borehole Drilling

Prior to the drilling of boreholes, the underground utilities were located and marked out in the field by the representatives of the major utility companies and/or a private locator.

A total of 6 boreholes were drilled at the approximate locations shown on the site plan in Appendix I. The locations, depths, and dates of the boreholes are provided in the table in Appendix II.

The borehole and monitoring well logs are presented on the boring logs in Appendix III.

5.2.2 Soil Sampling

Soil samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler. A portion of each sample was placed in a resealable plastic bag for field screening, and the remaining portion was placed into laboratory supplied glass sampling jars. Samples intended for VOC and the F1 fraction of petroleum hydrocarbons analysis were collected using a laboratory-supplied soil core sampler, placed into the vials containing methanol for preservation purposes and sealed using Teflon lined septa lids. Soil samples considered to be representative of "worst-case" environmental conditions were selected for chemical analysis based on visual and olfactory observations made in the field and on field screening results. A formal chain of custody was maintained for all samples submitted to the laboratory.

Soil samples were examined for visual and olfactory evidence of impacts and a portion of each sample was analysed in the field for solvent and petroleum derived vapour concentrations in soil headspace using a photoionization detector ("PID").

There are no regulatory criteria for combustible soil vapours; however, soil vapours are often used as a field screening tool to practically identify soils impacted with combustible liquids or petroleum hydrocarbons. Elevated soil vapour concentrations, typically in the LEL range (1 %LEL is equivalent to 110 ppm; the %LEL scale is typically used for soil vapours in excess of 500 ppm), are generally indicative of the presence of volatile combustible products.

5.3 Monitoring Wells

5.3.1 Monitoring Well Installation

Groundwater monitoring wells were installed in the following borings:

- MW1, MW2, MW3, MW4, MW5, AND MW6

A track-mounted drill rig, equipped with 115 mm diameter hollow stem augers was used for the installation of monitoring wells through the direct-push soil bores upon completion of soil sampling activities. Nitrile gloves were used to handle the well casings and screens during installation to minimize the potential for cross contamination.

Each monitoring well was constructed using 51 mm diameter well screens and Schedule 40 PVC riser pipe. The screened interval was 3.0 meters long with a No. 10 slot size screen. Sand pack, consisting of No. 2 silica sand, was placed around the well screen and the sand pack was extended to 0.6 m above the top of the screen. A bentonite seal was then placed around the PVC riser pipe up to within 0.3 m of the ground surface. The monitoring wells were capped with a flush-mount/stick-up protective casing.

After monitoring well installation, well development was carried out to remove particulates and fluids that may have collected in the sand pack around the well screen during drilling activities to collect a sediment free groundwater. The purged water was drummed for future management based on its quality relative to accepted standards.

The monitoring well construction details are provided in Appendix IV.

No light non-aqueous phase liquid (LNAPL) was observed or measured in any of the monitoring wells.

5.3.2 Groundwater Sampling

After well development, on 2023-2-18 groundwater samples were collected from each of the monitoring wells.

The wells were purged using a peristaltic pump equipped with dedicated polyethylene tubing. A YSI Water Quality Meter equipped with a flow-through cell was used to monitor the geochemical conditions during purging to assess whether steady-state conditions were achieved prior to sampling. Groundwater samples were collected a minimum of 24 hours after the development of the monitoring wells. Groundwater samples were collected using a dedicated bailer for each of the monitoring wells. The groundwater samples were collected directly into the laboratory-supplied containers. All groundwater samples were place on ice in coolers and delivered to the accredited laboratory under a formal chain of custody.

5.4 Surface Water and Sediment Sampling

The investigation of sediments and surface water was not applicable as no surface water bodies are present on the subject property.

5.5 Analytical Testing

A total of 6 soil samples were collected and submitted for analysis. The analyses, locations, depths, and dates of the samples are provided in the table in Appendix II.

A total of 6 groundwater samples were collected and submitted for analysis. The analyses, locations, depths, and dates of the samples are provided in the table in Appendix II.

The collected samples were submitted to ACME Labs for chemical analyses.

5.6 Residue Management Procedures

All residues produced during the investigation (soil cuttings from borehole drilling, groundwater from well development purging, wash water from equipment decontamination) were placed in sealed drums and left at the Site pending receipt of laboratory analytical results.

5.7 Elevation Surveying

An elevation survey of the boreholes and monitoring wells was conducted on 2023-2-16. The elevations were recorded using GPS survey equipment.

5.8 Quality Assurance and Quality Control Measures

Samples were given unique identifications as they were collected, typically identifying the project number, date, sample location and depth. Soil and groundwater samples were collected in laboratory prepared containers. Soil sample containers for PHC F1, BTEX and/or VOC analysis contained methanol preservative in a 40 mL glass vial with septum lid. Soil sample containers for PHCs F2-F4 and/or PAH analysis were a 120 mL or 250 mL unpreserved jar with Teflon lined lid. Groundwater sample containers for PHCs F1, PHCs F2-F4, and/or VOC analysis contained sodium bisulphate to pH < 2 in a 40 mL glass vial with septum lid. Groundwater sample containers for dissolved metals analysis contained nitric acid to pH < 2. A formal chain of custody was maintained for all samples submitted to the laboratory.

Dedicated equipment was used for well development and sampling for further minimize the risk of cross contamination. Dedicated, disposable nitrile gloves were used for each sampling event to reduce the potential for cross-contamination. Non-dedicated equipment (i.e. interface probe) was cleaned before initial use and between all measurement points with a solution of Alconox and distilled water. The split spoon sampler was brushed clean of soil, washed in municipal water containing phosphate free detergent, rinsed in municipal water, and then rinsed with distilled water for each sampling interval in order to reduce the potential for cross contamination.

A laboratory prepared trip blank accompanied the groundwater samples during each sampling event and was submitted for laboratory analysis of VOCs. All field screening devices were calibrated prior to use by the supplier. Calibration checks were completed, and re-calibrations were conducted as required. Field duplicate samples were collected at the time of sampling.

There were no deviations from the QA/QC program described in the SAP.

6.0 REVIEW AND EVALUATION

6.1 Subsurface Conditions

6.1.1 Soil Stratigraphy

The local stratigraphy encountered in the boreholes consists of approximately 5 m of poorly graded gravels underlain by inorganic clay. The stratigraphic information recorded during the investigation is presented on the borehole and monitoring well logs in Appendix IV.

6.1.2 Soil Texture

No soil samples were submitted for grain size analysis.

6.1.3 Soil Field Screening

Petroleum hydrocarbon-like odour was observed in the soil samples in borehole(s) MW3 and MW5.

No foreign material was observed in the soil samples.

Soil vapour headspace measurements were conducted on all soil samples for combustible gas concentrations (FID readings) and for volatile organic compounds (PID readings).

6.1.4 Groundwater Elevations and Flow Direction

Groundwater elevations measured in the monitoring wells is shown in the table below.

Groundwater Elevations

Well ID	Ground Elevation (mASL)	Date Measured	Water Level (mBGS)	Groundwater Elevation (mASL)
MW1	104.62	2023-02-17	6.05	98.57
MW2	104.65	2023-02-17	5.91	98.74
MW3	104.85	2023-02-17	5.82	99.03
MW4	105.3	2023-02-17	5.63	99.67
MW5	104.91	2023-02-17	5.72	99.19
MW6	105.23	2023-02-17	5.61	99.62

Based on the groundwater elevations measured the local groundwater flow direction is north towards Lake Ontario. It should be noted that the groundwater levels can be expected to vary over time and are subject to seasonal fluctuations.

Based on the groundwater elevation data collected from the monitoring wells, a horizontal groundwater hydraulic gradient could not be determined.

A contour map of ground water elevations is provided in Appendix I.

6.2 Analytical Results

6.2.1 Soil Quality

Petroleum Hydrocarbons

The soil analytical results for petroleum hydrocarbons along with the applicable guidelines and criteria are summarized in the table provided in Appendix III. Soil samples MW3:SS8 and MW5:SS8 exceeded the guidelines.

Figure(s) showing the results of the soil analytical testing are provided in Appendix I.

6.2.2 Groundwater Quality

Petroleum Hydrocarbons

The groundwater analytical results for petroleum hydrocarbons compounds along with the applicable guidelines and criteria are summarized in Appendix III. Samples GW3 and GW5 exceeded the guidelines.

Figure(s) showing the results of the groundwater analytical testing are provided in Appendix I.

6.2.3 Surface Water Quality

No surface water samples were collected and submitted for laboratory analysis.

6.2.4 Sediment Quality

No sediment samples were collected and submitted for laboratory analysis.

6.3 Quality Assurance and Quality Control Results

6.3.1 Field QA/QC Duplicate Samples

The field QA/QC program included the collection and analysis of 2 field duplicate samples.

A summary of the field duplicates samples analysed and an interpretation of the efficacy of the QA/QC program is provided in the table in Appendix III.

The Relative Percentage Difference ("RPD") is a method of measuring the variation in a set of data that looks at the variation as a proportion of the average or target value. The RPD for the parameters detected with the concentrations five (5) times the detection limits were calculated, and the results are within the acceptable ranges.

The results of the laboratory analysis of the field duplicate QA/QC samples are acceptable. The analytical results of the field QA/QC duplicates samples are provided in Appendix VI.

6.3.2 Trip Spike and Trip Blank Samples

The field QA/QC program included the collection and analysis of trip spike and trip blank samples. One trip spike and one trip blank were submitted for analysis of petroleum hydrocarbons.

A trip blank is a sample of analyte free media (supplied by the laboratory) taken to the site and returned to the laboratory unopened. The laboratory prepares the trip blank. A duplicate of the trip blank prepared at the same time is retained at the laboratory in a contaminant free location. The purpose is to identify potential cross-contamination that may occur from other samples, ambient conditions, or other sources that samples may be exposed.

A trip spike is a sample prepared by the laboratory that is fortified with a known concentration of target analytes. This sample is shipped along with containers and is to be taken into the field but returned unopened to the laboratory. Analysis is conducted and recoveries are reported expressed as a percentage. The purpose is to monitors the breakdown or loss of analytes during the sampling process. Holding time, and temperature effects on concentration can be accessed.

The analytical results of the trip spike and trip blank samples are provided in Appendix VI.

6.3.3 Sample Handling Protocol

The samples analyzed as part of this Phase II ESA were handled in accordance with the analytical protocol with respect to holding time, preservation method, storage requirement and sample container type. All samples collected as part of the Phase II ESA were submitted with chains of custody to the laboratory. The laboratory used for the analytical testing is accredited by the Canadian Association for Laboratory Accreditation.

6.3.4 Laboratory QA/QC Results

The laboratory used for the analytical testing has an internal QA/QC analytical protocol, consisting of analysing duplicate, blank, control, certified reference material and matrix spike samples. Based on a review of the data in the laboratory Certificates of Analysis, it is indicated that all samples/sample extracts were analysed within the applicable holding times using approved analytical method. The reported detection limits were acceptable for all tested parameters.

6.3.5 Certification of QA/QC Results

Based on a review of the QA/QC sample results, chain of custody, and the laboratory Certificates of Analysis, Plan B Environmental confirms that:

- A Certificate of Analysis or Analytical Report has been received for each sample submitted for analysis.
- All Certificates of Analysis and analytical reports are included in Appendix VI.

Based on the interpretation of the laboratory results and the QA/QC program it is our opinion that the laboratory analytical data can be relied upon.

6.4 Conceptual Site Model Validation

The conceptual model developed for the site described in Section 4.3 was validated during the investigation and the information from the investigation is sufficient to support sound conclusions regarding the presence and significance of contaminants of potential concern.

7.0 INTERPRETATION AND CONCLUSIONS

This assessment has been prepared in accordance with generally accepted environmental methodologies referred to in CSA Z769-00 (reaffirmed 2018) and contains all the limitations inherent in these methodologies. No other warranties, expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.

7.1 Deviations and Limitations

There were no deviations to the work plan.

There were no limitations encountered during the assessment.

7.2 Absence, Presence, and Extent of Substances of Concern

Based on the results of this assessment, the following impacted soil in exceedance of applicable guidelines or criteria was identified:

- Impacted soil from petroleum hydrocarbons was found on the north side of the underground storage tanks.

Based on the results of this assessment, the following impacted groundwater in exceedance of applicable guidelines or criteria was identified:

- Impacted groundwater from petroleum hydrocarbons was found in monitoring wells on the north side of the underground storage tanks.

Based on the analytical results, the following areas of contamination were identified on the subject property.

Areas of Contamination

Area	Area around the two USTs
Contaminant	Petroleum Hydrocarbons
Media	Soil and groundwater
Description	Petroleum hydrocarbons impacted soil and groundwater was found in boreholes MW3 and MW5
Reason for Discharge	Possibly related to leak during piping upgrade
Migration Pathways	Coarse fill materials around USTs
Influences on Migration	Groundwater flow to the north

Figure(s) showing the areas of contamination are provided in Appendix I.

7.3 Other Concerns

There were no other concerns identified during this assessment.

7.4 Conclusions

There was evidence of the substances of concern in excess of applicable guidelines and criteria as discussed below.

- Impacted soil and groundwater from petroleum hydrocarbons on the north side of the underground storage tanks. Impacted soil and groundwater from petroleum hydrocarbons on the north side of the underground storage tanks.

8.0 RECOMMENDATIONS

Based on the results of this assessment the following further work is recommended:

- Additional borings and monitoring wells to delineate the extend of the impacted soil and groundwater on the north side of the underground storage tanks.

9.0 QUALIFICATIONS AND SIGNATURES

This report has been prepared for the sole benefit of ACME Oil & Gas. The report may not be relied upon by any other person or entity without the express written consent of Plan B Environmental and ACME Oil & Gas.

Respectfully submitted,

Plan B Environmental

Prepared by:

John Smith, P.Eng.
Sr. Environmental Engineer

Reviewed by:

David Doe, P.Eng.
Engineering Manager

10.0 LIMITATIONS

The report has been prepared in accordance with generally accepted environmental methodologies referred to in CSA Z769-00 and contains all the limitations inherent in these methodologies. The findings and conclusions regarding the substances of concern at the property are based solely on the extent of the information gathered and reviewed during the Phase II ESA, consistent with the scope of work. No other warranties, expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.

10.1 Limiting Conditions and Methodologies Used

No ESA can eliminate all uncertainty. Furthermore, any sample, either surface or subsurface, taken for chemical analysis may or may not be representative of a larger population. Professional judgment and interpretation are inherent in the process and uncertainty is inevitable. Additional assessment may be able to reduce the uncertainty.

Even when Phase II ESA work is executed with an appropriate site-specific standard of care, certain conditions present especially difficult detection problems. Such conditions may include, but are not limited to, complex geological settings, the fate and transport characteristics of certain substances, the distribution of existing target analytics, physical limitations imposed by the location of utilities and other man-made objects, and the inherent limitations of assessment technologies.

Phase II ESAs do not generally require an exhaustive assessment of environmental conditions on a property. There is a point at which the cost of information obtained, and the time required to obtain it outweigh the usefulness of the information and, in fact, may be a material detriment to the orderly completion of transactions. If the presence of target analytes is confirmed on a property, the extent of further assessment is a function of the degree of confidence required and the degree of uncertainty that is acceptable in relation to the objectives of the assessment.

Measurements and sampling data only represent the site conditions at the time of data collection. Therefore, the usability of data collected as part of this Phase II ESA may have a finite lifetime depending on the application and use being made of the data.

REFERENCES AND SOURCES OF INFORMATION

The following references may have been used in the preparation of this report.

CSA Z769-00 (reaffirmed 2018) Standard for Phase II Environmental Site Assessment.

Generally Accepted Standards for Environmental Investigations, Consulting Engineers of Ontario, April 1993.

Guidance Manual on Sampling, Analysis, and Data Management for Contaminated Sites — Volume 1: Main Report; Volume 2: Analytical Method Summaries, Canadian Council of Ministers of the Environment, December 1993.

Guidance to Environmental Site Assessments, National Groundwater Association, September 1992.

Guideline for Professional Engineers Providing Services in Environmental Site Assessment, Remediation and Management, Association of Professional Engineers of Ontario, 1996.

Interim Canadian Environmental Quality Criteria for Contaminated Sites, Canadian Council of Ministers of the Environment, September 1991.

National Classification System for Contaminated Sites, Canadian Council of Ministers of the Environment, March 1992.

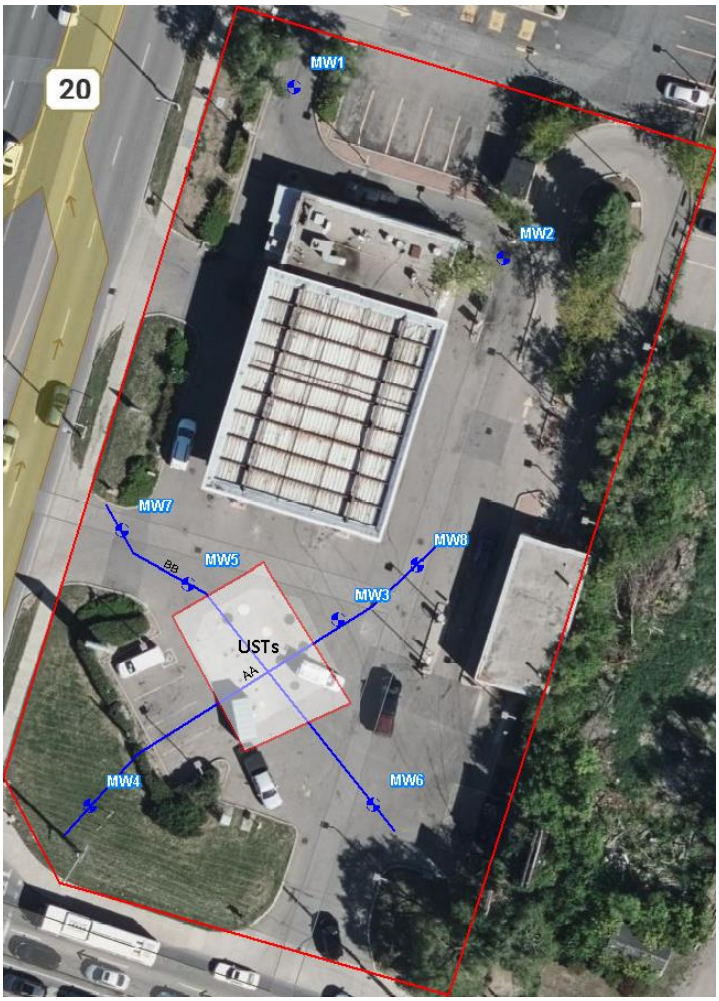
Standard Guide for Environmental Site Assessment: Phase II Environmental Site Assessment Process, American Society for Testing and Materials (ASTM E 1903-19), 2019.

ASTM Standard D 5730 Guide to Site Characteristics for Environmental Purposes with Emphasis on Soil, Rock, The Vadose Zone, and Ground Water.

Ontario MECP "Soil, ground water and sediment standards for use under PART XV.1 of the Environmental Protection Act, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition".

APPENDICES

APPENDIX I: SITE PLAN AND FIGURES



15 m

Plan B Environmental
301 James St. S
Hamilton, ON

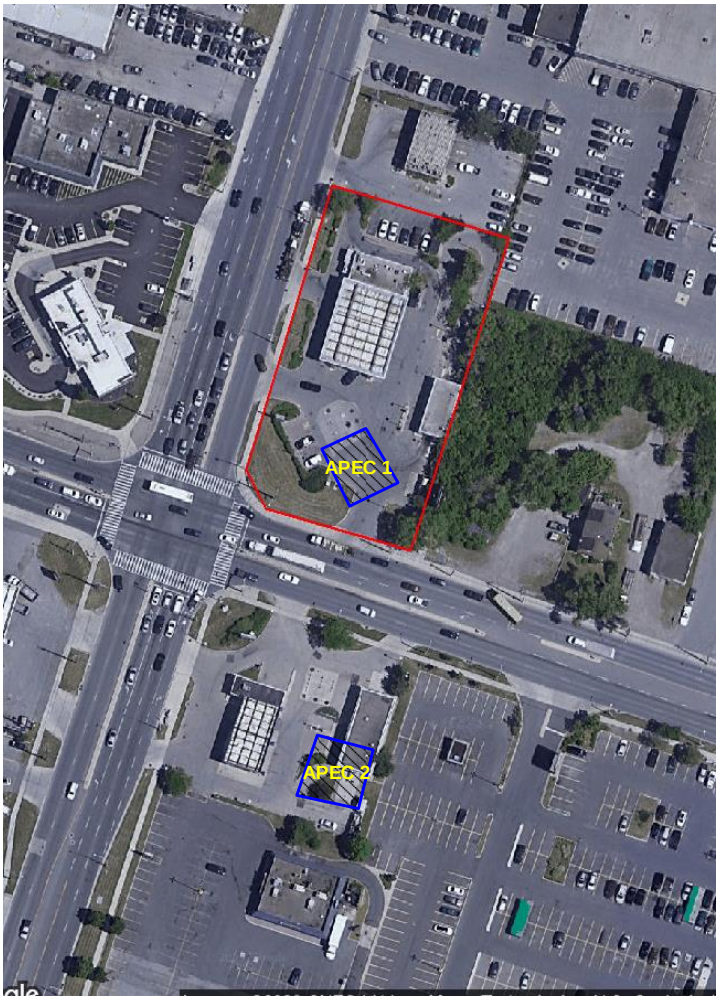
Figure 1: Phase II ESA Site Plan

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Bartion St. S
City:	Hamilton
StateProvince:	ON

Project Manager:	John Smith
Date:	2023-2-24



40 m

Areas of Potential Environmental Concern
APEC 1: USTs On-site
APEC 2: USTs Off-site

Plan B Environmental
301 James St. S
Hamilton, ON

Figure 2: Phase I Conceptual Site Model

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Barton St. S
City:	Hamilton
State:	ON

Project Manager:	John Smith
Date:	2023-1-24

Plan B Environmental
301 James St. S
Hamilton, ON

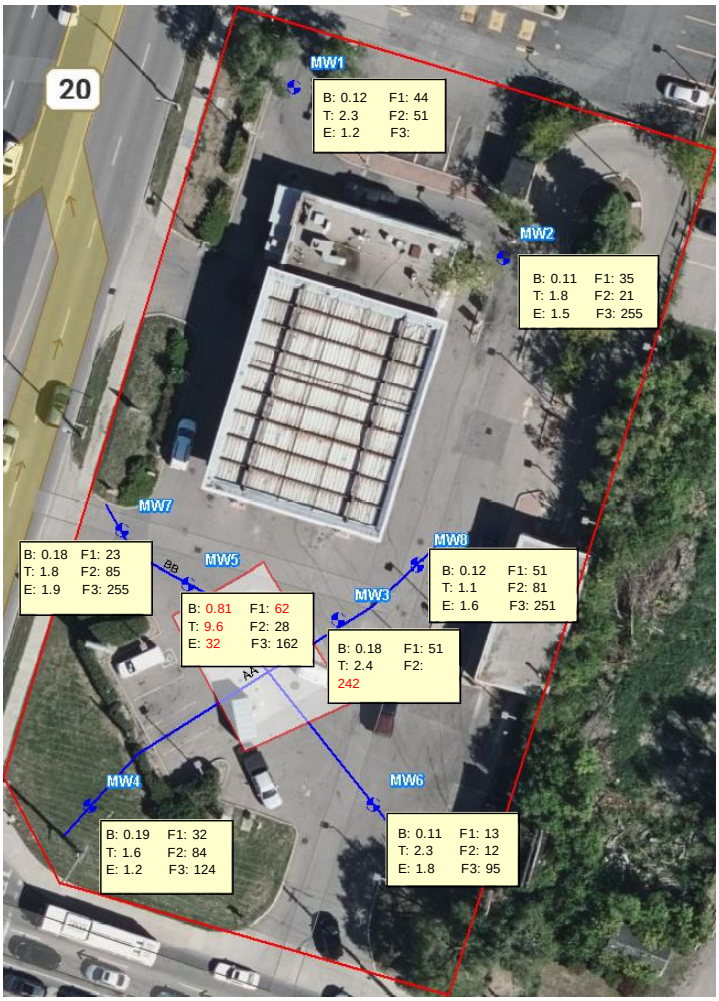
Figure 3: Ground Water Elevation (mASL)

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Barton St. S
City:	Hamilton
StateProvince:	ON

Project Manager:	John Smith
Date:	2023-2-24



15 m

Plan B Environmental
301 James St. S
Hamilton, ON

1. Analytical results are in µg/g
2. Analytical results in red exceed the applicable site standard

Figure 4: Soil Contamination

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Barton St. S
City:	Hamilton
StateProvince:	ON

Project Manager:	John Smith
Date:	2023-2-24

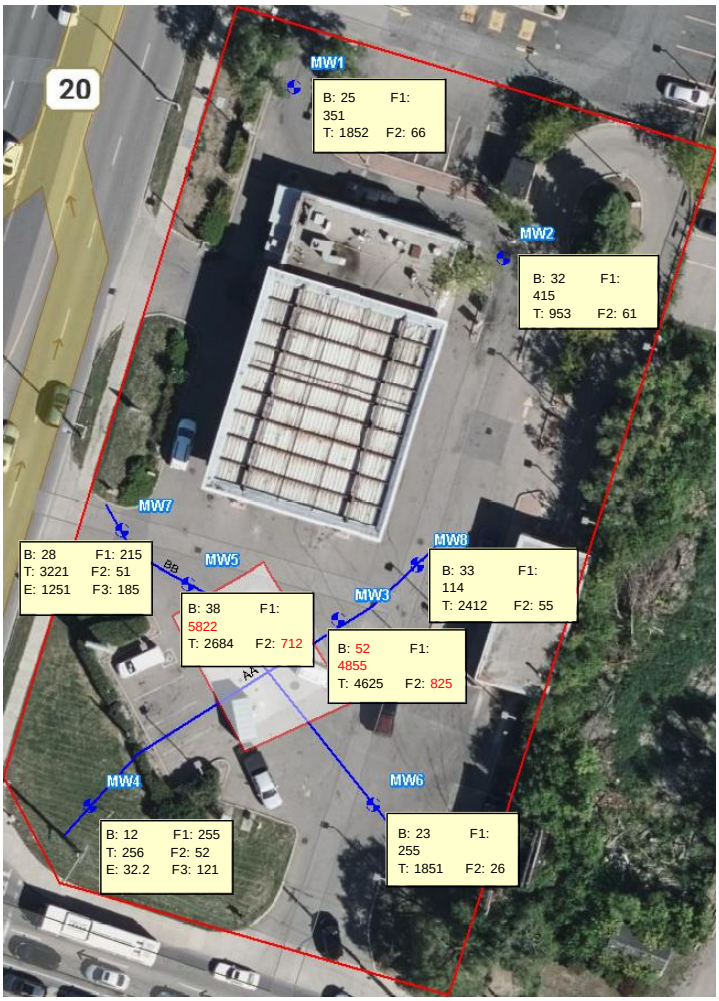


Figure 5: Ground Water Contamination

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Barton St. S
City:	Hamilton
StateProvince:	ON

Project Manager:	John Smith
Date:	2023-2-24

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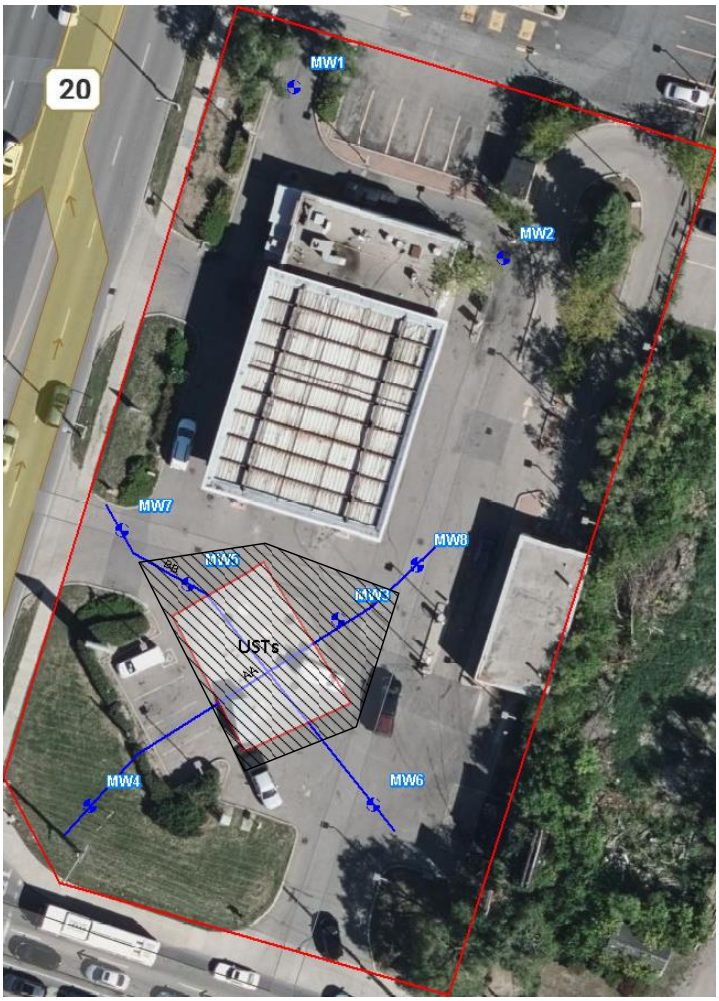
301 James St. S
Hamilton, ON

1. Analytical results are in µg/L
2. Analytical results in red exceed the applicable site standard



15 m

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Hamilton, ON

Estimated area of soil and groundwater contamination

Figure 6: Delineation of Contamination

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Barton St. S
City:	Hamilton
StateProvince:	ON

Project Manager:	John Smith
Date:	2023-2-24

APPENDIX II: SUMMARY OF FIELD ACTIVITIES

Borings and Monitoring Wells

Number	Date	Depth	Location
MW1	2023-02-16	10.2 m	Northwest side of property
MW2	2023-02-16	10.4 m	Northeast side of property
MW3	2023-02-16	10.4 m	East side of property
MW4	2023-02-16	10.6 m	Southwest side of property
MW5	2023-02-16	10.5 m	West side of property
MW6	2023-02-16	10.8 m	Southeast side of property

Soil Samples Collected

Number	Date	Depth	Location	Analyses
MW1:SS8	2023-02-16	5.9	MW1	PHC and BTEX
MW2:SS8	2023-02-16	5.9	MW2	PHC and BTEX
MW3:SS8	2023-02-16	5.8	MW3	PHC and BTEX
MW4:SS8	2023-02-16	6.0	MW4	PHC and BTEX
MW5:SS8	2023-02-16	5.9	MW5	PHC and BTEX
MW6:SS8	2023-02-16	6.1	MW6	PHC and BTEX

Groundwater Samples Collected

Number	Date	Depth	Location	Analyses
GW1	2023-02-16	6.1	MW1	PHC and BTEX
GW2	2023-02-16	6.1	MW2	PHC and BTEX
GW3	2023-02-16	6.0	MW3	PHC and BTEX
GW4	2023-02-16	5.9	MW4	PHC and BTEX
GW5	2023-02-16	6.0	MW5	PHC and BTEX
GW6	2023-02-16	5.9	MW6	PHC and BTEX

APPENDIX III: ANALTICAL DATA

Summary of Soil Analytical Results - Petroleum Hydrocarbons

	Units	Criteria						
Sample Number			MW1:SS8	MW2:SS8	MW3:SS8	MW4:SS8	MW5:SS8	MW6:SS8
Sample Date			2023-02-16	2023-02-16	2023-02-16	2023-02-16	2023-02-16	2023-02-16
Lab. Ref. ID			L1123	L1124	L1125	L1126	L1127	L1128
Benzene	µg/g	0.21	.12	.11	.18	.19	**.81**	.11
Ethylbenzene	µg/g	2	1.2	1.5	**12.6**	1.2	**32**	1.8
Toluene	µg/g	2.5	2.3	1.8	2.4	1.6	**13.2**	2.3
Xylenes (Total)	µg/g	3.1	2.5	2.1	**6.2**	1.9	**9.6**	1.7
F1 (C6-C10)	µg/g	55	44	35	51	32	**62**	16
F2 (C10-C16)	µg/g	98	51	21	**242**	84	28	12
F3 (C16-C34)	µg/g	300	125	255	**1826**	124	162	95
F4 (C34-C50)	µg/g	2800	2151	1525	2299	155	**3925**	2154

The soil analytical results were compared with the following applicable guidelines and criteria:

Ontario MECP "Soil, ground water and sediment standards for use under PART XV.1 of the Environmental Protection Act, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition".

Summary of Groundwater Analytical Results - Petroleum Hydrocarbons

	Units	Criteria						
Sample Number	µg/L		GW1	GW2	GW3	GW4	GW5	GW6
Sample Date	µg/L		2023-02-17	2023-02-17	2023-02-17	2023-02-17	2023-02-17	2023-02-17
Lab. Ref. ID	µg/L		G11299	G11300	G11301	G11302	G11303	G11304
Benzene	µg/L	44	25	32	**52**	12	38	23
Ethylbenzene	µg/L	2300	12.6	15.8	56.5	32.2	85.6	23.2
Toluene	µg/L	18000	1852	953	4625	256	2684	1851
Xylenes (Total)	µg/L	4200	1252	2568	**15652**	3212	**23851**	1251
F1 (C6-C10)	µg/L	750	351	415	**4855**	255	**5822**	255
F2 (C10-C16)	µg/L	150	66	61	**825**	52	**712**	26
F3 (C16-C34)	µg/L	500	85	53	145	121	235	125
F4 (C34-C50)	µg/L	500	125	322	**512**	235	455	126

The groundwater analytical results were compared with the following applicable guidelines and criteria:

Ontario MECP "Soil, ground water and sediment standards for use under PART XV.1 of the Environmental Protection Act, Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition".

Summary of QA/QC Results

Sample ID	QA/QC Duplicate	Media	Parameter Analyzed	QA/QC Result
MW1:SS8	MW1:SS8-D	Soil	Petroleum Hydrocarbons	Results are within RPD criteria
GW5	GW5-D	Groundwater	Petroleum Hydrocarbons	Results are within RPD criteria

APPENDIX IV: SUBSURFACE EXPLORATION LOGS

Log of Borehole: MW1

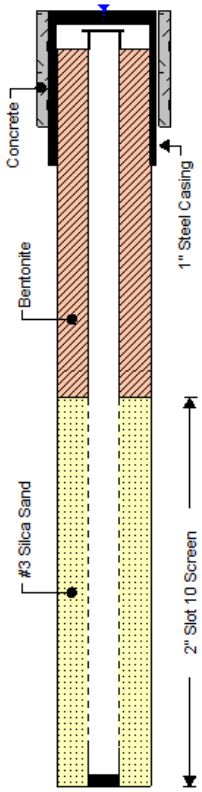
Plan B Environmental
301 James St. S
Hamilton, ON

Project No.: CAD EX
Project: Canadian Examples
X Coordinate: -79.759884
Y Coordinate: 43.237612
Status: Unspecified

Elevation: 104.62
Total Depth: 10.2
Project Manager: John Smith

Depth (ft / m)	Elevation (masl)	% Recovery	Soil Sample ID	Type	VOC (ppm)	Graphic	Material Description	Lab Analysis
0.0 / 0.0	104.6						Ground Surface	
	0.0						Poorly-graded gravels, gravel-sand mixtures, little or no fines.	
		80	SS1	SS	1.9			
		85	SS2	SS	2			
		85	SS3	SS	2.3			
		80	SS4	SS	2.7			
		85	SS5	SS	3.2			
		90	SS6	SS	3.1			
		90	SS7	SS	3.8			
		95	SS8	SS	4.5			PHC and BTEX
			DUP-SS8		0			
	98.1							
6.5 / 7.0	6.5	95	SS9	SS	2.1		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	
10.0 / 11.0	94.4							
	10.2							

Well Diagram



Drilled By: ACME Drilling
Drill Method: H/S Auger
Drill Date: 2023-02-16

Hole Size: 6.5"
Datum: MSL
Sheet: 1 of 1

Log of Borehole: MW2

Plan B Environmental
301 James St. S
Hamilton, ON

Project No.: CAD EX
Project: Canadian Examples
X Coordinate: -79.759625
Y Coordinate: 43.237459
Status: Unspecified

Elevation: 104.65
Total Depth: 10.4
Project Manager: John Smith

Depth (ft / m)	Elevation (masl)	% Recovery	Soil Sample ID	Type	VOC (ppm)	SUBSURFACE PROFILE: Graphic	SUBSURFACE PROFILE: Material Description	Lab Analysis	Well Diagram
0.0 / 0.0	104.7						Ground Surface		
	0.0						Poorly-graded gravels, gravel-sand mixtures, little or no fines.		
5.0 / 1.0		85	SS1	SS	1.1				
7.0 / 2.0		85	SS2	SS	1.5				
10.0 / 3.0		90	SS3	SS	1.9				
12.0 / 4.0		85	SS4	SS	2.2				
14.0 / 5.0		80	SS5	SS	2.6				
16.0 / 6.0		85	SS6	SS	3				
19.0 / 6.0		90	SS7	SS	3.2			PHC and BTEX	
20.0 / 6.0		95	SS8	SS	4.5				
22.0 / 7.0	98.0	90	SS9	SS	3.1				
	6.7						Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.		
33.0 / 10.0	94.3								
	10.4								
39.0 / 12.0									

Well Diagram: Concrete; Bentonite; #3 Silica Sand; 1" Steel Casing; 2" Slot 10 Screen

Drilled By: ACME Drilling
Drill Method: H/S Auger
Drill Date: 2023-02-16

Hole Size: 6.5"
Datum: MSL
Sheet: 1 of 1

Log of Borehole: MW3

Plan B Environmental
301 James St. S
Hamilton, ON

Project No.: CAD EX
Project: Canadian Examples
X Coordinate: -79.7598285241058
Y Coordinate: 43.2371334510784
Status: Unspecified

Elevation: 104.85
Total Depth: 10.4
Project Manager: John Smith

Depth (ft / m)	Elevation (masl)	% Recovery	Soil Sample ID	Type	VOC (ppm)	SUBSURFACE PROFILE: Graphic	SUBSURFACE PROFILE: Material Description	Lab Analysis	Well Diagram
0.0 / 0.0	104.9						Ground Surface		
0.0 / 0.0	0.0						Poorly-graded gravels, gravel-sand mixtures, little or no fines.		
5.0 / 1.0		80	SS1	SS	2.5				
7.5 / 2.0		75	SS2	SS	2.1				
10.0 / 3.0		80	SS3	SS	3.2				
12.5 / 4.0		85	SS4	SS	3.6				
15.0 / 5.0		75	SS5	SS	3.9				
17.5 / 6.0		80	SS6	SS	4.1				
20.0 / 6.0		90	SS7	SS	4.5				
20.0 / 6.0		90	SS8	SS	8.5			PHC and BTEX	
21.7 / 6.6	98.3	90	SS9	SS	4.8				
21.7 / 6.6	6.6						Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.		
34.0 / 10.4	94.4								
34.0 / 10.4	10.4								

Well Diagram: Concrete; Bentonite; #3 Silica Sand; 1" Steel Casing; 2" Slot 10 Screen

Drilled By: ACME Drilling
Drill Method: H/S Auger
Drill Date: 2023-02-16

Hole Size: 6.5"
Datum: MSL
Sheet: 1 of 1

Log of Borehole: MW4

Plan B Environmental
301 James St. S
Hamilton, ON

Project No.: CAD EX
Project: Canadian Examples
X Coordinate: -79.7601354433962
Y Coordinate: 43.2369657268055
Status: Unspecified

Elevation: 105.3
Total Depth: 10.6
Project Manager: John Smith

Depth (ft / m)	Elevation (masl)	% Recovery	Soil Sample ID	Type	VOC (ppm)	SUBSURFACE PROFILE: Graphic	SUBSURFACE PROFILE: Material Description	Lab Analysis	Well Diagram
0.0 / 0.0	105.3						Ground Surface		
	0.0						Poorly-graded gravels, gravel-sand mixtures, little or no fines.		
		80	SS1	SS	2				
		85	SS2	SS	2.2				
		85	SS3	SS	2.5				
		80	SS4	SS	3.2				
		85	SS5	SS	3.7				
		90	SS6	SS	4.2				
		90	SS7	SS	4.3				
		95	SS8	SS	4.5			PHC and BTEX	
	98.7	95	SS9	SS	3.8				
	6.6						Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.		
	94.7								
	10.6								
12.0									

Well Diagram: Concrete; Bentonite; #3 Silica Sand; 1" Steel Casing; 2" Slot 10 Screen

Drilled By: ACME Drilling
Drill Method: H/S Auger
Drill Date: 2023-02-16

Hole Size: 6.5"
Datum: MSL
Sheet: 1 of 1

Log of Borehole: MW5

Plan B Environmental
301 James St. S
Hamilton, ON

Project No.: CAD EX
Project: Canadian Examples
X Coordinate: -79.7600144401244
Y Coordinate: 43.2371653203486
Status: Unspecified

Elevation: 104.91
Total Depth: 10.5
Project Manager: John Smith

Depth (ft / m)	Elevation (masl)	% Recovery	Soil Sample ID	Type	VOC (ppm)	Graphic	Material Description	Lab Analysis	Well Diagram
0.0 / 0.0	104.9						Ground Surface		
	0.0						Poorly-graded gravels, gravel-sand mixtures, little or no fines.		
		80	SS1	SS	2.2				
		85	SS2	SS	2.5				
		85	SS3	SS	3.7				
		80	SS4	SS	3.8				
		85	SS5	SS	3.5				
		90	SS6	SS	4.8				
		90	SS7	SS	6.5				
		95	SS8	SS	7.8			PHC and BTEX	
20.0 / 6.0			MW5-SS8		0				
	98.3								
	6.6	95	SS9	SS	4.5		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.		
	94.3								
	10.6								
39.0 / 12.0									

Well Diagram: Concrete; Bentonite; #3 Silica Sand; 1" Steel Casing; 2" Slot 10 Screen

Drilled By: ACME Drilling
Drill Method: H/S Auger
Drill Date: 2023-02-16

Hole Size: 6.5"
Datum: MSL
Sheet: 1 of 1

Log of Borehole: MW6

Plan B Environmental
301 James St. S
Hamilton, ON

Project No.: CAD EX
Project: Canadian Examples
X Coordinate: -79.759785
Y Coordinate: 43.236967
Status: Unspecified

Elevation: 105.23
Total Depth: 10.6
Project Manager: John Smith

Depth (ft / m)	Elevation (masl)	% Recovery	Soil Sample ID	Type	VOC (ppm)	SUBSURFACE PROFILE: Graphic	SUBSURFACE PROFILE: Material Description	Lab Analysis	Well Diagram
0.0 / 0.0	105.2						Ground Surface		
	0.0						Poorly-graded gravels, gravel-sand mixtures, little or no fines.		
		80	SS1	SS	2.1				
		85	SS2	SS	2				
		85	SS3	SS	2.5				
		80	SS4	SS	3.2				
		85	SS5	SS	3.7				
		90	SS6	SS	4.5				
		90	SS7	SS	4.6				
		95	SS8	SS	4.5			PHC and BTEX	
	98.6	95	SS9	SS	3.5				
	6.6						Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.		
	94.6								
12.0	10.6								

Well Diagram: Concrete; Bentonite; #3 Silica Sand; 1" Steel Casing; 2" Slot 10 Screen

Drilled By: ACME Drilling
Drill Method: H/S Auger
Drill Date: 2023-02-16

Hole Size: 6.5"
Datum: MSL
Sheet: 1 of 1

APPENDIX V: PHOTOGRAPHS

Plan B Environmental
301 James St. S
Hamilton, ON

Satellite Map of Vicinity

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Barton St S
City:	Hamilton
State:	ON

Project Manager:	John Smith
Date:	2023-1-24

Plan B Environmental
301 James St. S
Hamilton, ON

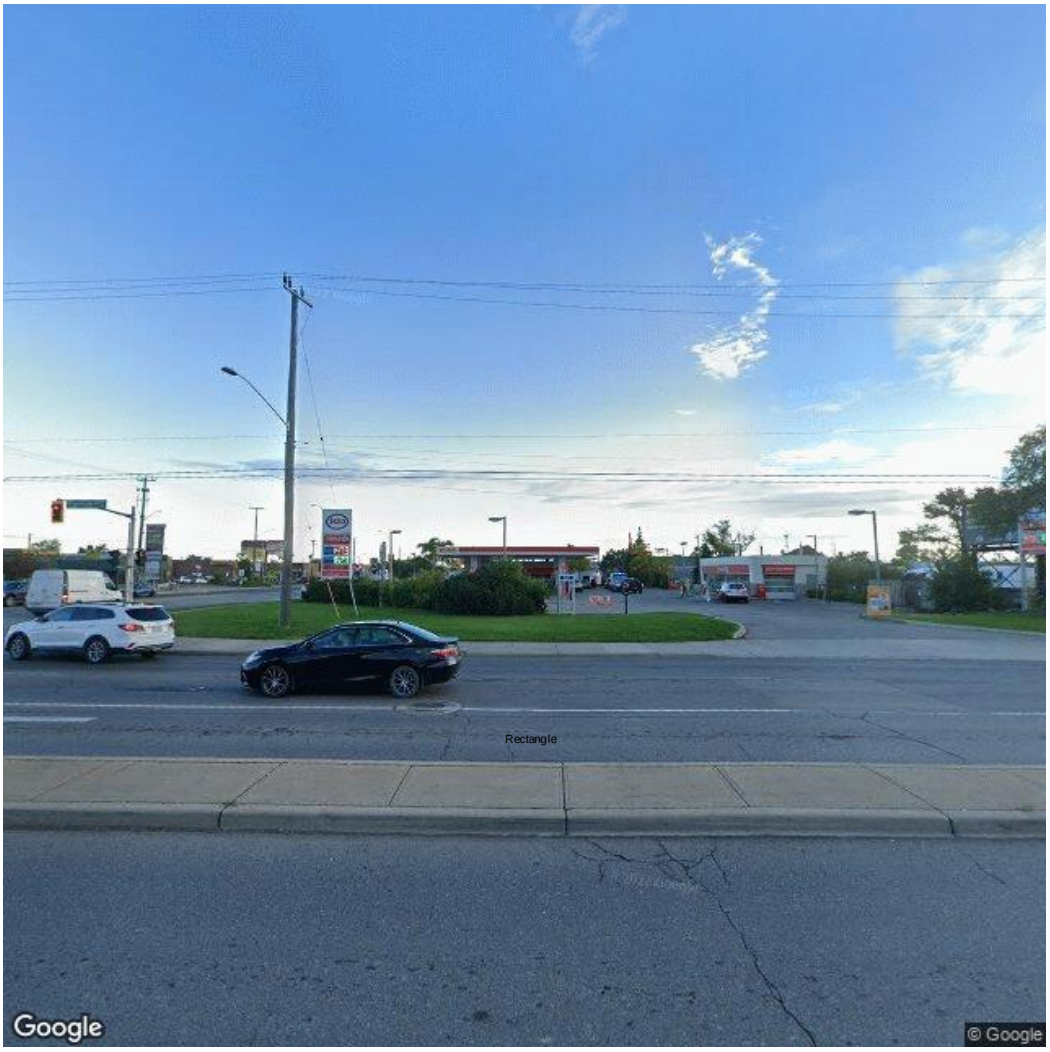
Street View East

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Barton St. S
City:	Hamilton
State:	ON

Project Manager:	John Smith
Date:	2023-1-24



Plan B Environmental
301 James St. S
Hamilton, ON

Street View North

Project Number:	CAD EX
Project Name:	Canadian Examples
Client Name:	ACME Oil & Gas

Site Location

Address:	2911 Barton St. S
City:	Hamilton
State:	ON

Project Manager:	John Smith
Date:	2023-1-24

APPENIX VI: LABORATORY CERTIFICATES OF ANALYSIS