GEOTECHNICAL INVESTIGATION

PROPOSED PARKING LOT EXPANSION
HIGHPOINT COMMUNITY SCHOOL
351 MAIN STREET WEST
DUNDALK, ONTARIO

CMT Project 24-875.R01

Prepared for:

Triton Engineering Services Ltd.

January 22, 2025

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January 22, 2025 24-875.R01

Triton Engineering Services Ltd.
39 Elora Street South
Harriston, Ontario
N0G 1Z0

Attention: Mr. Paul Zeigler

Dear Paul:

Re: Geotechnical Investigation
Proposed Parking Lot Expansion
Highpoint Community School
351 Main Street West
Dundalk, Ontario

As requested, CMT Engineering Inc. conducted a geotechnical investigation for the proposed parking lot improvements to be undertaken at the above-referenced site, and we are pleased to present the enclosed report.

We trust that this information meets your present requirements, and we thank you for allowing us to undertake this project. Should you have any questions, please do not hesitate to contact our office.

Yours truly,

Jake Feeney, P. Eng.

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1.0 INTRODUCTION

The services of CMT Engineering Inc. (CMT Inc.) were retained by Mr. Paul Zeigler of Triton Engineering Services Ltd., to conduct a geotechnical investigation for the proposed parking lot expansion at the Highpoint Community School, located at 351 Main Street West, in Dundalk, Ontario. The location of the site is shown on Drawing 1.

It is understood that the project will comprise the construction of a new surface-level parking lot. The purpose of the geotechnical investigation was to assess the existing soil and groundwater conditions encountered in the boreholes. Included in the assessment are the soil classification and groundwater observations, as well as comments and recommendations regarding serviceability limit states (anticipated settlement); dewatering considerations; recommendations for site grading, site servicing, excavations and backfilling; pavement design/drainage; soil design properties; and a summary of the laboratory results.

The recommendations provided in this report are based solely on the information obtained from the boreholes advanced on the subject site.

2.0 EXISTING SITE CONDITIONS

The existing site is currently comprised of a grassed lawn area with some trees and a soccer field. In general, the site topography is relatively flat in elevation, with approximately 0.5 m (1.6 ft) change in elevation across the site. The site is bounded by Main Street West to the southeast, residential property to the southwest and northeast, and undeveloped to the north.

3.0 FIELD AND LABORATORY PROCEDURES

Prior to the commencement of the field drilling program, underground service locates were organized by CMT Inc. to ensure that underground utilities would not be damaged.

The field investigation was conducted on December 23, 2024 and comprised the advancement of twelve (12) boreholes (referenced as Boreholes 1 to 12). The boreholes were advanced to depths of approximately 1.52 m (5.00 ft) below the existing ground surface.

Macro core (MC5) continuous soil sampling technique in accordance with ASTM D6282/D6282M-14 "Standard Guide for Direct Push Soil Sampling" was utilized throughout the boreholes.

Technical staff from CMT Inc. observed the drilling operation and collected and logged the recovered soil samples. A small portion of each sample was placed in a sealed, marked jar for moisture content determinations.

A representative sample from boreholes at the following depth was submitted to the CMT Inc. laboratory in St. Clements, Ontario for grain size analysis:

- Borehole 6 – approximate depth 0.45 m to 1.52 m (1.50 to 5.00 ft).

As requested, representative samples of soil were submitted to ALS Laboratory Group (ALS) in Waterloo, Ontario for environmental analysis (please refer to Section 5.8 and 5.8.1, and Appendix C of this report for the chemical analysis results).

The borehole logs can be found in Appendix A and the resulting grain size analysis is provided in Appendix B.

CMT Inc. may be contacted for additional laboratory testing on previously obtained samples should it be required. Samples are typically held for three months, unless other arrangements are made.

CMT Inc. surveyed the ground surface elevations at the borehole locations using laser survey equipment on December 23, 2024. The top of the catchbasin, located at the southwest corner of the curb between the existing parking lot and Main Street West, was utilized as a temporary benchmark with an assumed elevation of 100.00 m. The ground surface elevation at the borehole locations ranged from about 100.12 m to 100.65 m. The locations of the boreholes and the temporary benchmark are shown on Drawing 2.

4.0 SUBSOIL CONDITIONS

The soils encountered in the boreholes are described briefly below with a more detailed stratigraphic description provided on the borehole logs in Appendix A. The following paragraphs have been simplified into terms of major soil strata. The soil boundaries indicated have been inferred from non-continuous samples and observations of sampling and drilling resistance and typically represent transitions from one soil type to another rather than exact planes of geological change. Further, the subsurface conditions are anticipated to vary between and beyond the borehole locations.

4.1. Asphaltic Concrete

Asphaltic concrete was encountered at the surface of Boreholes 1, 2, 4, 6 and 8. The asphalt was observed to range in thickness from approximately 80 mm to 90 mm (average 82 mm) and the thickness should be expected to vary outside of the borehole locations.

4.2. Topsoil

Dark brown, silty, organic topsoil was encountered at the surface of Boreholes 3, 5, 7, and 9 to 12. The topsoil was considered to be moist. The topsoil was observed to range in thickness from approximately 460 mm to 1,220 mm (average 849 mm) and should be expected to vary outside of the borehole locations. Materials noted as topsoil in this

report were classified based on visual and textural evidence. Testing of organic content or for other nutrients was not carried out.

4.3. Sand and Gravel Fill

Brown sand and gravel fill with trace silt was encountered underlying the asphalt at Boreholes 1, 2, 4, 6 and 8. The sand and gravel fill was observed to range in thickness from approximately 210 mm to 530 mm (average 374 mm) and should be expected to vary outside of the borehole locations. The sand and gravel fill was considered to be moist, with moisture contents ranging from about 11.1% to 15.3% (average 13.2%)

4.4. Sandy Silt

Brown to grey sandy silt with some clay and trace gravel was encountered underlying the sand and gravel fill at Boreholes 1, 2, 4, 6 and 8 and underlying the topsoil at Boreholes 3, 5, 7, and 9 to 12. The sandy silt was considered to be moist to wet, with moisture contents ranging from about 10.0% to 26.3% (average 17.4%).

4.5. Groundwater

Accumulated groundwater was not observed in the boreholes conducted as part of this investigation; however, some wet to saturated soil conditions were observed within the sandy silt in some of the boreholes. Groundwater conditions (particularly perched water) are generally dependent on the amount of precipitation, control of surface water, as well as the time of year, and can fluctuate significantly in elevation and volume.

5.0 DISCUSSION AND RECOMMENDATIONS

This section of the report provides an interpretation of the factual geotechnical data obtained during the investigation and is intended for the guidance of the owner and design engineer. Where comments are made on construction, they are provided only to highlight those aspects which could affect the design of the project. Contractors bidding on or undertaking the work should make their own independent interpretation of the factual subsurface information provided as it affects their proposed construction means and methods, equipment selection, scheduling, pricing, and the like.

Utilizing the information gathered during the geotechnical investigation and assuming that the borehole information is representative of the subsoil conditions throughout the site, the following comments and recommendations are provided.

5.1. Soil Design Parameters

The following table provides the estimated soil design parameters for imported granular fill and native soils encountered on-site. It should be noted that earth pressure coefficients (K_a, K_p, K_o) provided are for flat ground surface conditions and will differ for areas with slopes or embankments.

The estimated soil design parameters can be utilized for the design of any foundations, retaining walls, or other subsurface structures, as required.

Soil Type	Soil Density (kg/m^3)	Friction Angle (Degree)	Coefficient of Active Pressure (K_a)	Coefficient of Passive Pressure (K_p)	Coefficient of At-Rest Pressure (K_o)	Coefficient of Friction (μ)	Cohesion (kPa)
Imported Granular 'A' (OPSS 1010)	2,100	34°	0.28	3.54	0.44	0.45	0
Imported Granular 'B' (OPSS 1010)	2,050	32°	0.31	3.25	0.47	0.41	0
Sand and Gravel Fill	1,900	34°	0.28	3.54	0.44	0.45	0
Sandy Silt	1,750	30°	0.33	3.00	0.50	0.38	0

5.2. Site Preparation

The site preparation for the proposed parking lot construction is anticipated to comprise vegetation grubbing, asphalt/topsoil stripping, removal of fill and unsuitable soils, removal/relocation/repair of any existing underground services (as required), and site grading to achieve the design grades.

5.2.1. Asphalt Stripping/Topsoil Stripping/Vegetation Grubbing

All existing asphalt, topsoil, vegetation, and trees (including tree root structures as well as any loose soils that are typically associated with root structures) must be removed from within the proposed driveway and parking lot envelopes to expose approved competent subgrade soils. The topsoil may be used in landscaped areas where some settlement can be tolerated; otherwise, it should be properly disposed of off-site.

5.2.2. Fill/Unsuitable Soil Removal

Any soils containing topsoil/organics must be removed from the paved driveway and parking lot envelopes. It would be sound construction practice to subexcavate all existing unsuitable fill from the paved driveway and parking lot areas; however, this may not be cost-effective. At a minimum, thorough inspection will be required at the time of construction to assess the existing fill to ensure there is no buried topsoil or other deleterious materials within the prepared subgrade. Remedial action will also be required to further consolidate the existing fill if it is decided to leave it in place. If the existing fill is left in place, provisions for the alterations to the design of the pavement structure should be included in the tender documents. Review of the subgrade and potential changes to the design of the pavement structure, as required, will be addressed at the time of construction.

Prior to reusing excavated material on-site as potential bulk fill, thorough field inspection and approval by qualified geotechnical personnel would be required to ensure that existing fill materials do not comprise organics, topsoil or other deleterious materials.

5.2.3. Removal/Relocation/Repair of Existing Buried Piping

Any existing buried pipes and underground services that may be encountered during the site grading process (that are no longer deemed necessary), should be removed. Any piping that is left in place that is no longer active must be completely sealed with concrete or grout at termination points to prevent the migration of soils into pipe voids, which may result in long-term settlement. Any existing pipes that will remain active should be thoroughly inspected for blockage, corrosion, holes, or damage (collapse or out-of-round) and be repaired/replaced as required. This operation may require a camera inspection to confirm the pipe condition. All existing trench backfill material associated with the removal of any existing buried pipes must be subexcavated and the subsequent excavation must be backfilled with approved soils placed in accordance with Section 5.2.4 of this report.

5.2.4. Site Grading

Following the removal of the topsoil/vegetation, as well as subexcavation of any unsuitable fill that may be encountered or native soils deemed unsuitable to support the new pavement structure, the exposed subgrade soils must be proof-rolled, and any soft or unstable areas observed must be subexcavated and replaced with approved fill materials. It is recommended that the site undergo an additional inspection prior to the addition of new fill material to ensure that any deleterious and unsuitable materials are removed, and that any remaining fill subgrade soils are properly compacted.

Any fill materials required to achieve the design grades should be placed according to the following procedures:

- Prior to placement of any granular subbase/base material, the subgrade must be prepared large enough to accommodate a 1:1 slope commencing a distance of 0.5 m beyond the outside edge of the proposed new parking lots and driveway areas, as well as any sidewalks or access ramps, down to the approved competent founding soils;

- It is recommended that a good quality granular subbase material meeting the physical properties and gradation requirements of OPSS 1010 Type III Granular 'B' be utilized for the granular subbase in the new pavement structure;

- The granular base material in the new pavement structure must meet the physical properties and gradation requirements of OPSS 1010 for Granular 'A';

- Granular fill approved for use in the parking lot construction must be placed in loose lifts not exceeding 0.3 m (12") in depth or the capacity of the compactor (whichever is less);

- Granular fill materials should be compacted utilizing adequate heavy vibratory smooth drum and/or large diesel vibratory plate tamper compaction equipment;

- Fine-grained silt or clay soils (if utilized as bulk subgrade fill) must be compacted utilizing adequate heavy padfoot vibratory compaction equipment;

- Approved fill materials must be at suitable moisture contents to achieve the specified compaction. Soil moisture will be dependent on weather conditions and time of year that construction takes place;

- Approved Granular 'B' subbase and Granular 'A' base materials that will support all hard surfaces (parking lots, driveways, sidewalks and large expansive slabs) must be compacted to 100% SPMDD;

- Approved bulk fill (bulk subgrade fill for driveways and parking lots as well as sidewalks) that will not support footings or heavy point loading) must be compacted to a minimum 95% SPMDD.

If wet to saturated subgrade soils are encountered, as was observed in some of the boreholes, significant air-drying along with working of the soils may be required in order to achieve the specified compaction of 95% SPMDD for bulk subgrade fill for the parking lots and driveways. Utilizing the existing soils during site grading may be more achievable if work is completed during the generally drier

summer months. It should also be noted, however, that due to the nature of some of the soils, the addition of water might be required during hot dry weather in order to achieve the specified compaction. Reuse of excavated soils on-site will be subject to approval from qualified geotechnical personnel.

5.3. Excavations

All excavations must be carried out in accordance with Ontario Regulation 213/91 (Reg 213/91) of the Occupational Health and Safety Act and Regulations for Construction Projects.

Type 3 Soils - In general, the fill soils and the native soils encountered in a drained state (not wet or saturated), would be classified as Type 3 soils under Reg 213/91. The Type 3 soils must be sloped from the bottom of the excavation at a minimum gradient of 1 horizontal to 1 vertical. All saturated soils encountered must be treated as Type 4 soils, as described below.

Type 4 Soils - In general, any wet to saturated soils would be classified as Type 4 soils under Reg 213/91. Type 4 soils must be sloped from the bottom of the excavation at a minimum gradient of 3 horizontal to 1 vertical.

If it is not practical to excavate according to the above requirements, then a trench support system (designed in accordance with the Ontario Health and Safety Act Regulations) may be utilized. When using a temporary trench support system consisting of trench boxes to reduce the lateral extent of the excavations, it should be noted that the support system is intended primarily to protect workers as opposed to controlling lateral soil movement. Any voids between the excavation walls and the support system should be immediately filled to reduce the potential for loss of ground and to provide support to existing adjacent utilities and structures, and it is recommended that the excavation be carried out in short sections, with the support system installed immediately upon excavation completion.

Excavations that extend into very dense strata may prove difficult to remove with conventional excavating equipment, impacting the production schedule. It is imperative that if these very dense strata are utilized for backfilling of service trenches, the material must be broken down (pulverized) to minimize voids and reduce the potential for settlement. It is not recommended that these blocky excavated soils be utilized as structural fill.

5.4. Construction Dewatering Considerations

Some wet soil conditions were observed at the borehole locations which can likely be attributed to perched water in the sand and gravel fill. Depending on the time of year and weather conditions during construction, seepage of this perched water may be encountered.

If required, dewatering should be performed in accordance with OPSS 517 and the control of water must be in accordance with OPSS 518. It is the responsibility of the contractor to propose a suitable dewatering system based on the groundwater elevation at the time of construction. Collected water should discharge a sufficient distance away from the excavation to prevent re-entry. Sediment control measures must be installed at the discharge point of the dewatering system to avoid any potential adverse impacts on the environment.

5.5. Service Pipe Bedding

The existing native soils that are free of any organics or deleterious materials are generally considered suitable for indirect support of the site service pipes. Should instability due to wet soil conditions be encountered, it may be necessary to increase the thickness of the granular base and utilize 19 mm clear stone to create an adequate supporting base for the service pipes and/or manholes (if installed). Pipe embedment, cover and backfill for both flexible and rigid pipes should be in accordance with all current and applicable OPSD, OPSS and OBC standards and guidelines and as follows:

Flexible Pipes – The pipe bedding should be shaped to receive the bottom of the pipe. If necessary, pipe culvert frost treatment should be undertaken in accordance with OPSD-803.031. The trench excavations should be symmetrical with respect to the centreline of the pipe. The granular material placed under the haunches of the pipe must be compacted to 95% SPMDD prior to the continued placement and compaction of the embedment material. The homogeneous granular material used for embedment should be placed and compacted uniformly around the pipe. Should wet conditions be encountered at the base of the trench, then the pipe bedding should consist of 19 mm clear stone (meeting OPSS 1004 specifications) wrapped completely in a geotextile fabric such as Terrafix 270 or equivalent.

Rigid Pipes - In general, the pipe installation recommendations for rigid pipes are the same as those for flexible pipes, except that the minimum bedding depth below a rigid pipe should be 0.15*D* (where *D* is the pipe diameter). In no case should this dimension be less than 150 mm or greater than 300 mm.

Any service pipes that are not provided with sufficient frost coverage must be protected with the necessary equivalent thermal insulation. The general contractor is responsible to protect existing and new service piping from damage by heavy equipment.

5.6. Sensitivity of Subsoils

The native subgrade soils encountered in the boreholes are highly susceptible to strength losses and will prove difficult to place and compact if they become overly wet as a result of inclement weather and/or water ponding or if they become overly dry. If the soils become overly wet/dry or disturbed, they may become unsuitable for reuse and require subexcavation and replacement with suitable dryer soils. As such, the following recommendations are presented:

- Perform the project during the typically drier summer months,
- Provide proper measures for control of surface water and seepage during construction,
- Allow sufficient time between excavating and backfilling to provide for air-drying (as required),
- Work the stockpiles as required to expedite air-drying,
- Apply water to overly dry soils to aid in compaction (as required),
- Use a smooth lipped bucket to reduce the disturbance while excavating to the subgrade elevation, and
- Minimize construction traffic traveling over the subgrade soils.

5.7. Backfilling

Approved native (non-organic) soils are generally considered to be suitable for reuse as a pavement structure subgrade and as backfill for any service trenches from the top of the pipe cover to the subgrade elevation. Any existing soils which contain organic material or deleterious fill materials are not considered suitable for reuse as pavement structure subgrade and backfill. Backfill material should be at suitable moisture contents to achieve the specified field compaction. Based on the insitu moisture contents of the existing soils encountered in the geotechnical investigation, and on past experience with similar soil types, it should be anticipated that any existing wet soils that are encountered in the excavations will require extensive air-drying in order to achieve the specified field compaction. If space or time constraints do not permit for air-drying of soils, any wet soils may have to be disposed of properly off-site and replaced with a suitable approved alternative.

Backfilling operations should be carried out with the following minimum requirements:

- Adequate heavy smooth drum or padfoot vibratory compaction equipment (suited to soil type) should be used for the compaction;

- Loose lift thicknesses should not exceed 0.3 m (12") for granular soils or 0.2 m (8") for silt and clay soils or the capacity of the compactor (whichever is less);

- The soils must be at suitable moisture contents to achieve compaction to a minimum 95% SPMDD for subgrade soils and 100% SPMDD for the pavement structure granular subbase and granular base;

- It is recommended that inspection and testing be carried out during construction to confirm backfill quality, thickness and to ensure that compaction requirements are achieved;

- Pavement subgrade and backfill materials may consist of approved excavated soils with no particles greater than 100 mm and no topsoil or other deleterious materials;

- If construction operations are undertaken in the winter, strict consideration should be given to the condition of the backfill material to make certain that frozen material is not used.

5.8. Pavement Design/Drainage

The following section provides general pavement structure recommendations for the subject site.

Any soils containing topsoil/organics or other deleterious materials must be subexcavated from within the proposed parking lot and driveway construction envelopes. Prior to placement of the granular subbase, the subgrade soils must be proof-rolled, and any soft, loose, or unstable areas should be subexcavated and replaced with suitable drier materials; or any existing loose subgrade materials could be further consolidated with vibratory compaction equipment in order to prepare a proper, stable subgrade. The subgrade should be graded smooth (free of depressions) and properly crowned to ensure positive drainage, with a minimum grade of 3% toward the drainage outlet or curb line/edge of pavement. When service pipes are installed, pipe bedding and backfilling should be undertaken as indicated in Sections 5.5 and 5.7 of this report.

Rapid drainage of the pavement structure is critical to ensure long-term performance and also to reduce the potential and effects of frost heave. The subgrade soils are considered susceptible to frost heaving, as such, it is recommended to install subdrains for this project (provided gravity drainage to a suitable outlet (catch basin or ditch) can be provided). Subdrains should be designed and installed in accordance with OPSS 405 and OPSD 216.021.

If Granular 'A' bedding (OPSS 1010) is utilized, the subdrains should be equipped with a factory installed filter sock. If 19 mm clear stone (OPSS 1004) is utilized as bedding for the subdrain (recommended for this application), then the bedding must be wrapped

completely with geotextile filter fabric such as Terrafix 270R (or equivalent) and a factory installed filter sock is not required. Installation of rigid subdrains allows for better grade control and less potential for damage during installation or service. Positive drainage through grade control of subdrains is critical, as improperly installed subdrains can turn drainage systems into reservoirs, which can fuel frost action. The subdrains will hasten the removal of water, thereby reducing the risk and effects of frost heaving and load transfer in saturated conditions. It is suggested that subdrains be installed at regular intervals (to be designed based on layout of catch basins and storm sewers) throughout the paved parking and driveway areas. It is also recommended to install subdrains through any areas that cannot tolerate differential frost heave such as accessibility ramps/sidewalks. Installation of subdrains along the curb line/pavement edge can reduce the potential for wheel depressions to form from repetitive parking during saturated conditions and/or freeze thaw cycles. The subdrains should be installed in a 0.3 m (1.0 ft) by 0.3 m (1.0 ft) trench in the subgrade and bedded approximately 50 mm (2") above the bottom of the trench. The subgrade must be prepared with positive drainage to the subdrains and the subdrains must be installed with positive drainage into a catch basin structure or other suitable outlet.

The subgrade soils are highly sensitive to changes in moisture content and can become loose or soft if the soils are subject to inclement weather and seepage or severe drying. Furthermore, the subgrade soils could be easily disturbed if traveled on during construction. As such, where this material will be exposed, it is recommended that the granular subbase material be placed immediately upon completion of the subgrade preparation to protect the integrity of the subgrade soils.

It is expected that the new parking lot and driveway areas will be subject to mostly light traffic (personal vehicles) as well as occasional heavy traffic (delivery trucks, maintenance, and emergency vehicles).

Based on the frost-susceptibility of the subgrade soils as well as the anticipated loading, the following pavement design is provided:

Material		**Recommended Thickness for Light Traffic**	**Recommended Thickness for Heavy Traffic**	**Compaction Requirements**
Asphaltic Concrete (OPSS 1150 and OPSS 310)	HL3 Surface Coarse	40 mm (1.5")	50 mm (2.0")	92% MRD
	HL4 or HL8 Binder Coarse	50 mm (2.0")	60 mm (3.0")	
Granular 'A' Base (OPSS 1010)		150 mm (6.0")	150 mm (6.0")	100% SPMDD
Granular 'B' Subbase (OPSS 1010 Type III)		400 mm (16.0")	450 mm (18.0")	

Frost tapers must be constructed at any changes from light traffic to heavy traffic areas as well as at any service trenches that are backfilled with granular fill.

Should wet conditions be encountered during construction, site assessments may be required to determine what options can be undertaken to construct a modified pavement base. These options may include subexcavation of loose/soft soils, increasing the thickness of the granular base, the use of reinforcing geotextiles or geogrids, or a combination of all.

Construction joints in the surface asphalt must be offset a minimum of 150 mm to 300 mm (6" to 12") from construction joints in the binder asphalt so that longitudinal joints do not coincide.

Where new asphalt is joined into existing asphalt, it is recommended that the existing asphalt be sawcut in a straight line prior to being milled to a depth of 80 mm and a width of 300 mm as per OPSD 509.010. It is recommended that a tackcoat in conformance with OPSS 308 be applied to the edge and surface of all milled asphalt prior to placement of new asphalt.

The Granular 'A' base and Granular 'B' subbase (Type III Granular 'B' recommended) materials must conform to the physical property and gradation requirements of OPSS 1010 and must be compacted to 100% SPMDD. Asphaltic concrete should be supplied, placed and compacted to a minimum 92.0% Marshall maximum relative density, in accordance with OPSS 1150 and OPSS 310.

The pavement should be designed to ensure that water will not pond on the pavement surface. If the surface asphalt is not placed within a reasonable time following placement of the binder asphalt, it is recommended that any catch basin lids are set at a lower elevation or apertures provided to allow surface water to drain into the catch basins and not accumulate around the catch basins. The strength of the pavement structure relies on all of the components to be in place in order to provide the design strength; therefore, it is strongly recommended that the surface asphalt be placed shortly after placement of the binder asphalt so as to avoid undue stress on the binder asphalt by not having the complete pavement structure in place.

It should be noted that currently, asphalt mixes tend to be more flexible, and as such, there is a tendency for damage to occur from vehicles turning their steering wheels or applying excessive brake pressure. The condition is further intensified during hot weather and the damage can occur from both passenger vehicles as well as large vehicles.

5.8. Chemical Analysis/Excess Soil Management

As requested, random representative samples of soil were obtained by CMT Inc. personnel and were submitted to ALS Laboratory Group in Waterloo, Ontario for chemical analyses. Samples were obtained from the following depths and locations:

- Borehole 1 – approximate depth 0.46 m to 1.52 m (1.50 ft to 5.00 ft),
- Borehole 3 – approximate depth 0.91 m to 1.52 m (3.00 ft to 5.00 ft),

- Borehole 7 – approximate depth 1.22 m to 1.52 m (4.00 ft to 5.00 ft), and
- Borehole 10 – approximate depth 0.61 m to 1.52 m (2.00 ft to 5.00 ft).

The samples were tested for the following various parameters:

- VOC, PHC F1-F4, BTEX as per O. Reg. 406/19,
- Metals and Inorganics as per O. Reg. 406/19, and
- PAH as per O.Reg. 406/19,
- TCLP (Leachate concentrations of Metals & Inorganics, VOCs, PCBs, and benzo(a)pyrene) as per O.Reg. 406/19 (Borehole 1 Sample 1 and Borehole 7 Sample 1).

The chemical analysis results were compared to the site condition standards of Ontario Regulation 406/19. Specifically, the results are compared to; *Table 1-Soil-Res/Park/Inst/Ind/Com/Commu (RPI-ICC) Property Use; Table 2.1-Volume Independent Soil – Res/Park/Inst (RPI) Property Use; T2.1-Volume Independent Soil – Ind/Com/Commu (ICC) Property Use;*

There were no exceedances of the Table 1 and Table 2.1 standards noted in the testing completed by ALS Environmental on January 7, 2025. A more detailed breakdown of the results of the chemical testing can be found in Appendix C.

The above test results are based on samples extracted from random samples and does not constitute as a guarantee for the entire site. It is the responsibility of the contractor to confirm the results provided and notify the owner/consultant of any changes in site conditions such as odours or staining that would warrant further testing.

5.8.1. Leachate Testing Requirement

Two (2) representative samples of soil were obtained by CMT Inc. personnel and were submitted to ALS Laboratory Group in Waterloo, Ontario for TCLP leachate analysis. Samples were obtained from the following depths and locations:

- Borehole 1 – approximate depth 0.46 m to 1.52 m (1.50 ft to 5.00 ft),
- Borehole 7 – approximate depth 1.22 m to 1.52 m (4.00 ft to 5.00 ft).

The results of the leachate testing will be provided under separate cover.

6.0 SITE INSPECTION

Qualified geotechnical personnel should supervise excavation inspections as well as compaction testing for site grading, site servicing and pavement structure construction. This will ensure that proper material and techniques are used, and the specified compaction is achieved. CMT Engineering Inc. would be pleased to review the design drawings and provide an inspection and testing program for the parking lot reconstruction.

7.0 LIMITATIONS OF THE INVESTIGATION

This report is intended for the Client named herein and for their Client. The report should be read in its entirety, and no portion of this report may be used as a separate entity. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties.

The recommendations made in this report are in accordance with our present understanding of the project. We request that we be permitted to review our recommendations when the drawings and specifications are complete, or if the proposed construction should differ from that mentioned in this report.

It is important to emphasize that a soil investigation is, in fact, a random sampling of a site and the comments are based on the results obtained at the test locations only. It is therefore assumed that these results are representative of the subsoil conditions across the site. Should any conditions at the site be encountered which differ from those found at the test locations, we request that we be notified immediately in order to permit a reassessment of our recommendations.

It should be noted that this report specifically addresses geotechnical aspects of the project and does not include any investigations or assessments relating to potential subsurface contamination. As such, there should be no assumptions or conclusions derived from this report with respect to potential soil or water contamination. Soil or water contamination is generally caused by the presence of xenobiotic (human-made) chemicals or other alteration processes in the natural soil and groundwater environment. If necessary, the investigation, assessment and rehabilitation of soil and water contaminants should be undertaken by qualified environmental specialists.

The samples obtained during the geotechnical investigation will be stored for a period of three months, after which time they will be disposed of unless alternative arrangements are made.

We trust that this report meets with your present requirements. Should you have any questions, please do not hesitate to contact our office.

Prepared by:

Jake Feeney, P. Eng.

Reviewed by:

Nathan Chortos, P.Eng.

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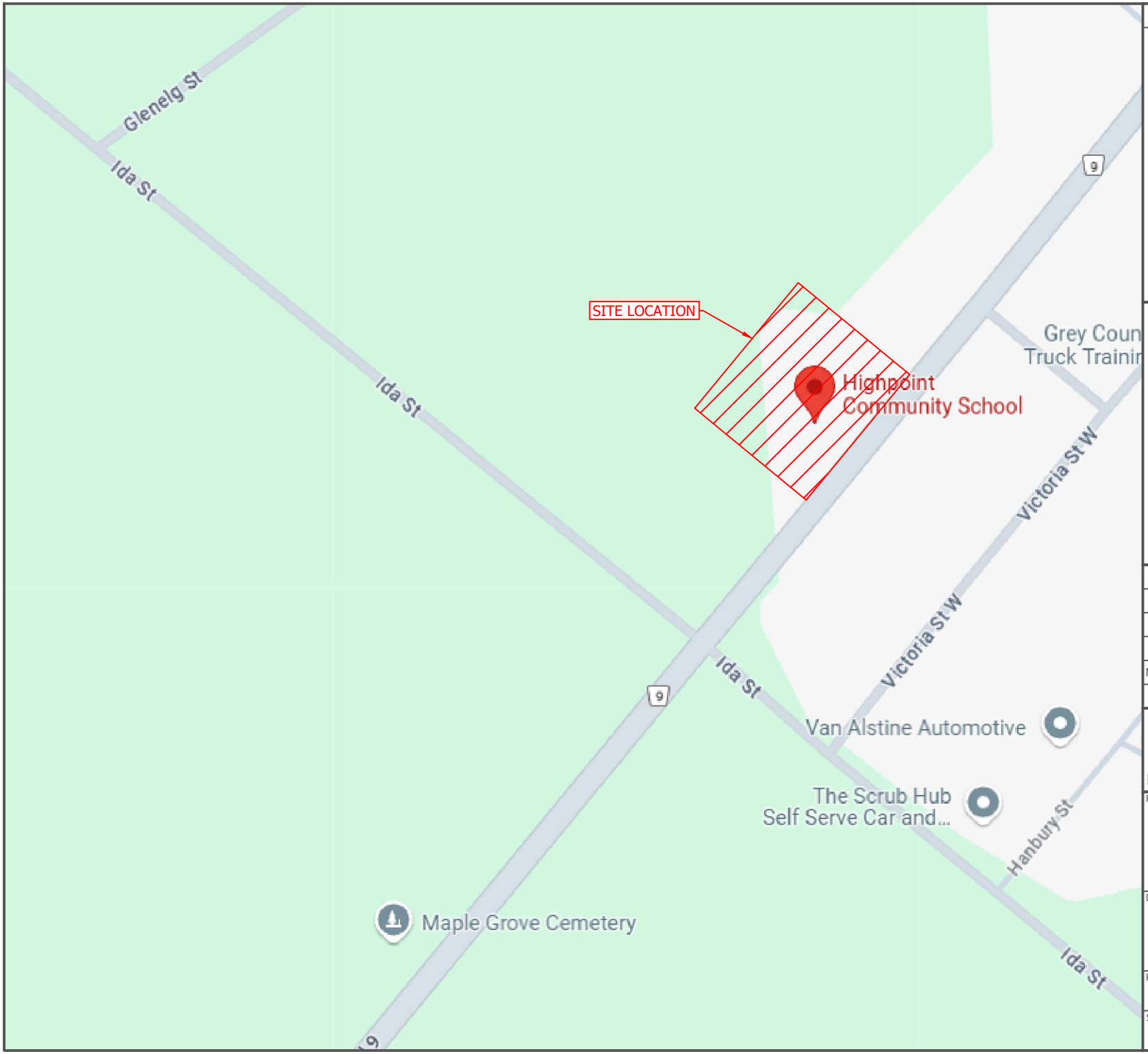

NOTES:

Base map provided by Google

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NO.	DESCRIPTION	DATE

REVISIONS

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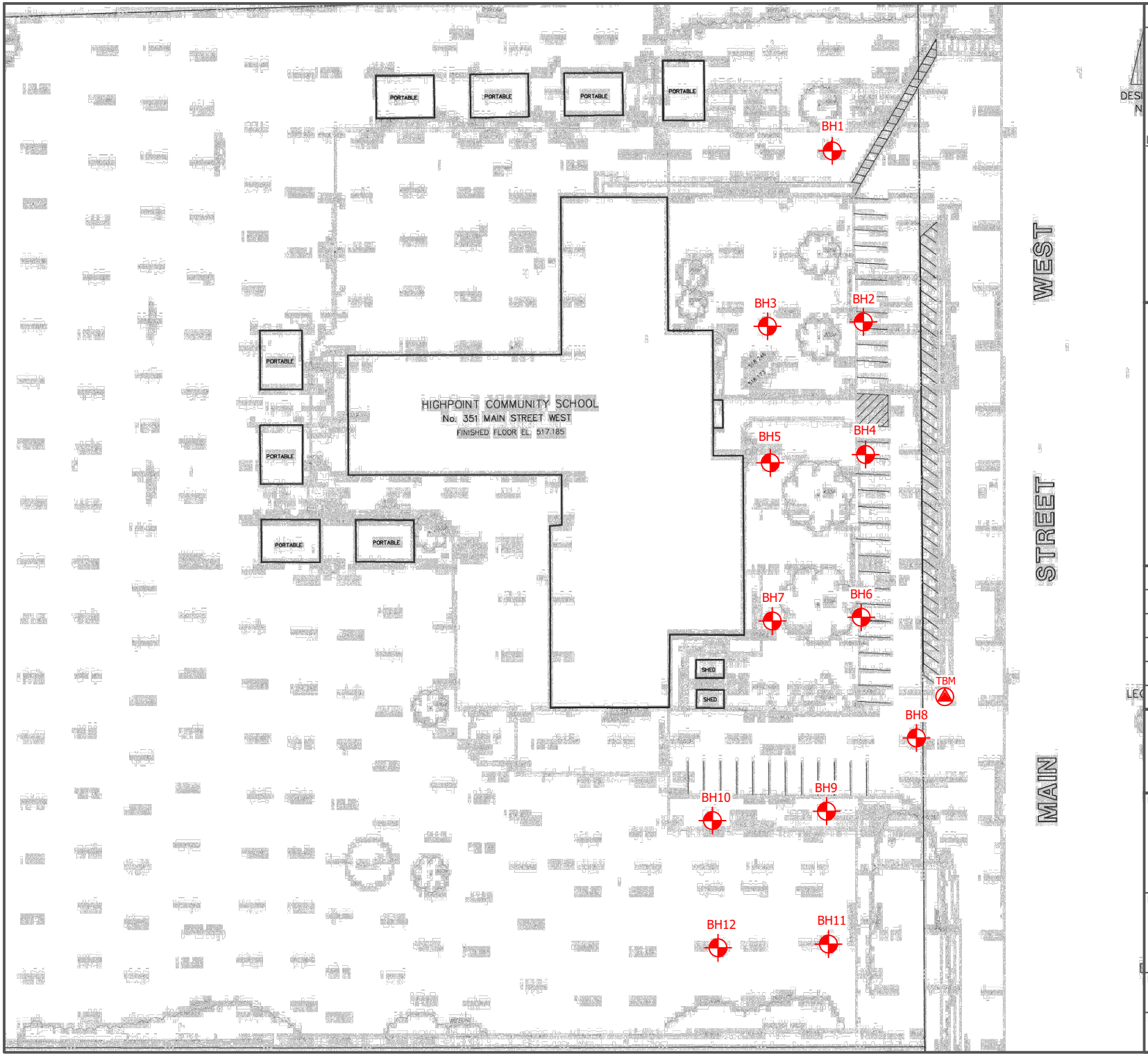
PROJECT:
PARKING LOT EXPANSION
Highpoint Community School
351 Main Street West
Dundalk, Ontario

DRAWING TITLE:
SITE LOCATION MAP

PROJECT NO.:	DATE:
24-875	January 10, 2025
SCALE:	DRAWING NO.
N.T.S.	1



NOTES:

1. This drawing is for information purposes only. Locations and sizes of existing and proposed structures are approximate only, and should not be used for construction.
2. Base drawing is provided by Client

Legend

CMT Borehole 2024

Temporary Benchmark - Catchbasin (Assumed Elevation: 100.00 m)

N

NO.	DESCRIPTION	DATE

REVISIONS

CMT ENGINEERING INC.
1011 Industrial Crescent, Unit 1
St. Clements, Ontario N0B 2M0
Tel.: 519-699-5775
Fax: 519-699-4664
www.cmtinc.net

PROJECT:

PARKING LOT EXPANSION
Highpoint Community School
351 Main Street West
Dundalk, Ontario

DRAWING TITLE:

SITE PLAN SHOWING
BOREHOLE LOCATIONS

PROJECT NO.:	DATE:
24-875	January 10, 2025
SCALE:	DRAWING NO.
N.T.S.	2

APPENDIX A

BOREHOLE LOGS

CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

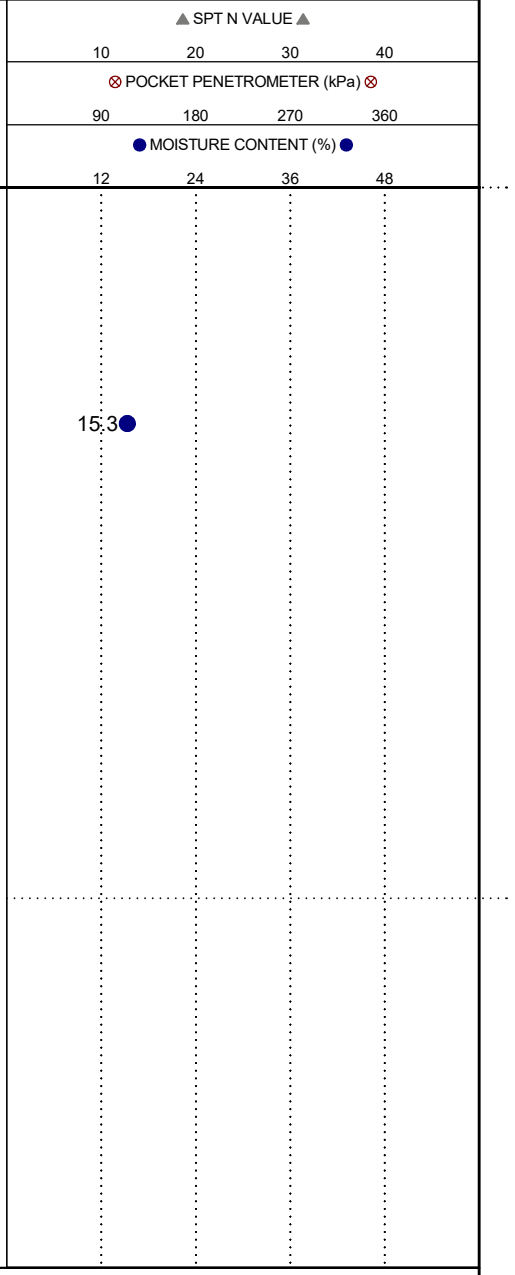
BOREHOLE NUMBER 1

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.46 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Asphalt: 80 mm	0.00, 100.46			
		Sand and Gravel Fill: Brown sand and gravel fill, trace silt, moist (380 mm)	0.08, 100.38			
		Sandy Silt: Brown sandy silt, some clay, trace gravel, moist	0.46, 100.00	MC5 1	100	
1						

Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.

Bottom of borehole at 1.52 m, Elevation 98.94 m.



BOREHOLE LOG2 24-875.GPJ CMT_TEMPLATE_2020-05-15.GDT 25-1-9

CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

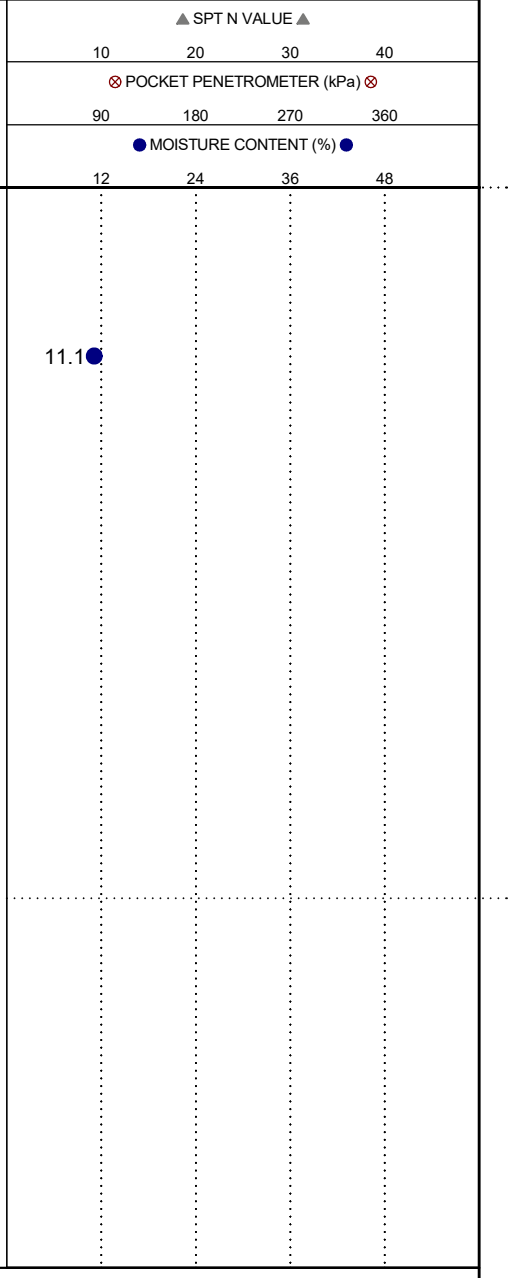
BOREHOLE NUMBER 2

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.65 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Asphalt: 90 mm	0.00, 100.65			
		Sand and Gravel Fill: Brown sand and gravel fill, trace silt, moist (210 mm)	0.09, 100.56			
		Sandy Silt: Brown sandy silt, some clay, trace gravel, moist	0.30, 100.35	MC5 1	100	
1						

Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.

Bottom of borehole at 1.52 m, Elevation 99.13 m.



CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 3

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.59 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Topsoil: Dark brown, silty, organic topsoil, moist (910 mm)	0.00, 100.59	MC5 1	100	
1		**Sandy Silt:** Brown sandy silt, some clay, trace gravel, moist	0.91, 99.68			

SPT N VALUE: 10 20 30 40
POCKET PENETROMETER (kPa): 90 180 270 360
MOISTURE CONTENT (%): 12 24 36 48

Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.

Bottom of borehole at 1.52 m, Elevation 99.07 m.

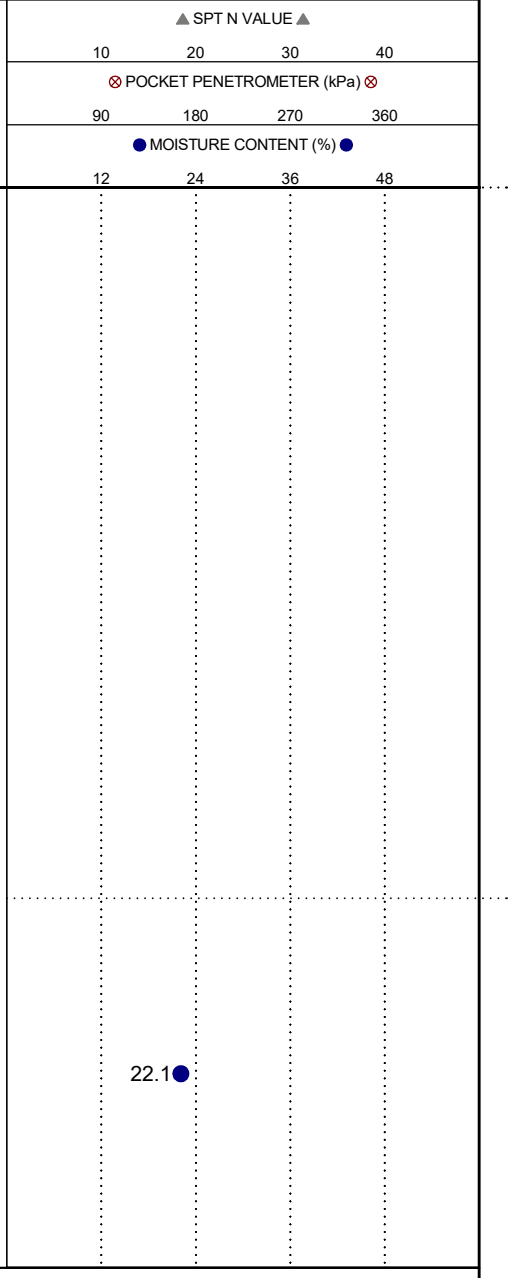
BOREHOLE LOG2 24-875.GPJ CMT_TEMPLATE_2020-05-15.GDT 25-1-9

CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 4

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.49 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Asphalt: 80 mm	0.00, 100.49			
		Sand and Gravel Fill: Brown sand and gravel fill, trace silt, moist (530 mm)	0.08, 100.41			
1		**Sandy Silt:** Brown sandy silt, some clay, trace gravel, moist	0.61, 99.88	MC5 1	100	
		Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.	,			
		Bottom of borehole at 1.52 m, Elevation 98.97 m.				



CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 5

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.59 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Topsoil: Dark brown, silty, organic topsoil, moist (1,220 mm)	0.00, 100.59	MC5 1	100	
1		**Sandy Silt:** Brown sandy silt, some clay, trace gravel, wet	1.22, 99.37			
		Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.	,			
		Bottom of borehole at 1.52 m, Elevation 99.07 m.				

SPT N VALUE
10 20 30 40
POCKET PENETROMETER (kPa)
90 180 270 360
MOISTURE CONTENT (%)
12 24 36 48

17.8

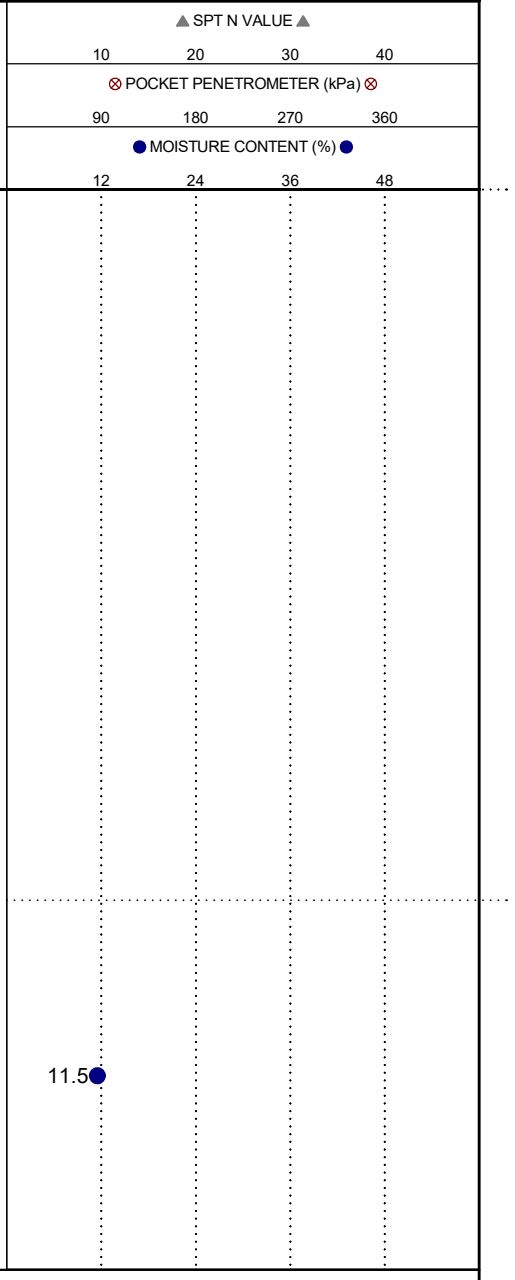
BOREHOLE LOG2 24-875.GPJ CMT_TEMPLATE_2020-05-15.GDT 25-1-9

CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 6

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.35 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Asphalt: 80 mm	0.00, 100.35			
		Sand and Gravel Fill: Brown sand and gravel fill, trace silt, moist (530 mm)	0.08, 100.27			
1		**Sandy Silt:** Brown sandy silt, some clay, trace gravel, moist	0.61, 99.74	MC5 1	75	
		Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.	,			
		Bottom of borehole at 1.52 m, Elevation 98.83 m.				



CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 7

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.54 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Topsoil: Dark brown, silty, organic topsoil, moist (1,220 mm)	0.00, 100.54	MC5 1	100	
1		**Sandy Silt:** Brown sandy silt, some clay, trace gravel, moist	1.22, 99.32			
		Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.	,			
		Bottom of borehole at 1.52 m, Elevation 99.02 m.				

SPT N VALUE: 10 20 30 40
POCKET PENETROMETER (kPa): 90 180 270 360
MOISTURE CONTENT (%): 12 24 36 48

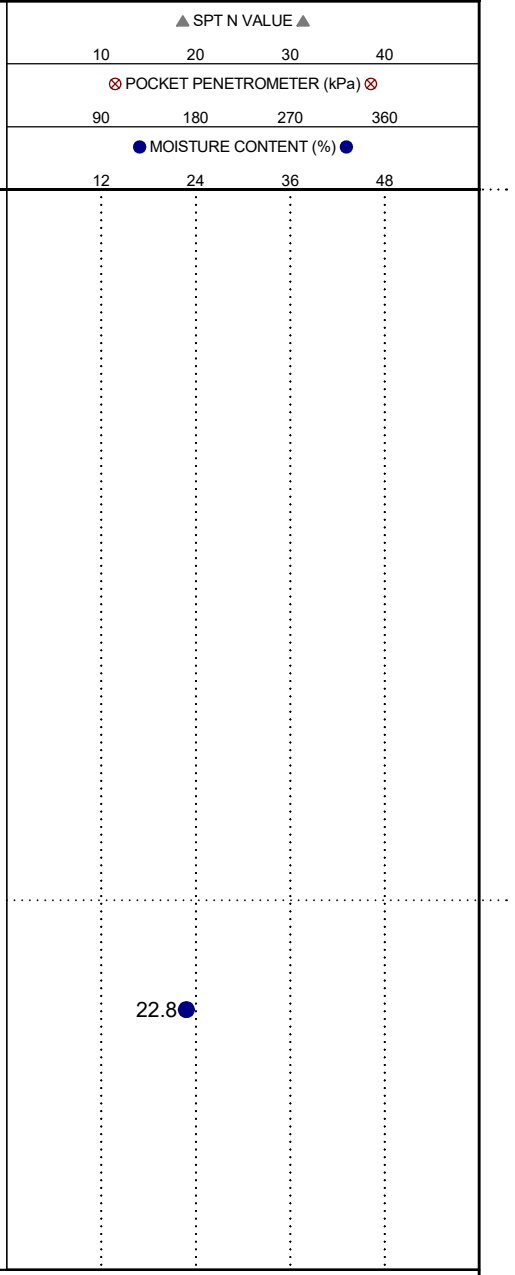
BOREHOLE LOG2 24-875.GPJ CMT_TEMPLATE_2020-05-15.GDT 25-1-9

CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 8

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.12 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Asphalt: 80 mm	0.00, 100.12			
		Sand and Gravel Fill: Brown sand and gravel fill, trace silt, moist (220 mm)	0.08, 100.04			
		Sandy Silt: Grey sandy silt, some clay, trace gravel, moist to wet Becoming more wet with depth	0.30, 99.82	MC5 1	100	
1						
		Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.	,			
		Bottom of borehole at 1.52 m, Elevation 98.60 m.				



CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 9

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.17 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Topsoil: Dark brown, silty, organic topsoil, moist (910 mm)	0.00, 100.17	MC5 1	100	
1		**Sandy Silt:** Brown sandy silt, some clay, trace gravel, moist to wet Becoming more wet with depth	0.91, 99.26			

SPT N VALUE: 10 20 30 40
POCKET PENETROMETER (kPa): 90 180 270 360
MOISTURE CONTENT (%): 12 24 36 48

13.3

Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.

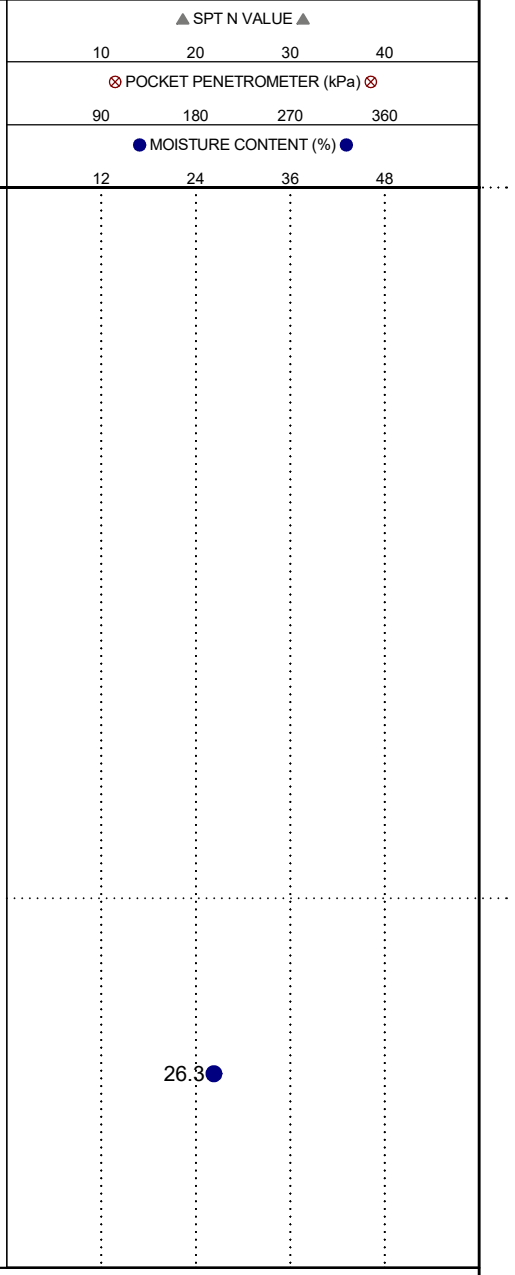
Bottom of borehole at 1.52 m, Elevation 98.65 m.

CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 10

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.27 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Topsoil: Dark brown, silty, organic topsoil, moist (610 mm)	0.00, 100.27			
		Sandy Silt: Brown sandy silt, some clay, trace gravel, moist to wet Becoming more wet with depth	0.61, 99.66	MC5 1	100	
1						
		Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.	,			
		Bottom of borehole at 1.52 m, Elevation 98.75 m.				

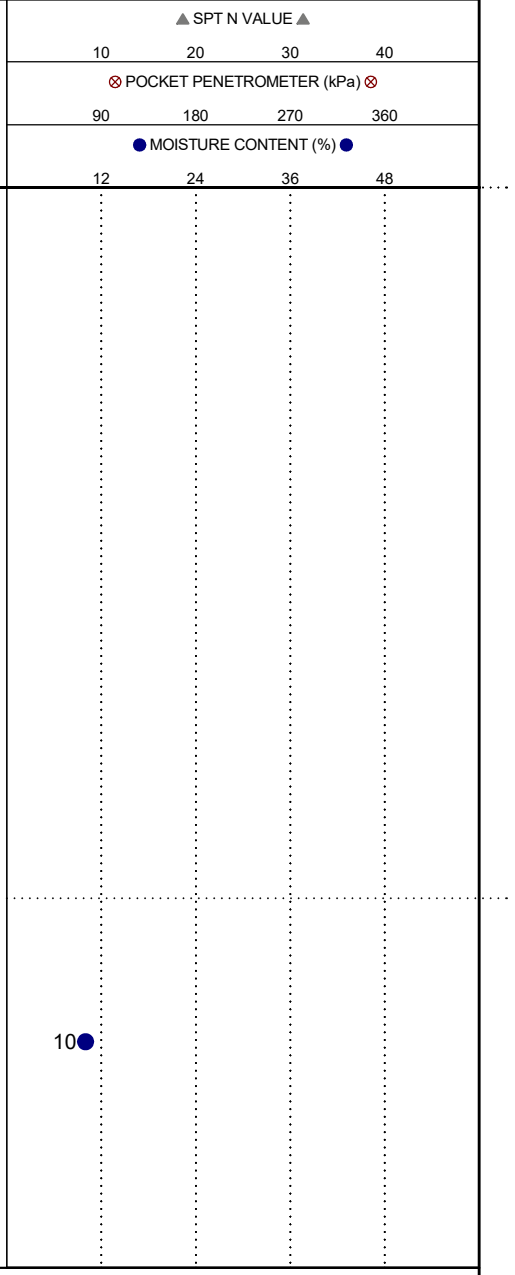


CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 11

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.16 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Topsoil: Dark brown, silty, organic topsoil, moist (460 mm)	0.00, 100.16			
		Sandy Silt: Brown sandy silt, some clay, trace gravel, moist to wet Becoming more wet with depth	0.46, 99.70	MC5 1	100	
1						
		Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.	,			
		Bottom of borehole at 1.52 m, Elevation 98.64 m.				

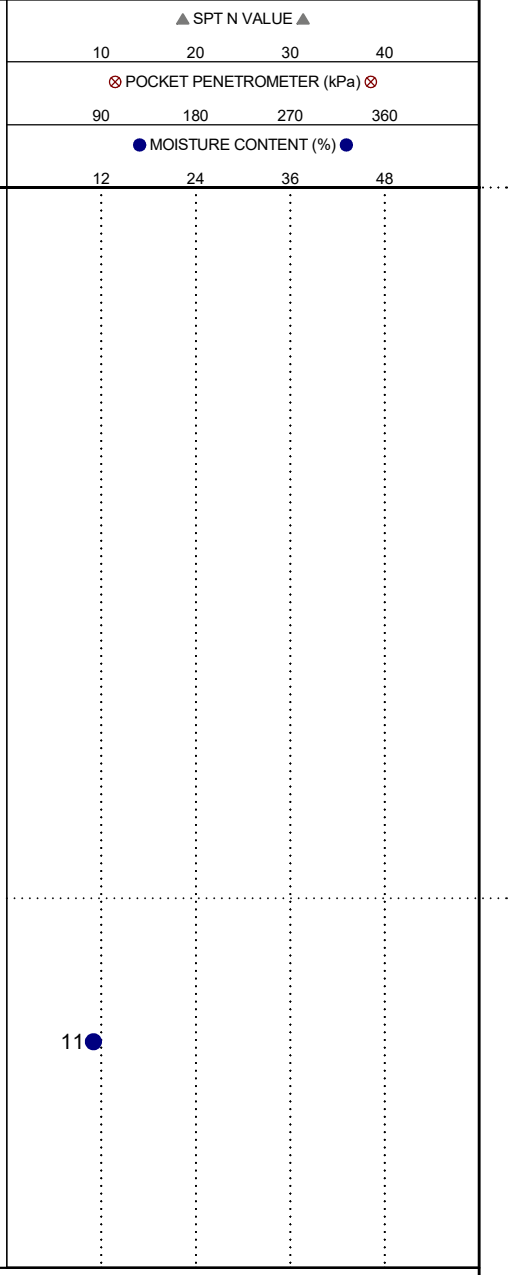


CMT Engineering Inc.
1011 Industrial Crescent
St. Clements, Ontario, N0B 2M0
Telephone: 519-699-5775
Fax: 519-699-4664

BOREHOLE NUMBER 12

PROJECT: Proposed Parking Lot Expansion - High Point Community School
PROJECT ADDRESS: 351 Main Street West
PROJECT NUMBER: 24-875
PROJECT LOCATION: Dundalk, Ontario
DRILLING DATE: 24-12-23
GROUND ELEVATION: 100.20 m
DRILLING CONTRACTOR: CMT Drilling Inc.
LOGGED BY: J. Feeney
DRILLING EQUIPMENT: Geoprobe 7822DT
SAMPLING METHOD: MC5

DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION	Depth, Elevation (m)	SAMPLE TYPE NUMBER	RECOVERY %	BLOW COUNTS (N VALUE)
		Topsoil: Dark brown, silty, organic topsoil, moist (610 mm)	0.00, 100.20			
		Sandy Silt: Brown sandy silt, some clay, trace gravel, moist to wet Becoming more wet with depth	0.61, 99.59	MC5 1	100	
1						
		Borehole open to about 1.52 m below the ground surface. No accumulated groundwater or seepage observed upon completion.	,			
		Bottom of borehole at 1.52 m, Elevation 98.68 m.				



APPENDIX B

GRAIN SIZE ANALYSIS

Particle Size Distribution Report

	% Cobbles	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	4.2	1.1	3.0	23.7	57.3	10.7

SOIL DATA					
	SOURCE	SAMPLE NO.	DEPTH (ft.)	Material Description	USCS
○	BH6	2	0.45-1.52m	Sandy silt, some clay, trace gravel	ML
				Tested by J.M. of CMT Engineering Inc., January 2, 2024	
				Sampled by J.F. of CMT Engineering Inc., December 23, 2024	

CMT Engineering Inc.

St. Clements, ON

Client: Triton Engineering Services Ltd.

Project: Parking Lot - High Point Community School
351 Main Street West, Dundalk, ON

Project No.: 24-875

Figure 1

APPENDIX C

CHEMICAL ANALYSES

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: **WT2437976**	Page	: 1 of 11
Client	: **CMT Engineering Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jake Feeney	Account Manager	: Mathy Mahadeva
Address	: 1011 Industrial Crescent Unit 1 St. Clements ON Canada N0B 2M0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 699 5775	Telephone	: +1 519 886 6910
Project	: 24-875 Highpoint Community School, Dundalk, ON	Date Samples Received	: 23-Dec-2024 14:45
PO	: ----	Date Analysis Commenced	: 31-Dec-2024
C-O-C number	: ----	Issue Date	: 07-Jan-2025 15:35
Sampler	: Jake Feeney		
Site	: ----		
Quote number	: Standing Offer 2025 Pricing		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amarpreet Singh	Analyst	VOC, Waterloo, Ontario
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario
Niral Patel		Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario

No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.
Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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

Key : LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
mS/cm	millisiemens per centimetre
pH units	pH units

>: greater than.
<: less than.
Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).
For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

Workorder Comments

RRQC: Silver recovery outside of ALS DQOs due to issue with standard. Reported data was not affected by this issue.

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH1S1	BH3S1	BH7S1	BH10S1	----	----	----
				Sampling date/time	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	----	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----	----
					WT2437976-001	WT2437976-002	WT2437976-003	WT2437976-004	--------	--------	--------
Physical Tests											
Conductivity (1:2 leachate)	----	E100-L/WT	mS/cm		0.239	0.166	0.114	0.196	----	----	----
Moisture	----	E144/WT	%		10.4	16.7	17.7	16.3	----	----	----
pH (1:2 soil:CaCl2-aq)	----	E108A/WT	pH units		7.90	7.38	7.51	7.20	----	----	----
Cyanides											
Cyanide, weak acid dissociable	----	E336A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Fixed-Ratio Extractables											
Calcium, soluble ion content	7440-70-2	E484/WT	mg/L		8.99	8.75	3.14	9.42	----	----	----
Magnesium, soluble ion content	7439-95-4	E484/WT	mg/L		1.70	1.68	0.66	1.36	----	----	----
Sodium, soluble ion content	17341-25-2	E484/WT	mg/L		16.7	1.32	2.06	9.95	----	----	----
Sodium adsorption ratio [SAR]	----	E484/WT	-		1.34	0.11	0.28	0.80	----	----	----
Metals											
Antimony	7440-36-0	E440C/WT	mg/kg		<0.10	<0.10	<0.10	0.11	----	----	----
Arsenic	7440-38-2	E440C/WT	mg/kg		2.28	3.72	4.12	5.60	----	----	----
Barium	7440-39-3	E440C/WT	mg/kg		18.3	41.2	39.0	54.4	----	----	----
Beryllium	7440-41-7	E440C/WT	mg/kg		0.16	0.37	0.41	0.50	----	----	----
Boron	7440-42-8	E440C/WT	mg/kg		7.3	5.8	<5.0	6.4	----	----	----
Boron, hot water soluble	7440-42-8	E487/WT	mg/kg		<0.10	0.16	0.10	0.13	----	----	----
Cadmium	7440-43-9	E440C/WT	mg/kg		0.092	0.198	0.141	0.232	----	----	----
Chromium	7440-47-3	E440C/WT	mg/kg		6.52	16.4	18.9	21.0	----	----	----
Cobalt	7440-48-4	E440C/WT	mg/kg		2.15	4.32	5.34	5.55	----	----	----
Copper	7440-50-8	E440C/WT	mg/kg		7.55	10.0	11.2	14.9	----	----	----
Lead	7439-92-1	E440C/WT	mg/kg		5.49	6.32	6.05	10.6	----	----	----
Mercury	7439-97-6	E510C/WT	mg/kg		<0.0050	0.0312	0.0276	0.0572	----	----	----
Molybdenum	7439-98-7	E440C/WT	mg/kg		0.24	0.25	0.26	0.34	----	----	----
Nickel	7440-02-0	E440C/WT	mg/kg		5.05	9.86	10.7	13.8	----	----	----
Selenium	7782-49-2	E440C/WT	mg/kg		<0.20	<0.20	<0.20	<0.20	----	----	----
Silver	7440-22-4	E440C/WT	mg/kg		<0.10	<0.10	<0.10	<0.10	----	----	----

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH1S1	BH3S1	BH7S1	BH10S1	----	----	----
				Sampling date/time	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	----	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----	----
					WT2437976-001	WT2437976-002	WT2437976-003	WT2437976-004	--------	--------	--------
Metals											
Thallium	7440-28-0	E440C/WT	mg/kg		<0.050	0.074	0.063	0.097	----	----	----
Uranium	7440-61-1	E440C/WT	mg/kg		0.328	0.546	0.599	0.516	----	----	----
Vanadium	7440-62-2	E440C/WT	mg/kg		10.2	31.3	39.9	35.5	----	----	----
Zinc	7440-66-6	E440C/WT	mg/kg		27.9	32.4	26.6	55.0	----	----	----
Speciated Metals											
Chromium, hexavalent [Cr VI]	18540-29-9	E532/WT	mg/kg		<0.10	<0.10	<0.10	0.29	----	----	----
Volatile Organic Compounds											
Acetone	67-64-1	E611D/WT	mg/kg		<0.50	<0.50	<0.50	<0.50	----	----	----
Benzene	71-43-2	E611D/WT	mg/kg		0.0097	<0.0050	0.0074	<0.0050	----	----	----
Bromodichloromethane	75-27-4	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Bromoform	75-25-2	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Bromomethane	74-83-9	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Carbon tetrachloride	56-23-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Chlorobenzene	108-90-7	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Chloroform	67-66-3	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dibromochloromethane	124-48-1	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dibromoethane, 1,2-	106-93-4	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichlorobenzene, 1,2-	95-50-1	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichlorobenzene, 1,3-	541-73-1	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichlorobenzene, 1,4-	106-46-7	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichlorodifluoromethane	75-71-8	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichloroethane, 1,1-	75-34-3	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichloroethane, 1,2-	107-06-2	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichloroethylene, 1,1-	75-35-4	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichloromethane	75-09-2	E611D/WT	mg/kg		<0.045	<0.045	<0.045	<0.045	----	----	----
Dichloropropane, 1,2-	78-87-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH1S1	BH3S1	BH7S1	BH10S1	----	----	----
				Sampling date/time	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	----	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----	----
					WT2437976-001	WT2437976-002	WT2437976-003	WT2437976-004	--------	--------	--------
Volatile Organic Compounds											
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	----	----	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	----	----	----
Ethylbenzene	100-41-4	E611D/WT	mg/kg		<0.015	<0.015	<0.015	<0.015	----	----	----
Hexane, n-	110-54-3	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT	mg/kg		<0.50	<0.50	<0.50	<0.50	----	----	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT	mg/kg		<0.50	<0.50	<0.50	<0.50	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT	mg/kg		<0.040	<0.040	<0.040	<0.040	----	----	----
Styrene	100-42-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Tetrachloroethylene	127-18-4	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Toluene	108-88-3	E611D/WT	mg/kg		0.070	<0.050	0.054	<0.050	----	----	----
Trichloroethane, 1,1,1-	71-55-6	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Trichloroethane, 1,1,2-	79-00-5	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Trichloroethylene	79-01-6	E611D/WT	mg/kg		<0.010	<0.010	<0.010	<0.010	----	----	----
Trichlorofluoromethane	75-69-4	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Vinyl chloride	75-01-4	E611D/WT	mg/kg		<0.020	<0.020	<0.020	<0.020	----	----	----
Xylene, m+p-	179601-23-1	E611D/WT	mg/kg		0.032	<0.030	<0.030	<0.030	----	----	----
Xylene, o-	95-47-6	E611D/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	----	----	----
Xylenes, total	1330-20-7	E611D/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
BTEX, total	----	E611D/WT	mg/kg		0.11	<0.10	<0.10	<0.10	----	----	----
Hydrocarbons											
F1 (C6-C10)	----	E581.F1/WT	mg/kg		<5.0	<5.0	<5.0	<5.0	----	----	----
F2 (C10-C16)	----	E601.SG-L/WT	mg/kg		<10	<10	<10	<10	----	----	----
F2-Naphthalene	----	EC600/WT	mg/kg		<25	<25	<25	<25	----	----	----
F3 (C16-C34)	----	E601.SG-L/WT	mg/kg		<50	<50	<50	<50	----	----	----
F3-PAH	n/a	EC600/WT	mg/kg		<50	<50	<50	<50	----	----	----

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID	BH1S1	BH3S1	BH7S1	BH10S1	----	----	----
				Sampling date/time	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	----	----	----
				Sub-Matrix	Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----	----
					WT2437976-001	WT2437976-002	WT2437976-003	WT2437976-004	--------	--------	--------
Hydrocarbons											
F4 (C34-C50)	----	E601.SG-L/WT	mg/kg		<50	<50	<50	<50	----	----	----
F1-BTEX	----	EC580/WT	mg/kg		<5.0	<5.0	<5.0	<5.0	----	----	----
Hydrocarbons, total (C6-C50)	n/a	EC581/WT	mg/kg		<80	<80	<80	<80	----	----	----
Chromatogram to baseline at nC50	n/a	E601.SG-L/WT	-		YES	YES	YES	YES	----	----	----
Hydrocarbons Surrogates											
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG-L/WT	%		90.7	101	93.8	93.7	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1/WT	%		113	87.8	103	92.3	----	----	----
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611D/WT	%		120	104	110	98.5	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT	%		124	109	113	102	----	----	----
Polycyclic Aromatic Hydrocarbons											
Acenaphthene	83-32-9	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Acenaphthylene	208-96-8	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Anthracene	120-12-7	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benz(a)anthracene	56-55-3	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benzo(a)pyrene	50-32-8	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Chrysene	218-01-9	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Fluoranthene	206-44-0	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Fluorene	86-73-7	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	----	----	----
Methylnaphthalene, 1+2-	----	E641A/WT	mg/kg		<0.050	<0.050	<0.050	<0.050	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/WT	mg/kg		<0.030	<0.030	<0.030	<0.030	----	----	----
Naphthalene	91-20-3	E641A/WT	mg/kg		<0.010	<0.010	<0.010	<0.010	----	----	----

Analytical Results Evaluation

Matrix: **Soil/Solid**

Analyte	CAS Number	Method/Lab	Unit	Client sample ID: BH1S1	BH3S1	BH7S1	BH10S1	----	----	----
				Sampling date/time: 23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	23-Dec-2024 00:00	----	----	----
				Sub-Matrix: Soil/Solid	Soil/Solid	Soil/Solid	Soil/Solid	----	----	----
				WT2437976-001	WT2437976-002	WT2437976-003	WT2437976-004	--------	--------	--------
Polycyclic Aromatic Hydrocarbons										
Phenanthrene	85-01-8	E641A/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	----	----	----
Pyrene	129-00-0	E641A/WT	mg/kg	<0.050	<0.050	<0.050	<0.050	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
Acridine-d9	34749-75-2	E641A/WT	%	101	96.0	96.0	85.6	----	----	----
Chrysene-d12	1719-03-5	E641A/WT	%	112	106	102	97.8	----	----	----
Naphthalene-d8	1146-65-2	E641A/WT	%	108	105	107	97.9	----	----	----
Phenanthrene-d10	1517-22-2	E641A/WT	%	108	105	105	95.1	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Summary of Guideline Limits

Analyte	CAS Number	Unit	ON406 T1-RPIICC	ON406 T2.1-S-ICC	ON406 T2.1-S-RPI				
Physical Tests									
Conductivity (1:2 leachate)	----	mS/cm	**0.57 mS/cm**	**1.4 mS/cm**	**0.7 mS/cm**				
Moisture	----	%	--	--	--				
pH (1:2 soil:CaCl2-aq)	----	pH units	--	--	--				
Cyanides									
Cyanide, weak acid dissociable	----	mg/kg	**0.051 mg/kg**	**0.051 mg/kg**	**0.051 mg/kg**				
Fixed-Ratio Extractables									
Calcium, soluble ion content	7440-70-2	mg/L	--	--	--				
Magnesium, soluble ion content	7439-95-4	mg/L	--	--	--				
Sodium adsorption ratio [SAR]	----	-	**2.4 -**	**12 -**	**5 -**				
Sodium, soluble ion content	17341-25-2	mg/L	--	--	--				
Metals									
Antimony	7440-36-0	mg/kg	**1.3 mg/kg**	**40 mg/kg**	**7.5 mg/kg**				
Arsenic	7440-38-2	mg/kg	**18 mg/kg**	**18 mg/kg**	**18 mg/kg**				
Barium	7440-39-3	mg/kg	**220 mg/kg**	**670 mg/kg**	**390 mg/kg**				
Beryllium	7440-41-7	mg/kg	**2.5 mg/kg**	**8 mg/kg**	**4 mg/kg**				
Boron, hot water soluble	7440-42-8	mg/kg	--	**2 mg/kg**	**1.5 mg/kg**				
Boron	7440-42-8	mg/kg	**36 mg/kg**	**120 mg/kg**	**120 mg/kg**				
Cadmium	7440-43-9	mg/kg	**1.2 mg/kg**	**1.9 mg/kg**	**1.2 mg/kg**				
Chromium	7440-47-3	mg/kg	**70 mg/kg**	**160 mg/kg**	**160 mg/kg**				
Cobalt	7440-48-4	mg/kg	**21 mg/kg**	**80 mg/kg**	**22 mg/kg**				
Copper	7440-50-8	mg/kg	**92 mg/kg**	**230 mg/kg**	**140 mg/kg**				
Lead	7439-92-1	mg/kg	**120 mg/kg**	**120 mg/kg**	**120 mg/kg**				
Mercury	7439-97-6	mg/kg	**0.27 mg/kg**	**0.27 mg/kg**	**0.27 mg/kg**				
Molybdenum	7439-98-7	mg/kg	**2 mg/kg**	**40 mg/kg**	**6.9 mg/kg**				
Nickel	7440-02-0	mg/kg	**82 mg/kg**	**270 mg/kg**	**100 mg/kg**				
Selenium	7782-49-2	mg/kg	**1.5 mg/kg**	**5.5 mg/kg**	**2.4 mg/kg**				
Silver	7440-22-4	mg/kg	**0.5 mg/kg**	**40 mg/kg**	**20 mg/kg**				
Thallium	7440-28-0	mg/kg	**1 mg/kg**	**3.3 mg/kg**	**1 mg/kg**				
Uranium	7440-61-1	mg/kg	**2.5 mg/kg**	**33 mg/kg**	**23 mg/kg**				
Vanadium	7440-62-2	mg/kg	**86 mg/kg**	**86 mg/kg**	**86 mg/kg**				
Zinc	7440-66-6	mg/kg	**290 mg/kg**	**340 mg/kg**	**340 mg/kg**				
Speciated Metals									
Chromium, hexavalent [Cr VI]	18540-29-9	mg/kg	**0.66 mg/kg**	**8 mg/kg**	**8 mg/kg**				
Volatile Organic Compounds									
Acetone	67-64-1	mg/kg	**0.5 mg/kg**	**0.5 mg/kg**	**0.5 mg/kg**				
Benzene	71-43-2	mg/kg	**0.02 mg/kg**	**0.02 mg/kg**	**0.02 mg/kg**				
Bromodichloromethane	75-27-4	mg/kg	**0.05 mg/kg**	**0.05 mg/kg**	**0.05 mg/kg**				

Analyte	CAS Number	Unit	ON406 T1-RPIICC	ON406 T2.1-S-ICC	ON406 T2.1-S-RPI				
Volatile Organic Compounds - Continued									
Bromoform	75-25-2	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Bromomethane	74-83-9	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
BTEX, total	----	mg/kg	--	--	--				
Carbon tetrachloride	56-23-5	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Chlorobenzene	108-90-7	mg/kg	0.05 mg/kg	0.083 mg/kg	0.083 mg/kg				
Chloroform	67-66-3	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dibromochloromethane	124-48-1	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dibromoethane, 1,2-	106-93-4	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichlorobenzene, 1,2-	95-50-1	mg/kg	0.05 mg/kg	6.8 mg/kg	3.4 mg/kg				
Dichlorobenzene, 1,3-	541-73-1	mg/kg	0.05 mg/kg	0.26 mg/kg	0.26 mg/kg				
Dichlorobenzene, 1,4-	106-46-7	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichlorodifluoromethane	75-71-8	mg/kg	0.05 mg/kg	1.5 mg/kg	1.5 mg/kg				
Dichloroethane, 1,1-	75-34-3	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichloroethane, 1,2-	107-06-2	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichloroethylene, 1,1-	75-35-4	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichloroethylene, cis-1,2-	156-59-2	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichloroethylene, trans-1,2-	156-60-5	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichloromethane	75-09-2	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichloropropane, 1,2-	78-87-5	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichloropropylene, cis+trans-1,3-	542-75-6	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Dichloropropylene, cis-1,3-	10061-01-5	mg/kg	--	--	--				
Dichloropropylene, trans-1,3-	10061-02-6	mg/kg	--	--	--				
Ethylbenzene	100-41-4	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Hexane, n-	110-54-3	mg/kg	0.05 mg/kg	2.5 mg/kg	2.5 mg/kg				
Methyl ethyl ketone [MEK]	78-93-3	mg/kg	0.5 mg/kg	0.5 mg/kg	0.5 mg/kg				
Methyl isobutyl ketone [MIBK]	108-10-1	mg/kg	0.5 mg/kg	0.5 mg/kg	0.5 mg/kg				
Methyl-tert-butyl ether [MTBE]	1634-04-4	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Styrene	100-42-5	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Tetrachloroethane, 1,1,1,2-	630-20-6	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Tetrachloroethane, 1,1,2,2-	79-34-5	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Tetrachloroethylene	127-18-4	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Toluene	108-88-3	mg/kg	0.2 mg/kg	0.2 mg/kg	0.2 mg/kg				
Trichloroethane, 1,1,1-	71-55-6	mg/kg	0.05 mg/kg	0.12 mg/kg	0.11 mg/kg				
Trichloroethane, 1,1,2-	79-00-5	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Trichloroethylene	79-01-6	mg/kg	0.05 mg/kg	0.05 mg/kg	0.05 mg/kg				
Trichlorofluoromethane	75-69-4	mg/kg	0.25 mg/kg	0.25 mg/kg	0.25 mg/kg				
Vinyl chloride	75-01-4	mg/kg	0.02 mg/kg	0.02 mg/kg	0.02 mg/kg				
Xylene, m+p-	179601-23-1	mg/kg	--	--	--				
Xylene, o-	95-47-6	mg/kg	--	--	--				

Analyte	CAS Number	Unit	ON406 T1-RPIICC	ON406 T2.1-S-ICC	ON406 T2.1-S-RPI				
Volatile Organic Compounds - Continued									
Xylenes, total	1330-20-7	mg/kg	**0.05 mg/kg**	**0.091 mg/kg**	**0.091 mg/kg**				
Hydrocarbons									
Chromatogram to baseline at nC50	n/a	-	--	--	--				
F1 (C6-C10)	----	mg/kg	**25 mg/kg**	**25 mg/kg**	**25 mg/kg**				
F1-BTEX	----	mg/kg	**25 mg/kg**	**25 mg/kg**	**25 mg/kg**				
F2 (C10-C16)	----	mg/kg	**10 mg/kg**	**26 mg/kg**	**10 mg/kg**				
F2-Naphthalene	----	mg/kg	--	--	--				
F3 (C16-C34)	----	mg/kg	**240 mg/kg**	**240 mg/kg**	**240 mg/kg**				
F3-PAH	n/a	mg/kg	--	--	--				
F4 (C34-C50)	----	mg/kg	**120 mg/kg**	**3300 mg/kg**	**2800 mg/kg**				
Hydrocarbons, total (C6-C50)	n/a	mg/kg	--	--	--				
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	%	--	--	--				
Dichlorotoluene, 3,4-	95-75-0	%	--	--	--				
Bromofluorobenzene, 4-	460-00-4	%	--	--	--				
Difluorobenzene, 1,4-	540-36-3	%	--	--	--				
Polycyclic Aromatic Hydrocarbons									
Acenaphthene	83-32-9	mg/kg	**0.072 mg/kg**	**2.5 mg/kg**	**2.5 mg/kg**				
Acenaphthylene	208-96-8	mg/kg	**0.093 mg/kg**	**0.093 mg/kg**	**0.093 mg/kg**				
Anthracene	120-12-7	mg/kg	**0.16 mg/kg**	**0.16 mg/kg**	**0.16 mg/kg**				
Benz(a)anthracene	56-55-3	mg/kg	**0.36 mg/kg**	**0.92 mg/kg**	**0.5 mg/kg**				
Benzo(a)pyrene	50-32-8	mg/kg	**0.3 mg/kg**	**0.31 mg/kg**	**0.31 mg/kg**				
Benzo(b+j)fluoranthene	n/a	mg/kg	**0.47 mg/kg**	**3.2 mg/kg**	**3.2 mg/kg**				
Benzo(g,h,i)perylene	191-24-2	mg/kg	**0.68 mg/kg**	**13 mg/kg**	**6.6 mg/kg**				
Benzo(k)fluoranthene	207-08-9	mg/kg	**0.48 mg/kg**	**3.1 mg/kg**	**3.1 mg/kg**				
Chrysene	218-01-9	mg/kg	**2.8 mg/kg**	**9.4 mg/kg**	**7 mg/kg**				
Dibenz(a,h)anthracene	53-70-3	mg/kg	**0.1 mg/kg**	**0.7 mg/kg**	**0.57 mg/kg**				
Fluoranthene	206-44-0	mg/kg	**0.56 mg/kg**	**2.8 mg/kg**	**0.69 mg/kg**				
Fluorene	86-73-7	mg/kg	**0.12 mg/kg**	**6.8 mg/kg**	**6.8 mg/kg**				
Indeno(1,2,3-c,d)pyrene	193-39-5	mg/kg	**0.23 mg/kg**	**0.76 mg/kg**	**0.38 mg/kg**				
Methylnaphthalene, 1+2-	----	mg/kg	**0.59 mg/kg**	**0.59 mg/kg**	**0.59 mg/kg**				
Methylnaphthalene, 1-	90-12-0	mg/kg	**0.59 mg/kg**	**0.59 mg/kg**	**0.59 mg/kg**				
Methylnaphthalene, 2-	91-57-6	mg/kg	**0.59 mg/kg**	**0.59 mg/kg**	**0.59 mg/kg**				
Naphthalene	91-20-3	mg/kg	**0.09 mg/kg**	**0.2 mg/kg**	**0.2 mg/kg**				
Phenanthrene	85-01-8	mg/kg	**0.69 mg/kg**	**12 mg/kg**	**6.2 mg/kg**				
Pyrene	129-00-0	mg/kg	**1 mg/kg**	**28 mg/kg**	**28 mg/kg**				
Acridine-d9	34749-75-2	%	--	--	--				
Chrysene-d12	1719-03-5	%	--	--	--				
Naphthalene-d8	1146-65-2	%	--	--	--				
Phenanthrene-d10	1517-22-2	%	--	--	--				

Please refer to the General Comments section for an explanation of any qualifiers detected.

Key:

ON406	Ontario Regulation 406/19 - Excess Soils (Bulk) (12-April-2022)
T1-RPIICC	406 T1 - Soil - Res/Park/Inst/Ind/Com/Commu Property Use
T2.1-S-ICC	406 T2.1 - Volume Independent Soil - Ind/Com/Commu Property Use
T2.1-S-RPI	406 T2.1 - Volume Independent Soil - Res/Park/Inst Property Use

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WT2437976**	Page	: 1 of 15
Client	: **CMT Engineering Inc.**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jake Feeney	Account Manager	: Mathy Mahadeva
Address	: 1011 Industrial Crescent Unit 1 St. Clements ON Canada N0B 2M0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 699 5775	Telephone	: +1 519 886 6910
Project	: 24-875 Highpoint Community School, Dundalk, ON	Date Samples Received	: 23-Dec-2024 14:45
PO	: ----	Issue Date	: 07-Jan-2025 15:35
C-O-C number	: ----		
Sampler	: Jake Feeney		
Site	: ----		
Quote number	: Standing Offer 2025 Pricing		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Laboratory Control Sample (LCS) outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Laboratory Control Sample (LCS) Recoveries								
Metals	QC-MRG2-1826650 002	----	Silver	7440-22-4	E440C	7.73 % RRQC	80.0-120%	Recovery less than lower control limit

Result Qualifiers

Qualifier	Description
RRQC	Refer to report comments for information regarding this QC result.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH10S1	E336A	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	02-Jan-2025	14 days	3 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH1S1	E336A	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	02-Jan-2025	14 days	3 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH3S1	E336A	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	02-Jan-2025	14 days	3 days	✓
Cyanides : WAD Cyanide (0.01M NaOH Extraction)										
Glass soil jar/Teflon lined cap [ON MECP] BH7S1	E336A	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	02-Jan-2025	14 days	3 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] BH10S1	E581.F1	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	31-Dec-2024	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] BH1S1	E581.F1	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	31-Dec-2024	40 days	0 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] BH3S1	E581.F1	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	31-Dec-2024	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial [ON MECP] BH7S1	E581.F1	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	31-Dec-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH10S1	E601.SG-L	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	02-Jan-2025	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH1S1	E601.SG-L	23-Dec-2024	31-Dec-2024	14 days	9 days	✓	02-Jan-2025	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH3S1	E601.SG-L	23-Dec-2024	31-Dec-2024	14 days	9 days	✓	02-Jan-2025	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP] BH7S1	E601.SG-L	23-Dec-2024	31-Dec-2024	14 days	9 days	✓	02-Jan-2025	40 days	2 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] BH10S1	E487	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] BH1S1	E487	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] BH3S1	E487	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	0 days	✓
Metals : Boron-Hot Water Extractable by ICPOES										
Glass soil jar/Teflon lined cap [ON MECP] BH7S1	E487	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH10S1	E510C	23-Dec-2024	06-Jan-2025	28 days	14 days	✓	07-Jan-2025	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1S1	E510C	23-Dec-2024	06-Jan-2025	28 days	14 days	✓	07-Jan-2025	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3S1	E510C	23-Dec-2024	06-Jan-2025	28 days	14 days	✓	07-Jan-2025	28 days	1 days	✓
Metals : Mercury in Soil/Solid by CVAAS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7S1	E510C	23-Dec-2024	06-Jan-2025	28 days	14 days	✓	07-Jan-2025	28 days	1 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH10S1	E440C	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1S1	E440C	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3S1	E440C	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	15 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS (<355 µm)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7S1	E440C	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	15 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH10S1	E484	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1S1	E484	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	1 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3S1	E484	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	1 days	✓
Metals : Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7S1	E484	23-Dec-2024	06-Jan-2025	180 days	14 days	✓	06-Jan-2025	180 days	1 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH10S1	E100-L	23-Dec-2024	06-Jan-2025	30 days	14 days	✓	07-Jan-2025	30 days	16 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1S1	E100-L	23-Dec-2024	06-Jan-2025	30 days	14 days	✓	07-Jan-2025	30 days	16 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH3S1	E100-L	23-Dec-2024	06-Jan-2025	30 days	14 days	✓	07-Jan-2025	30 days	16 days	✓
Physical Tests : Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)										
Glass soil jar/Teflon lined cap [ON MECP]										
BH7S1	E100-L	23-Dec-2024	06-Jan-2025	30 days	14 days	✓	07-Jan-2025	30 days	16 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH10S1	E144	23-Dec-2024	----	----	----		31-Dec-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP]										
BH1S1	E144	23-Dec-2024	----	----	----		31-Dec-2024	----	9 days	

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH3S1	E144	23-Dec-2024	----	----	----		31-Dec-2024	----	9 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap [ON MECP] BH7S1	E144	23-Dec-2024	----	----	----		31-Dec-2024	----	9 days	
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] BH10S1	E108A	23-Dec-2024	31-Dec-2024	30 days	8 days	✓	02-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] BH1S1	E108A	23-Dec-2024	31-Dec-2024	30 days	8 days	✓	02-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] BH3S1	E108A	23-Dec-2024	31-Dec-2024	30 days	8 days	✓	02-Jan-2025	30 days	11 days	✓
Physical Tests : pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received										
Glass soil jar/Teflon lined cap [ON MECP] BH7S1	E108A	23-Dec-2024	31-Dec-2024	30 days	8 days	✓	02-Jan-2025	30 days	11 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Soil/solid by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH10S1	E641A	23-Dec-2024	31-Dec-2024	60 days	8 days	✓	02-Jan-2025	40 days	2 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Soil/solid by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH1S1	E641A	23-Dec-2024	31-Dec-2024	60 days	9 days	✓	02-Jan-2025	40 days	1 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Soil/solid by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH3S1	E641A	23-Dec-2024	31-Dec-2024	60 days	9 days	✓	02-Jan-2025	40 days	1 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs in Soil/solid by Hex:Ace GC-MS										
Glass soil jar/Teflon lined cap [ON MECP] BH7S1	E641A	23-Dec-2024	31-Dec-2024	60 days	9 days	✓	02-Jan-2025	40 days	1 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] BH10S1	E532	23-Dec-2024	31-Dec-2024	30 days	8 days	✓	03-Jan-2025	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] BH1S1	E532	23-Dec-2024	31-Dec-2024	30 days	8 days	✓	03-Jan-2025	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] BH3S1	E532	23-Dec-2024	31-Dec-2024	30 days	8 days	✓	03-Jan-2025	7 days	3 days	✓
Speciated Metals : Hexavalent Chromium (Cr VI) by IC										
Glass soil jar/Teflon lined cap [ON MECP] BH7S1	E532	23-Dec-2024	31-Dec-2024	30 days	8 days	✓	03-Jan-2025	7 days	3 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH10S1	E611D	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	31-Dec-2024	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH1S1	E611D	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	31-Dec-2024	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH3S1	E611D	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	31-Dec-2024	40 days	0 days	✓
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass soil methanol vial [ON MECP] BH7S1	E611D	23-Dec-2024	31-Dec-2024	14 days	8 days	✓	31-Dec-2024	40 days	0 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Boron-Hot Water Extractable by ICPOES	E487	1826654	1	6	16.6	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1826360	1	4	25.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1826314	2	29	6.9	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1826652	1	15	6.6	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1826262	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1826651	1	6	16.6	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1826650	1	20	5.0	5.0	✓
Moisture Content by Gravimetry	E144	1826932	2	25	8.0	5.0	✓
PAHs in Soil/solid by Hex:Ace GC-MS	E641A	1826315	2	13	15.3	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1826263	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1826653	1	15	6.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1826359	1	4	25.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1826264	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Boron-Hot Water Extractable by ICPOES	E487	1826654	2	6	33.3	10.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1826360	1	4	25.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1826314	2	29	6.9	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1826652	2	15	13.3	10.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1826262	2	20	10.0	10.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1826651	2	6	33.3	10.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1826650	2	20	10.0	10.0	✓
Moisture Content by Gravimetry	E144	1826932	2	25	8.0	5.0	✓
PAHs in Soil/solid by Hex:Ace GC-MS	E641A	1826315	2	13	15.3	5.0	✓
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A	1826263	1	20	5.0	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1826653	2	15	13.3	10.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1826359	1	4	25.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1826264	1	20	5.0	5.0	✓
Method Blanks (MB)							
Boron-Hot Water Extractable by ICPOES	E487	1826654	1	6	16.6	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1826360	1	4	25.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1826314	2	29	6.9	5.0	✓
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L	1826652	1	15	6.6	5.0	✓
Hexavalent Chromium (Cr VI) by IC	E532	1826262	1	20	5.0	5.0	✓
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C	1826651	1	6	16.6	5.0	✓
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C	1826650	1	20	5.0	5.0	✓

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Method Blanks (MB) - Continued							
Moisture Content by Gravimetry	E144	1826932	2	25	8.0	5.0	✓
PAHs in Soil/solid by Hex:Ace GC-MS	E641A	1826315	2	13	15.3	5.0	✓
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484	1826653	1	15	6.6	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1826359	1	4	25.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1826264	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
CCME PHC - F1 by Headspace GC-FID	E581.F1	1826360	1	4	25.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L	1826314	2	29	6.9	5.0	✓
PAHs in Soil/solid by Hex:Ace GC-MS	E641A	1826315	2	13	15.3	5.0	✓
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1826359	1	4	25.0	5.0	✓
WAD Cyanide (0.01M NaOH Extraction)	E336A	1826264	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Soil (1:2 Soil:Water Extraction) (Low Level)	E100-L ALS Environmental - Waterloo	Soil/Solid	CSSS Ch. 15 (mod)/APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a soil sample that has been added in a defined ratio of soil to deionized water, then shaken well and allowed to settle. Conductance is measured in the fluid that is observed in the upper layer.
pH by Meter (1:2 Soil:0.01M CaCl2 Extraction) - As Received	E108A ALS Environmental - Waterloo	Soil/Solid	MECP E3530	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C) and is carried out in accordance with procedures described in the Analytical Protocol (prescriptive method). A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling, or decanting and then analyzed using a pH meter and electrode. This method is equivalent to ASTM D4972 and is acceptable for topsoil analysis.
Moisture Content by Gravimetry	E144 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
WAD Cyanide (0.01M NaOH Extraction)	E336A ALS Environmental - Waterloo	Soil/Solid	APHA 4500-CN I (mod)	Weak Acid Dissociable (WAD) cyanide is determined after extraction by Continuous Flow Analyzer (CFA) with in-line distillation followed by colourmetric analysis.
Metals in Soil/Solid by CRC ICPMS (<355 µm)	E440C ALS Environmental - Waterloo	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 355 µm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Sodium Adsorption Ratio (SAR) - 1:2 Soil:Water (Dry)	E484 ALS Environmental - Waterloo	Soil/Solid	SW846 6010C	A dried, disaggregated solid sample is extracted with deionized water, the aqueous extract is separated from the solid, acidified and then analyzed using a ICP/OES. The concentrations of Na, Ca and Mg are reported as per CALA requirements for calculated parameters. These individual parameters are not for comparison to any guideline.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Boron-Hot Water Extractable by ICPOES	E487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011).
Mercury in Soil/Solid by CVAAS (<355 µm)	E510C ALS Environmental - Waterloo	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are sieved through a 355 µm sieve, and digested with HNO_3 and HCl, followed by CVAAS analysis.
Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Waterloo	Soil/Solid	APHA 3500-CR C	Instrumental analysis is performed by ion chromatography with UV detection.
CCME PHC - F1 by Headspace GC-FID	E581.F1 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Test results are expressed on a dry weight basis. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
CCME PHCs - F2-F4 by GC-FID (Low Level)	E601.SG-L ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Test results are expressed on a dry weight basis. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs in Soil/solid by Hex:Ace GC-MS	E641A ALS Environmental - Waterloo	Soil/Solid	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are extracted with hexane/acetone and analyzed by GC-MS. If reported, IACR (index of additive cancer risk, unitless) and B(a)P toxic potency equivalent (in soil concentration units) are calculated as per CCME PAH Soil Quality Guidelines fact sheet (2010) or ABT1.
F1-BTEX	EC580 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sum F1 to F4 (C6-C50)	EC581 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.
F2 to F3 minus PAH	EC600 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1	F2-Naphthalene = CCME Fraction 2 (C10-C16) minus Naphthalene F3-PAH = CCME Fraction 3 (C16-C34) minus sPhenanthrene, Fluoranthene, Pyrene, Benz(a)anthracene, benzo(b+j)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-c,d)pyrene, and Dibenz(a,h)anthracene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Waterloo	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Leach 1:2 Soil : 0.01CaCl2 - As Received for pH	EP108A ALS Environmental - Waterloo	Soil/Solid	MOEE E3137A	A minimum 10g portion of the sample, as received, is extracted with 20mL of 0.01M calcium chloride solution by shaking for at least 30 minutes. The aqueous layer is separated from the soil by centrifuging, settling or decanting and then analyzed using a pH meter and electrode.
Cyanide Extraction for CFA (0.01M NaOH)	EP333A ALS Environmental - Waterloo	Soil/Solid	ON MECP E3015 (mod)	Extraction for various cyanide analysis is by rotary extraction of the soil with 0.01M Sodium Hydroxide.
Digestion for Metals and Mercury (355 µm Sieve)	EP440C ALS Environmental - Waterloo	Soil/Solid	EPA 200.2 (mod)	Samples are sieved through a 355 µm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Boron-Hot Water Extractable	EP487 ALS Environmental - Waterloo	Soil/Solid	HW EXTR, EPA 6010B	A dried solid sample is extracted with weak calcium chloride, the sample undergoes a heating process. After cooling the sample is filtered and analyzed by ICP/OES. Analysis conducted in accordance with the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act (July 1, 2011)
Preparation of Hexavalent Chromium (Cr VI) for IC	EP532 ALS Environmental - Waterloo	Soil/Solid	EPA 3060A	Field moist samples are digested with a sodium hydroxide/sodium carbonate solution as described in EPA 3060A.
VOCs Methanol Extraction for Headspace Analysis	EP581 ALS Environmental - Waterloo	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 ALS Environmental - Waterloo	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

QUALITY CONTROL REPORT

Work Order	: **WT2437976**	Page	: 1 of 18
Client	: CMT Engineering Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Jake Feeney	Account Manager	: Mathy Mahadeva
Address	: 1011 Industrial Crescent Unit 1 St. Clements ON Canada N0B 2M0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	: 519 699 5775	Telephone	: +1 519 886 6910
Project	: 24-875 Highpoint Community School, Dundalk, ON	Date Samples Received	: 23-Dec-2024 14:45
PO	: ----	Date Analysis Commenced	: 31-Dec-2024
C-O-C number	: ----	Issue Date	: 07-Jan-2025 15:35
Sampler	: Jake Feeney		
Site	: ----		
Quote number	: Standing Offer 2025 Pricing		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Amarpreet Singh	Analyst	Waterloo VOC, Waterloo, Ontario
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Inorganics, Waterloo, Ontario
Greg Pokocky	Manager - Inorganics	Waterloo Metals, Waterloo, Ontario
Niral Patel		Waterloo Centralized Prep, Waterloo, Ontario
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1826263)											
WT2437926-048	Anonymous	pH (1:2 soil:CaCl2-aq)	----	E108A	0.10	pH units	8.14	8.22	0.978%	5%	----
Physical Tests (QC Lot: 1826652)											
WT2437976-001	BH1S1	Conductivity (1:2 leachate)	----	E100-L	5.00	µS/cm	0.239 mS/cm	253	5.69%	20%	----
Physical Tests (QC Lot: 1826932)											
WT2438049-001	Anonymous	Moisture	----	E144	0.25	%	16.2	16.6	2.01%	20%	----
Physical Tests (QC Lot: 1827875)											
WT2437976-001	BH1S1	Moisture	----	E144	0.25	%	10.4	10.2	1.54%	20%	----
Cyanides (QC Lot: 1826264)											
WT2437926-048	Anonymous	Cyanide, weak acid dissociable	----	E336A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Metals (QC Lot: 1826650)											
WT2437926-048	Anonymous	Antimony	7440-36-0	E440C	0.10	mg/kg	0.18	0.18	0.004	Diff <2x LOR	----
		Arsenic	7440-38-2	E440C	0.10	mg/kg	3.89	3.92	0.800%	30%	----
		Barium	7440-39-3	E440C	0.50	mg/kg	84.8	85.6	0.973%	40%	----
		Beryllium	7440-41-7	E440C	0.10	mg/kg	0.48	0.43	0.04	Diff <2x LOR	----
		Boron	7440-42-8	E440C	5.0	mg/kg	10.5	9.9	0.6	Diff <2x LOR	----
		Cadmium	7440-43-9	E440C	0.020	mg/kg	0.119	0.127	0.007	Diff <2x LOR	----
		Chromium	7440-47-3	E440C	0.50	mg/kg	18.2	18.6	1.67%	30%	----
		Cobalt	7440-48-4	E440C	0.10	mg/kg	10.1	10.2	0.493%	30%	----
		Copper	7440-50-8	E440C	0.50	mg/kg	12.6	12.7	0.588%	30%	----
		Lead	7439-92-1	E440C	0.50	mg/kg	4.92	4.70	4.39%	40%	----
		Molybdenum	7439-98-7	E440C	0.10	mg/kg	0.51	0.50	2.01%	40%	----
		Nickel	7440-02-0	E440C	0.50	mg/kg	21.6	21.9	1.15%	30%	----
		Selenium	7782-49-2	E440C	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Silver	7440-22-4	E440C	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Thallium	7440-28-0	E440C	0.050	mg/kg	0.075	0.080	0.005	Diff <2x LOR	----
		Uranium	7440-61-1	E440C	0.050	mg/kg	0.728	0.711	2.32%	30%	----
		Vanadium	7440-62-2	E440C	0.20	mg/kg	25.0	25.6	2.07%	30%	----
		Zinc	7440-66-6	E440C	2.0	mg/kg	45.2	46.5	2.80%	30%	----
Metals (QC Lot: 1826651)											
WT2437926-048	Anonymous	Mercury	7439-97-6	E510C	0.0050	mg/kg	0.0061	0.0058	0.0003	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Metals (QC Lot: 1826653)											
WT2437976-001	BH1S1	Calcium, soluble ion content	7440-70-2	E484	0.50	mg/L	8.99	9.88	9.43%	30%	----
		Magnesium, soluble ion content	7439-95-4	E484	0.50	mg/L	1.70	1.89	0.19	Diff <2x LOR	----
		Sodium, soluble ion content	17341-25-2	E484	0.50	mg/L	16.7	17.6	5.25%	30%	----
Metals (QC Lot: 1826654)											
WT2437976-002	BH3S1	Boron, hot water soluble	7440-42-8	E487	0.10	mg/kg	0.16	0.15	0.008	Diff <2x LOR	----
Speciated Metals (QC Lot: 1826262)											
WT2437926-048	Anonymous	Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1826359)											
WT2437976-001	BH1S1	Acetone	67-64-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.0050	mg/kg	0.0097	0.0086	0.0009	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	<0.045	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Volatile Organic Compounds (QC Lot: 1826359) - continued											
WT2437976-001	BH1S1	Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.040	mg/kg	<0.040	<0.040	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.050	mg/kg	0.070	0.063	0.005	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.020	mg/kg	<0.020	<0.020	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.030	mg/kg	0.032	<0.030	0.001	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1826314)											
TY2414528-003	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	123	180	37.5%	40%	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1826360)											
WT2437976-001	BH1S1	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1826405)											
WT2438049-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	<10	0	Diff <2x LOR	----
		F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
		F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	<50	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 1826315)											
TY2414528-003	Anonymous	Acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Polycyclic Aromatic Hydrocarbons (QC Lot: 1826315) - continued											
TY2414528-003	Anonymous	Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	0.193	0.185	4.54%	50%	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E641A	0.066	mg/kg	<0.066	<0.066	0	Diff <2x LOR	----
		Phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Pyrene	129-00-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
Polycyclic Aromatic Hydrocarbons (QC Lot: 1826406)											
WT2438049-001	Anonymous	Acenaphthene	83-32-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Acenaphthylene	208-96-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Anthracene	120-12-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benz(a)anthracene	56-55-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(a)pyrene	50-32-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Chrysene	218-01-9	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluoranthene	206-44-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Fluorene	86-73-7	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Naphthalene	91-20-3	E641A	0.010	mg/kg	<0.010	<0.010	0	Diff <2x LOR	----
		Phenanthrene	85-01-8	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Pyrene	129-00-0	E641A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1826652)						
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	<5.00	----
Physical Tests (QCLot: 1826932)						
Moisture	----	E144	0.25	%	<0.25	----
Physical Tests (QCLot: 1827875)						
Moisture	----	E144	0.25	%	<0.25	----
Cyanides (QCLot: 1826264)						
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	<0.050	----
Metals (QCLot: 1826650)						
Antimony	7440-36-0	E440C	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440C	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	<0.10	----
Boron	7440-42-8	E440C	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	<0.020	----
Chromium	7440-47-3	E440C	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440C	0.5	mg/kg	<0.50	----
Lead	7439-92-1	E440C	0.5	mg/kg	<0.50	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440C	0.5	mg/kg	<0.50	----
Selenium	7782-49-2	E440C	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440C	0.1	mg/kg	<0.10	----
Thallium	7440-28-0	E440C	0.05	mg/kg	<0.050	----
Uranium	7440-61-1	E440C	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	<0.20	----
Zinc	7440-66-6	E440C	2	mg/kg	<2.0	----
Metals (QCLot: 1826651)						
Mercury	7439-97-6	E510C	0.005	mg/kg	<0.0050	----
Metals (QCLot: 1826653)						
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	<0.50	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	<0.50	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	<0.50	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1826654)						
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	<0.10	----
Speciated Metals (QCLot: 1826262)						
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	<0.10	----
Volatile Organic Compounds (QCLot: 1826359)						
Acetone	67-64-1	E611D	0.5	mg/kg	<0.50	----
Benzene	71-43-2	E611D	0.005	mg/kg	<0.0050	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	<0.050	----
Bromoform	75-25-2	E611D	0.05	mg/kg	<0.050	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	<0.050	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	<0.050	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	<0.050	----
Chloroform	67-66-3	E611D	0.05	mg/kg	<0.050	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	<0.050	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	<0.050	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	<0.050	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	<0.050	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	<0.050	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	<0.050	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	<0.045	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	<0.050	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	<0.030	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	<0.030	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	<0.015	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	<0.050	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	<0.50	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	<0.040	----
Styrene	100-42-5	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	<0.050	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	<0.050	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1826359) - continued						
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	<0.050	----
Toluene	108-88-3	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	<0.050	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	<0.050	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	<0.010	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	<0.050	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	<0.020	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 1826314)						
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	----
Hydrocarbons (QCLot: 1826360)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 1826405)						
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	<10	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	<50	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	<50	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1826315)						
Acenaphthene	83-32-9	E641A	0.05	mg/kg	<0.050	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	<0.050	----
Anthracene	120-12-7	E641A	0.05	mg/kg	<0.050	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	<0.050	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	<0.050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	<0.050	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	<0.050	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	<0.050	----
Chrysene	218-01-9	E641A	0.05	mg/kg	<0.050	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	<0.050	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	<0.050	----
Fluorene	86-73-7	E641A	0.05	mg/kg	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1826315) - continued						
Naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1826406)						
Acenaphthene	83-32-9	E641A	0.05	mg/kg	<0.050	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	<0.050	----
Anthracene	120-12-7	E641A	0.05	mg/kg	<0.050	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	<0.050	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	<0.050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	<0.050	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	<0.050	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	<0.050	----
Chrysene	218-01-9	E641A	0.05	mg/kg	<0.050	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	<0.050	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	<0.050	----
Fluorene	86-73-7	E641A	0.05	mg/kg	<0.050	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	<0.050	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	<0.030	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	<0.030	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	<0.010	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	<0.050	----
Pyrene	129-00-0	E641A	0.05	mg/kg	<0.050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1826263)									
pH (1:2 soil:CaCl2-aq)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1826652)									
Conductivity (1:2 leachate)	----	E100-L	5	µS/cm	1410 µS/cm	96.4	90.0	110	----
Physical Tests (QCLot: 1826932)									
Moisture	----	E144	0.25	%	50 %	98.9	90.0	110	----
Physical Tests (QCLot: 1827875)									
Moisture	----	E144	0.25	%	50 %	100	90.0	110	----
Cyanides (QCLot: 1826264)									
Cyanide, weak acid dissociable	----	E336A	0.05	mg/kg	1.25 mg/kg	90.3	80.0	120	----
Metals (QCLot: 1826650)									
Antimony	7440-36-0	E440C	0.1	mg/kg	100 mg/kg	98.3	80.0	120	----
Arsenic	7440-38-2	E440C	0.1	mg/kg	100 mg/kg	106	80.0	120	----
Barium	7440-39-3	E440C	0.5	mg/kg	25 mg/kg	94.6	80.0	120	----
Beryllium	7440-41-7	E440C	0.1	mg/kg	10 mg/kg	88.3	80.0	120	----
Boron	7440-42-8	E440C	5	mg/kg	100 mg/kg	89.6	80.0	120	----
Cadmium	7440-43-9	E440C	0.02	mg/kg	10 mg/kg	91.8	80.0	120	----
Chromium	7440-47-3	E440C	0.5	mg/kg	25 mg/kg	97.7	80.0	120	----
Cobalt	7440-48-4	E440C	0.1	mg/kg	25 mg/kg	96.2	80.0	120	----
Copper	7440-50-8	E440C	0.5	mg/kg	25 mg/kg	95.6	80.0	120	----
Lead	7439-92-1	E440C	0.5	mg/kg	50 mg/kg	91.2	80.0	120	----
Molybdenum	7439-98-7	E440C	0.1	mg/kg	25 mg/kg	97.4	80.0	120	----
Nickel	7440-02-0	E440C	0.5	mg/kg	50 mg/kg	96.1	80.0	120	----
Selenium	7782-49-2	E440C	0.2	mg/kg	100 mg/kg	100	80.0	120	----
Silver	7440-22-4	E440C	0.1	mg/kg	10 mg/kg	# 7.73	80.0	120	RRQC
Thallium	7440-28-0	E440C	0.05	mg/kg	100 mg/kg	92.4	80.0	120	----
Uranium	7440-61-1	E440C	0.05	mg/kg	0.5 mg/kg	86.8	80.0	120	----
Vanadium	7440-62-2	E440C	0.2	mg/kg	50 mg/kg	100	80.0	120	----
Zinc	7440-66-6	E440C	2	mg/kg	50 mg/kg	94.1	80.0	120	----
Metals (QCLot: 1826651)									
Mercury	7439-97-6	E510C	0.005	mg/kg	0.1 mg/kg	104	80.0	120	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Metals (QCLot: 1826653)									
Calcium, soluble ion content	7440-70-2	E484	0.5	mg/L	300 mg/L	103	80.0	120	----
Magnesium, soluble ion content	7439-95-4	E484	0.5	mg/L	50 mg/L	99.2	80.0	120	----
Sodium, soluble ion content	17341-25-2	E484	0.5	mg/L	50 mg/L	100	80.0	120	----
Metals (QCLot: 1826654)									
Boron, hot water soluble	7440-42-8	E487	0.1	mg/kg	2 mg/kg	107	70.0	130	----
Speciated Metals (QCLot: 1826262)									
Chromium, hexavalent [Cr VI]	18540-29-9	E532	0.1	mg/kg	0.8 mg/kg	97.8	80.0	120	----
Volatile Organic Compounds (QCLot: 1826359)									
Acetone	67-64-1	E611D	0.5	mg/kg	3.48 mg/kg	89.6	60.0	140	----
Benzene	71-43-2	E611D	0.005	mg/kg	3.48 mg/kg	103	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.05	mg/kg	3.48 mg/kg	92.3	50.0	140	----
Bromoform	75-25-2	E611D	0.05	mg/kg	3.48 mg/kg	95.0	70.0	130	----
Bromomethane	74-83-9	E611D	0.05	mg/kg	3.48 mg/kg	77.0	50.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.05	mg/kg	3.48 mg/kg	92.5	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.05	mg/kg	3.48 mg/kg	104	70.0	130	----
Chloroform	67-66-3	E611D	0.05	mg/kg	3.48 mg/kg	97.1	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.05	mg/kg	3.48 mg/kg	99.4	60.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.05	mg/kg	3.48 mg/kg	92.0	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.05	mg/kg	3.48 mg/kg	103	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.05	mg/kg	3.48 mg/kg	108	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.05	mg/kg	3.48 mg/kg	107	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.05	mg/kg	3.48 mg/kg	70.4	50.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.05	mg/kg	3.48 mg/kg	82.2	60.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.05	mg/kg	3.48 mg/kg	84.0	60.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.05	mg/kg	3.48 mg/kg	94.1	60.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.05	mg/kg	3.48 mg/kg	102	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.05	mg/kg	3.48 mg/kg	98.0	60.0	130	----
Dichloromethane	75-09-2	E611D	0.045	mg/kg	3.48 mg/kg	93.2	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.05	mg/kg	3.48 mg/kg	101	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.03	mg/kg	3.48 mg/kg	94.7	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.03	mg/kg	3.48 mg/kg	94.8	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.015	mg/kg	3.48 mg/kg	105	70.0	130	----
Hexane, n-	110-54-3	E611D	0.05	mg/kg	3.48 mg/kg	85.4	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	0.5	mg/kg	3.48 mg/kg	90.2	60.0	140	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1826359) - continued									
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	0.5	mg/kg	3.48 mg/kg	83.5	60.0	140	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.04	mg/kg	3.48 mg/kg	100	70.0	130	----
Styrene	100-42-5	E611D	0.05	mg/kg	3.48 mg/kg	104	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.05	mg/kg	3.48 mg/kg	102	60.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.05	mg/kg	3.48 mg/kg	92.5	60.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.05	mg/kg	3.48 mg/kg	109	60.0	130	----
Toluene	108-88-3	E611D	0.05	mg/kg	3.48 mg/kg	105	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.05	mg/kg	3.48 mg/kg	92.0	60.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.05	mg/kg	3.48 mg/kg	95.3	60.0	130	----
Trichloroethylene	79-01-6	E611D	0.01	mg/kg	3.48 mg/kg	105	60.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.05	mg/kg	3.48 mg/kg	90.1	50.0	140	----
Vinyl chloride	75-01-4	E611D	0.02	mg/kg	3.48 mg/kg	94.1	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.03	mg/kg	6.95 mg/kg	106	70.0	130	----
Xylene, o-	95-47-6	E611D	0.03	mg/kg	3.48 mg/kg	102	70.0	130	----
Hydrocarbons (QCLot: 1826314)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	671 mg/kg	93.9	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1380 mg/kg	93.8	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	748 mg/kg	92.9	70.0	130	----
Hydrocarbons (QCLot: 1826360)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	69.2 mg/kg	84.6	80.0	120	----
Hydrocarbons (QCLot: 1826405)									
F2 (C10-C16)	----	E601.SG-L	10	mg/kg	671 mg/kg	86.5	70.0	130	----
F3 (C16-C34)	----	E601.SG-L	50	mg/kg	1380 mg/kg	86.1	70.0	130	----
F4 (C34-C50)	----	E601.SG-L	50	mg/kg	748 mg/kg	88.1	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1826315)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	97.1	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	98.9	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	94.8	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	100	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	90.8	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	91.0	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	104	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	87.5	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	114	60.0	130	----

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1826315) - continued									
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	108	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	105	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	102	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	105	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	85.5	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	90.1	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	83.8	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	104	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	101	60.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1826406)									
Acenaphthene	83-32-9	E641A	0.05	mg/kg	0.5 mg/kg	93.7	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.05	mg/kg	0.5 mg/kg	92.3	60.0	130	----
Anthracene	120-12-7	E641A	0.05	mg/kg	0.5 mg/kg	87.2	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.05	mg/kg	0.5 mg/kg	95.0	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.05	mg/kg	0.5 mg/kg	92.8	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.05	mg/kg	0.5 mg/kg	83.8	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.05	mg/kg	0.5 mg/kg	97.2	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.05	mg/kg	0.5 mg/kg	101	60.0	130	----
Chrysene	218-01-9	E641A	0.05	mg/kg	0.5 mg/kg	112	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.05	mg/kg	0.5 mg/kg	91.3	60.0	130	----
Fluoranthene	206-44-0	E641A	0.05	mg/kg	0.5 mg/kg	94.7	60.0	130	----
Fluorene	86-73-7	E641A	0.05	mg/kg	0.5 mg/kg	93.9	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.05	mg/kg	0.5 mg/kg	91.0	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.03	mg/kg	0.5 mg/kg	80.0	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.03	mg/kg	0.5 mg/kg	78.3	60.0	130	----
Naphthalene	91-20-3	E641A	0.01	mg/kg	0.5 mg/kg	73.5	60.0	130	----
Phenanthrene	85-01-8	E641A	0.05	mg/kg	0.5 mg/kg	87.6	60.0	130	----
Pyrene	129-00-0	E641A	0.05	mg/kg	0.5 mg/kg	92.2	60.0	130	----

Qualifiers

Qualifier	Description
RRQC	*Refer to report comments for information regarding this QC result.*

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Cyanides (QCLot: 1826264)										
WT2437926-048	Anonymous	Cyanide, weak acid dissociable	----	E336A	1.12 mg/kg	1.27 mg/kg	88.8	70.0	130	----
Volatile Organic Compounds (QCLot: 1826359)										
WT2437976-001	BH1S1	Acetone	67-64-1	E611D	2.11 mg/kg	1.98 mg/kg	106	50.0	140	----
		Bromodichloromethane	75-27-4	E611D	2.09 mg/kg	1.98 mg/kg	106	50.0	140	----
		Bromoform	75-25-2	E611D	2.08 mg/kg	1.98 mg/kg	105	50.0	140	----
		Bromomethane	74-83-9	E611D	1.88 mg/kg	1.98 mg/kg	95.1	50.0	140	----
		Carbon tetrachloride	56-23-5	E611D	2.09 mg/kg	1.98 mg/kg	105	50.0	140	----
		Chlorobenzene	108-90-7	E611D	2.28 mg/kg	1.98 mg/kg	115	50.0	140	----
		Chloroform	67-66-3	E611D	2.19 mg/kg	1.98 mg/kg	110	50.0	140	----
		Dibromochloromethane	124-48-1	E611D	2.20 mg/kg	1.98 mg/kg	111	50.0	140	----
		Dibromoethane, 1,2-	106-93-4	E611D	2.05 mg/kg	1.98 mg/kg	104	50.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	2.22 mg/kg	1.98 mg/kg	112	50.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	2.31 mg/kg	1.98 mg/kg	117	50.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	2.29 mg/kg	1.98 mg/kg	115	50.0	140	----
		Dichlorodifluoromethane	75-71-8	E611D	2.47 mg/kg	1.98 mg/kg	125	50.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611D	2.19 mg/kg	1.98 mg/kg	110	50.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611D	1.92 mg/kg	1.98 mg/kg	97.1	50.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611D	2.21 mg/kg	1.98 mg/kg	112	50.0	140	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	2.31 mg/kg	1.98 mg/kg	117	50.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	2.27 mg/kg	1.98 mg/kg	115	50.0	140	----
		Dichloromethane	75-09-2	E611D	2.16 mg/kg	1.98 mg/kg	109	50.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611D	2.30 mg/kg	1.98 mg/kg	116	50.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	2.16 mg/kg	1.98 mg/kg	109	50.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	2.09 mg/kg	1.98 mg/kg	105	50.0	140	----
		Ethylbenzene	100-41-4	E611D	2.29 mg/kg	1.98 mg/kg	115	50.0	140	----
		Hexane, n-	110-54-3	E611D	2.48 mg/kg	1.98 mg/kg	125	50.0	140	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	2.04 mg/kg	1.98 mg/kg	103	50.0	140	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	1.90 mg/kg	1.98 mg/kg	96.0	50.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	2.15 mg/kg	1.98 mg/kg	108	50.0	140	----
		Styrene	100-42-5	E611D	2.31 mg/kg	1.98 mg/kg	116	50.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	2.24 mg/kg	1.98 mg/kg	113	50.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	2.02 mg/kg	1.98 mg/kg	102	50.0	140	----
		Tetrachloroethylene	127-18-4	E611D	2.36 mg/kg	1.98 mg/kg	119	50.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	2.08 mg/kg	1.98 mg/kg	105	50.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	2.11 mg/kg	1.98 mg/kg	107	50.0	140	----
		Trichloroethylene	79-01-6	E611D	2.36 mg/kg	1.98 mg/kg	119	50.0	140	----
		Trichlorofluoromethane	75-69-4	E611D	2.18 mg/kg	1.98 mg/kg	110	50.0	140	----
		Vinyl chloride	75-01-4	E611D	2.41 mg/kg	1.98 mg/kg	122	50.0	140	----
		Xylene, m+p-	179601-23-1	E611D	4.62 mg/kg	3.96 mg/kg	116	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1826359) - continued										
WT2437976-001	BH1S1	Xylene, o-	95-47-6	E611D	2.25 mg/kg	1.98 mg/kg	114	50.0	140	----
Hydrocarbons (QCLot: 1826314)										
TY2414528-003	Anonymous	F2 (C10-C16)	----	E601.SG-L	435 mg/kg	496 mg/kg	87.7	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	1050 mg/kg	1020 mg/kg	102	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	597 mg/kg	553 mg/kg	108	60.0	140	----
Hydrocarbons (QCLot: 1826360)										
WT2437976-001	BH1S1	F1 (C6-C10)	----	E581.F1	37.6 mg/kg	39.6 mg/kg	94.9	60.0	140	----
Hydrocarbons (QCLot: 1826405)										
WT2438049-001	Anonymous	F2 (C10-C16)	----	E601.SG-L	435 mg/kg	501 mg/kg	86.8	60.0	140	----
		F3 (C16-C34)	----	E601.SG-L	917 mg/kg	1030 mg/kg	88.8	60.0	140	----
		F4 (C34-C50)	----	E601.SG-L	507 mg/kg	559 mg/kg	90.7	60.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1826315)										
TY2414528-003	Anonymous	Acenaphthene	83-32-9	E641A	0.412 mg/kg	0.394 mg/kg	104	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.407 mg/kg	0.394 mg/kg	103	50.0	140	----
		Anthracene	120-12-7	E641A	0.427 mg/kg	0.394 mg/kg	108	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.425 mg/kg	0.394 mg/kg	108	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.375 mg/kg	0.394 mg/kg	95.3	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.385 mg/kg	0.394 mg/kg	97.7	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.350 mg/kg	0.394 mg/kg	88.9	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.399 mg/kg	0.394 mg/kg	101	50.0	140	----
		Chrysene	218-01-9	E641A	0.420 mg/kg	0.394 mg/kg	107	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.397 mg/kg	0.394 mg/kg	101	50.0	140	----
		Fluoranthene	206-44-0	E641A	0.405 mg/kg	0.394 mg/kg	103	50.0	140	----
		Fluorene	86-73-7	E641A	0.416 mg/kg	0.394 mg/kg	106	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.400 mg/kg	0.394 mg/kg	102	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.378 mg/kg	0.394 mg/kg	96.0	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.413 mg/kg	0.394 mg/kg	105	50.0	140	----
		Naphthalene	91-20-3	E641A	0.392 mg/kg	0.394 mg/kg	99.5	50.0	140	----
		Phenanthrene	85-01-8	E641A	0.430 mg/kg	0.394 mg/kg	109	50.0	140	----
		Pyrene	129-00-0	E641A	0.392 mg/kg	0.394 mg/kg	99.7	50.0	140	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1826406)										
WT2438049-001	Anonymous	Acenaphthene	83-32-9	E641A	0.375 mg/kg	0.392 mg/kg	95.8	50.0	140	----
		Acenaphthylene	208-96-8	E641A	0.380 mg/kg	0.392 mg/kg	96.9	50.0	140	----
		Anthracene	120-12-7	E641A	0.351 mg/kg	0.392 mg/kg	89.6	50.0	140	----
		Benz(a)anthracene	56-55-3	E641A	0.378 mg/kg	0.392 mg/kg	96.6	50.0	140	----
		Benzo(a)pyrene	50-32-8	E641A	0.354 mg/kg	0.392 mg/kg	90.3	50.0	140	----
		Benzo(b+j)fluoranthene	n/a	E641A	0.350 mg/kg	0.392 mg/kg	89.4	50.0	140	----
		Benzo(g,h,i)perylene	191-24-2	E641A	0.395 mg/kg	0.392 mg/kg	101	50.0	140	----
		Benzo(k)fluoranthene	207-08-9	E641A	0.409 mg/kg	0.392 mg/kg	104	50.0	140	----
		Chrysene	218-01-9	E641A	0.458 mg/kg	0.392 mg/kg	117	50.0	140	----
		Dibenz(a,h)anthracene	53-70-3	E641A	0.379 mg/kg	0.392 mg/kg	96.8	50.0	140	----

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1826406) - continued										
WT2438049-001	Anonymous	Fluoranthene	206-44-0	E641A	0.384 mg/kg	0.392 mg/kg	97.9	50.0	140	----
		Fluorene	86-73-7	E641A	0.381 mg/kg	0.392 mg/kg	97.2	50.0	140	----
		Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.363 mg/kg	0.392 mg/kg	92.6	50.0	140	----
		Methylnaphthalene, 1-	90-12-0	E641A	0.364 mg/kg	0.392 mg/kg	93.0	50.0	140	----
		Methylnaphthalene, 2-	91-57-6	E641A	0.353 mg/kg	0.392 mg/kg	90.2	50.0	140	----
		Naphthalene	91-20-3	E641A	0.336 mg/kg	0.392 mg/kg	85.7	50.0	140	----
		Phenanthrene	85-01-8	E641A	0.352 mg/kg	0.392 mg/kg	89.9	50.0	140	----
		Pyrene	129-00-0	E641A	0.371 mg/kg	0.392 mg/kg	94.8	50.0	140	----

Reference Material (RM) Report

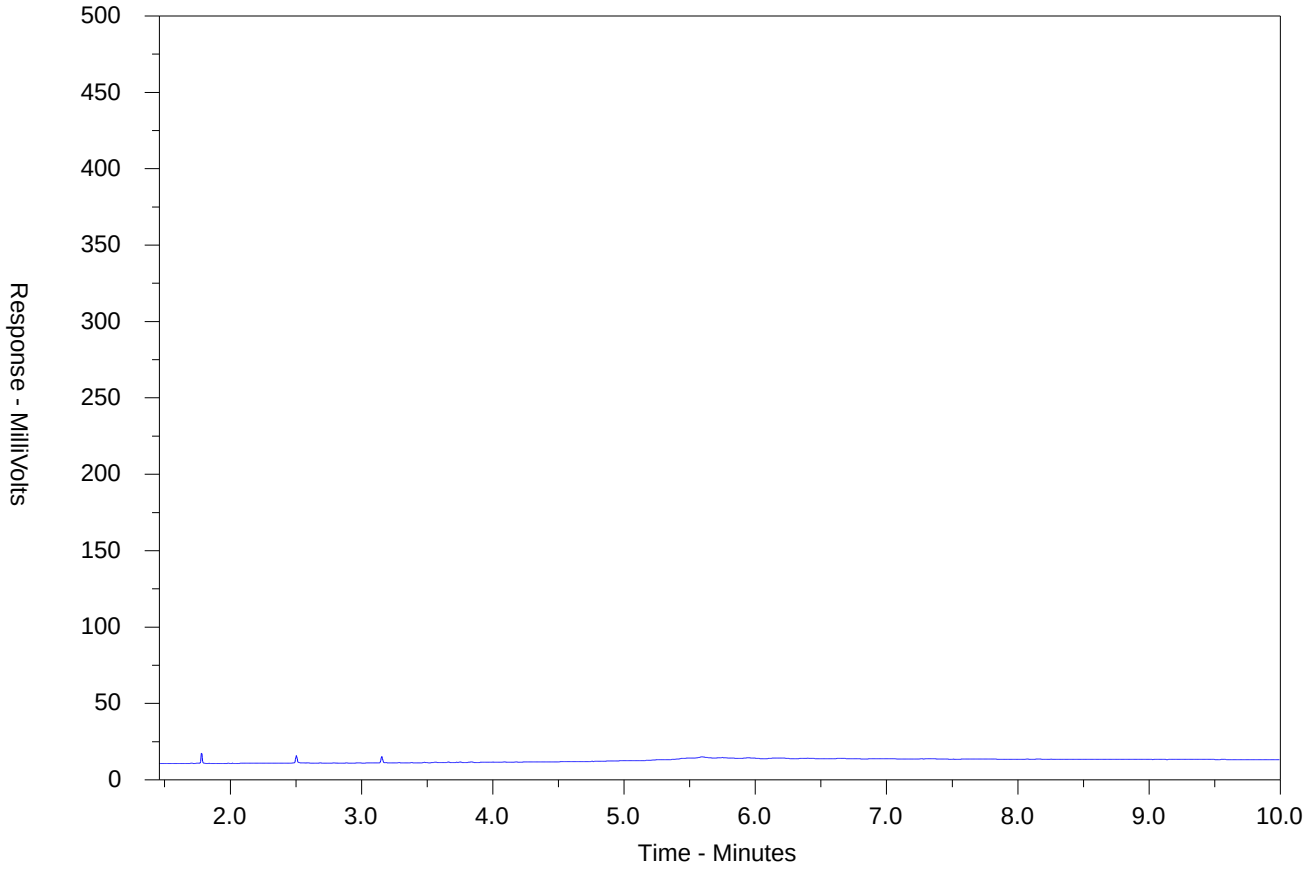
A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

Reference Material (RM) Report									
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 1826652)									
QC-1826652-003	RM	Conductivity (1:2 leachate)	----	E100-L	3310 µS/cm	96.5	70.0	130	----
Metals (QCLot: 1826650)									
QC-1826650-003	RM	Antimony	7440-36-0	E440C	24.8 mg/kg	84.7	70.0	130	----
QC-1826650-003	RM	Arsenic	7440-38-2	E440C	21.2 mg/kg	102	70.0	130	----
QC-1826650-003	RM	Barium	7440-39-3	E440C	788 mg/kg	99.0	70.0	130	----
QC-1826650-003	RM	Beryllium	7440-41-7	E440C	1.82 mg/kg	94.5	70.0	130	----
QC-1826650-003	RM	Cadmium	7440-43-9	E440C	2.15 mg/kg	95.5	70.0	130	----
QC-1826650-003	RM	Chromium	7440-47-3	E440C	56.9 mg/kg	103	70.0	130	----
QC-1826650-003	RM	Cobalt	7440-48-4	E440C	32 mg/kg	101	70.0	130	----
QC-1826650-003	RM	Copper	7440-50-8	E440C	969 mg/kg	110	70.0	130	----
QC-1826650-003	RM	Lead	7439-92-1	E440C	919 mg/kg	95.1	70.0	130	----
QC-1826650-003	RM	Molybdenum	7439-98-7	E440C	25.1 mg/kg	96.5	70.0	130	----
QC-1826650-003	RM	Nickel	7440-02-0	E440C	1000 mg/kg	108	70.0	130	----
QC-1826650-003	RM	Selenium	7782-49-2	E440C	1.04 mg/kg	103	60.0	140	----
QC-1826650-003	RM	Silver	7440-22-4	E440C	8.98 mg/kg	91.7	70.0	130	----
QC-1826650-003	RM	Thallium	7440-28-0	E440C	0.907 mg/kg	91.2	70.0	130	----
QC-1826650-003	RM	Uranium	7440-61-1	E440C	3.97 mg/kg	89.2	70.0	130	----
QC-1826650-003	RM	Vanadium	7440-62-2	E440C	66.2 mg/kg	103	70.0	130	----
QC-1826650-003	RM	Zinc	7440-66-6	E440C	828 mg/kg	99.2	70.0	130	----
Metals (QCLot: 1826651)									
QC-1826651-003	RM	Mercury	7439-97-6	E510C	0.068 mg/kg	89.8	70.0	130	----
Metals (QCLot: 1826653)									
QC-1826653-003	RM	Calcium, soluble ion content	7440-70-2	E484	174 mg/L	104	70.0	130	----
QC-1826653-003	RM	Magnesium, soluble ion content	7439-95-4	E484	63.5 mg/L	106	70.0	130	----
QC-1826653-003	RM	Sodium, soluble ion content	17341-25-2	E484	113 mg/L	103	70.0	130	----
Metals (QCLot: 1826654)									
QC-1826654-003	RM	Boron, hot water soluble	7440-42-8	E487	1.82 mg/kg	120	60.0	140	----
Speciated Metals (QCLot: 1826262)									
QC-1826262-003	RM	Chromium, hexavalent [Cr VI]	18540-29-9	E532	134 mg/kg	77.2	70.0	130	----

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2437976-001-E601.SG-L
Client Sample ID: BH1S1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizin hydrocarbon products that may be present in your sample.

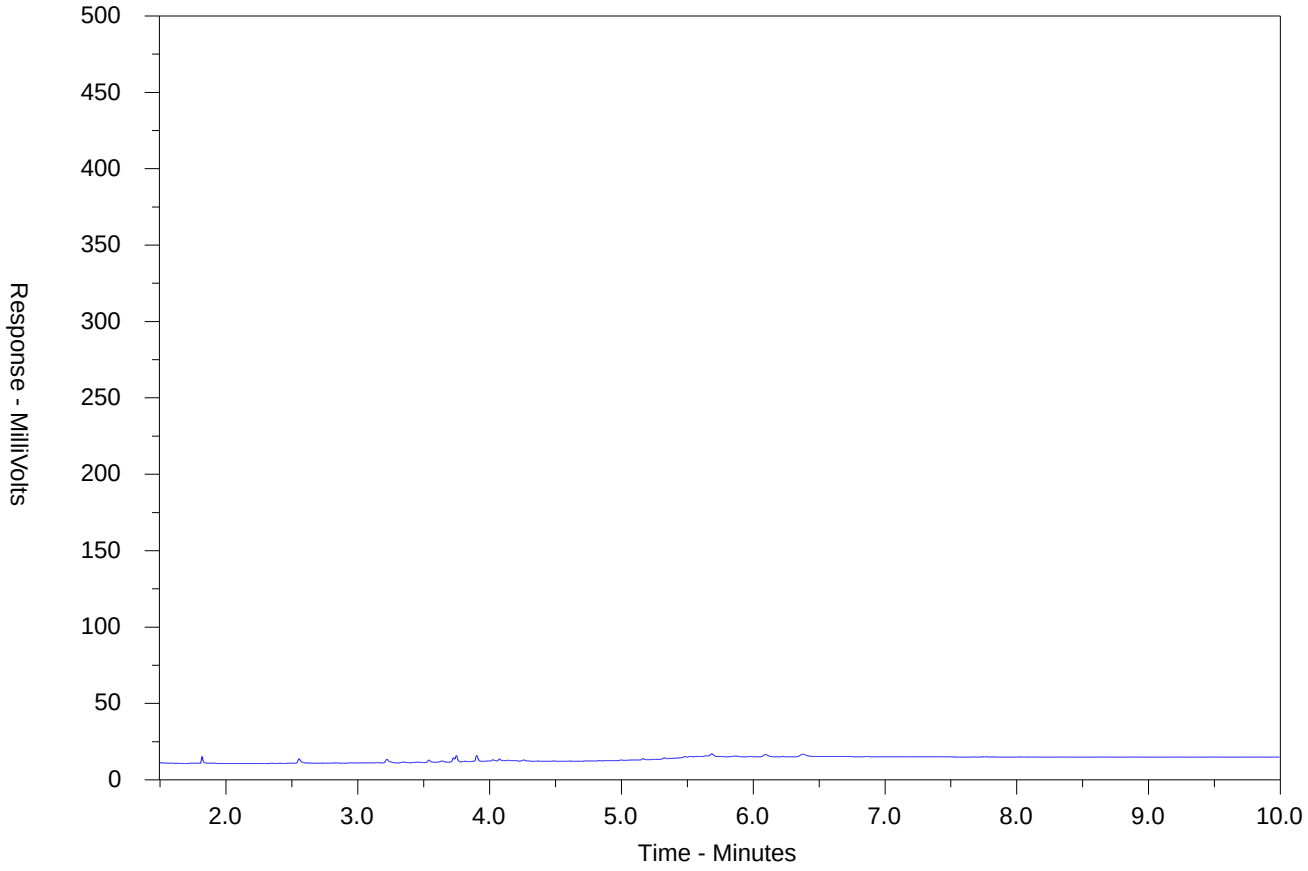
The scale at the bottom of the chromatogram indicates the approximate retention times of commo petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary betwee samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, th sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms fro common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2437976-002-E601.SG-L
Client Sample ID: BH3S1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizin hydrocarbon products that may be present in your sample.

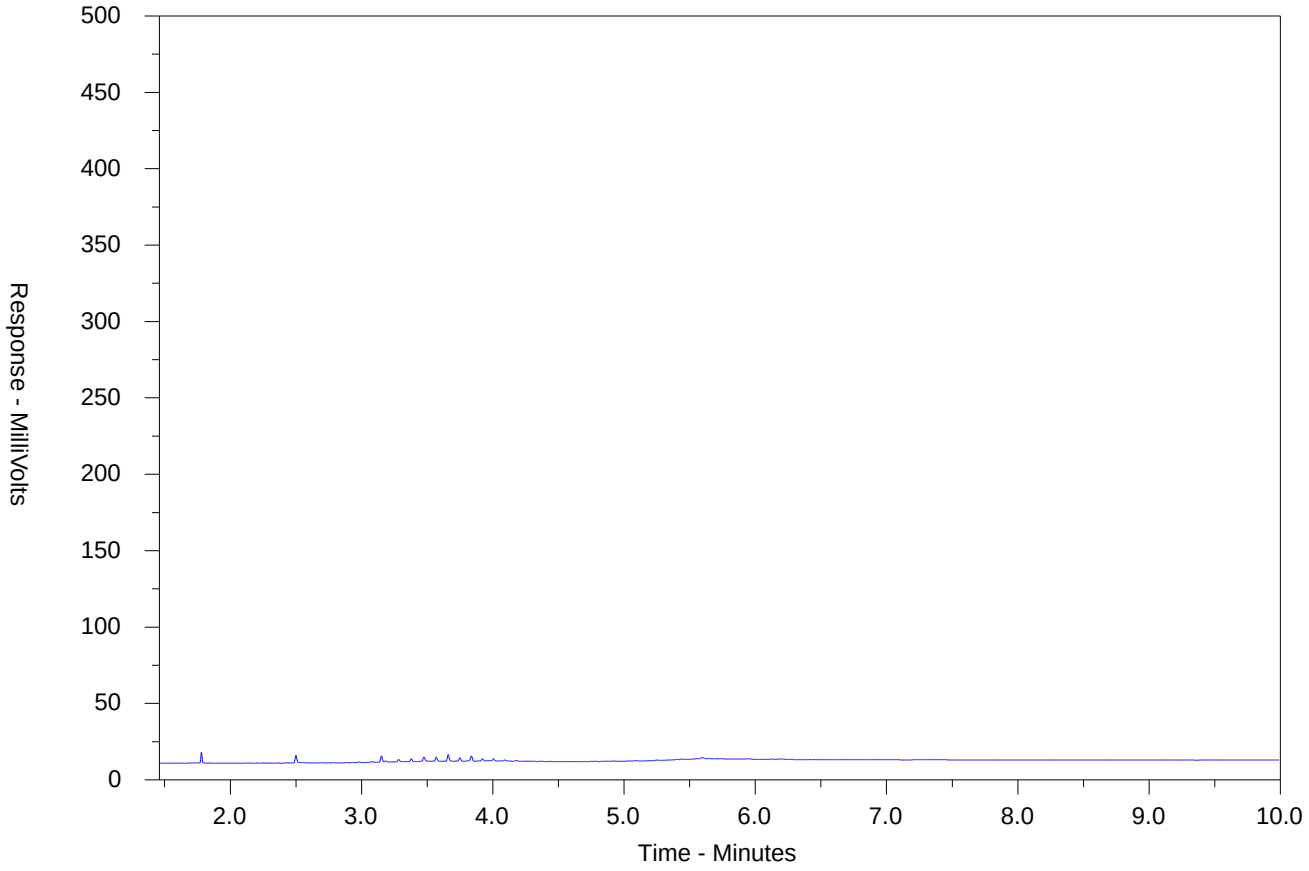
The scale at the bottom of the chromatogram indicates the approximate retention times of commo petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary betwee samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, th sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms fro common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2437976-003-E601.SG-L
Client Sample ID: BH7S1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizin hydrocarbon products that may be present in your sample.

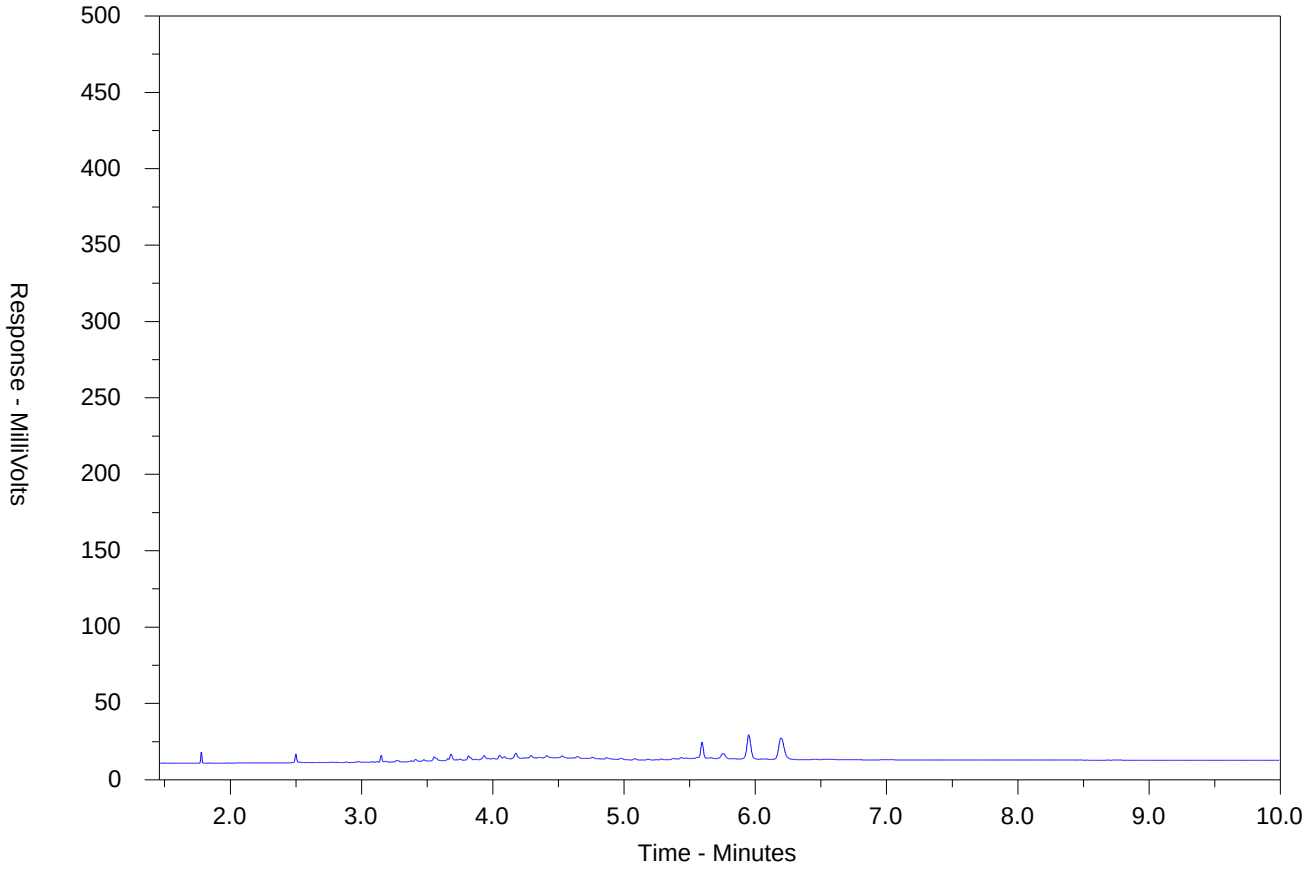
The scale at the bottom of the chromatogram indicates the approximate retention times of commo petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary betwee samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, th sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms fro common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: WT2437976-004-E601.SG-L
Client Sample ID: BH10S1



←F2→	←F3→	←F4→	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	575°C
346°F	549°F	898°F	1067°F
Gasoline →		← Motor Oils/Lube Oils/Grease →	
← Diesel/Jet Fuels →			

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizin hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of commo petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary betwee samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, th sample dilution factor and the scale at the left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms fro common reference samples (fuels, oils, etc.). The HDR Library can be found at www.alsglobal.com.

SOL- 895 VS- 226

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Page of

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Environmental Division Waterloo
Work Order Reference
WT2437976

Telephone : +1 519 886 6910

Report To	Contact and company name below will appear on the final report
Company:	CMT Engineering Inc.
Contact:	J. Feeney
Phone:	519-699-5775 (ext. 307)
	Company address below will appear on the final report
Street:	1011 Industrial Cres. Unit 1
City/Province:	St. Clements, Ontario
Postal Code:	N0B 2M0
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)
Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A
☑ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: nchortos@cmtinc.net
Email 2: jfeeney@cmtinc.net
Email 3:

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: egibbs@cmtinc.net
Email 2: jfeeney@cmtinc.net

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges app
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharg
☐ 3 day [P3] if received by 3pm M-F - 25% rush surchar
☐ 2 day [P2] if received by 3pm M-F - 50% rush surchar
☐ 1 day [E] if received by 3pm M-F - 100% rush surchar
Same day [E2] if received by 10am M-S - 200% rush s
☐ fees may apply to rush resuests on weekends, statutory routine tests

Date and Time Required for all E&P TATs:

For tests that can not be performed acc

Analy

Project Information

ALS Account # / Quote #:
Job #: 24-875 Highpoint Community School, Dundalk, ON
PO / AFE:
LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#
Major/Minor Code: Routing Code:
Requisitioner:
Location:

ALS Lab Work Order # (lab use only): WT2437976

ALS Contact: MM Sampler: J. Feeney

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Metals and Inorganics (EC/SAR/pH)	VOC, BTEX, PHC F1-F4	PAH	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRE	SUSPECTED HAZARD (see notes)
	BH1S1	23-Dec-24		MC5	5	R	R	R			
	BH3S1	23-Dec-24		MC5	6	R	R	R			
	BH7S1	23-Dec-24		MC5	6	R	R	R			
	BH10S1	23-Dec-24		MC5	6	R	R	R			

Indicate Filtered (F), Preserved (P) or Fi

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☐ NO
Are samples for human consumption/ use? ☐ YES ☐ NO

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

O. Reg.406 Table 1 RPIICC
Table 2.1 RPI
Table 2.1 ICC

SAMPLE RECEIPT DETAILS (lab use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				0.5			

SHIPMENT RELEASE (client use)

Released by:	Date:	Time:

INITIAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:

FINAL SHIPMENT RECEPTION (lab use only)

Received by:	Date:	Time:
	12/23/24	1445

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.