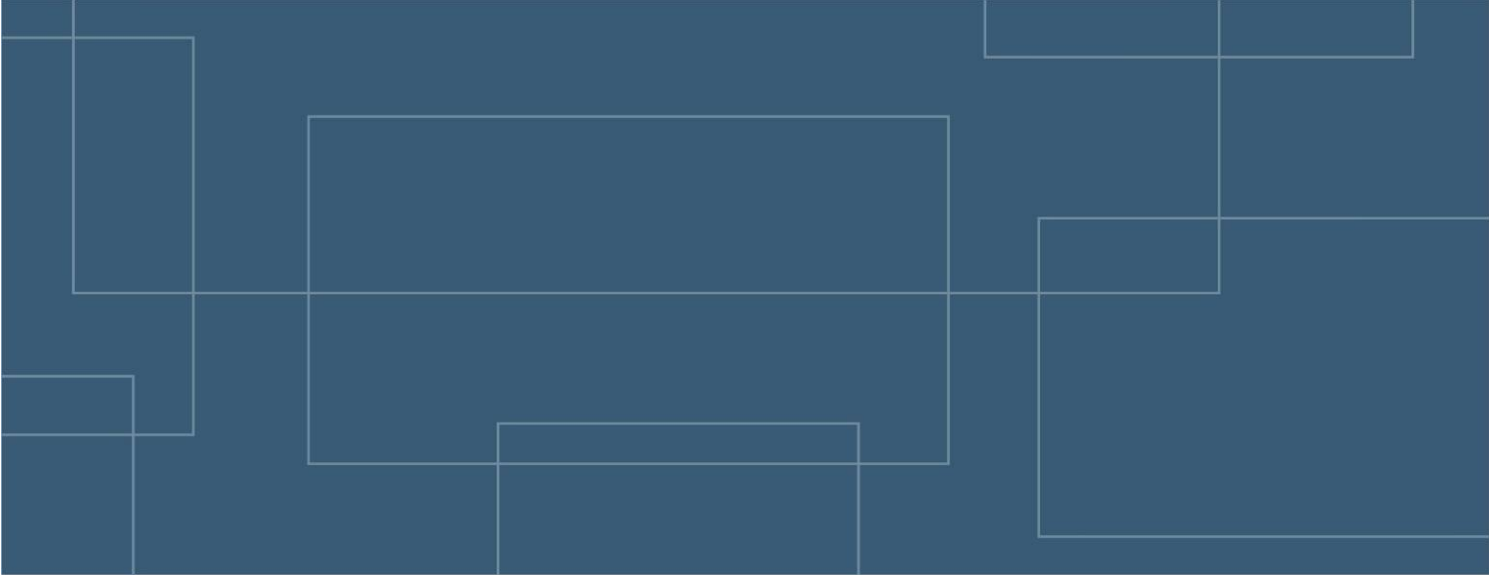




**The Tricar Group
c/o Stantec Consulting Ltd.**

**Wellington Street East Reconstruction
Neeve Street to MacDonell Street
Guelph, Ontario**

Geotechnical Investigation Report

Date: August 30, 2013

Ref. N°: 160-P-0003883-0-01-100-R-0001-00



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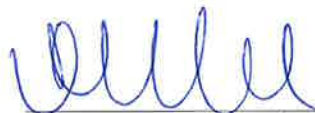
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Test results mentioned herein are only valid for the sample(s) stated in this report.

LVM inc.'s subcontractors who may have accomplished work either on site or in laboratory are duly qualified as stated in our Quality Manual's procurement procedure. Should you require any further information, please contact your Project Manager."

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INTRODUCTION

LVM inc. (LVM) was retained by The Tricar Group c/o Stantec Consulting Ltd. (Stantec) to carry out a geotechnical investigation for the reconstruction of Wellington Street East between Neeve Street and MacDonell Street in Guelph, Ontario, as shown on the appended Location Plan, Drawing 1. This work was authorized by Mr. Peter Fitzgerald of Stantec on behalf of The Tricar Group in Letter 1603-11220/49 dated July 12, 2013.

The purpose of this investigation was to determine the subsurface soil and groundwater conditions at the site, and based on this information; prepare this engineering report with geotechnical recommendations pertaining to service installations and pavement reconstruction.

1 GENERAL INFORMATION

Wellington Street East between Neeve Street and MacDonell Street is approximately 280 m long and about 18 to 20 m wide. The subject section of Wellington Street East is a four lane road with concrete curb, gutter and sidewalks on both sides. Grades along the subject corridor of Wellington Street East generally slope down from MacDonell Street in the north to Neeve Street in the south.

The project involves upgrading of existing underground infrastructure located in the southbound lanes of Wellington Street East, including watermain, sanitary and storm sewers. Following installation of the services the roadway will be fully reconstructed.

2 INVESTIGATION PROCEDURE

2.1 FIELD PROGRAM

The fieldwork for this investigation was carried out on August 12, 2013 and involved the drilling of five boreholes (Boreholes BH-01-13 to BH-05-13) to depths ranging between 2.3 and 5.4 m at the locations shown on the appended Site Plan, Drawing 2. The boreholes were advanced with a CME-75 track-mounted drillrig equipped with continuous flight hollow stem augers.

Local utility companies were contacted prior to the start of drilling activities in order to demarcate underground utilities near the boring locations.

Soil samples were recovered from the boreholes at regular depths intervals using a 50 mm outside diameter split spoon sampler in accordance with the Standard Penetration Test (SPT) procedure and the SPT N-values are plotted on the borehole logs.

As per the scope of work the bedrock in Borehole BH-03-13 was cored using an NQ-size double tube core barrel. The bedrock core specimens were measured in the field to determine the Rock Quality Designation (RQD) (ASTM 6032).

Groundwater observations and measurements were carried out in the open boreholes during and upon completion of drilling, and the observations are summarized on the appended borehole logs.

Monitoring wells were installed in Boreholes BH-03-13 and BH-04-13 to allow measurement of the stabilized groundwater levels as well as collection of groundwater samples. The monitoring wells installations comprised 50 mm diameter pipes with slotted and filter screens, as well as bentonite seals and concrete near the ground surface. The groundwater levels were measured by LVM inc. on August 14, 2013.

The monitoring well in Borehole BH-04-13 was tagged and a completed well record was submitted to the Ministry of Environment. A licensed well technician must properly decommission the monitoring wells before construction.

The remaining boreholes were backfilled with bentonite in accordance with the Ontario Regulation 468/10 (formerly O. Reg. 903) under the province's Water Resources Act.

The fieldwork was observed by a member of our geotechnical engineering staff who documented the drilling and sampling procedures; recorded the RQD and SPT N-values; documented the soil stratigraphies; monitored the groundwater conditions; and cared for the recovered soil samples.

The borehole locations and ground surface elevations were surveyed by LVM, using a Sokkia Model GXR 1 Global Navigation Satellite System (GNSS) rover. The borehole locations were referenced to Universal Trans Mercator North American Datum of 1983 (UTM NAD83) coordinates; the zone reference (17T) has been excluded for presentation purposes. The ground surface elevations are geodetic based on GNSS and local base station telemetry with a vertical root mean squared error of less than 20 mm.

2.2 LABORATORY TESTING

2.2.1 Geotechnical Laboratory Testing

The soil samples secured during this investigation were returned to our laboratory for visual examination as well as moisture content tests. The moisture content test results are plotted on the borehole logs.

Combustible Soil Vapour (CSV) headspace (the air space between the top of the soil and the top of the jar) testing was carried out on soil samples obtained from all of the boreholes using a Type 101, RKI Eagle Portable – Gas Detector Surveyor. The samples were allowed to equilibrate for approximately 1 hour at 20°C prior to measurement.

The soil samples will be stored for a period of three months from the date of sampling. After this time, they will be discarded unless prior arrangements have been made for longer storage.

2.2.2 Limited Analytical Testing

As per the request for proposal, selected soil samples were submitted for chemical analyses in order to provide preliminary soil quality data. The soil samples were tested for one or more of the following analytical parameters:

- ▶ Petroleum Hydrocarbon Fraction (PHC) F1 to F4;
- ▶ Benzene, Toluene, Ethyl Benzene and Xylenes (BTEX);
- ▶ Metals and Inorganics (including Conductivity, pH, SAR); and/or,
- ▶ Polycyclic Aromatic Hydrocarbons (PAHs).

Following authorization by Stantec groundwater samples obtained from the monitoring wells installed in Boreholes BH-03-13 and BH-04-13 were submitted for analytical testing of the aforementioned parameters.

Additionally, one soil sample was submitted to the laboratory for Ontario Regulation 558/00 Toxicity Characteristic Leachate Procedure (TCLP) Analyses (metals, conventionals, and VOC parameters), to classify the soil cuttings prior to final disposal.

The chemical testing conducted for this investigation is summarized in Table 1, hereafter.

Table 1 Summary of Limited Chemical Soil and Groundwater Analyses

BOREHOLE AND SAMPLE NUMBER	APPROX. DEPTH (m)	MATRIX	TESTING RATIONALE	LABORATORY ANALYSIS
BH-01-13, AS1	0.2 - 0.3	Pavement Granulars	Chemical characterization of pavement granulars.	PHC F1-F4, VOC, Metals and Inorganics, PAHs
BH-01-13, SS2	0.8 – 1.1	Sand and Gravel	Chemical characterization of native material which is likely to be excavated.	PHC F1-F4, VOC, PAHs
BH-01-13, SS3	1.5 – 2.0	Sand	Chemical characterization of native material which is likely to be excavated.	Metals and Inorganics
BH-02-13, SS1	0.8 – 1.2	Possible Fill	Chemical characterization of possible fill which is likely to be excavated.	PHC F1-F4, VOC, PAHs
BH-02-13, SS1+SS2	0.8 – 1.8	Possible Fill and highly weathered dolostone bedrock	Chemical characterization of possible fill and native material which is likely to be excavated.	Metals and Inorganics
BH-03-13, SS1	0.8 – 1.2	Possible Fill	Chemical characterization of possible fill which is likely to be excavated.	PHC F1-F4, VOC, Metals and Inorganics, PAHs
BH-03-13, SS2	1.5 – 2.0	Sand and Gravel	Chemical characterization of native material which is likely to be excavated.	PHC F1-F4, VOC, PAHs
BH-03-13, SS2+SS3	1.5 – 2.7	Sand and Gravel	Chemical characterization of native material which is likely to be excavated.	Metals and Inorganics
BH-04-13, AS1	0.2 – 0.3	Pavement Granulars	Chemical characterization of pavement granulars.	PHC F1-F4, VOC, Metals and Inorganics, PAHs
BH-04-13, SS2	0.8 – 1.2	Possible Fill	Chemical characterization of possible fill which is likely to be excavated.	PHC F1-F4, VOC, Metals and Inorganics, PAHs
BH-05-13, SS1	0.8 – 1.2	Fill	Chemical characterization of fill which is likely to be excavated.	PHC F1-F4, VOC, Metals and Inorganics, PAHs
BH-05-13, SS2	1.5 – 2.0	Sand	Chemical characterization of native material which is likely to be excavated.	PHC F1-F4, VOC, Metals and Inorganics, PAHs
BH-05-13, SS3	2.3 – 2.7	Sand	Chemical characterization of native material which is likely to be excavated.	PHC F1-F4, VOC, Metals and Inorganics, PAHs
BH-04-13, AS1	0.2 – 0.3	Pavement Granulars	Soil classification for future off-site disposal.	TCLP

Table 1 Summary of Limited Chemical Soil and Groundwater Analyses, continued

BOREHOLE AND SAMPLE NUMBER	APPROX. DEPTH (m)	MATRIX	TESTING RATIONALE	LABORATORY ANALYSIS
BH-03-13	2.8*	Groundwater	Groundwater quality assessment..	PHC F1-F4, VOC, Metals and Inorganics, PAHs
BH-04-13	4.2*	Groundwater	Groundwater quality assessment.	PHC F1-F4, VOC, Metals and Inorganics, PAHs

Notes: *depth of sampler

The sample containers (with the appropriate preservatives added) were provided by ALS Environmental. The samples were kept cold in coolers with ice and delivered to the laboratory within the allowable holding times. Completed chain-of-custody forms accompanied the samples.

Laboratory Certificate of Analysis reports have been received for the soil and groundwater samples analyzed as part of this investigation. A copy of the complete Laboratory Certificate of Analysis reports for the soil and groundwater samples are included in Appendix 5.

3 SUMMARIZED CONDITIONS

We refer to the appended borehole logs for detailed soil descriptions and stratigraphies; RQD and SPT N-values; moisture content profiles; and groundwater observations.

The subsurface stratigraphy at the site generally comprises pavement structure, fill, and possible fill, overlying native deposits of sand and sand and gravel which are underlain by bedrock. Descriptions of the various deposits encountered are provided in the following subsections.

3.1 PAVEMENT STRUCTURE

The pavement structure contacted in the boreholes comprises 140 to 175 mm of asphaltic concrete overlying 150 mm of Granular 'A' base layer. The contacted Granular 'B' subbase layer was between 250 and 300 mm thick.

3.2 FILL/POSSIBLE FILL

Fill and possible fill was contacted in all boreholes underlying the pavement structure. The fill/possible fill is 0.2 to 1.0 m thick and ranges in composition from sand and gravel with some silt to sand with some silt and traces of gravel. Occasional cobbles, rock powder and/or rock fragments were contacted in the fill/possible fill in Boreholes BH-02-13, BH-03-13, and BH-05-13. Traces of topsoil were encountered in the fill/possible fill in Boreholes BH-03-13 and BH-04-13, and traces of coal in Borehole BH-05-13. At the time of fieldwork the fill/possible fill was generally moist. SPT N-values in the fill/possible fill range from 36 to greater than 50 blows per 300 mm penetration of a split spoon sampler indicating dense to very dense relative densities.

3.3 NATIVE MINERAL SOILS

Sand and gravel was contacted in Boreholes BH-01-13 (north section of corridor) and BH-03-13 (central section of corridor) underlying the fill. The deposit generally ranges in composition from sand and gravel with some silt to silty sand and gravel. Occasional cobbles were contacted throughout the sand and gravel. At the time of sampling the sand and gravel located above the stabilized groundwater table was moist to very moist. SPT N-values in the deposit vary from 27 to greater than 50 blows per 300 mm indicative of compact to very dense relative densities.

Sand was encountered throughout the subject corridor in Boreholes BH-01-13, BH-03-13, and BH-05-13 generally underlying the sand and gravel or fill. The silty sand comprises trace to some gravel and was very moist to wet above the stabilized groundwater table. Rock powder and fragments were contacted within the sand deposit in Borehole BH-03-13. Organics and peat were contacted within the sand in Borehole BH-05-13. SPT N-values in the sand range from 8 to 24 blows per 300 mm indicative of a loose to compact relative density.

3.4 BEDROCK

Dolostone bedrock was encountered at depths ranging from 1.2 to 3.7 m (Elevation 311.0 to 315.9 m). The upper 0.2 to 3.5 m of the contacted bedrock were highly weathered and could be augered; however, SPT N-values were greater than 50 blows per 300 mm.

The bedrock elevations as encountered at the borehole locations are illustrated on the Site Plan, Drawing 2. The depth to bedrock and thickness of the upper weathered dolostone zone will vary between and beyond the borehole locations.

The bedrock in Borehole BH-03-13 was cored over a length of 1.5 m and a photograph of the bedrock core is included in Appendix 3. The Rock Quality Designation (RQD), a measurement of the quality of the bedrock mass, was measured at 91%, indicating a good to excellent bedrock quality.

3.5 GROUNDWATER

Groundwater observations and measurements carried out in the open boreholes are provided on the appended borehole logs. Stabilized groundwater level measurements were obtained by LVM on August 14, 2013 from the monitoring wells installed in Boreholes BH-03-13 and BH-04-13. The stabilized groundwater was measured at a 3.1 m depth (Elevation 310.9 m) within the weathered portion of the dolostone bedrock in Borehole BH-04-13 and at a 2.5 m depth (Elevation 313.1 m) within the granular deposit located above the dolostone bedrock in Borehole BH-03-13.

Wet granular deposits were observed in Boreholes BH-01-13 at a 1.5 m depth (Elevation 316.2 m) and in Borehole BH-05-13 at a 2.3 m depth (Elevation 311.3 m). Wet to saturated weathered dolostone bedrock was contacted at a 3.1 m depth (Elevation 310.6 m) in Borehole BH-05-13.

The groundwater generally occurs under perched conditions above or within the relatively impermeable weathered dolostone bedrock. Seasonal fluctuations and local variations in the groundwater levels would be expected at the site.

3.6 ORGANIC VAPOURS

As noted in Section 2.1.1, CSV headspace testing was carried out on the recovered soil samples utilizing a Type 101, RKI Eagle Portable – Gas Detector Surveyor, which was operated in the methane elimination mode. The readings measured between 0 parts per million (ppm) and 5 ppm, indicative of non-detectable and low concentrations of VOCs in the recovered soil samples.

3.7 CHEMICAL TEST RESULTS

The project site is located in the City of Guelph, which relies on groundwater as a potable water source. The soil analytical results were compared to the Generic Full Depth Standards presented in the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, Ontario Regulation 153/04 (O. Reg. 153/04), as amended by Ontario Regulation 511/09 (O. Reg. 511/09).

The east portion of the project corridor is located within 30 m of an open water body (i.e. the Speed River). The approximate 30 m buffer, based on available air photo photography, has been included on Drawing 3, appended. Additionally, shallow bedrock (i.e. at depths less than 2 mbg, not including the existing pavement structure) has been observed in the majority of the boreholes. Hence, as per O. Reg. 153/04 as amended, the MOE Table 6 Standards (Generic Standards for properties within 30 m of an open water body) and/or Table 8 Standards (Generic Standards for Shallow Soils in a potable groundwater condition) are considered to be applicable for the subject corridor of Wellington Street East. However, considering the objectives of this soil sampling and analysis assignment (i.e. review of appropriate off-site export/disposal options for the on-Site soils as all excavated soil will be transferred from the Site for off-Site re-use/disposal) and as requested, these Standards have not been applied.

The MOE Table 1 Standards (Background Standards for residential/parkland/institutional/community/commercial/industrial property use) and Table 2 Standards (Potable Groundwater Condition Standards for industrial/commercial/community property use, coarse textured soil) were selected to compare the analytical results. The MOE Table 2 Standards were used as an indication of contamination at the site and the MOE Table 1 Standards for excess soil disposal.

3.7.1 Soil Chemistry

The soil chemical test results are presented in Tables 101 to 105 in Appendix 4 and the Certificate of Analysis is included in Appendix 5.

Based on the reported laboratory analytical results, the concentrations of all tested parameters in the soil samples analyzed were below their respective MOE Table 2 Standards with the exception of EC and SAR.

Several exceedances above the respective MOE Table 1 Standards were reported for various parameters, including PHC F4 (BH-01-13, AS1), PHC F3, F4, F4G-SG (BH-04-13, AS1), Antimony (BH-05-13, SS1), EC (all analyzed samples with the exemption of BH-03-13, SS1 and BH-04-13, AS1), and SAR (all analyzed samples).

Considering that the identified elevated concentrations of SAR and EC are potentially related to deicing activities, they are not considered as contaminants of concern in accordance with O. Reg. 153/04 as amended by O. Reg. 511/09, Section 48.

It must be noted, that with exception of Site Alteration Permit properties, per Ontario Regulation 153/04, as amended, Non-Table 1 soil (i.e. soil that does not meet the MOE Table 1 Standards) should only be exported if the receiving site is currently used or has been used for industrial purposes, used as a bulk liquid dispensing facility including gas outlet, garage or dry cleaner and for which a potentially contaminating activity on the receiving site has been identified; and for which one or more contaminants of concern have been identified as present on the receiving site. This excludes: any and all residential, agricultural, park land, institutional, and community land use sites.

A soil sample representing the excess soil cuttings was submitted for Toxicity Characteristic Leachate Procedure (TCLP) Analyses to classify the material for off-Site disposal. The soil sample was submitted to the laboratory for Ontario Regulation 558/00 TCLP Analysis – Metals, Conventional, and VOCs. The chemical results of the testing indicated that the soil sample meets O. Reg. 558/00 Schedule 4 Criteria for the analyzed parameters, and as such is classified as non-hazardous.

3.7.2 Groundwater Chemistry

The groundwater chemical test results are summarized in the attached Tables 201 to 204 in Appendix 4, and are included in the Laboratory Certificate of Analyses contained in Appendix 5.

The groundwater sample obtained from Borehole BH-03-13 exceeded the MOE Table 2 Standards, for all types of use, for Acenaphthylene.

4 DISCUSSION AND RECOMMENDATIONS

4.1 GENERAL

The project involves the upgrading of the existing services located within the southbound lanes of Wellington Street East. This involves the replacement of the existing sanitary sewer and watermain as well as partial replacement of the existing storm sewer located in the north section of the subject corridor. The proposed sewers and watermain will be installed about 2 to 4 m below existing grades. A profile including the proposed services, encountered stratigraphy and stabilized groundwater level measurements is illustrated on Drawing 4, appended.

It is understood that the pavement structure of the southbound lanes will be fully reconstructed following completion of the service installations.

4.2 SERVICING

4.2.1 Excavations and Dewatering

Temporary excavations for the service installations should be straight forward and must comply with Ontario Regulation 213/91 (Construction Projects) under the Occupational Health and Safety Act. The predominant soils encountered at the site will be classified as Type 3 soils, and temporary side slopes must be cut at an inclination of 1 horizontal to 1 vertical or less from the base of the excavation (free of groundwater effects).

Where saturated deposits are contacted in the trench sides, the soil would be classified as Type 4, and temporary side slopes should be cut at a minimum gradient of 3 horizontal to 1 vertical from the base of the excavation.

Excavation slopes through the bedrock can be cut near vertical. All loosened bedrock pieces should be removed from the slope faces as the excavation proceeds. Seepage through discontinuities in the bedrock will loosen small pieces and the slopes should be checked periodically.

A large hydraulic backhoe equipped with a hoe-ram should be capable of breaking the upper weathered zone of the rock mass. Drilling and blasting will likely be necessary to excavate below the weathered zone. Vertical and horizontal overbreak of the rock mass should be expected. Rock excavation shall be carried out in accordance with OPSS 515.

Where space limitations (from utility poles, existing underground services, above ground structures, etc.) do not permit overburden cut slopes at inclinations specified above, a steeper cut slope can be employed if trench liner boxes (prefabricated support system) are used to protect workers. Some movement/slumping of the cohesionless silty soils adjacent to the trench boxes is to be expected if this option is used. If ground movement adjacent to the trench is unacceptable then a braced sheeting system may be used to support structures such as pipes located above the new services.

The trench side slopes should be inspected for evidence of instability, particularly following periods of heavy rainfall, thawing or when the trench has been left open for an extended period of time. Appropriate remedial action should be taken to ensure the continued stability of the slopes.

It is anticipated that excavations for the proposed watermain and storm sewer will not extend below the stabilized groundwater table. However, it is envisaged that excavations for the proposed sanitary sewer will extend up to 0.5 m below the stabilized groundwater table along the south section of Wellington Street East and up to 1.0 m near the central section of subject corridor. No free groundwater was observed in the north section of Wellington Street East at the time of fieldwork completion.

Minor to moderate groundwater inflow must be expected for excavation extending through the saturated weathered dolostone bedrock or up to 0.5 m into saturated granular deposits. Moderate to significant groundwater inflow should be expected where excavations extend more than 0.5 m into saturated granular deposits.

It is believed that groundwater inflow from excavations can be controlled using a gravity dewatering system with perimeter interceptor ditches and high capacity pumps.

A Permit To Take Water (PTTW) would be required by the Ministry of the Environment in the event that the daily taking of groundwater exceeds 50,000 L per day.

The design of the dewatering system should be left to the contractor's discretion, and the system should meet a performance specification to maintain and control the groundwater at least 0.3 m below the invert levels in order to provide a stable excavation base. Successful dewatering operations will depend on the contractor's own experience, construction techniques, sequencing, and efficiency of work force and plant. Care should be taken to direct surface runoff away from open excavations.

4.2.2 Pipe Bedding

The majority of the subgrade soils beneath the new services will comprise native mineral soils or dolostone bedrock. Organic sand was contacted in Borehole BH-05-13 and may locally extend below the proposed invert depth of the watermain and storm sewer in the south section of the subject corridor. The organic sand is not considered suitable to support the proposed services without undergoing possible detrimental post-construction settlement and should therefore be subexcavated from below the pipe invert level. To ensure adequate support for the pipes grades should be raised with granular material such as OPSS Granular 'B' placed in thin lifts (maximum 300 mm thick) and compacted to a minimum 95% standard Proctor maximum dry density (SPMDD). No bearing problems are anticipated for flexible or rigid pipes founded on compact to very dense native mineral soils, dolostone bedrock or well compacted Granular 'B' material.

Prior to the installation of the new services, the pipe subgrade should be inspected by a geotechnical engineer. Any loose zones noted during the inspection must be subexcavated and replaced with well-compacted Granular material such as OPSS Granular 'A'. Where wet silty soils are exposed in the subgrade, care should be taken to avoid excessive vibration or disturbance from foot traffic in the base of the trenches.

Pipe bedding for water and sewer services should be conventional Class 'B' pipe bedding comprising a minimum 150 mm thick layer of OPSS Granular 'A' aggregate below the pipe invert. For services installed in rock trenches the bedding course should be increased to 300 mm thickness. Further, the bedding course may be thickened if portions of the subgrade become unduly wet during excavation. Granular 'A' type aggregate should be provided around the pipe to at least 300 mm above the pipe. The bedding aggregate should be compacted to a minimum 100% SPMDD.

A well-graded clear stone such as Coarse Aggregate for HL4 Asphaltic Concrete (OPSS 1003) could be used in the trenches as bedding below the spring line of the pipe to facilitate sump pump dewatering, if necessary. The clear stone should be compacted with a plate tamper.

4.2.3 Backfilling

The trench backfill should be placed in 300 mm thick lifts and should be compacted to a minimum 98% SPMDD. It is understood that the excavated material will be disposed of off-site and we refer the reader to Section 3.7, Chemical Test Results for further details. The trench backfill should therefore comprise imported granular soils such as OPSS Select Subgrade Material placed in maximum 300 mm thick lifts compacted to 98% SPMDD.

To minimize potential problems, backfilling operations should follow closely after excavations so that only a minimal length of trench is exposed. Care should be taken to direct surface run-off away from open excavations.

If construction extends into the winter months, then the backfilling operations should be planned so that exposure of the backfill material to frost is kept to a minimum and to ensure that frozen material is not used as backfill.

Frequent inspection and compaction testing by experienced geotechnical personnel should be carried out to verify that the specified degree of compaction has been achieved.

4.3 SURFACE WORKS

4.3.1 Curb, Gutter and Sidewalk

The concrete for curb, gutter and sidewalks should be proportioned, mixed, placed, and cured in accordance with the requirements of OPSS 353 and OPSS 1350, and shall meet the following specific requirements (OPSS 353.05.01):

- ▶ minimum 28-day compressive strength = 30 MPa
- ▶ maximum slump = 60 mm max for curb and gutter, 70 ± 20 mm for sidewalk
- ▶ air entrainment = $7.0 \pm 1.5\%$

A minimum 150 mm thick layer of compacted Granular 'A' type aggregate should be placed beneath the sidewalk slabs.

During cold weather, the freshly placed concrete must be covered with insulating blankets to protect against freezing. Three cylinders from each day's pour should be taken for compressive strength testing. Air entrainment, temperature, and slump tests should be made from the same batch of concrete from which test cylinders are made.

4.3.2 Pavement Construction

Following sewer and watermain installation, a new pavement structure will be constructed for the southbound lanes of Wellington Street East. The pavement subgrade soils are expected to comprise granular material placed as trench backfill and compacted to 98% SPMDD.

The following pavement component thicknesses are recommended based on the proposed pavement usage, and the frost-susceptibility and strength of the subgrade soils.

Table 2 Pavement Component Thicknesses

PAVEMENT COMPONENT	THICKNESS
Asphaltic Concrete	135 mm
Granular 'A' Base	175 mm
Granular 'B' Subbase	450 mm

The pavement subgrade materials should be thoroughly proof-rolled prior to placement of the Granular 'B' subbase course. If any unstable areas are noted, then the Granular 'B' thickness may need to be increased to support pavement construction traffic. This should be left as a field decision by a qualified geotechnical engineer at the time of construction, but it is recommended that additional Granular 'B' be carried as a provisional item under the construction contract.

The subgrade beneath the new pavement structure constructed adjacent to the existing pavement structure should be tapered to match the subgrade beneath the existing pavement in order to prevent differential frost heaving for the pavement structure.

Samples of both the Granular 'A' and Granular 'B' aggregates should be checked for conformance to OPSS 1010 prior to utilization on site and during construction. The Granular 'B' subbase and Granular 'A' base courses must be compacted to 100% standard Proctor maximum dry density (SPMDD), as verified by in-situ density testing.

The asphaltic concrete should comprise 45 mm of HL3 surface overlying 90 mm of HL8 binder. The asphaltic concrete paving materials should conform to the requirements of OPSS 1150. The asphalt should be placed and compacted in accordance with OPSS 310. Performance Graded Asphalt Cement (PGAC) 58-28 should be utilized in the hot mix asphalt, in accordance with the recommendations of OPSS 1101.

4.3.3 Subdrains

The pavement subgrade and granular courses will lose their strength to support traffic loads if allowed to become wet due to surface water or groundwater infiltration. Therefore, subsurface drainage and the provision of a well-drained granular base and subbase courses are critical to the long-term performance of pavement structures.

The most effective subdrains run continuously along the edge of the pavement between catchbasins. Where it is not practical to install continuous subdrains beneath pavement structures underlain by poorly drained soils, 5 m long subdrain stubs can be installed at the catchbasin locations (i.e. in the lower south section of the subject corridor) to speed the pavement drainage of excess water from the granular base and subbase to the storm drainage system. A typical subdrain detail has been illustrated on Drawing 5, appended.

4.4 CONSTRUCTION INSPECTION AND TESTING REQUIREMENTS

4.4.1 Materials Testing and Inspection

Geotechnical inspections and compaction testing should be carried out on the pipe bedding and trench backfill on a daily basis to ensure that all the materials are being adequately compacted.

Appropriate laboratory and field testing of the pavement structure components (granulars and asphaltic concrete) should be conducted, as well as concrete testing for the curbs and sidewalks.

LVM inc. would be pleased to provide the above noted inspection and testing services upon request.

4.4.2 Construction Vibration

It is recommended that the contractor conduct a pre-construction condition survey of the properties and buildings along Wellington Street East and notify the residents of the likelihood of construction vibrations prior to the start of construction. The contractor should adjust the amplitude and frequency of the compaction equipment, as well as keep layer thicknesses to a minimum such that the appropriate compaction can be achieved without excess vibration.

5 STATEMENT OF LIMITATIONS

The geotechnical recommendations provided in this report are applicable only to the project described in the text and then only if constructed substantially in accordance with the details stated in this report. Since all details of the design may not be known at the time of report preparation, we recommend that we be retained during the final design stage to verify that the geotechnical recommendations have been correctly interpreted in the design. Also, if any further clarification and/or elaboration are needed concerning the geotechnical aspects of the project, LVM inc. should be contacted. We recommend that we be retained during construction to confirm that the subsurface conditions do not deviate materially from those encountered in the test holes and to ensure that our recommendations are properly understood.

The geotechnical recommendations provided in this report are intended for the use of the owner and its retained designer. They are not intended as specifications or instructions to contractors. Any use which a contractor makes of this report, or decisions made based on it, are the responsibility of the contractor. The contractor must also accept the responsibility for means and methods of construction, seek additional information if required, and draw their own conclusions as to how the subsurface conditions may affect their work. LVM inc. accepts no responsibility and denies any liability whatsoever for any damages arising from improper or unauthorized use of the report or parts thereof.

It is important to note that the geotechnical investigation involves a limited sampling of the site gathered at specific test hole locations and the conclusions in this report are based on this information gathered. The subsurface geotechnical, hydrogeological, environmental and geologic conditions between and beyond the test holes will differ from those encountered at the test holes. Also such conditions are not uniform and can vary over time. Should subsurface conditions be encountered which differ materially from those indicated at the test holes, we request that we be notified in order to assess the additional information and determine whether or not changes should be made as a result of the conditions.

Appendix 1 Drawings

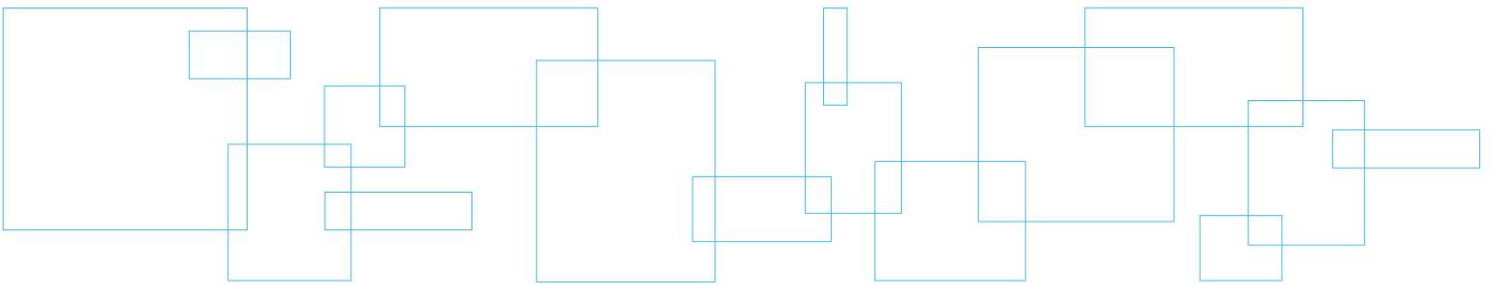
Drawing 1: Location Plan

Drawing 2: Site Plan

Drawing 3: Site Plan – Approximate 30 m Buffer Line

Drawing 4: Profile

Drawing 5: Typical Pavement Subdrain Detail



10 cm

5

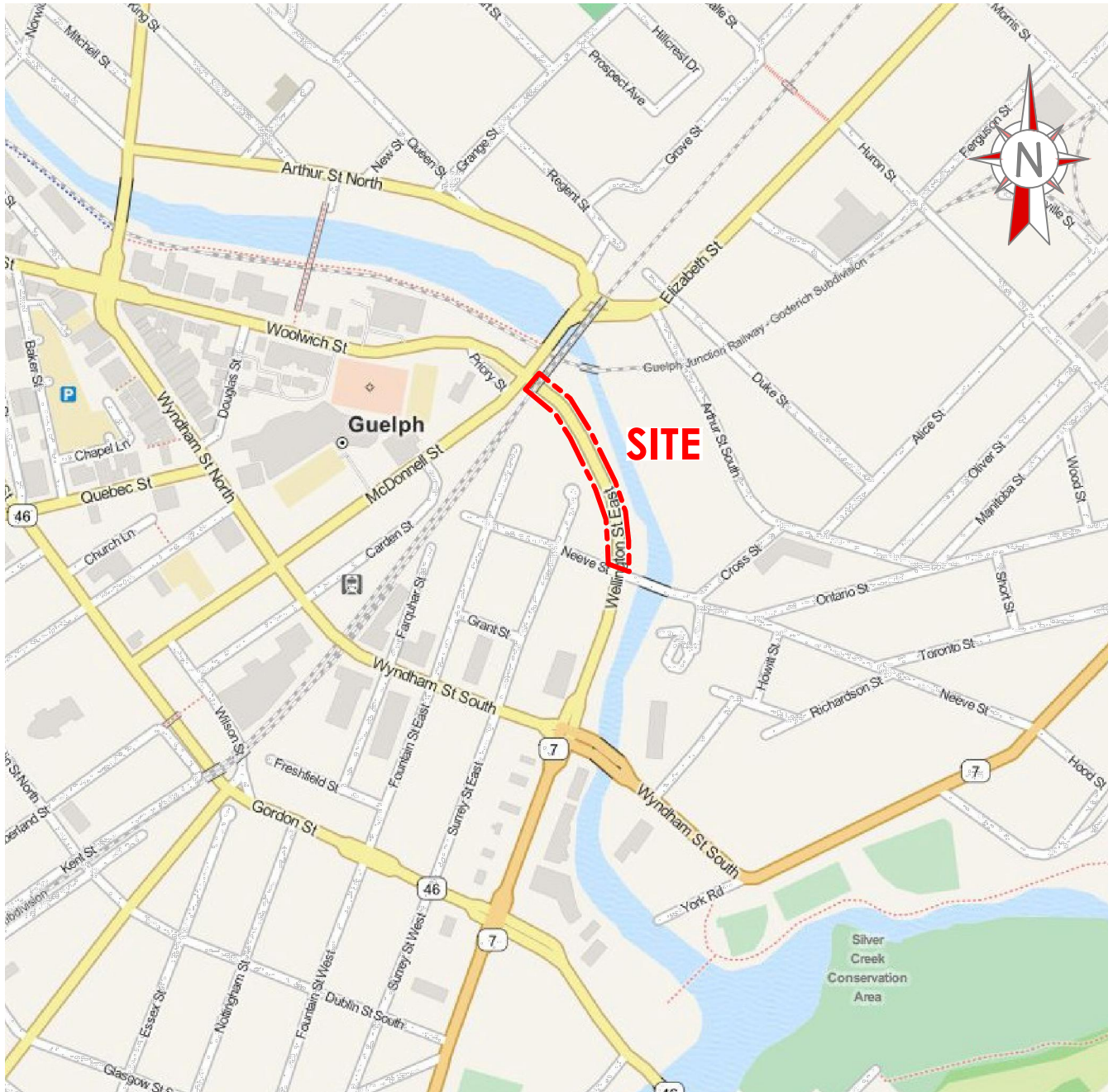
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3

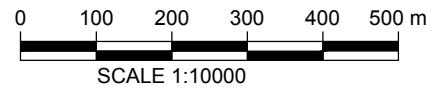
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1

0



NOTES :
1-REFERENCES : © OpenStreetMap contributors (2013).

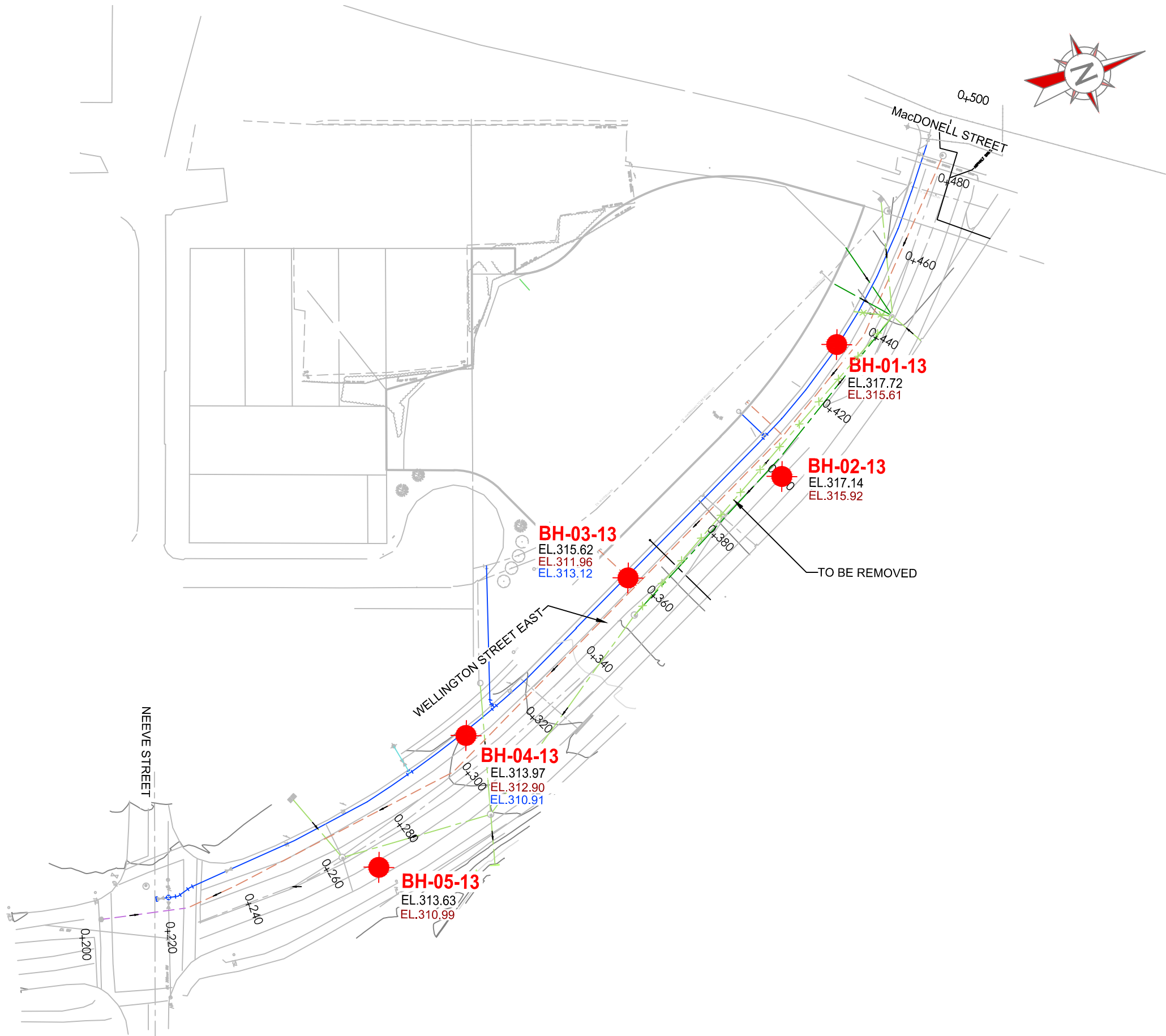


Project	Wellington Street East Reconstruction
	Neeve Street to MacDonnell Street, Guelph, Ontario
Title	LOCATION PLAN

LVM		LVM inc. 353, Bridge Street East Kitchener (Ontario) N2K 2Y5 Telephone : 519.741.1313 Fax : 519.741.5422			
Prepared	E.Ciochon	Discipline	GEOTECHNICAL	Project manager	K.Thrams
Drawn	E.Ciochon	Scale	1 : 10000	Sequence no.	01 of 05
Checked	K.Thrams	Date	2013-08-15		
M. dept.	Project	Disc.	Dwg no.	Rev.	
160	P-0003883-0-01-100	GE	001	00	

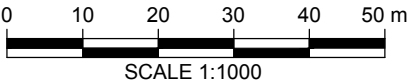
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10 cm
5
4
3
2
1
0



LEGEND :

- BOREHOLE LOCATION
- EL. 313.63 GROUND SURFACE ELEVATION (m)
- EL.310.99 BEDROCK ELEVATION (m)
- EL.310.91 GROUNDWATER ELEVATION (m)
- PROPOSED STORM SEWER
- EXISTING STORM SEWER
- PROPOSED WATERMAIN
- PROPOSED SANITARY SEWER



- NOTES :
- 1-REFERENCES: STANTEC Consulting Ltd., File: 2000-160311398-C-FB-2000-g2913. dwg., received 2013-08-13.
 - 2-REFERENCES: Coordinates and Elevations based on Sokkia network coordinates.
 - 3-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.

Project
**Wellington Street East
Reconstruction**

Neeve Street to MacDonell Street, Guelph, Ontario

Title
SITE PLAN



LVM inc.
353, Bridge Street East
Kitchener (Ontario) N2K 2Y5
Telephone : 519.741.1313
Fax : 519.741.3422

Prepared **E.Ciochon**
Drawn **E.Ciochon**
Checked **K.Thrams**

Discipline **GEOTECHNICAL**
Scale **1:1000**
Date **2013-08-22**

Project manager
K.Thrams

Sequence no. **02 of 05**

M. dept.	Project	Disc.	Dwg no.	Rev.
160	P-0003883-0-01-100	GE	002	00

10 cm

5

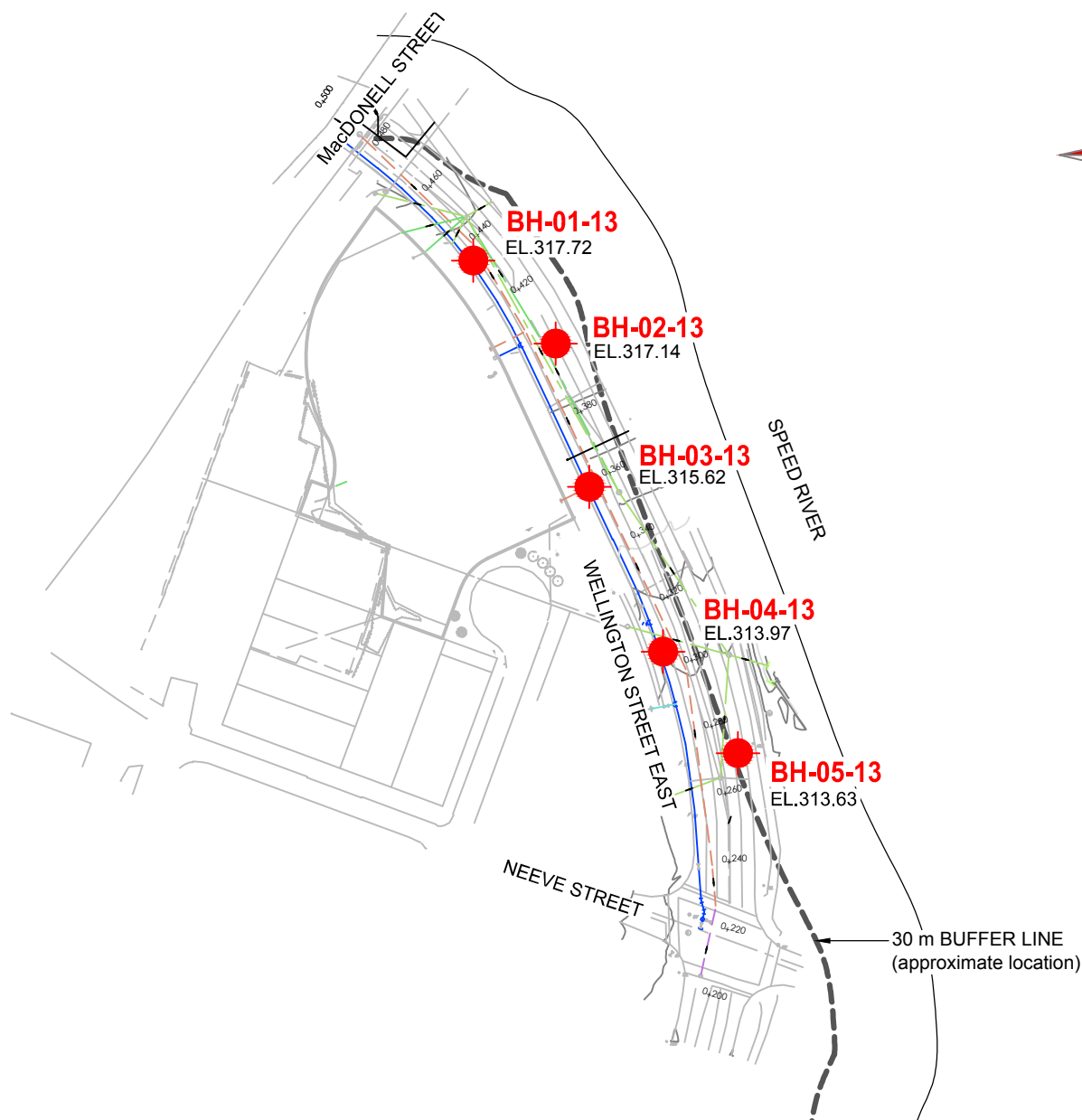
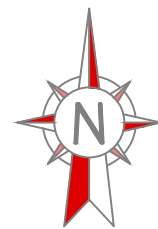
4

3

2

1

0

**LEGEND :**

BOREHOLE LOCATION

EL.313.63 GROUND SURFACE ELEVATION (m)

0 20 40 60 80 100 m

SCALE 1:2000

NOTES :

- 1-REFERENCES: STANTEC Consulting Ltd., File: 2000-160311398-C-FB-2000-g2913. dwg., received 2013-08-13.
- 2-REFERENCES: Coordinates and Elevations based on Sokkia network coordinates.
- 3-GRAND RIVER CONSERVATION AUTHORITY: 2010 Aerial Photography (2013).
- 4-Drawing scale may be distorted due to file conversion and/or copying. Measurements taken from the drawing must be verified in the field.

Project

Wellington Street East Reconstruction

Neeve Street to MacDonell Street, Guelph, Ontario

Title

SITE PLAN APPROXIMATE 30 m BUFFER LINE



LVM inc.

353, Bridge Street East
Kitchener (Ontario) N2K 2Y5
Telephone : 519.741.1313
Fax : 519.741.5422

Prepared **E.Ciochon**Drawn **E.Ciochon**Checked **K.Thrams**Discipline **GEOTECHNICAL**Scale **1 : 2000**Date **2013-08-15**

Project manager

K.Thrams

Sequence no.

03 of 05

M. dept.

160

Project

P-0003883-0-01-100

Disc.

GE

Dwg no.

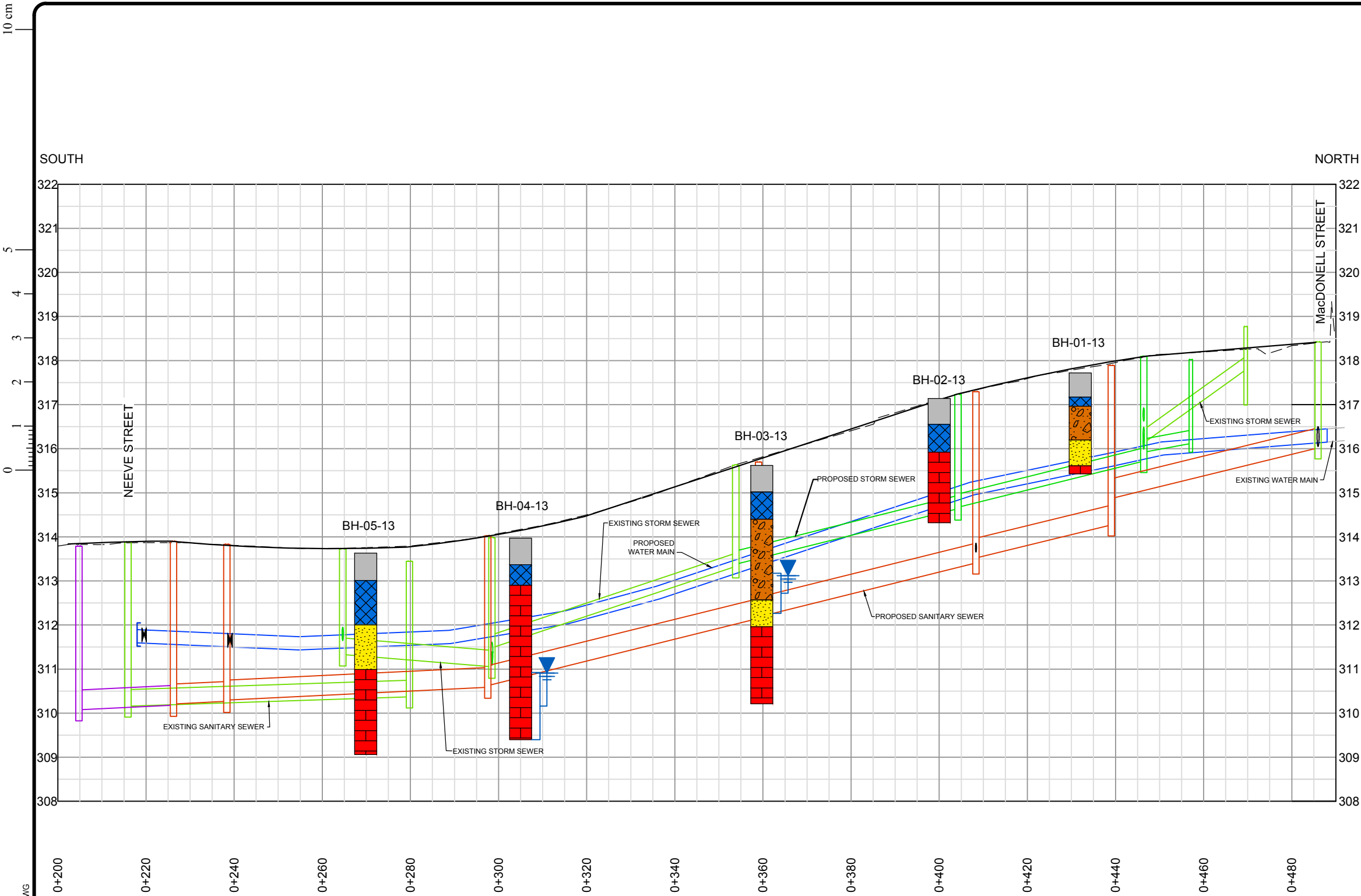
003

Rev.

00

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G:\160\PO003883\25_CAD\IP-4003883-0-01-100_DWG\002-DWG\003.DWG



Project

**Wellington Street East
Reconstruction**

Neeve Street to MacDonell Street, Guelph, Ontario

Title

PROFILE

LVM

LVM inc.
353, Bridge Street East
Kitchener (Ontario) N2K 2Y5
Telephone : 519.741.1313
Fax : 519.741.3422

Prepared **E.Ciochon**

Drawn **E.Ciochon**

Checked **K.Thrams**

Discipline **GEOTECHNICAL**

Scale **1:1000**

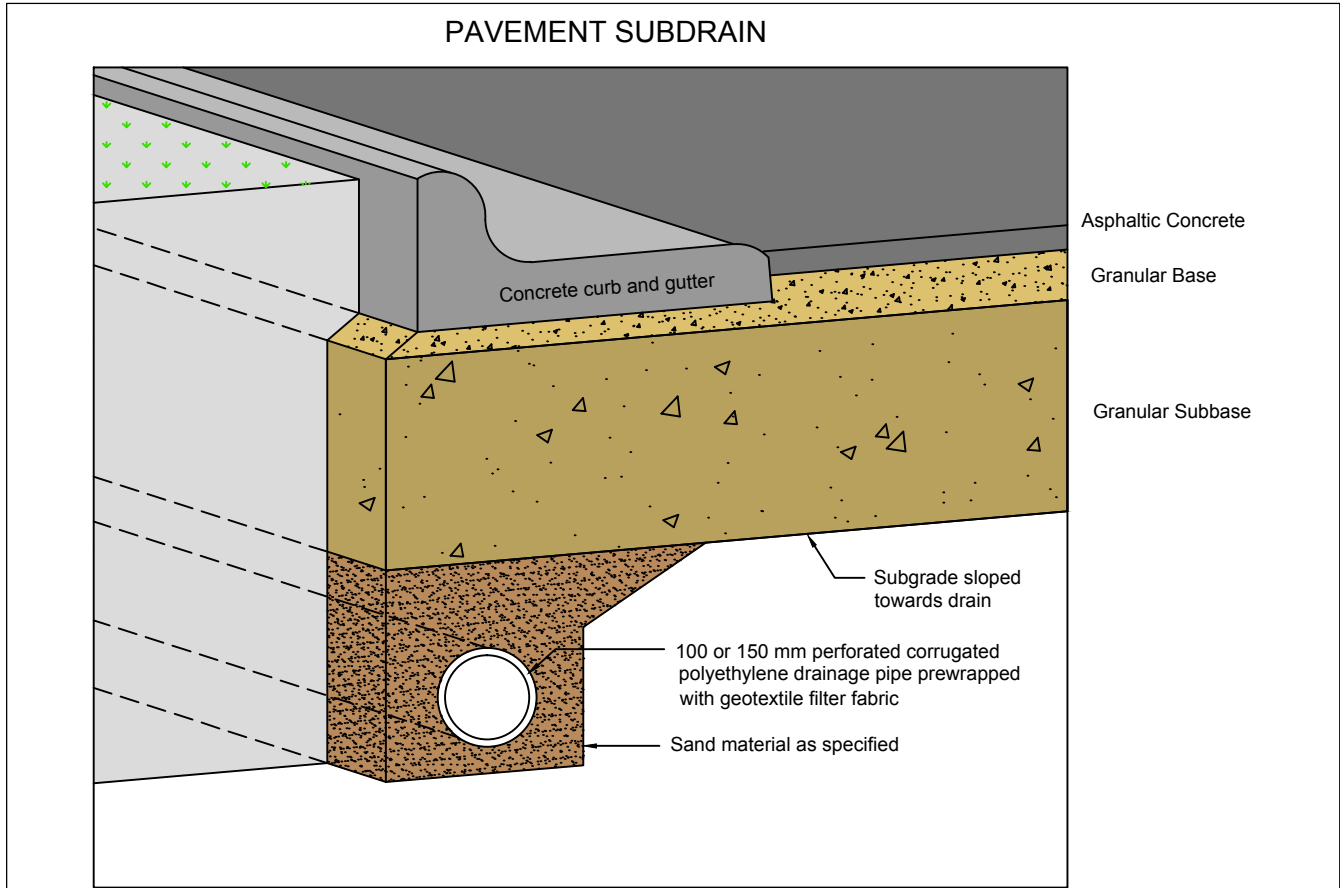
Date **2013-08-15**

Project manager
K.Thrams

Sequence no.
04 of 05

M. dept.	Project	Disc.	Dwg no.	Rev.
160	P-0003883-0-01-100	GE	004	00

10 cm
5
4
3
2
1
0



GENERAL REQUIREMENTS FOR PAVEMENT SUBDRAINS

1. Perforated corrugated polyethylene drainage pipe shall meet the requirements of OPSS 1840.
2. Pipe filter fabric conforming to OPSS 1860 for geotextile Class 1 with a filtration opening size of 150 to 450 microns shall be supplied on all sections of perforated pipe.
3. The open upstream ends of pipes should be capped.
4. Subdrain pipes to be set on at least 1% grade draining to a positive frost-free outlet. If the subdrains are outletted to a ditch then the last 1.5 m of the outlet pipe should consist of a corrugated galvanized steel pipe equipped with a rodent gate.
5. Bedding and backfill material shall be concrete sand meeting the gradation requirements of OPSS 1002 (Fine Aggregate for Concrete).

Project

Wellington Street East Reconstruction

Neeve Street to MacDonell Street, Guelph, Ontario

Title

TYPICAL PAVEMENT SUBDRAIN DETAIL



LVM inc.
353, Bridge Street East
Kitchener (Ontario) N2K 2Y5
Telephone : 519.741.1313
Fax : 519.741.5422

Prepared **E.Ciochon**

Drawn **E.Ciochon**

Checked **K.Thrams**

Discipline **GEOTECHNICAL**

Scale **1 : 10000**

Date **2013-08-27**

Project manager

K.Thrams

Sequence no.

05 of 05

M. dept.

160

Project

P-0003883-0-01-100

Disc.

GE

Dwg no.

005

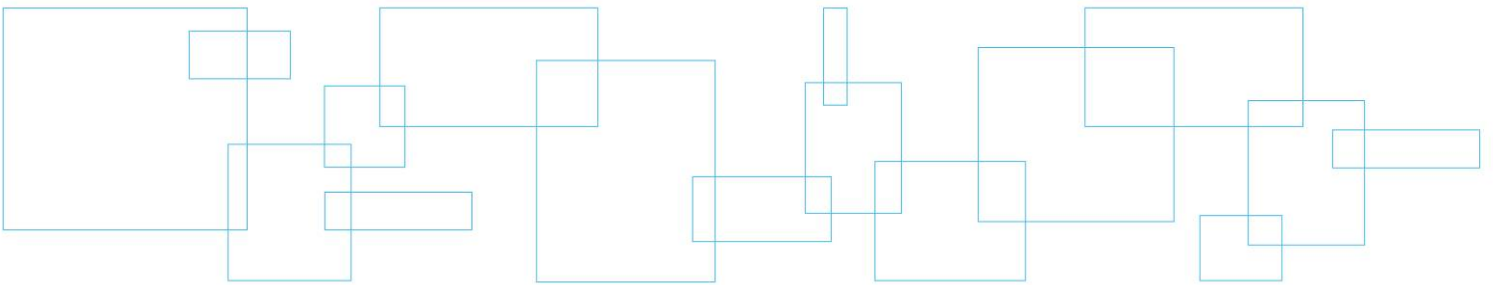
Rev.

00

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Appendix 2 Borehole Logs

List of Abbreviations
Boreholes BH-01-13 to BH-05-13



LIST OF ABBREVIATIONS

The abbreviations commonly employed on the borehole logs, on the figures, and in the text of the report, are as follows:

Sample Types		Soil Tests and Properties	
AS	Auger Sample	SPT	Standard Penetration Test
CS	Core Sample	UC	Unconfined Compression
RC	Rock Core	FV	Field Vane Test
SS	Split Spoon	ϕ	Angle of internal friction
TW	Thinwall, Open	γ	Unit weight
WS	Wash Sample	w_p	Plastic limit
BS	Bulk Sample	w	Water content
GS	Grab Sample	w_L	Liquid limit
WC	Water Content Sample	I_L	Liquidity index
TP	Thinwall, Piston	I_p	Plasticity index
		PP	Pocket penetrometer

Penetration Resistances	
Dynamic Penetration Resistance	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a 50 mm (2 in.) diameter 60° cone a distance 300 mm (12 in.). The cone is attached to 'A' size drill rods and casing is not used.
Standard Penetration Resistance, N (ASTM D1586)	The number of blows by a 63.5 kg (140 lb.) hammer dropped 760 mm (30 in.) required to drive a standard split spoon sampler 300 mm (12 in.)
WH	sampler advanced by static weight of hammer
PH	sampler advanced by hydraulic pressure
PM	sampler advanced by manual pressure

Soil Description		
Cohesionless Soils	SPT N-Value	Relative Density (D_r)
Compactness Condition	(blows per 0.3 m)	(%)
Very Loose	0 to 4	0 to 20
Loose	4 to 10	20 to 40
Compact	10 to 30	40 to 60
Dense	30 to 50	60 to 80
Very Dense	over 50	80 to 100
Cohesive Soils	Undrained Shear Strength (C_u)	
Consistency	kPa	psf
Very Soft	less than 12	less than 250
Soft	12 to 25	250 to 500
Firm	25 to 50	500 to 1000
Stiff	50 to 100	1000 to 2000
Very Stiff	100 to 200	2000 to 4000
Hard	over 200	over 4000
DTPL	Drier than plastic limit	Low Plasticity, $W_L < 30$
APL	About plastic limit	Medium Plasticity, $30 < W_L < 50$
WTPL	Wetter than plastic limit	High Plasticity, $W_L > 50$



Ground Elevation: 317.72 m

Borehole Number: BH-01-13

Job N°: P-0003883-0-01-100

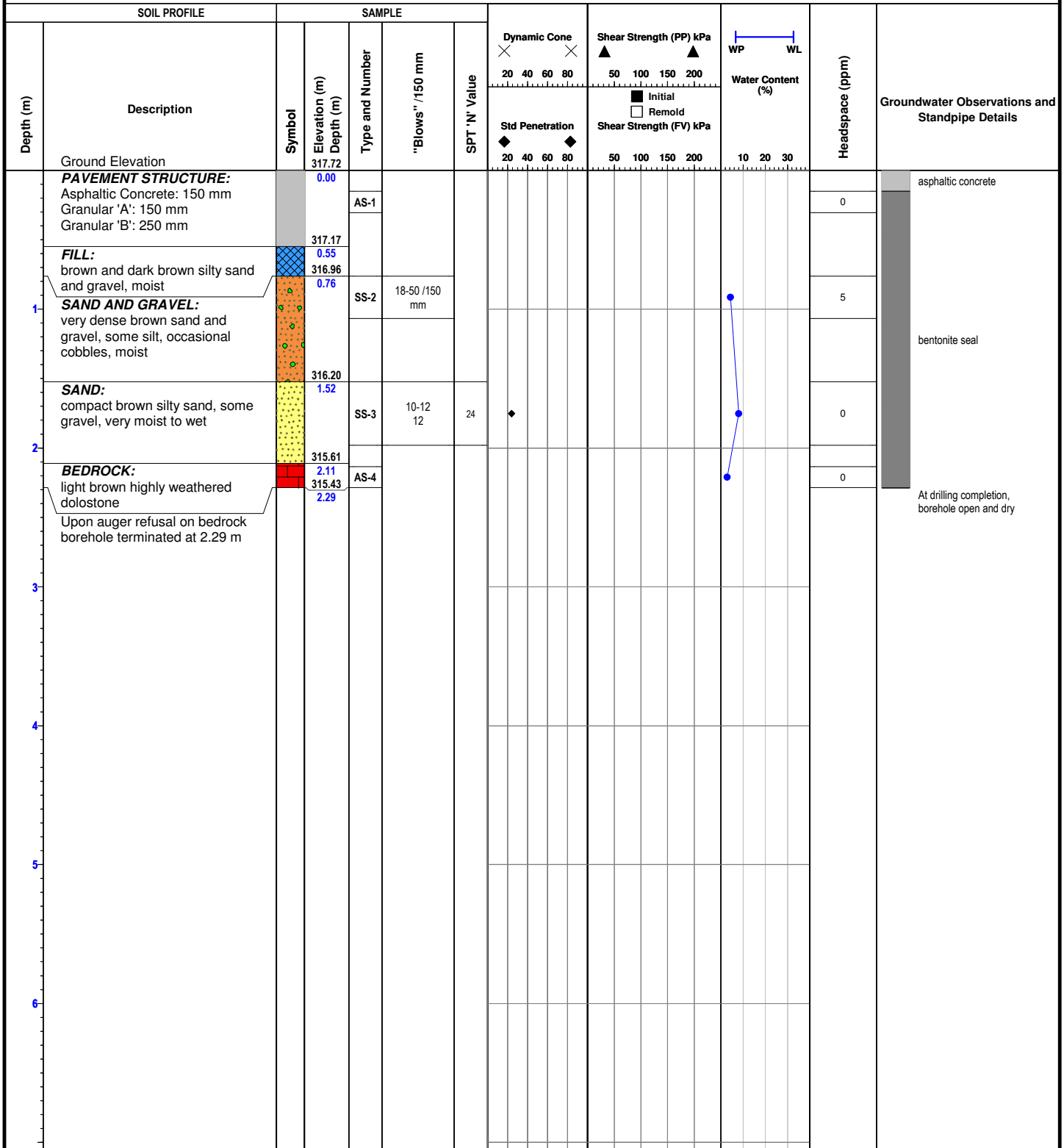
Drill Date: 2013-08-12

Project: Wellington Street East Reconstruction

Field Tech: D.Souter

Location: Neeve Street to MacDonell Street, Guelph, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: K.Thrams

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Headspace readings expressed as parts per million (ppm).



Ground Elevation: 317.14 m

Borehole Number: BH-02-13

Job N°: P-0003883-0-01-100

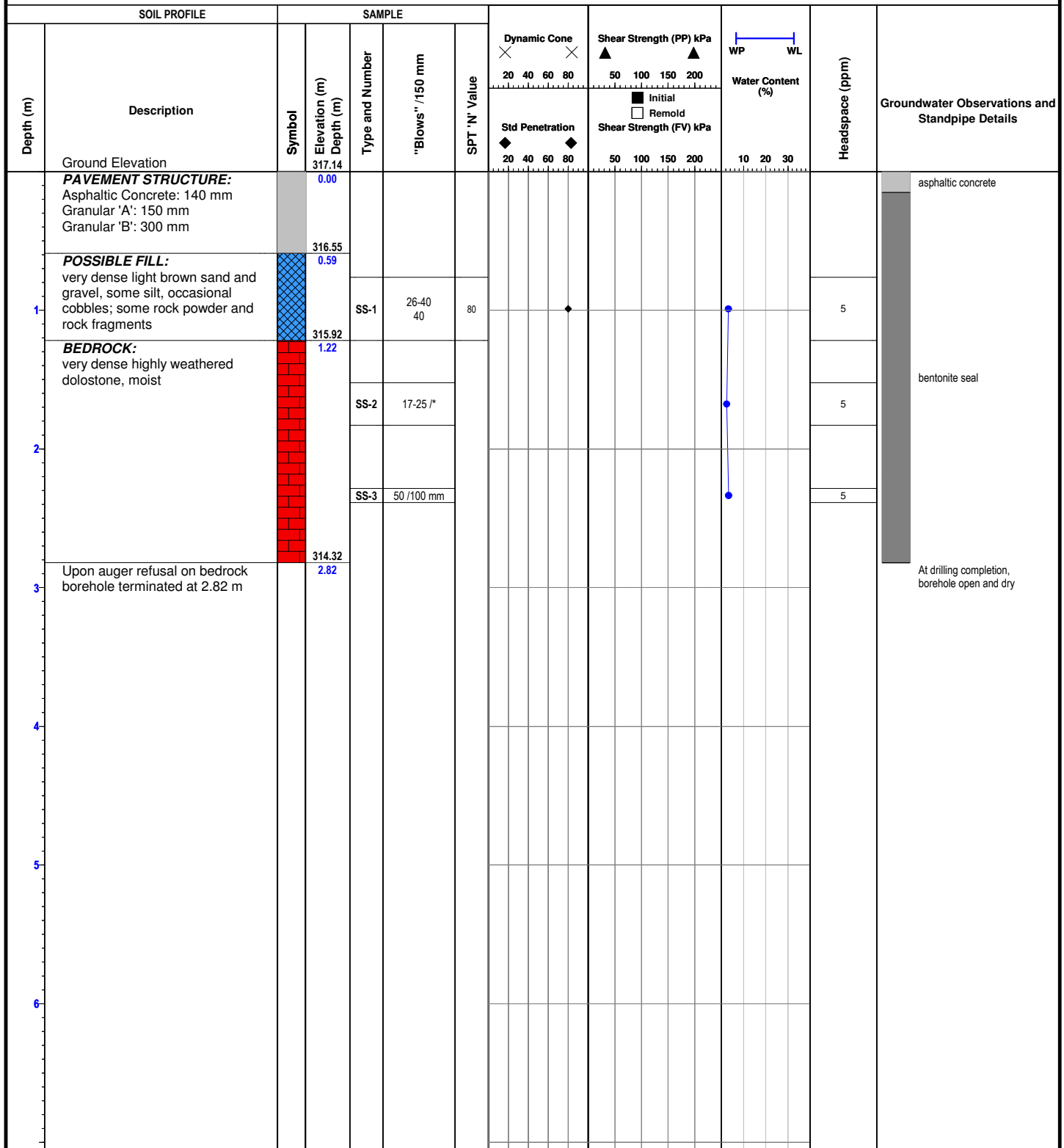
Drill Date: 2013-08-12

Field Tech: D.Souter

Project: Wellington Street East Reconstruction

Drill Method: Hollow Stem Auger

Location: Neeve Street to MacDonell Street, Guelph, Ontario



Reviewed by: K.Thrams

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Headspace readings expressed as parts per million (ppm).
*Sampler bouncing on weathered bedrock.



Ground Elevation: 315.62 m

Borehole Number:

BH-03-13

Job N°:

P-0003883-0-01-100

Drill Date:

2013-08-12

Field Tech:

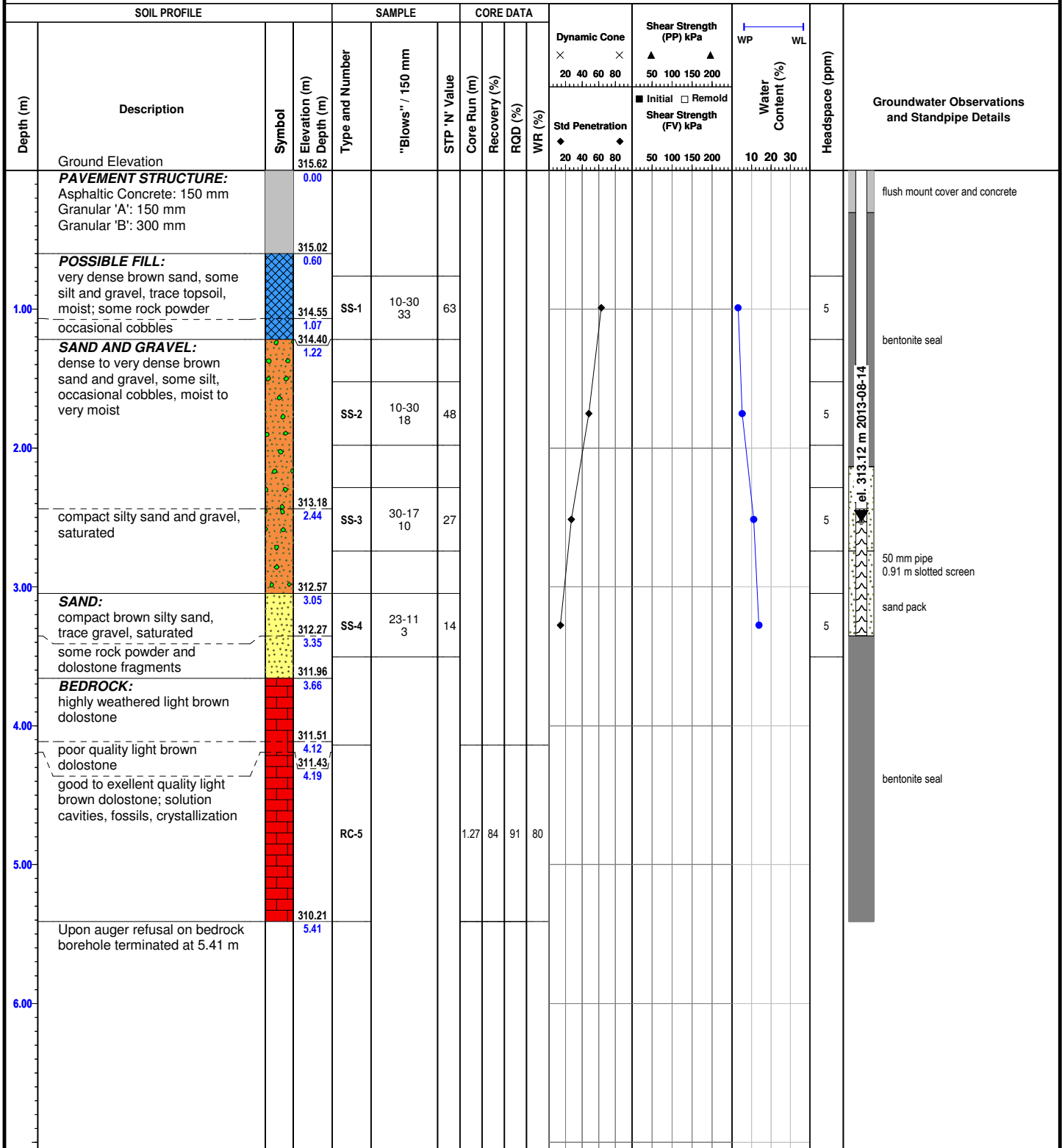
D.Souter

Drill Method:

Hollow Stem Auger/
NQ Core Barrel

Project: Wellington Street East Reconstruction

Location Neeve Street to MacDonell Street, Guelph, Ontario

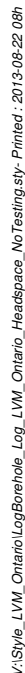


Reviewed by: K.Thrams

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Headspace readings expressed as parts per million (ppm).



Borehole Number: BH-04-13

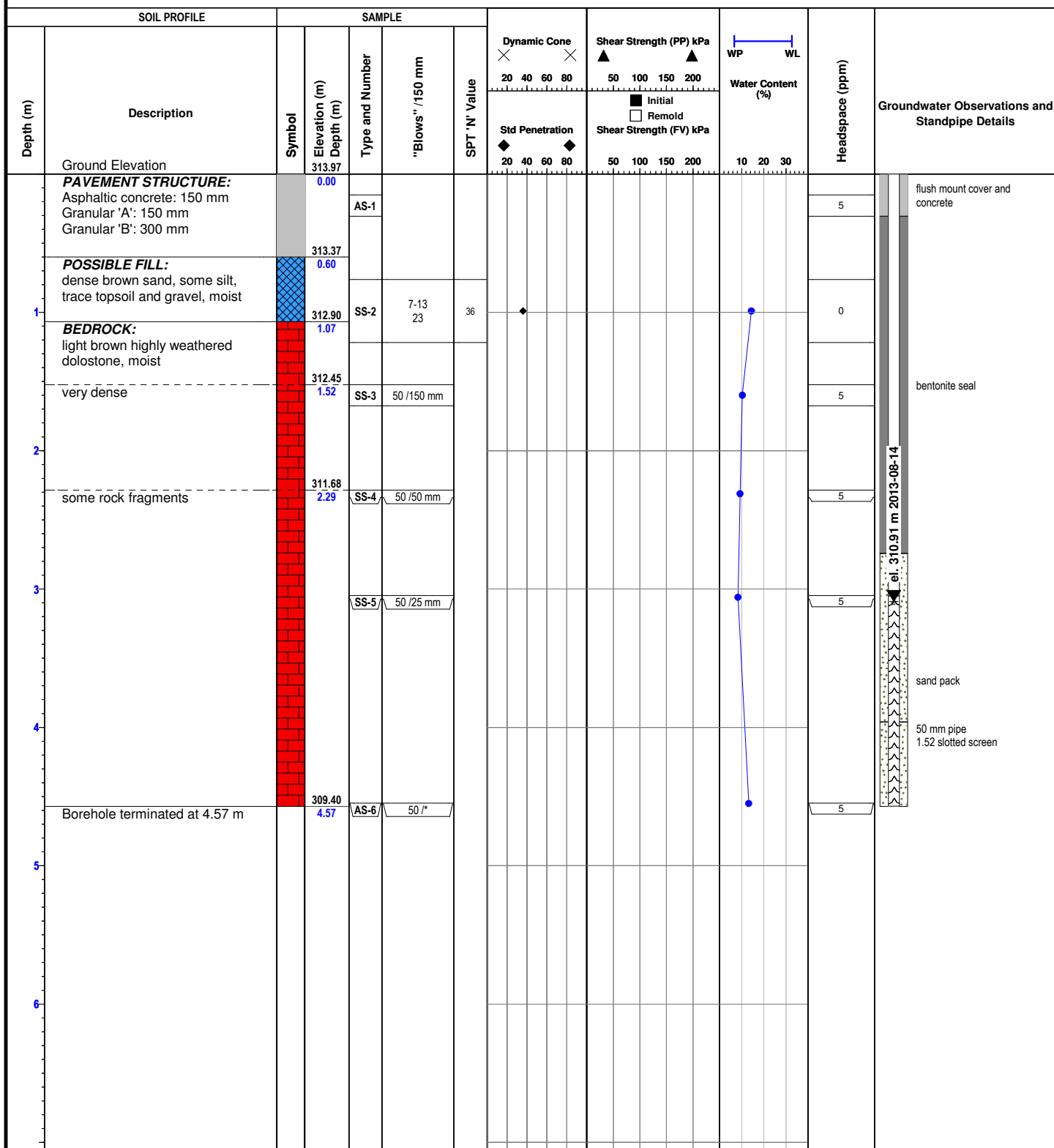
Drill Date: 2013-08-12

Field Tech: *D.Souter*

Drill Method: *Hollow Stem Auger*

Project: *Wellington Street East Reconstruction*

Location: *Neeve Street to MacDonell Street, Guelph, Ontario*



Sheet: 1 of 1

Notes: Headspace readings expressed as parts per million (ppm).
*Sampler bouncing on bedrock.

Vertical Scale = 1 : 40.0

EQ-09-Ge-72 R.1 18.02.2011



Ground Elevation: 313.63 m

Borehole Number: BH-05-13

Northing: 4823103.95

Job N°: P-0003883-0-01-100

Easting: 244768.29

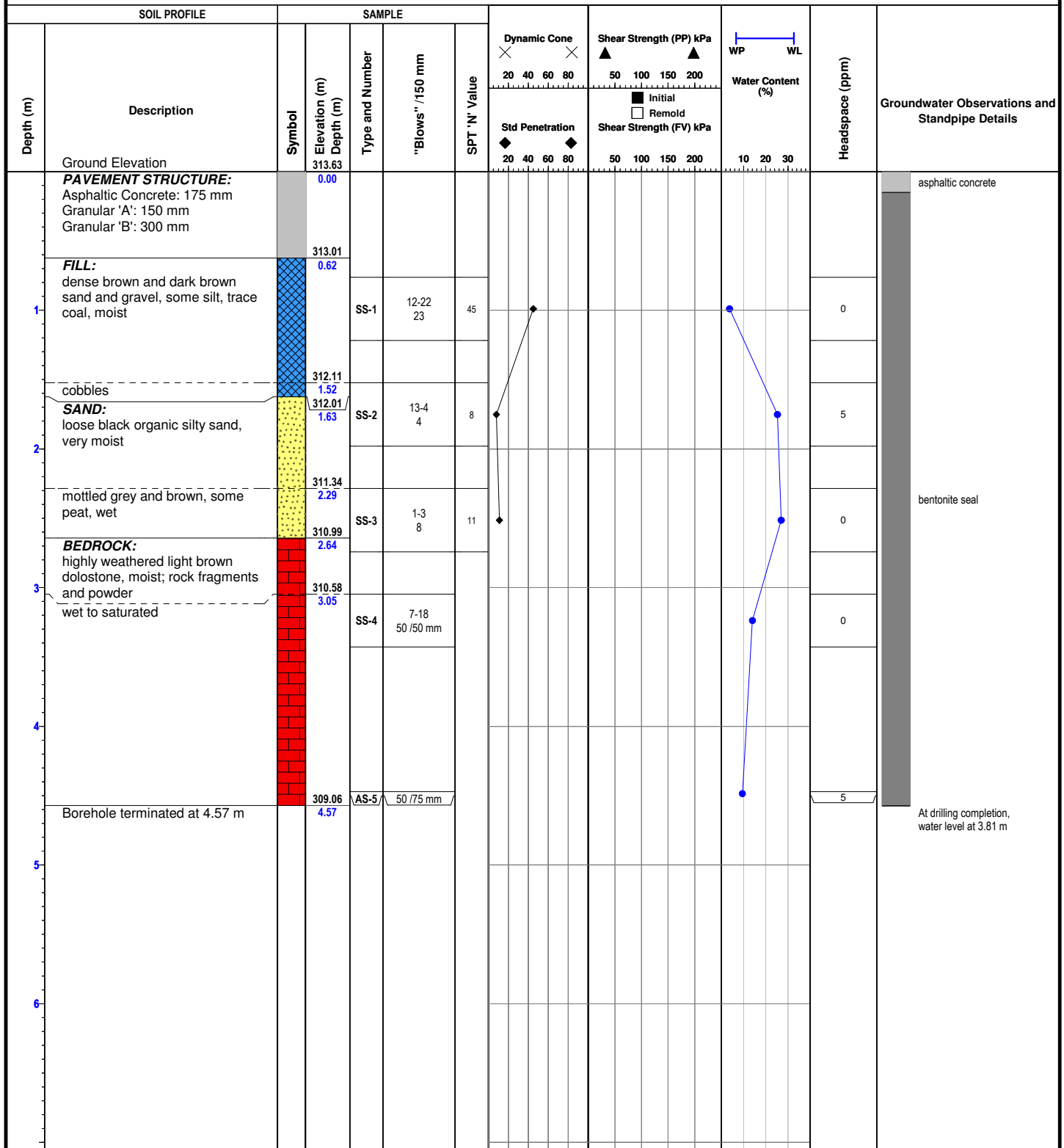
Drill Date: 2013-08-12

Project: Wellington Street East Reconstruction

Field Tech: D.Souter

Location: Neeve Street to MacDonell Street, Guelph, Ontario

Drill Method: Hollow Stem Auger



Reviewed by: K.Thrams

Drafted by: E.Ciochon

Sheet: 1 of 1

Notes: Headspace readings expressed as parts per million (ppm).

Appendix 3 Photographs

Photo 1: Rock Core BH-03-13, RC-5

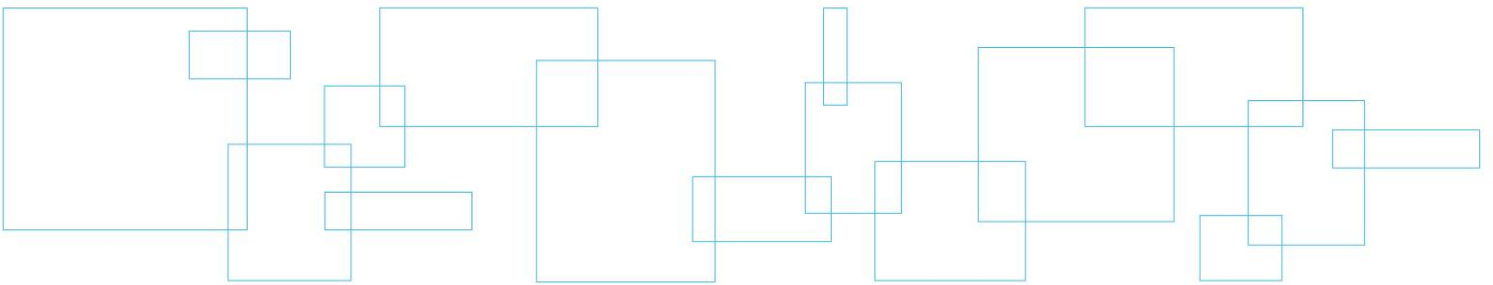




Photo 1: Photograph of Rock Core Borehole BH-03-13, RC-5.

Appendix 4 Tables

Table 101: Petroleum Hydrocarbon and BTEX Analysis – Soil

Table 102: Metals and/or Inorganics Analysis – Soil

Table 103: Volatile Organic Compounds (VOCs) Analysis – Soil

Table 104: Polycyclic Aromatic Hydrocarbons (PAHs) Analysis – Soil

Table 105: Ontario Regulation 558/00 Leachate Analysis (TCLP) – Soil

Table 201: Petroleum Hydrocarbon and BTEX Analysis – Groundwater

Table 202: Metals and/or Inorganics Analysis – Groundwater

Table 203: Volatile Organic Compounds (VOCs) Analysis – Groundwater

Table 204: Polycyclic Aromatic Hydrocarbons (PAHs) Analysis – Groundwater

TABLE 101
PETROLEUM HYDROCARBON AND BTEX ANALYSIS - SOIL

Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario

PARAMETERS	TABLE 1 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL / INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE	TABLE 2 STANDARDS INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE COARSE SOILS	BH-01-13, AS-1	BH-01-13, SS-2	BH-02-13, SS-1	BH-03-13, SS-1	BH-03-13, SS-2	BH-04-13, AS-1	BH-04-13, SS-2	BH-05-13, SS-1	BH-05-13, SS-2	BH-05-13, SS-3
Benzene	0.02	0.32	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethyl Benzene	0.05	1.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.20	6.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Xylenes (Total)	0.05	26	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
F1-BTEX	25	55	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	10	230	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16-C34)	240	1,700	109	58	<50	<50	<50	342	<50	<50	71	<50
F4 (C34-C50)	120	3,300	196	58	<50	<50	<50	668	<50	<50	67	<50
Chrom. to baseline at nC50	NA	NA	YES	YES	YES	YES	YES	NO	YES	YES	YES	YES
F4G-SG (GHH-Silica)	120	3,300	-	-	-	-	-	1510	-	-	-	-

Notes:

- Standards from Table 1 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.
- Standards from Table 2 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for Industrial/Commercial/Community Property Use - Potable Groundwater Condition/Coarse Textured Soil.
- Test results shown in bold type exceeded the Table 1 MOE O. Reg. 153/04 Standards, as amended by O. Reg. 511/09.
- All Standards and results shown in µg/g.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

TABLE 102
METALS AND/OR INORGANICS ANALYSIS - SOIL

Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario

PARAMETERS	TABLE 1 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL / INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE	TABLE 2 STANDARDS INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE COARSE SOILS	BH-01-13, AS-1	BH-01-13, SS-3	BH-02-13, SS-1+SS-2	BH-03-13, SS-1	BH-03-13, SS-2+SS-3	BH-04-13, AS-1	BH-04-13, SS-2	BH-05-13, SS-1	BH-05-13, SS-2	BH-05-13, SS-3
Antimony (Sb)	1.30	40.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0
Arsenic (As)	18.00	18.00	2.8	<1.0	<1.0	1.4	1.5	3.6	<1.0	2.2	2	1.3
Barium (Ba)	220.00	670.00	12	9.1	5.2	169	6.9	20	9	24.9	16.5	14.1
Beryllium (Be)	2.50	8.00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron (B), Hot Water Ext.	NA	2.00	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.2	0.25	0.46	0.28
Boron (B)	36.00	120.00	7.3	<5.0	<5.0	<5.0	<5.0	6.4	<5.0	<5.0	<5.0	<5.0
Cadmium (Cd)	1.20	1.90	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	70.00	160.00	6.5	4	2.5	4.5	5.8	8	2.9	4.8	4.6	3.4
Chromium, Hexavalent	0.66	8.00	0.49	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.25	<0.20	<0.20
Cobalt (Co)	21.00	80.00	2.3	1.1	<1.0	1.3	1.3	3.1	<1.0	1.5	<1.0	<1.0
Copper (Cu)	92.00	230.00	14.1	4.5	2.3	5.2	4.2	20.3	1.1	6.9	6.2	2.2
Cyanide, Weak Acid Diss	0.05	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Conductivity	0.57	1.40	0.622	1.37	1.58	0.567	1.05	0.462	3	1.79	1.48	2.65
Lead (Pb)	120.00	120.00	20.1	5.5	4.5	15.1	31.7	20.6	3.4	38.8	27.5	6.7
Mercury (Hg)	0.27	3.90	<0.010	<0.010	0.012	0.02	<0.010	<0.010	0.023	0.168	0.264	0.061
Molybdenum (Mo)	2.00	40.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	82.00	270.00	5.3	2.7	1.3	2.7	2.9	6.4	<1.0	3.2	2.3	1.1
Selenium (Se)	1.50	5.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	0.50	40.00	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
SAR	2.40	12.00	16.6	31.6	16	11.7	34.3	18.7	43	39.4	38.6	53.1
Thallium (Tl)	1.00	3.30	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	2.50	33.00	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	86.00	86.00	11.4	7.4	4.3	8.2	8.4	12.9	4.3	8.1	6.3	5.6
Zinc (Zn)	290.00	340.00	183	42.4	23.1	51.5	76.6	133	<5.0	67.9	66.3	39.1

Notes:

- Standards from Table 1 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.
- Standards from Table 2 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for Industrial/Commercial/Community Property Use - Potable Groundwater Condition/Coarse Textured Soil.
- Test results shown in bold type exceeded the Table 1 MOE O. Reg. 153/04 Standards, as amended by O. Reg. 511/09.
- Test results shown in bold type exceeded the Table 2 MOE O. Reg. 153/04 Standards, as amended by O. Reg. 511/09.
- All Standards and results shown in µg/g.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

TABLE 103

VOLATILE ORGANIC COMPOUNDS (VOCs) ANALYSIS - SOIL

Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario

PARAMETERS	TABLE 1 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL / INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE	TABLE 2 STANDARDS INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE COARSE SOILS	BH-01-13, AS-1	BH-01-13, SS-2	BH-02-13, SS-1	BH-03-13, SS-1	BH-03-13, SS-2	BH-04-13, AS-1	BH-04-13, SS-2	BH-05-13, SS-1	BH-05-13, SS-2	BH-05-13, SS-3
Acetone	0.500	16.000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	0.020	0.320	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Bromodichloromethane	0.050	1.500	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	0.050	0.610	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	0.050	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon tetrachloride	0.050	0.210	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	0.050	2.400	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	0.050	0.470	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	0.050	2.300	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	0.050	1.200	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	0.050	9.600	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	0.050	0.200	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	0.050	16.000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	0.050	0.470	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	0.050	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	0.050	0.064	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	0.050	1.900	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	0.050	1.300	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	0.050	0.160	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	0.050	0.059	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	0.050	0.059	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Dichloropropene, 1,3-	0.050	0.059	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Ethyl Benzene	0.050	1.100	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dibromoethane	0.050	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
n-Hexane	0.050	46.000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	0.500	70.000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	0.500	31.000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MTBE	0.050	1.600	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methylene Chloride	0.050	1.600	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	0.050	34.000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	0.050	0.087	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	0.050	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	0.050	1.900	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.200	6.400	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	0.050	6.100	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2-Trichloroethane	0.050	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	0.050	0.550	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichlorofluoromethane	0.250	4.000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl chloride	0.020	0.032	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Xylenes (Total)	0.050	26.000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

Notes:

- Standards from Table 1 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.
- Standards from Table 2 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for Industrial/Commercial/Community Property Use - Potable Groundwater Condition/Coarse Textured Soil.
- All Standards and results shown in µg/g.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

TABLE 104

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) ANALYSIS - SOIL

Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario

PARAMETERS	TABLE 1 STANDARDS RESIDENTIAL / PARKLAND / INSTITUTIONAL / INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE	TABLE 2 STANDARDS INDUSTRIAL / COMMERCIAL / COMMUNITY PROPERTY USE COARSE SOILS	BH-01-13, AS-1	BH-01-13, SS-2	BH-02-13, SS-1	BH-03-13, SS-1	BH-03-13, SS-2	BH-04-13, AS-1	BH-04-13, SS-2	BH-05-13, SS-1	BH-05-13, SS-2	BH-05-13, SS-3
Acenaphthene	0.0720	21.0000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Acenaphthylene	0.0930	0.1500	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Anthracene	0.1600	0.6700	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)anthracene	0.3600	0.9600	<0.050	<0.050	<0.050	0.062	<0.050	<0.050	<0.050	<0.050	0.138	0.054
Benzo(a)pyrene	0.3000	0.3000	<0.050	<0.050	<0.050	0.088	<0.050	<0.050	<0.050	<0.050	0.167	0.057
Benzo(b)fluoranthene	0.4700	0.9600	<0.050	0.055	<0.050	0.086	<0.050	<0.050	<0.050	0.056	0.196	0.072
Benzo(g,h,i)perylene	0.6800	9.6000	<0.050	<0.050	<0.050	0.062	<0.050	<0.050	<0.050	<0.050	0.133	<0.050
Benzo(k)fluoranthene	0.4800	0.9600	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.055	<0.050
Chrysene	2.8000	9.6000	<0.050	<0.050	<0.050	0.063	<0.050	<0.050	<0.050	<0.050	0.154	0.051
Dibenzo(ah)anthracene	0.1000	0.1000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	0.5600	9.6000	<0.050	0.074	<0.050	0.083	<0.050	<0.050	<0.050	0.075	0.266	0.096
Fluorene	0.1200	62.0000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.2300	0.7600	<0.050	<0.050	<0.050	0.067	<0.050	<0.050	<0.050	<0.050	0.134	<0.050
1+2-Methylnaphthalenes	0.5900	30.0000	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
1-Methylnaphthalene	0.5900	30.0000	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
2-Methylnaphthalene	0.5900	30.0000	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Naphthalene	0.0900	9.6000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Phenanthrene	0.6900	12.0000	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.1	0.055
Pyrene	1.0000	96.0000	<0.050	0.084	<0.050	0.115	<0.050	<0.050	<0.050	0.068	0.271	0.093

Notes:

- Standards from Table 1 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use.
- Standards from Table 2 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for Industrial/Commercial/Community Property Use - Potable Groundwater Condition/Coarse Textured Soil.
- All Standards and results shown in µg/g.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

TABLE 105

ONTARIO REGULATION 558/00 LEACHATE ANALYSIS (TCLP)

Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario

PARAMETERS	CRITERIA SCHEDULE 4 CONCENTRATION	BH-04-13, AS-1
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TCLP Extractables

Fluoride (F)	150.000	<10
Nitrate and Nitrite as N	1000.000	<2.8

TCLP Cyanide

Cyanide, Weak Acid Diss	20.000	<0.0020
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TCLP Metals

Arsenic (As)	2.500	<0.050
Barium (Ba)	100.000	<0.50
Boron (B)	500.000	<2.5
Cadmium (Cd)	0.500	<0.0050
Chromium (Cr)	5.000	<0.050
Lead (Pb)	5.000	<0.050
Mercury (Hg)	0.100	<0.00010
Selenium (Se)	1.000	<0.25
Silver (Ag)	5.000	<0.0050
Uranium (U)	10.000	<0.25

TCLP VOCs

1,1-Dichloroethylene	1.400	<0.025
1,2-Dichlorobenzene	20.000	<0.025
1,2-Dichloroethane	0.500	<0.025
1,4-Dichlorobenzene	0.500	<0.025
Benzene	0.500	<0.025
Carbon tetrachloride	0.500	<0.025
Chlorobenzene	8.000	<0.025
Chloroform	10.000	<0.025
Dichloromethane	5.000	<0.025
Methyl Ethyl Ketone	200.000	<1.0
Tetrachloroethylene	3.000	<0.025
Trichloroethylene	5.000	<0.025
Vinyl chloride	0.200	<0.050

Notes:

- SCHEDULE 4 Criteria, Ontario Regulation 558/00
- All Standards and results shown in mg/L.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

TABLE 201
PETROLEUM HYDROCARBON AND BTEX ANALYSIS - GROUNDWATER

Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario

PARAMETERS	TABLE 1 STANDARDS ALL TYPES OF PROPERTY USE	TABLE 2 STANDARDS ALL TYPES OF PROPERTY USE COARSE SOILS	BH-03-13	BH-04-13
Benzene	0.50	5	2.43	<0.50
Ethyl Benzene	0.50	2.4	0.88	<0.50
Toluene	0.80	24	<0.70	<0.50
Xylenes (Total)	72.00	300	<0.50	<0.50
F1 (C6-C10)	420	750	91	<25
F1-BTEX	420	750	88	<25
F2 (C10-C16)	150	150	<100	<100
F3 (C16-C34)	500	500	<250	<250
F4 (C34-C50)	500	500	<250	<250
Chrom. to baseline at nC50	NA	NA	YES	YES

Notes:

- Standards from Table 1 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for All Types of Property Use.
- Standards from Table 2 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for All Types of Property Use - Potable Groundwater Condition/Coarse Textured Soil.
- Test results shown in bold type exceeded the Table 1 MOE O. Reg. 153/04 Standards, as amended by O. Reg. 511/09.
- All Standards and results shown in µg/l.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

TABLE 202**METALS AND/OR INORGANICS ANALYSIS - GROUNDWATER**

**Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario**

PARAMETERS	TABLE 1 STANDARDS ALL TYPES OF PROPERTY USE	TABLE 2 STANDARDS ALL TYPES OF PROPERTY USE COARSE SOILS	BH-03-13	BH-04-13
Antimony (Sb)-Dissolved	1.5	6	<0.50	<0.50
Arsenic (As)-Dissolved	13	25	<1.0	1.2
Barium (Ba)-Dissolved	610	1,000	76.8	82.9
Beryllium (Be)-Dissolved	0.5	4	<0.50	<0.50
Boron (B)-Dissolved	1700	5,000	59	48
Cadmium (Cd)-Dissolved	0.5	2.7	<0.10	<0.10
Chromium (Cr)-Dissolved	11	50	<0.50	<0.50
Cobalt (Co)-Dissolved	3.8	3.8	<0.50	<0.50
Copper (Cu)-Dissolved	5	87	1.2	2.3
Lead (Pb)-Dissolved	1.9	10	<1.0	<1.0
Molybdenum (Mo)-Dissolved	23	70	4.88	2.38
Nickel (Ni)-Dissolved	14	100	1.4	<1.0
Selenium (Se)-Dissolved	5	10	<5.0	<5.0
Silver (Ag)-Dissolved	0.3	1.5	<0.10	<0.10
Sodium (Na)-Dissolved	490,000	490,000	369,000	305,000
Thallium (Tl)-Dissolved	0.5	2	<0.30	<0.30
Uranium (U)-Dissolved	8.9	20	<2.0	<2.0
Vanadium (V)-Dissolved	3.9	6.2	<0.50	0.67
Zinc (Zn)-Dissolved	160	1100	7.1	5.7

Notes:

- Standards from Table 1 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for All Types of Property Use.
- Standards from Table 2 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for All Types of Property Use - Potable Groundwater Condition/Coarse Textured Soil.
- All Standards and results shown in µg/l.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

TABLE 203

VOLATILE ORGANIC COMPOUNDS (VOCs) ANALYSIS - GROUNDWATER

Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario

PARAMETERS	TABLE 1 STANDARDS ALL TYPES OF PROPERTY USE	TABLE 2 STANDARDS ALL TYPES OF PROPERTY USE COARSE SOILS	BH-03-13	BH-04-13
Acetone	2,700	2,700	<30	<30
Benzene	0.5	5	2.43	<0.50
Bromodichloromethane	2	16	<2.0	<2.0
Bromoform	5	25	<5.0	<5.0
Bromomethane	0.89	0.89	<0.50	<0.50
Carbon tetrachloride	0.2	0.79	<0.20	<0.20
Chlorobenzene	0.5	30	<0.50	<0.50
Chloroform	2	2.4	<1.0	<1.0
Dibromochloromethane	2	25	<2.0	<2.0
1,2-Dichlorobenzene	0.5	3	<0.50	<0.50
1,3-Dichlorobenzene	0.5	59	<0.50	<0.50
1,4-Dichlorobenzene	0.5	1	<0.50	<0.50
Dichlorodifluoromethane	590	590	<2.0	<2.0
1,1-Dichloroethane	0.5	5	<0.50	<0.50
1,2-Dichloroethane	0.5	1.6	<0.50	<0.50
1,1-Dichloroethylene	0.5	1.6	<0.50	<0.50
cis-1,2-Dichloroethylene	1.6	1.6	<0.50	<0.50
trans-1,2-Dichloroethylene	1.6	1.6	<0.50	<0.50
1,2-Dichloropropane	0.5	5	<0.50	<0.50
cis-1,3-Dichloropropene	0.5	0.5	<0.30	<0.30
trans-1,3-Dichloropropene	0.5	0.5	<0.30	<0.30
Dichloropropene, 1,3-	0.5	0.5	<0.30	<0.30
Ethyl Benzene	0.5	2.4	0.88	<0.50
1,2-Dibromoethane	0.2	0.2	<0.20	<0.20
n-Hexane	5	51	<0.50	<0.50
Methyl Ethyl Ketone	400	1,800	<20	<20
Methyl Isobutyl Ketone	640	640	<20	<20
MTBE	15	15	<2.0	<2.0
Methylene Chloride	5	50	<5.0	<5.0
Styrene	0.5	5.4	<0.50	<0.50
1,1,1,2-Tetrachloroethane	1.1	1.1	<0.50	<0.50
1,1,2,2-Tetrachloroethane	0.5	1	<0.50	<0.50
Tetrachloroethylene	0.5	1.6	<0.50	<0.50
Toluene	0.8	24	<0.70	<0.50
1,1,1-Trichloroethane	0.5	200	<0.50	<0.50
1,1,2-Trichloroethane	0.5	4.7	<0.50	<0.50
Trichloroethylene	0.5	1.6	<0.50	<0.50
Trichlorofluoromethane	150	150	<5.0	<5.0
Vinyl chloride	0.5	0.5	<0.50	<0.50
Xylenes (Total)	72	300	<0.50	<0.50

Notes:

- Standards from Table 1 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for All Types of Property Use.
- Standards from Table 2 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for All Types of Property Use - Potable Groundwater Condition/Coarse Textured Soil.
- Test results shown in bold type exceeded the Table 1 MOE O. Reg. 153/04 Standards, as amended by O. Reg. 511/09.
- All Standards and results shown in µg/l.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

TABLE 204

POLYCYCLIC AROMATIC HYDROCARBONS (PAHs) ANALYSIS - GROUNDWATER

Wellington Street East Reconstruction
Neeve Street to MacDonell Street, Guelph, Ontario

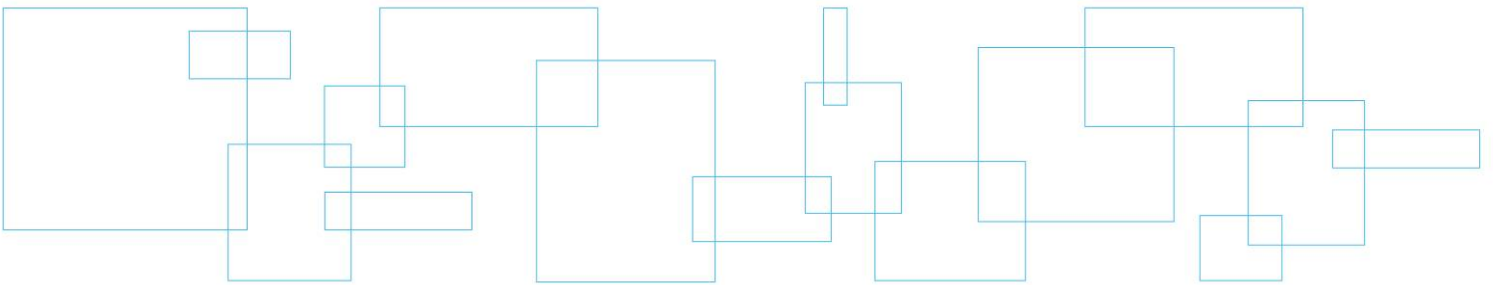
PARAMETERS	TABLE 1 STANDARDS ALL TYPES OF PROPERTY USE	TABLE 2 STANDARDS ALL TYPES OF PROPERTY USE COARSE SOILS	BH-03-13	BH-04-13
Acenaphthene	4.1	4.1	0.125	<0.020
Acenaphthylene	1	1	1.56	0.282
Anthracene	0.1	2.4	<0.020	<0.020
Benzo(a)anthracene	0.2	1	<0.020	<0.020
Benzo(a)pyrene	0.01	0.01	<0.010	<0.010
Benzo(b)fluoranthene	0.1	0.1	<0.020	<0.020
Benzo(k)fluoranthene	0.1	0.1	<0.020	<0.020
Chrysene	0.1	0.1	<0.020	<0.020
Fluoranthene	0.4	0.41	<0.020	0.022
Fluorene	120	120	0.21	<0.020
Indeno(1,2,3-cd)pyrene	0.2	0.2	<0.020	<0.020
1+2-Methylnaphthalenes	2	3.2	<0.028	<0.028
1-Methylnaphthalene	2	3.2	0.023	<0.020
2-Methylnaphthalene	2	3.2	<0.020	<0.020
Naphthalene	7	11	8.84	1.38
Phenanthrene	0.1	1	0.028	0.033
Pyrene	0.2	4.1	<0.020	<0.020

Notes:

- Standards from Table 1 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for All Types of Property Use.
- Standards from Table 2 of the MOE's Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act, April 15, 2011, O. Reg. 511/09 document for Full Depth Generic Site Condition Standards for All Types of Property Use - Potable Groundwater Condition/Coarse Textured Soil.
- Test results shown in bold type exceeded the Table 1 MOE O. Reg. 153/04 Standards, as amended by O. Reg. 511/09.
- Test results shown in bold type exceeded the Table 2 MOE O. Reg. 153/04 Standards, as amended by O. Reg. 511/09.
- All Standards and results shown in µg/l.
- Tests carried out by: ALS Environmental, Waterloo, Ontario

Appendix 5 Analytical Laboratory Test Results

ALS Laboratory Group Work Order No. L1346763 (Soil)
ALS Laboratory Group Work Order No. L1349197 (Groundwater)
ALS Laboratory Group Work Order No. L1351922 (TCLP)





LVM INC.
ATTN: KAREN THRAMS
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5

Date Received: 13-AUG-13
Report Date: 15-AUG-13 14:59 (MT)
Version: FINAL

Client Phone: 519-741-1313

Certificate of Analysis

Lab Work Order #: L1346763
Project P.O. #: 209255
Job Reference: 160-P-0003883-0-01-100-01
C of C Numbers: 151047
Legal Site Desc:

Nancy Smith
Account Manager

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ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
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ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result		Qualifier		D.L.		Units		Analyzed		Guideline Limits	
Grouping	Analyte												
L1346763-1	BH-01-13, AS-1												
Sampled By: D. SOUTER on 12-AUG-13 @ 13:00													
Matrix: SOIL													
Physical Tests													
Conductivity		0.622				0.0040		mS/cm		14-AUG-13		*0.57	
% Moisture		2.62				0.10		%		14-AUG-13			
pH		8.32				0.10		pH units		15-AUG-13			
Cyanides													
Cyanide, Weak Acid Diss		<0.050				0.050		ug/g		14-AUG-13		0.051	
Saturated Paste Extractables													
SAR		16.6		SAR:Q		0.10		SAR		14-AUG-13		*2.4	
Calcium (Ca)		5.4				1.0		mg/L		14-AUG-13			
Magnesium (Mg)		<1.0				1.0		mg/L		14-AUG-13			
Sodium (Na)		140				1.0		mg/L		14-AUG-13			
Metals													
Antimony (Sb)		<1.0				1.0		ug/g		14-AUG-13		1.3	
Arsenic (As)		2.8				1.0		ug/g		14-AUG-13		18	
Barium (Ba)		12.0				1.0		ug/g		14-AUG-13		220	
Beryllium (Be)		<0.50				0.50		ug/g		14-AUG-13		2.5	
Boron (B)		7.3				5.0		ug/g		14-AUG-13		36	
Boron (B), Hot Water Ext.		<0.10				0.10		ug/g		14-AUG-13		36	
Cadmium (Cd)		<0.50				0.50		ug/g		14-AUG-13		1.2	
Chromium (Cr)		6.5				1.0		ug/g		14-AUG-13		70	
Cobalt (Co)		2.3				1.0		ug/g		14-AUG-13		21	
Copper (Cu)		14.1				1.0		ug/g		14-AUG-13		92	
Lead (Pb)		20.1				1.0		ug/g		14-AUG-13		120	
Mercury (Hg)		<0.010				0.010		ug/g		14-AUG-13		0.27	
Molybdenum (Mo)		<1.0				1.0		ug/g		14-AUG-13		2	
Nickel (Ni)		5.3				1.0		ug/g		14-AUG-13		82	
Selenium (Se)		<1.0				1.0		ug/g		14-AUG-13		1.5	
Silver (Ag)		<0.20				0.20		ug/g		14-AUG-13		0.5	
Thallium (Tl)		<0.50				0.50		ug/g		14-AUG-13		1	
Uranium (U)		<1.0				1.0		ug/g		14-AUG-13		2.5	
Vanadium (V)		11.4				1.0		ug/g		14-AUG-13		86	
Zinc (Zn)		183				5.0		ug/g		14-AUG-13		290	
Speciated Metals													
Chromium, Hexavalent		0.49				0.20		ug/g		14-AUG-13		0.66	
Volatile Organic Compounds													
Acetone		<0.50				0.50		ug/g		14-AUG-13		0.5	
Benzene		<0.020				0.020		ug/g		14-AUG-13		0.02	
Bromodichloromethane		<0.050				0.050		ug/g		14-AUG-13		0.05	
Bromoform		<0.050				0.050		ug/g		14-AUG-13		0.05	
Bromomethane		<0.050				0.050		ug/g		14-AUG-13		0.05	
Carbon tetrachloride		<0.050				0.050		ug/g		14-AUG-13		0.05	
Chlorobenzene		<0.050				0.050		ug/g		14-AUG-13		0.05	
Dibromochloromethane		<0.050				0.050		ug/g		14-AUG-13		0.05	
Chloroform		<0.050				0.050		ug/g		14-AUG-13		0.05	
1,2-Dibromoethane		<0.050				0.050		ug/g		14-AUG-13		0.05	

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-1	BH-01-13, AS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 13:00										
Matrix: SOIL										
Volatile Organic Compounds										
	1,2-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,3-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,4-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Dichlorodifluoromethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1-Dichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	14-AUG-13	0.05			
	Methylene Chloride	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichloropropane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	14-AUG-13				
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	14-AUG-13				
	Ethyl Benzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	14-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	14-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	14-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	14-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	14-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	118.0		70-130	%	14-AUG-13				
	Surrogate: 1,4-Difluorobenzene	96.2		70-130	%	14-AUG-13				
Hydrocarbons										
	F1 (C6-C10)	<5.0		5.0	ug/g	14-AUG-13	25			
	F1-BTEX	<5.0		5.0	ug/g	15-AUG-13	25			
	F2 (C10-C16)	<10		10	ug/g	15-AUG-13	10			
	F2-Naphth	<10		10	ug/g	15-AUG-13				
	F3 (C16-C34)	109		50	ug/g	15-AUG-13	240			
	F3-PAH	109		50	ug/g	15-AUG-13				
	F4 (C34-C50)	196		50	ug/g	15-AUG-13	*120			
	Total Hydrocarbons (C6-C50)	305		50	ug/g	15-AUG-13				
	Chrom. to baseline at nC50	YES			No Unit	15-AUG-13				
	Surrogate: 2-Bromobenzotrifluoride	95.0		50-140	%	15-AUG-13				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-1	BH-01-13, AS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 13:00										
Matrix: SOIL										
Hydrocarbons										
Surrogate: 3,4-Dichlorotoluene		91.6		60-140	%	14-AUG-13				
Polycyclic Aromatic Hydrocarbons										
Acenaphthene		<0.050		0.050	ug/g	15-AUG-13	0.072			
Acenaphthylene		<0.050		0.050	ug/g	15-AUG-13	0.093			
Anthracene		<0.050		0.050	ug/g	15-AUG-13	0.16			
Benzo(a)anthracene		<0.050		0.050	ug/g	15-AUG-13	0.36			
Benzo(a)pyrene		<0.050		0.050	ug/g	15-AUG-13	0.3			
Benzo(b)fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.47			
Benzo(g,h,i)perylene		<0.050		0.050	ug/g	15-AUG-13	0.68			
Benzo(k)fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.48			
Chrysene		<0.050		0.050	ug/g	15-AUG-13	2.8			
Dibenzo(ah)anthracene		<0.050		0.050	ug/g	15-AUG-13	0.1			
Fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.56			
Fluorene		<0.050		0.050	ug/g	15-AUG-13	0.12			
Indeno(1,2,3-cd)pyrene		<0.050		0.050	ug/g	15-AUG-13	0.23			
1+2-Methylnaphthalenes		<0.042		0.042	ug/g	15-AUG-13	0.59			
1-Methylnaphthalene		<0.030		0.030	ug/g	15-AUG-13	0.59			
2-Methylnaphthalene		<0.030		0.030	ug/g	15-AUG-13	0.59			
Naphthalene		<0.050		0.050	ug/g	15-AUG-13	0.09			
Phenanthrene		<0.050		0.050	ug/g	15-AUG-13	0.69			
Pyrene		<0.050		0.050	ug/g	15-AUG-13	1			
Surrogate: 2-Fluorobiphenyl		95.5		50-140	%	15-AUG-13				
Surrogate: p-Terphenyl d14		96.1		50-140	%	15-AUG-13				
L1346763-2	BH-01-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 13:00										
Matrix: SOIL										
Physical Tests										
% Moisture		3.96		0.10	%	14-AUG-13				
Volatile Organic Compounds										
Acetone		<0.50		0.50	ug/g	14-AUG-13	0.5			
Benzene		<0.020		0.020	ug/g	14-AUG-13	0.02			
Bromodichloromethane		<0.050		0.050	ug/g	14-AUG-13	0.05			
Bromoform		<0.050		0.050	ug/g	14-AUG-13	0.05			
Bromomethane		<0.050		0.050	ug/g	14-AUG-13	0.05			
Carbon tetrachloride		<0.050		0.050	ug/g	14-AUG-13	0.05			
Chlorobenzene		<0.050		0.050	ug/g	14-AUG-13	0.05			
Dibromochloromethane		<0.050		0.050	ug/g	14-AUG-13	0.05			
Chloroform		<0.050		0.050	ug/g	14-AUG-13	0.05			
1,2-Dibromoethane		<0.050		0.050	ug/g	14-AUG-13	0.05			
1,2-Dichlorobenzene		<0.050		0.050	ug/g	14-AUG-13	0.05			
1,3-Dichlorobenzene		<0.050		0.050	ug/g	14-AUG-13	0.05			
1,4-Dichlorobenzene		<0.050		0.050	ug/g	14-AUG-13	0.05			
Dichlorodifluoromethane		<0.050		0.050	ug/g	14-AUG-13	0.05			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-2	BH-01-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 13:00										
Matrix: SOIL										
Volatile Organic Compounds										
	1,1-Dichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	14-AUG-13	0.05			
	Methylene Chloride	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichloropropane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	14-AUG-13				
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	14-AUG-13				
	Ethyl Benzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	14-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	14-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	14-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	14-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	14-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	118.7		70-130	%	14-AUG-13				
	Surrogate: 1,4-Difluorobenzene	97.1		70-130	%	14-AUG-13				
Hydrocarbons										
	F1 (C6-C10)	<5.0		5.0	ug/g	14-AUG-13	25			
	F1-BTEX	<5.0		5.0	ug/g	15-AUG-13	25			
	F2 (C10-C16)	<10		10	ug/g	15-AUG-13	10			
	F2-Naphth	<10		10	ug/g	15-AUG-13				
	F3 (C16-C34)	58		50	ug/g	15-AUG-13	240			
	F3-PAH	58		50	ug/g	15-AUG-13				
	F4 (C34-C50)	58		50	ug/g	15-AUG-13	120			
	Total Hydrocarbons (C6-C50)	116		50	ug/g	15-AUG-13				
	Chrom. to baseline at nC50	YES			No Unit	15-AUG-13				
	Surrogate: 2-Bromobenzotrifluoride	94.0		50-140	%	15-AUG-13				
	Surrogate: 3,4-Dichlorotoluene	92.2		60-140	%	14-AUG-13				
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	<0.050		0.050	ug/g	15-AUG-13	0.072			
	Acenaphthylene	<0.050		0.050	ug/g	15-AUG-13	0.093			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-2	BH-01-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 13:00							#1			
Matrix: SOIL										
Polycyclic Aromatic Hydrocarbons										
	Anthracene	<0.050		0.050	ug/g	15-AUG-13	0.16			
	Benzo(a)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.36			
	Benzo(a)pyrene	<0.050		0.050	ug/g	15-AUG-13	0.3			
	Benzo(b)fluoranthene	0.055		0.050	ug/g	15-AUG-13	0.47			
	Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-AUG-13	0.68			
	Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-AUG-13	0.48			
	Chrysene	<0.050		0.050	ug/g	15-AUG-13	2.8			
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.1			
	Fluoranthene	0.074		0.050	ug/g	15-AUG-13	0.56			
	Fluorene	<0.050		0.050	ug/g	15-AUG-13	0.12			
	Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-AUG-13	0.23			
	1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-AUG-13	0.59			
	1-Methylnaphthalene	<0.030		0.030	ug/g	15-AUG-13	0.59			
	2-Methylnaphthalene	<0.030		0.030	ug/g	15-AUG-13	0.59			
	Naphthalene	<0.050		0.050	ug/g	15-AUG-13	0.09			
	Phenanthrene	<0.050		0.050	ug/g	15-AUG-13	0.69			
	Pyrene	0.084		0.050	ug/g	15-AUG-13	1			
	Surrogate: 2-Fluorobiphenyl	92.4		50-140	%	15-AUG-13				
	Surrogate: p-Terphenyl d14	93.1		50-140	%	15-AUG-13				
L1346763-3	BH-01-13, SS-3									
Sampled By: D. SOUTER on 12-AUG-13 @ 13:00							#1			
Matrix: SOIL										
Physical Tests										
	Conductivity	1.37		0.0040	mS/cm	14-AUG-13	*0.57			
	% Moisture	8.06		0.10	%	14-AUG-13				
	pH	8.15		0.10	pH units	15-AUG-13				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	14-AUG-13	0.051			
Saturated Paste Extractables										
	SAR	31.6	SAR:Q	0.10	SAR	14-AUG-13	*2.4			
	Calcium (Ca)	6.7		1.0	mg/L	14-AUG-13				
	Magnesium (Mg)	<1.0		1.0	mg/L	14-AUG-13				
	Sodium (Na)	297		1.0	mg/L	14-AUG-13				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	14-AUG-13	1.3			
	Arsenic (As)	<1.0		1.0	ug/g	14-AUG-13	18			
	Barium (Ba)	9.1		1.0	ug/g	14-AUG-13	220			
	Beryllium (Be)	<0.50		0.50	ug/g	14-AUG-13	2.5			
	Boron (B)	<5.0		5.0	ug/g	14-AUG-13	36			
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	14-AUG-13	36			
	Cadmium (Cd)	<0.50		0.50	ug/g	14-AUG-13	1.2			
	Chromium (Cr)	4.0		1.0	ug/g	14-AUG-13	70			
	Cobalt (Co)	1.1		1.0	ug/g	14-AUG-13	21			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details									
Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits		
L1346763-3	BH-01-13, SS-3								
Sampled By:	D. SOUTER on 12-AUG-13 @ 13:00								
Matrix:	SOIL								
Metals									
Copper (Cu)		4.5		1.0	ug/g	14-AUG-13	92		
Lead (Pb)		5.5		1.0	ug/g	14-AUG-13	120		
Mercury (Hg)		<0.010		0.010	ug/g	14-AUG-13	0.27		
Molybdenum (Mo)		<1.0		1.0	ug/g	14-AUG-13	2		
Nickel (Ni)		2.7		1.0	ug/g	14-AUG-13	82		
Selenium (Se)		<1.0		1.0	ug/g	14-AUG-13	1.5		
Silver (Ag)		<0.20		0.20	ug/g	14-AUG-13	0.5		
Thallium (Tl)		<0.50		0.50	ug/g	14-AUG-13	1		
Uranium (U)		<1.0		1.0	ug/g	14-AUG-13	2.5		
Vanadium (V)		7.4		1.0	ug/g	14-AUG-13	86		
Zinc (Zn)		42.4		5.0	ug/g	14-AUG-13	290		
Speciated Metals									
Chromium, Hexavalent		<0.20		0.20	ug/g	14-AUG-13	0.66		
L1346763-4	BH-02-13, SS-1								
Sampled By:	D. SOUTER on 12-AUG-13 @ 14:00								
Matrix:	SOIL								
Physical Tests									
% Moisture		4.65		0.10	%	14-AUG-13			
Volatile Organic Compounds									
Acetone		<0.50		0.50	ug/g	14-AUG-13	0.5		
Benzene		<0.020		0.020	ug/g	14-AUG-13	0.02		
Bromodichloromethane		<0.050		0.050	ug/g	14-AUG-13	0.05		
Bromoform		<0.050		0.050	ug/g	14-AUG-13	0.05		
Bromomethane		<0.050		0.050	ug/g	14-AUG-13	0.05		
Carbon tetrachloride		<0.050		0.050	ug/g	14-AUG-13	0.05		
Chlorobenzene		<0.050		0.050	ug/g	14-AUG-13	0.05		
Dibromochloromethane		<0.050		0.050	ug/g	14-AUG-13	0.05		
Chloroform		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,2-Dibromoethane		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,2-Dichlorobenzene		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,3-Dichlorobenzene		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,4-Dichlorobenzene		<0.050		0.050	ug/g	14-AUG-13	0.05		
Dichlorodifluoromethane		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,1-Dichloroethane		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,2-Dichloroethane		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,1-Dichloroethylene		<0.050		0.050	ug/g	14-AUG-13	0.05		
cis-1,2-Dichloroethylene		<0.050		0.050	ug/g	14-AUG-13	0.05		
trans-1,2-Dichloroethylene		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,3-Dichloropropene (cis & trans)		<0.042		0.042	ug/g	14-AUG-13	0.05		
Methylene Chloride		<0.050		0.050	ug/g	14-AUG-13	0.05		
1,2-Dichloropropane		<0.050		0.050	ug/g	14-AUG-13	0.05		
cis-1,3-Dichloropropene		<0.030		0.030	ug/g	14-AUG-13			
trans-1,3-Dichloropropene		<0.030		0.030	ug/g	14-AUG-13			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

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T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-4	BH-02-13, SS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 14:00										
Matrix: SOIL										
Volatile Organic Compounds										
	Ethyl Benzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	14-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	14-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	14-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	14-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	14-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	119.0		70-130	%	14-AUG-13				
	Surrogate: 1,4-Difluorobenzene	95.5		70-130	%	14-AUG-13				
Hydrocarbons										
	F1 (C6-C10)	<5.0		5.0	ug/g	14-AUG-13	25			
	F1-BTEX	<5.0		5.0	ug/g	15-AUG-13	25			
	F2 (C10-C16)	<10		10	ug/g	15-AUG-13	10			
	F2-Naphth	<10		10	ug/g	15-AUG-13				
	F3 (C16-C34)	<50		50	ug/g	15-AUG-13	240			
	F3-PAH	<50		50	ug/g	15-AUG-13				
	F4 (C34-C50)	<50		50	ug/g	15-AUG-13	120			
	Total Hydrocarbons (C6-C50)	<50		50	ug/g	15-AUG-13				
	Chrom. to baseline at nC50	YES			No Unit	15-AUG-13				
	Surrogate: 2-Bromobenzotrifluoride	96.9		50-140	%	15-AUG-13				
	Surrogate: 3,4-Dichlorotoluene	97.9		60-140	%	14-AUG-13				
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	<0.050		0.050	ug/g	15-AUG-13	0.072			
	Acenaphthylene	<0.050		0.050	ug/g	15-AUG-13	0.093			
	Anthracene	<0.050		0.050	ug/g	15-AUG-13	0.16			
	Benzo(a)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.36			
	Benzo(a)pyrene	<0.050		0.050	ug/g	15-AUG-13	0.3			
	Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-AUG-13	0.47			
	Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-AUG-13	0.68			
	Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-AUG-13	0.48			
	Chrysene	<0.050		0.050	ug/g	15-AUG-13	2.8			
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.1			
	Fluoranthene	<0.050		0.050	ug/g	15-AUG-13	0.56			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result		Qualifier	D.L.	Units	Analyzed	Guideline Limits	
Grouping	Analyte								
L1346763-4	BH-02-13, SS-1								
Sampled By: D. SOUTER on 12-AUG-13 @ 14:00									
Matrix: SOIL									
Polycyclic Aromatic Hydrocarbons									
Fluorene		<0.050			0.050	ug/g	15-AUG-13	0.12	
Indeno(1,2,3-cd)pyrene		<0.050			0.050	ug/g	15-AUG-13	0.23	
1+2-Methylnaphthalenes		<0.042			0.042	ug/g	15-AUG-13	0.59	
1-Methylnaphthalene		<0.030			0.030	ug/g	15-AUG-13	0.59	
2-Methylnaphthalene		<0.030			0.030	ug/g	15-AUG-13	0.59	
Naphthalene		<0.050			0.050	ug/g	15-AUG-13	0.09	
Phenanthrene		<0.050			0.050	ug/g	15-AUG-13	0.69	
Pyrene		<0.050			0.050	ug/g	15-AUG-13	1	
Surrogate: 2-Fluorobiphenyl		98.0			50-140	%	15-AUG-13		
Surrogate: p-Terphenyl d14		98.8			50-140	%	15-AUG-13		
L1346763-5	BH-02-13, SS-1 + SS-2								
Sampled By: D. SOUTER on 12-AUG-13 @ 14:00									
Matrix: SOIL									
Physical Tests									
Conductivity		1.58			0.0040	mS/cm	14-AUG-13	*0.57	
% Moisture		4.04			0.10	%	14-AUG-13		
pH		8.46			0.10	pH units	15-AUG-13		
Cyanides									
Cyanide, Weak Acid Diss		<0.050			0.050	ug/g	14-AUG-13	0.051	
Saturated Paste Extractables									
SAR		16.0			0.10	SAR	14-AUG-13	*2.4	
Calcium (Ca)		22.7			1.0	mg/L	14-AUG-13		
Magnesium (Mg)		5.5			1.0	mg/L	14-AUG-13		
Sodium (Na)		328			1.0	mg/L	14-AUG-13		
Metals									
Antimony (Sb)		<1.0			1.0	ug/g	14-AUG-13	1.3	
Arsenic (As)		<1.0			1.0	ug/g	14-AUG-13	18	
Barium (Ba)		5.2			1.0	ug/g	14-AUG-13	220	
Beryllium (Be)		<0.50			0.50	ug/g	14-AUG-13	2.5	
Boron (B)		<5.0			5.0	ug/g	14-AUG-13	36	
Boron (B), Hot Water Ext.		<0.10			0.10	ug/g	14-AUG-13	36	
Cadmium (Cd)		<0.50			0.50	ug/g	14-AUG-13	1.2	
Chromium (Cr)		2.5			1.0	ug/g	14-AUG-13	70	
Cobalt (Co)		<1.0			1.0	ug/g	14-AUG-13	21	
Copper (Cu)		2.3			1.0	ug/g	14-AUG-13	92	
Lead (Pb)		4.5			1.0	ug/g	14-AUG-13	120	
Mercury (Hg)		0.012			0.010	ug/g	14-AUG-13	0.27	
Molybdenum (Mo)		<1.0			1.0	ug/g	14-AUG-13	2	
Nickel (Ni)		1.3			1.0	ug/g	14-AUG-13	82	
Selenium (Se)		<1.0			1.0	ug/g	14-AUG-13	1.5	
Silver (Ag)		<0.20			0.20	ug/g	14-AUG-13	0.5	
Thallium (Tl)		<0.50			0.50	ug/g	14-AUG-13	1	
Uranium (U)		<1.0			1.0	ug/g	14-AUG-13	2.5	

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-5	BH-02-13, SS-1 + SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 14:00										
Matrix: SOIL										
Metals										
	Vanadium (V)	4.3		1.0	ug/g	14-AUG-13	86			
	Zinc (Zn)	23.1		5.0	ug/g	14-AUG-13	290			
Speciated Metals										
	Chromium, Hexavalent	<0.20		0.20	ug/g	14-AUG-13	0.66			
L1346763-6	BH-03-13, SS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 11:00										
Matrix: SOIL										
Physical Tests										
	Conductivity	0.567		0.0040	mS/cm	14-AUG-13	0.57			
	% Moisture	3.30		0.10	%	14-AUG-13				
	pH	8.32		0.10	pH units	15-AUG-13				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	14-AUG-13	0.051			
Saturated Paste Extractables										
	SAR	11.7		0.10	SAR	14-AUG-13	*2.4			
	Calcium (Ca)	6.8		1.0	mg/L	14-AUG-13				
	Magnesium (Mg)	1.4		1.0	mg/L	14-AUG-13				
	Sodium (Na)	128		1.0	mg/L	14-AUG-13				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	14-AUG-13	1.3			
	Arsenic (As)	1.4		1.0	ug/g	14-AUG-13	18			
	Barium (Ba)	169		1.0	ug/g	14-AUG-13	220			
	Beryllium (Be)	<0.50		0.50	ug/g	14-AUG-13	2.5			
	Boron (B)	<5.0		5.0	ug/g	14-AUG-13	36			
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	14-AUG-13	36			
	Cadmium (Cd)	<0.50		0.50	ug/g	14-AUG-13	1.2			
	Chromium (Cr)	4.5		1.0	ug/g	14-AUG-13	70			
	Cobalt (Co)	1.3		1.0	ug/g	14-AUG-13	21			
	Copper (Cu)	5.2		1.0	ug/g	14-AUG-13	92			
	Lead (Pb)	15.1		1.0	ug/g	14-AUG-13	120			
	Mercury (Hg)	0.020		0.010	ug/g	14-AUG-13	0.27			
	Molybdenum (Mo)	<1.0		1.0	ug/g	14-AUG-13	2			
	Nickel (Ni)	2.7		1.0	ug/g	14-AUG-13	82			
	Selenium (Se)	<1.0		1.0	ug/g	14-AUG-13	1.5			
	Silver (Ag)	<0.20		0.20	ug/g	14-AUG-13	0.5			
	Thallium (Tl)	<0.50		0.50	ug/g	14-AUG-13	1			
	Uranium (U)	<1.0		1.0	ug/g	14-AUG-13	2.5			
	Vanadium (V)	8.2		1.0	ug/g	14-AUG-13	86			
	Zinc (Zn)	51.5		5.0	ug/g	14-AUG-13	290			
Speciated Metals										
	Chromium, Hexavalent	<0.20		0.20	ug/g	14-AUG-13	0.66			
Volatile Organic Compounds										
	Acetone	<0.50		0.50	ug/g	14-AUG-13	0.5			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

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T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-6	BH-03-13, SS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 11:00										
Matrix: SOIL										
Volatile Organic Compounds										
	Benzene	<0.020		0.020	ug/g	14-AUG-13	0.02			
	Bromodichloromethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Bromoform	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Bromomethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Carbon tetrachloride	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Chlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Dibromochloromethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Chloroform	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dibromoethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,3-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,4-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Dichlorodifluoromethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1-Dichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	14-AUG-13	0.05			
	Methylene Chloride	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichloropropane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	14-AUG-13				
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	14-AUG-13				
	Ethyl Benzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	14-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	14-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	14-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	14-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	14-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	119.3		70-130	%	14-AUG-13				
	Surrogate: 1,4-Difluorobenzene	94.9		70-130	%	14-AUG-13				
Hydrocarbons										

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-6	BH-03-13, SS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 11:00										
Matrix: SOIL										
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	14-AUG-13	25			
F1-BTEX		<5.0		5.0	ug/g	15-AUG-13	25			
F2 (C10-C16)		<10		10	ug/g	15-AUG-13	10			
F2-Naphth		<10		10	ug/g	15-AUG-13				
F3 (C16-C34)		<50		50	ug/g	15-AUG-13	240			
F3-PAH		<50		50	ug/g	15-AUG-13				
F4 (C34-C50)		<50		50	ug/g	15-AUG-13	120			
Total Hydrocarbons (C6-C50)		<50		50	ug/g	15-AUG-13				
Chrom. to baseline at nC50		YES			No Unit	15-AUG-13				
Surrogate: 2-Bromobenzotrifluoride		94.0		50-140	%	15-AUG-13				
Surrogate: 3,4-Dichlorotoluene		99.4		60-140	%	14-AUG-13				
Polycyclic Aromatic Hydrocarbons										
Acenaphthene		<0.050		0.050	ug/g	15-AUG-13	0.072			
Acenaphthylene		<0.050		0.050	ug/g	15-AUG-13	0.093			
Anthracene		<0.050		0.050	ug/g	15-AUG-13	0.16			
Benzo(a)anthracene		0.062		0.050	ug/g	15-AUG-13	0.36			
Benzo(a)pyrene		0.088		0.050	ug/g	15-AUG-13	0.3			
Benzo(b)fluoranthene		0.086		0.050	ug/g	15-AUG-13	0.47			
Benzo(g,h,i)perylene		0.062		0.050	ug/g	15-AUG-13	0.68			
Benzo(k)fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.48			
Chrysene		0.063		0.050	ug/g	15-AUG-13	2.8			
Dibenzo(ah)anthracene		<0.050		0.050	ug/g	15-AUG-13	0.1			
Fluoranthene		0.083		0.050	ug/g	15-AUG-13	0.56			
Fluorene		<0.050		0.050	ug/g	15-AUG-13	0.12			
Indeno(1,2,3-cd)pyrene		0.067		0.050	ug/g	15-AUG-13	0.23			
1+2-Methylnaphthalenes		<0.042		0.042	ug/g	15-AUG-13	0.59			
1-Methylnaphthalene		<0.030		0.030	ug/g	15-AUG-13	0.59			
2-Methylnaphthalene		<0.030		0.030	ug/g	15-AUG-13	0.59			
Naphthalene		<0.050		0.050	ug/g	15-AUG-13	0.09			
Phenanthrene		<0.050		0.050	ug/g	15-AUG-13	0.69			
Pyrene		0.115		0.050	ug/g	15-AUG-13	1			
Surrogate: 2-Fluorobiphenyl		96.3		50-140	%	15-AUG-13				
Surrogate: p-Terphenyl d14		95.4		50-140	%	15-AUG-13				
L1346763-7	BH-03-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 11:00										
Matrix: SOIL										
Physical Tests										
% Moisture		6.33		0.10	%	14-AUG-13				
Volatile Organic Compounds										
Acetone		<0.50		0.50	ug/g	14-AUG-13	0.5			
Benzene		<0.020		0.020	ug/g	14-AUG-13	0.02			
Bromodichloromethane		<0.050		0.050	ug/g	14-AUG-13	0.05			
Bromoform		<0.050		0.050	ug/g	14-AUG-13	0.05			
Bromomethane		<0.050		0.050	ug/g	14-AUG-13				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-7	BH-03-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 11:00										
Matrix: SOIL										
Volatile Organic Compounds										
							#1			
							0.05			
	Carbon tetrachloride	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Chlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Dibromochloromethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Chloroform	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dibromoethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,3-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,4-Dichlorobenzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Dichlorodifluoromethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1-Dichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	14-AUG-13	0.05			
	Methylene Chloride	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,2-Dichloropropane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	14-AUG-13				
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	14-AUG-13				
	Ethyl Benzene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	14-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	14-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	14-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	14-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	14-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	14-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	14-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	117.6		70-130	%	14-AUG-13				
	Surrogate: 1,4-Difluorobenzene	96.4		70-130	%	14-AUG-13				
Hydrocarbons										
	F1 (C6-C10)	<5.0		5.0	ug/g	14-AUG-13	25			
	F1-BTEX	<5.0		5.0	ug/g	15-AUG-13	25			
	F2 (C10-C16)	<10		10	ug/g	15-AUG-13	10			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-7	BH-03-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 11:00										
Matrix: SOIL										
Hydrocarbons										
F2-Naphth		<10		10	ug/g	15-AUG-13				
F3 (C16-C34)		<50		50	ug/g	15-AUG-13	240			
F3-PAH		<50		50	ug/g	15-AUG-13				
F4 (C34-C50)		<50		50	ug/g	15-AUG-13	120			
Total Hydrocarbons (C6-C50)		<50		50	ug/g	15-AUG-13				
Chrom. to baseline at nC50		YES			No Unit	15-AUG-13				
Surrogate: 2-Bromobenzotrifluoride		92.8		50-140	%	15-AUG-13				
Surrogate: 3,4-Dichlorotoluene		94.1		60-140	%	14-AUG-13				
Polycyclic Aromatic Hydrocarbons										
Acenaphthene		<0.050		0.050	ug/g	15-AUG-13	0.072			
Acenaphthylene		<0.050		0.050	ug/g	15-AUG-13	0.093			
Anthracene		<0.050		0.050	ug/g	15-AUG-13	0.16			
Benzo(a)anthracene		<0.050		0.050	ug/g	15-AUG-13	0.36			
Benzo(a)pyrene		<0.050		0.050	ug/g	15-AUG-13	0.3			
Benzo(b)fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.47			
Benzo(g,h,i)perylene		<0.050		0.050	ug/g	15-AUG-13	0.68			
Benzo(k)fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.48			
Chrysene		<0.050		0.050	ug/g	15-AUG-13	2.8			
Dibenzo(ah)anthracene		<0.050		0.050	ug/g	15-AUG-13	0.1			
Fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.56			
Fluorene		<0.050		0.050	ug/g	15-AUG-13	0.12			
Indeno(1,2,3-cd)pyrene		<0.050		0.050	ug/g	15-AUG-13	0.23			
1+2-Methylnaphthalenes		<0.042		0.042	ug/g	15-AUG-13	0.59			
1-Methylnaphthalene		<0.030		0.030	ug/g	15-AUG-13	0.59			
2-Methylnaphthalene		<0.030		0.030	ug/g	15-AUG-13	0.59			
Naphthalene		<0.050		0.050	ug/g	15-AUG-13	0.09			
Phenanthrene		<0.050		0.050	ug/g	15-AUG-13	0.69			
Pyrene		<0.050		0.050	ug/g	15-AUG-13	1			
Surrogate: 2-Fluorobiphenyl		98.2		50-140	%	15-AUG-13				
Surrogate: p-Terphenyl d14		98.8		50-140	%	15-AUG-13				
L1346763-8	BH-03-13, SS-2+3									
Sampled By: D. SOUTER on 12-AUG-13 @ 11:00										
Matrix: SOIL										
Physical Tests										
Conductivity		1.05		0.0040	mS/cm	14-AUG-13	*0.57			
% Moisture		5.63		0.10	%	14-AUG-13				
pH		8.36		0.10	pH units	15-AUG-13				
Cyanides										
Cyanide, Weak Acid Diss		<0.050		0.050	ug/g	14-AUG-13	0.051			
Saturated Paste Extractables										
SAR		34.3	SAR:Q	0.10	SAR	14-AUG-13	*2.4			
Calcium (Ca)		3.6		1.0	mg/L	14-AUG-13				
Magnesium (Mg)		<1.0		1.0	mg/L	14-AUG-13				
Sodium (Na)		235		1.0	mg/L	14-AUG-13				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-8	BH-03-13, SS-2+3									
Sampled By: D. SOUTER on 12-AUG-13 @ 11:00										
Matrix: SOIL										
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	14-AUG-13	1.3			
	Arsenic (As)	1.5		1.0	ug/g	14-AUG-13	18			
	Barium (Ba)	6.9		1.0	ug/g	14-AUG-13	220			
	Beryllium (Be)	<0.50		0.50	ug/g	14-AUG-13	2.5			
	Boron (B)	<5.0		5.0	ug/g	14-AUG-13	36			
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	14-AUG-13	36			
	Cadmium (Cd)	<0.50		0.50	ug/g	14-AUG-13	1.2			
	Chromium (Cr)	5.8		1.0	ug/g	14-AUG-13	70			
	Cobalt (Co)	1.3		1.0	ug/g	14-AUG-13	21			
	Copper (Cu)	4.2		1.0	ug/g	14-AUG-13	92			
	Lead (Pb)	31.7		1.0	ug/g	14-AUG-13	120			
	Mercury (Hg)	<0.010		0.010	ug/g	14-AUG-13	0.27			
	Molybdenum (Mo)	<1.0		1.0	ug/g	14-AUG-13	2			
	Nickel (Ni)	2.9		1.0	ug/g	14-AUG-13	82			
	Selenium (Se)	<1.0		1.0	ug/g	14-AUG-13	1.5			
	Silver (Ag)	<0.20		0.20	ug/g	14-AUG-13	0.5			
	Thallium (Tl)	<0.50		0.50	ug/g	14-AUG-13	1			
	Uranium (U)	<1.0		1.0	ug/g	14-AUG-13	2.5			
	Vanadium (V)	8.4		1.0	ug/g	14-AUG-13	86			
	Zinc (Zn)	76.6		5.0	ug/g	14-AUG-13	290			
Speciated Metals										
	Chromium, Hexavalent	<0.20		0.20	ug/g	14-AUG-13	0.66			
L1346763-9	BH-04-13, AS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 09:00										
Matrix: SOIL										
Physical Tests										
	Conductivity	0.462		0.0040	mS/cm	14-AUG-13	0.57			
	% Moisture	2.21		0.10	%	14-AUG-13				
	pH	8.40		0.10	pH units	15-AUG-13				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	14-AUG-13	0.051			
Saturated Paste Extractables										
	SAR	18.7	SAR:Q	0.10	SAR	14-AUG-13	*2.4			
	Calcium (Ca)	2.4		1.0	mg/L	14-AUG-13				
	Magnesium (Mg)	<1.0		1.0	mg/L	14-AUG-13				
	Sodium (Na)	105		1.0	mg/L	14-AUG-13				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	14-AUG-13	1.3			
	Arsenic (As)	3.6		1.0	ug/g	14-AUG-13	18			
	Barium (Ba)	20.0		1.0	ug/g	14-AUG-13	220			
	Beryllium (Be)	<0.50		0.50	ug/g	14-AUG-13	2.5			
	Boron (B)	6.4		5.0	ug/g	14-AUG-13	36			
	Boron (B), Hot Water Ext.	<0.10		0.10	ug/g	14-AUG-13	36			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-9	BH-04-13, AS-1									
Sampled By:	D. SOUTER on 12-AUG-13 @ 09:00									
Matrix:	SOIL									
Metals							#1			
	Cadmium (Cd)	<0.50		0.50	ug/g	14-AUG-13	1.2			
	Chromium (Cr)	8.0		1.0	ug/g	14-AUG-13	70			
	Cobalt (Co)	3.1		1.0	ug/g	14-AUG-13	21			
	Copper (Cu)	20.3		1.0	ug/g	14-AUG-13	92			
	Lead (Pb)	20.6		1.0	ug/g	14-AUG-13	120			
	Mercury (Hg)	<0.010		0.010	ug/g	14-AUG-13	0.27			
	Molybdenum (Mo)	<1.0		1.0	ug/g	14-AUG-13	2			
	Nickel (Ni)	6.4		1.0	ug/g	14-AUG-13	82			
	Selenium (Se)	<1.0		1.0	ug/g	14-AUG-13	1.5			
	Silver (Ag)	<0.20		0.20	ug/g	14-AUG-13	0.5			
	Thallium (Tl)	<0.50		0.50	ug/g	14-AUG-13	1			
	Uranium (U)	<1.0		1.0	ug/g	14-AUG-13	2.5			
	Vanadium (V)	12.9		1.0	ug/g	14-AUG-13	86			
	Zinc (Zn)	133		5.0	ug/g	14-AUG-13	290			
Speciated Metals										
	Chromium, Hexavalent	<0.20		0.20	ug/g	14-AUG-13	0.66			
Volatile Organic Compounds										
	Acetone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	Benzene	<0.020		0.020	ug/g	15-AUG-13	0.02			
	Bromodichloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Bromoform	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Bromomethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Carbon tetrachloride	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Chlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Dibromochloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Chloroform	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dibromoethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,3-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,4-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Dichlorodifluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	15-AUG-13	0.05			
	Methylene Chloride	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichloropropane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13				
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13				
	Ethyl Benzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-9	BH-04-13, AS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 09:00										
Matrix: SOIL										
Volatile Organic Compounds										
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	15-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	15-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	15-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	15-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	116.7		70-130	%	15-AUG-13				
	Surrogate: 1,4-Difluorobenzene	96.2		70-130	%	15-AUG-13				
Hydrocarbons										
	F1 (C6-C10)	<5.0		5.0	ug/g	15-AUG-13	25			
	F1-BTEX	<5.0		5.0	ug/g	15-AUG-13	25			
	F2 (C10-C16)	<10		10	ug/g	15-AUG-13	10			
	F2-Naphth	<10		10	ug/g	15-AUG-13				
	F3 (C16-C34)	342		50	ug/g	15-AUG-13	*240			
	F3-PAH	342		50	ug/g	15-AUG-13				
	F4 (C34-C50)	668		50	ug/g	15-AUG-13	*120			
	F4G-SG (GHH-Silica)	1510		250	mg/kg	15-AUG-13	*120			
	Total Hydrocarbons (C6-C50)	1010		50	ug/g	15-AUG-13				
	Chrom. to baseline at nC50	NO			No Unit	15-AUG-13				
	Surrogate: 2-Bromobenzotrifluoride	91.9		50-140	%	15-AUG-13				
	Surrogate: 3,4-Dichlorotoluene	91.5		60-140	%	15-AUG-13				
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	<0.050		0.050	ug/g	15-AUG-13	0.072			
	Acenaphthylene	<0.050		0.050	ug/g	15-AUG-13	0.093			
	Anthracene	<0.050		0.050	ug/g	15-AUG-13	0.16			
	Benzo(a)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.36			
	Benzo(a)pyrene	<0.050		0.050	ug/g	15-AUG-13	0.3			
	Benzo(b)fluoranthene	<0.050		0.050	ug/g	15-AUG-13	0.47			
	Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-AUG-13	0.68			
	Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-AUG-13	0.48			
	Chrysene	<0.050		0.050	ug/g	15-AUG-13	2.8			
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.1			
	Fluoranthene	<0.050		0.050	ug/g	15-AUG-13	0.56			
	Fluorene	<0.050		0.050	ug/g	15-AUG-13	0.12			
	Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-AUG-13	0.23			

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T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-9	BH-04-13, AS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 09:00							#1			
Matrix: SOIL										
Polycyclic Aromatic Hydrocarbons										
	1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-AUG-13	0.59			
	1-Methylnaphthalene	<0.030		0.030	ug/g	15-AUG-13	0.59			
	2-Methylnaphthalene	<0.030		0.030	ug/g	15-AUG-13	0.59			
	Naphthalene	<0.050		0.050	ug/g	15-AUG-13	0.09			
	Phenanthrene	<0.050		0.050	ug/g	15-AUG-13	0.69			
	Pyrene	<0.050		0.050	ug/g	15-AUG-13	1			
	Surrogate: 2-Fluorobiphenyl	93.7		50-140	%	15-AUG-13				
	Surrogate: p-Terphenyl d14	96.4		50-140	%	15-AUG-13				
L1346763-10	BH-04-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 09:00							#1			
Matrix: SOIL										
Physical Tests										
	Conductivity	3.00		0.0040	mS/cm	14-AUG-13	*0.57			
	% Moisture	11.1		0.10	%	14-AUG-13				
	pH	8.15		0.10	pH units	15-AUG-13				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	14-AUG-13	0.051			
Saturated Paste Extractables										
	SAR	43.0		0.10	SAR	14-AUG-13	*2.4			
	Calcium (Ca)	10.0		1.0	mg/L	14-AUG-13				
	Magnesium (Mg)	2.9		1.0	mg/L	14-AUG-13				
	Sodium (Na)	599		1.0	mg/L	14-AUG-13				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	14-AUG-13	1.3			
	Arsenic (As)	<1.0		1.0	ug/g	14-AUG-13	18			
	Barium (Ba)	9.0		1.0	ug/g	14-AUG-13	220			
	Beryllium (Be)	<0.50		0.50	ug/g	14-AUG-13	2.5			
	Boron (B)	<5.0		5.0	ug/g	14-AUG-13	36			
	Boron (B), Hot Water Ext.	0.20		0.10	ug/g	14-AUG-13	36			
	Cadmium (Cd)	<0.50		0.50	ug/g	14-AUG-13	1.2			
	Chromium (Cr)	2.9		1.0	ug/g	14-AUG-13	70			
	Cobalt (Co)	<1.0		1.0	ug/g	14-AUG-13	21			
	Copper (Cu)	1.1		1.0	ug/g	14-AUG-13	92			
	Lead (Pb)	3.4		1.0	ug/g	14-AUG-13	120			
	Mercury (Hg)	0.023		0.010	ug/g	14-AUG-13	0.27			
	Molybdenum (Mo)	<1.0		1.0	ug/g	14-AUG-13	2			
	Nickel (Ni)	<1.0		1.0	ug/g	14-AUG-13	82			
	Selenium (Se)	<1.0		1.0	ug/g	14-AUG-13	1.5			
	Silver (Ag)	<0.20		0.20	ug/g	14-AUG-13	0.5			
	Thallium (Tl)	<0.50		0.50	ug/g	14-AUG-13	1			
	Uranium (U)	<1.0		1.0	ug/g	14-AUG-13	2.5			
	Vanadium (V)	4.3		1.0	ug/g	14-AUG-13	86			
	Zinc (Zn)	<5.0		5.0	ug/g	14-AUG-13	290			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-10	BH-04-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 09:00										
Matrix: SOIL							#1			
Speciated Metals										
	Chromium, Hexavalent	<0.20		0.20	ug/g	14-AUG-13	0.66			
Volatile Organic Compounds										
	Acetone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	Benzene	<0.020		0.020	ug/g	15-AUG-13	0.02			
	Bromodichloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Bromoform	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Bromomethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Carbon tetrachloride	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Chlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Dibromochloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Chloroform	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dibromoethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,3-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,4-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Dichlorodifluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	15-AUG-13	0.05			
	Methylene Chloride	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichloropropane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13				
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13				
	Ethyl Benzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	15-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	15-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	15-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	15-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	15-AUG-13	0.05			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-10 BH-04-13, SS-2										
Sampled By: D. SOUTER on 12-AUG-13 @ 09:00										
Matrix: SOIL										
Volatile Organic Compounds										
Surrogate: 4-Bromofluorobenzene		116.3		70-130	%	15-AUG-13				
Surrogate: 1,4-Difluorobenzene		96.8		70-130	%	15-AUG-13				
Hydrocarbons										
F1 (C6-C10)		<5.0		5.0	ug/g	15-AUG-13	25			
F1-BTEX		<5.0		5.0	ug/g	15-AUG-13	25			
F2 (C10-C16)		<10		10	ug/g	15-AUG-13	10			
F2-Naphth		<10		10	ug/g	15-AUG-13				
F3 (C16-C34)		<50		50	ug/g	15-AUG-13	240			
F3-PAH		<50		50	ug/g	15-AUG-13				
F4 (C34-C50)		<50		50	ug/g	15-AUG-13	120			
Total Hydrocarbons (C6-C50)		<50		50	ug/g	15-AUG-13				
Chrom. to baseline at nC50		YES			No Unit	15-AUG-13				
Surrogate: 2-Bromobenzotrifluoride		94.3		50-140	%	15-AUG-13				
Surrogate: 3,4-Dichlorotoluene		96.3		60-140	%	15-AUG-13				
Polycyclic Aromatic Hydrocarbons										
Acenaphthene		<0.050		0.050	ug/g	15-AUG-13	0.072			
Acenaphthylene		<0.050		0.050	ug/g	15-AUG-13	0.093			
Anthracene		<0.050		0.050	ug/g	15-AUG-13	0.16			
Benzo(a)anthracene		<0.050		0.050	ug/g	15-AUG-13	0.36			
Benzo(a)pyrene		<0.050		0.050	ug/g	15-AUG-13	0.3			
Benzo(b)fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.47			
Benzo(g,h,i)perylene		<0.050		0.050	ug/g	15-AUG-13	0.68			
Benzo(k)fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.48			
Chrysene		<0.050		0.050	ug/g	15-AUG-13	2.8			
Dibenzo(ah)anthracene		<0.050		0.050	ug/g	15-AUG-13	0.1			
Fluoranthene		<0.050		0.050	ug/g	15-AUG-13	0.56			
Fluorene		<0.050		0.050	ug/g	15-AUG-13	0.12			
Indeno(1,2,3-cd)pyrene		<0.050		0.050	ug/g	15-AUG-13	0.23			
1+2-Methylnaphthalenes		<0.042		0.042	ug/g	15-AUG-13	0.59			
1-Methylnaphthalene		<0.030		0.030	ug/g	15-AUG-13	0.59			
2-Methylnaphthalene		<0.030		0.030	ug/g	15-AUG-13	0.59			
Naphthalene		<0.050		0.050	ug/g	15-AUG-13	0.09			
Phenanthrene		<0.050		0.050	ug/g	15-AUG-13	0.69			
Pyrene		<0.050		0.050	ug/g	15-AUG-13	1			
Surrogate: 2-Fluorobiphenyl		96.0		50-140	%	15-AUG-13				
Surrogate: p-Terphenyl d14		99.5		50-140	%	15-AUG-13				
L1346763-11 BH-05-13, SS-1										
Sampled By: D. SOUTER on 12-AUG-13 @ 16:00										
Matrix: SOIL										
Physical Tests										
Conductivity		1.79		0.0040	mS/cm	14-AUG-13	*0.57			
% Moisture		7.18		0.10	%	14-AUG-13				
pH		8.04		0.10	pH units	15-AUG-13				
Cyanides										

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits							
Grouping	Analyte													
L1346763-11	BH-05-13, SS-1						#1							
Sampled By:	D. SOUTER on 12-AUG-13 @ 16:00													
Matrix:	SOIL													
Cyanides														
Cyanide, Weak Acid Diss	<0.050						0.050	ug/g	14-AUG-13	0.051				
Saturated Paste Extractables														
SAR	39.4						SAR:Q	0.10	SAR	14-AUG-13				*2.4
Calcium (Ca)	7.0							1.0	mg/L	14-AUG-13				
Magnesium (Mg)	<1.0							1.0	mg/L	14-AUG-13				
Sodium (Na)	380							1.0	mg/L	14-AUG-13				
Metals														
Antimony (Sb)	1.9							1.0	ug/g	14-AUG-13	*1.3			
Arsenic (As)	2.2							1.0	ug/g	14-AUG-13	18			
Barium (Ba)	24.9							1.0	ug/g	14-AUG-13	220			
Beryllium (Be)	<0.50							0.50	ug/g	14-AUG-13	2.5			
Boron (B)	<5.0							5.0	ug/g	14-AUG-13	36			
Boron (B), Hot Water Ext.	0.25							0.10	ug/g	14-AUG-13	36			
Cadmium (Cd)	<0.50							0.50	ug/g	14-AUG-13	1.2			
Chromium (Cr)	4.8							1.0	ug/g	14-AUG-13	70			
Cobalt (Co)	1.5							1.0	ug/g	14-AUG-13	21			
Copper (Cu)	6.9		1.0	ug/g	14-AUG-13	92								
Lead (Pb)	38.8		1.0	ug/g	14-AUG-13	120								
Mercury (Hg)	0.168		0.010	ug/g	14-AUG-13	0.27								
Molybdenum (Mo)	<1.0		1.0	ug/g	14-AUG-13	2								
Nickel (Ni)	3.2		1.0	ug/g	14-AUG-13	82								
Selenium (Se)	<1.0		1.0	ug/g	14-AUG-13	1.5								
Silver (Ag)	<0.20		0.20	ug/g	14-AUG-13	0.5								
Thallium (Tl)	<0.50		0.50	ug/g	14-AUG-13	1								
Uranium (U)	<1.0		1.0	ug/g	14-AUG-13	2.5								
Vanadium (V)	8.1		1.0	ug/g	14-AUG-13	86								
Zinc (Zn)	67.9		5.0	ug/g	14-AUG-13	290								
Speciated Metals														
Chromium, Hexavalent	0.25		0.20	ug/g	14-AUG-13	0.66								
Volatile Organic Compounds														
Acetone	<0.50		0.50	ug/g	15-AUG-13	0.5								
Benzene	<0.020		0.020	ug/g	15-AUG-13	0.02								
Bromodichloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05								
Bromoform	<0.050		0.050	ug/g	15-AUG-13	0.05								
Bromomethane	<0.050		0.050	ug/g	15-AUG-13	0.05								
Carbon tetrachloride	<0.050		0.050	ug/g	15-AUG-13	0.05								
Chlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05								
Dibromochloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05								
Chloroform	<0.050		0.050	ug/g	15-AUG-13	0.05								
1,2-Dibromoethane	<0.050		0.050	ug/g	15-AUG-13	0.05								
1,2-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05								
1,3-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05								
1,4-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05								
Dichlorodifluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.05								

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-11	BH-05-13, SS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 16:00										
Matrix: SOIL										
Volatile Organic Compounds										
	1,1-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	15-AUG-13	0.05			
	Methylene Chloride	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichloropropane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13				
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13				
	Ethyl Benzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	15-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	15-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	15-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	15-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	117.4		70-130	%	15-AUG-13				
	Surrogate: 1,4-Difluorobenzene	96.6		70-130	%	15-AUG-13				
Hydrocarbons										
	F1 (C6-C10)	<5.0		5.0	ug/g	15-AUG-13	25			
	F1-BTEX	<5.0		5.0	ug/g	15-AUG-13	25			
	F2 (C10-C16)	<10		10	ug/g	15-AUG-13	10			
	F2-Naphth	<10		10	ug/g	15-AUG-13				
	F3 (C16-C34)	<50		50	ug/g	15-AUG-13	240			
	F3-PAH	<50		50	ug/g	15-AUG-13				
	F4 (C34-C50)	<50		50	ug/g	15-AUG-13	120			
	Total Hydrocarbons (C6-C50)	<50		50	ug/g	15-AUG-13				
	Chrom. to baseline at nC50	YES			No Unit	15-AUG-13				
	Surrogate: 2-Bromobenzotrifluoride	99.0		50-140	%	15-AUG-13				
	Surrogate: 3,4-Dichlorotoluene	90.2		60-140	%	15-AUG-13				
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	<0.050		0.050	ug/g	15-AUG-13	0.072			
	Acenaphthylene	<0.050		0.050	ug/g	15-AUG-13	0.093			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-11	BH-05-13, SS-1									
Sampled By: D. SOUTER on 12-AUG-13 @ 16:00										
Matrix: SOIL										
Polycyclic Aromatic Hydrocarbons										
	Anthracene	<0.050		0.050	ug/g	15-AUG-13	0.16			
	Benzo(a)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.36			
	Benzo(a)pyrene	<0.050		0.050	ug/g	15-AUG-13	0.3			
	Benzo(b)fluoranthene	0.056		0.050	ug/g	15-AUG-13	0.47			
	Benzo(g,h,i)perylene	<0.050		0.050	ug/g	15-AUG-13	0.68			
	Benzo(k)fluoranthene	<0.050		0.050	ug/g	15-AUG-13	0.48			
	Chrysene	<0.050		0.050	ug/g	15-AUG-13	2.8			
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.1			
	Fluoranthene	0.075		0.050	ug/g	15-AUG-13	0.56			
	Fluorene	<0.050		0.050	ug/g	15-AUG-13	0.12			
	Indeno(1,2,3-cd)pyrene	<0.050		0.050	ug/g	15-AUG-13	0.23			
	1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-AUG-13	0.59			
	1-Methylnaphthalene	<0.030		0.030	ug/g	15-AUG-13	0.59			
	2-Methylnaphthalene	<0.030		0.030	ug/g	15-AUG-13	0.59			
	Naphthalene	<0.050		0.050	ug/g	15-AUG-13	0.09			
	Phenanthrene	<0.050		0.050	ug/g	15-AUG-13	0.69			
	Pyrene	0.068		0.050	ug/g	15-AUG-13	1			
	Surrogate: 2-Fluorobiphenyl	100.4		50-140	%	15-AUG-13				
	Surrogate: p-Terphenyl d14	99.3		50-140	%	15-AUG-13				
L1346763-12	BH-05-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 16:00										
Matrix: SOIL										
Physical Tests										
	Conductivity	1.48		0.0040	mS/cm	14-AUG-13	*0.57			
	% Moisture	8.60		0.10	%	14-AUG-13				
	pH	7.56		0.10	pH units	15-AUG-13				
Cyanides										
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	14-AUG-13	0.051			
Saturated Paste Extractables										
	SAR	38.6	SAR:Q	0.10	SAR	14-AUG-13	*2.4			
	Calcium (Ca)	5.4		1.0	mg/L	14-AUG-13				
	Magnesium (Mg)	<1.0		1.0	mg/L	14-AUG-13				
	Sodium (Na)	325		1.0	mg/L	14-AUG-13				
Metals										
	Antimony (Sb)	<1.0		1.0	ug/g	14-AUG-13	1.3			
	Arsenic (As)	2.0		1.0	ug/g	14-AUG-13	18			
	Barium (Ba)	16.5		1.0	ug/g	14-AUG-13	220			
	Beryllium (Be)	<0.50		0.50	ug/g	14-AUG-13	2.5			
	Boron (B)	<5.0		5.0	ug/g	14-AUG-13	36			
	Boron (B), Hot Water Ext.	0.46		0.10	ug/g	14-AUG-13	36			
	Cadmium (Cd)	<0.50		0.50	ug/g	14-AUG-13	1.2			
	Chromium (Cr)	4.6		1.0	ug/g	14-AUG-13	70			
	Cobalt (Co)	<1.0		1.0	ug/g	14-AUG-13	21			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details									
Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits		
L1346763-12	BH-05-13, SS-2								
Sampled By: D. SOUTER on 12-AUG-13 @ 16:00									
Matrix: SOIL									
Metals									
	Copper (Cu)	6.2		1.0	ug/g	14-AUG-13	92		
	Lead (Pb)	27.5		1.0	ug/g	14-AUG-13	120		
	Mercury (Hg)	0.264		0.010	ug/g	14-AUG-13	0.27		
	Molybdenum (Mo)	<1.0		1.0	ug/g	14-AUG-13	2		
	Nickel (Ni)	2.3		1.0	ug/g	14-AUG-13	82		
	Selenium (Se)	<1.0		1.0	ug/g	14-AUG-13	1.5		
	Silver (Ag)	<0.20		0.20	ug/g	14-AUG-13	0.5		
	Thallium (Tl)	<0.50		0.50	ug/g	14-AUG-13	1		
	Uranium (U)	<1.0		1.0	ug/g	14-AUG-13	2.5		
	Vanadium (V)	6.3		1.0	ug/g	14-AUG-13	86		
	Zinc (Zn)	66.3		5.0	ug/g	14-AUG-13	290		
Speciated Metals									
	Chromium, Hexavalent	<0.20		0.20	ug/g	14-AUG-13	0.66		
Volatile Organic Compounds									
	Acetone	<0.50		0.50	ug/g	15-AUG-13	0.5		
	Benzene	<0.020		0.020	ug/g	15-AUG-13	0.02		
	Bromodichloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Bromoform	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Bromomethane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Carbon tetrachloride	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Chlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Dibromochloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Chloroform	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,2-Dibromoethane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,2-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,3-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,4-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Dichlorodifluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,1-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,2-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,1-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05		
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05		
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	15-AUG-13	0.05		
	Methylene Chloride	<0.050		0.050	ug/g	15-AUG-13	0.05		
	1,2-Dichloropropane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13			
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13			
	Ethyl Benzene	<0.050		0.050	ug/g	15-AUG-13	0.05		
	n-Hexane	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5		
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5		
	MTBE	<0.050		0.050	ug/g	15-AUG-13	0.05		
	Styrene	<0.050		0.050	ug/g	15-AUG-13	0.05		

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-12	BH-05-13, SS-2									
Sampled By: D. SOUTER on 12-AUG-13 @ 16:00							#1			
Matrix: SOIL										
Volatile Organic Compounds										
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	15-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	15-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	15-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	15-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	118.9		70-130	%	15-AUG-13				
	Surrogate: 1,4-Difluorobenzene	96.8		70-130	%	15-AUG-13				
Hydrocarbons										
	F1 (C6-C10)	<5.0		5.0	ug/g	15-AUG-13	25			
	F1-BTEX	<5.0		5.0	ug/g	15-AUG-13	25			
	F2 (C10-C16)	<10		10	ug/g	15-AUG-13	10			
	F2-Naphth	<10		10	ug/g	15-AUG-13				
	F3 (C16-C34)	71		50	ug/g	15-AUG-13	240			
	F3-PAH	70		50	ug/g	15-AUG-13				
	F4 (C34-C50)	67		50	ug/g	15-AUG-13	120			
	Total Hydrocarbons (C6-C50)	138		50	ug/g	15-AUG-13				
	Chrom. to baseline at nC50	YES			No Unit	15-AUG-13				
	Surrogate: 2-Bromobenzotrifluoride	95.1		50-140	%	15-AUG-13				
	Surrogate: 3,4-Dichlorotoluene	93.4		60-140	%	15-AUG-13				
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	<0.050		0.050	ug/g	15-AUG-13	0.072			
	Acenaphthylene	<0.050		0.050	ug/g	15-AUG-13	0.093			
	Anthracene	<0.050		0.050	ug/g	15-AUG-13	0.16			
	Benzo(a)anthracene	0.138	R	0.050	ug/g	15-AUG-13	0.36			
	Benzo(a)pyrene	0.167		0.050	ug/g	15-AUG-13	0.3			
	Benzo(b)fluoranthene	0.196		0.050	ug/g	15-AUG-13	0.47			
	Benzo(g,h,i)perylene	0.133		0.050	ug/g	15-AUG-13	0.68			
	Benzo(k)fluoranthene	0.055		0.050	ug/g	15-AUG-13	0.48			
	Chrysene	0.154		0.050	ug/g	15-AUG-13	2.8			
	Dibenzo(ah)anthracene	<0.050		0.050	ug/g	15-AUG-13	0.1			
	Fluoranthene	0.266		0.050	ug/g	15-AUG-13	0.56			
	Fluorene	<0.050		0.050	ug/g	15-AUG-13	0.12			
	Indeno(1,2,3-cd)pyrene	0.134		0.050	ug/g	15-AUG-13	0.23			
	1+2-Methylnaphthalenes	<0.042		0.042	ug/g	15-AUG-13	0.59			
	1-Methylnaphthalene	<0.030		0.030	ug/g	15-AUG-13	0.59			
	2-Methylnaphthalene	<0.030		0.030	ug/g	15-AUG-13	0.59			
	Naphthalene	<0.050		0.050	ug/g	15-AUG-13	0.09			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

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T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

Sample Details		13-AUG-13 14:59 (M1)								
Grouping	Analyte	Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
L1346763-12	BH-05-13, SS-2									
	Sampled By: D. SOUTER on 12-AUG-13 @ 16:00									
	Matrix: SOIL						#1			
	Polycyclic Aromatic Hydrocarbons									
	Phenanthrene	0.100		0.050	ug/g	15-AUG-13	0.69			
	Pyrene	0.271		0.050	ug/g	15-AUG-13	1			
L1346763-13	Surrogate: 2-Fluorobiphenyl	97.2		50-140	%	15-AUG-13				
	Surrogate: p-Terphenyl d14	102.9		50-140	%	15-AUG-13				
	L1346763-13 BH-05-13, SS-3						#1			
	Sampled By: D. SOUTER on 12-AUG-13 @ 16:00									
	Matrix: SOIL									
	Physical Tests									
L1346763-13	Conductivity	2.65		0.0040	mS/cm	14-AUG-13	*0.57			
	% Moisture	17.1		0.10	%	14-AUG-13				
	pH	7.66		0.10	pH units	15-AUG-13				
	Cyanides									
	Cyanide, Weak Acid Diss	<0.050		0.050	ug/g	14-AUG-13	0.051			
	Saturated Paste Extractables									
	SAR	53.1		0.10	SAR	14-AUG-13	*2.4			
	Calcium (Ca)	5.9		1.0	mg/L	14-AUG-13				
	Magnesium (Mg)	1.1		1.0	mg/L	14-AUG-13				
	Sodium (Na)	535		1.0	mg/L	14-AUG-13				
	Metals									
	Antimony (Sb)	<1.0		1.0	ug/g	14-AUG-13	1.3			
	Arsenic (As)	1.3		1.0	ug/g	14-AUG-13	18			
	Barium (Ba)	14.1		1.0	ug/g	14-AUG-13	220			
	Beryllium (Be)	<0.50		0.50	ug/g	14-AUG-13	2.5			
	Boron (B)	<5.0		5.0	ug/g	14-AUG-13	36			
	Boron (B), Hot Water Ext.	0.28		0.10	ug/g	14-AUG-13	36			
	Cadmium (Cd)	<0.50		0.50	ug/g	14-AUG-13	1.2			
	Chromium (Cr)	3.4		1.0	ug/g	14-AUG-13	70			
	Cobalt (Co)	<1.0		1.0	ug/g	14-AUG-13	21			
	Copper (Cu)	2.2		1.0	ug/g	14-AUG-13	92			
	Lead (Pb)	6.7		1.0	ug/g	14-AUG-13	120			
	Mercury (Hg)	0.061		0.010	ug/g	14-AUG-13	0.27			
	Molybdenum (Mo)	<1.0		1.0	ug/g	14-AUG-13	2			
	Nickel (Ni)	1.1		1.0	ug/g	14-AUG-13	82			
	Selenium (Se)	<1.0		1.0	ug/g	14-AUG-13	1.5			
	Silver (Ag)	<0.20		0.20	ug/g	14-AUG-13	0.5			
	Thallium (Tl)	<0.50		0.50	ug/g	14-AUG-13	1			
Uranium (U)	<1.0		1.0	ug/g	14-AUG-13	2.5				
Vanadium (V)	5.6		1.0	ug/g	14-AUG-13	86				
Zinc (Zn)	39.1		5.0	ug/g	14-AUG-13	290				
Speciated Metals										
Chromium, Hexavalent	<0.20		0.20	ug/g	14-AUG-13	0.66				
Volatile Organic Compounds										
Acetone	<0.50		0.50	ug/g	15-AUG-13	0.5				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1346763-13	BH-05-13, SS-3									
Sampled By: D. SOUTER on 12-AUG-13 @ 16:00										
Matrix: SOIL										
Volatile Organic Compounds										
	Benzene	<0.020		0.020	ug/g	15-AUG-13	0.02			
	Bromodichloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Bromoform	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Bromomethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Carbon tetrachloride	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Chlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Dibromochloromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Chloroform	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dibromoethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,3-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,4-Dichlorobenzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Dichlorodifluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	cis-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	trans-1,2-Dichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,3-Dichloropropene (cis & trans)	<0.042		0.042	ug/g	15-AUG-13	0.05			
	Methylene Chloride	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,2-Dichloropropane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	cis-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13				
	trans-1,3-Dichloropropene	<0.030		0.030	ug/g	15-AUG-13				
	Ethyl Benzene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	n-Hexane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Methyl Ethyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	Methyl Isobutyl Ketone	<0.50		0.50	ug/g	15-AUG-13	0.5			
	MTBE	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Styrene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,1,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2,2-Tetrachloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Tetrachloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Toluene	<0.20		0.20	ug/g	15-AUG-13	0.2			
	1,1,1-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	1,1,2-Trichloroethane	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichloroethylene	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Trichlorofluoromethane	<0.050		0.050	ug/g	15-AUG-13	0.25			
	Vinyl chloride	<0.020		0.020	ug/g	15-AUG-13	0.02			
	o-Xylene	<0.020		0.020	ug/g	15-AUG-13				
	m+p-Xylenes	<0.030		0.030	ug/g	15-AUG-13				
	Xylenes (Total)	<0.050		0.050	ug/g	15-AUG-13	0.05			
	Surrogate: 4-Bromofluorobenzene	121.5		70-130	%	15-AUG-13				
	Surrogate: 1,4-Difluorobenzene	94.5		70-130	%	15-AUG-13				
Hydrocarbons										

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use



L1346763 CONTD....

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15-AUG-13 14:59 (MT)

160-P-0003883-0-01-100-01

* Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

#1: T1-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
R	The ion abundance ratio(s) did not meet the acceptance criteria. Value is an estimated maximum.
SAR:Q	Qualified SAR value: actual SAR is lower but is incalculable due to Na, Ca or Mg below detection limit.

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
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B-HWS-R511-WT Soil Boron-HWE-O.Reg 153/04 (July 2011) 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).

CN-WAD-R511-WT Soil Cyanide (WAD)-O.Reg 153/04 (July 2011) MOE 3015/APHA 4500CN I-WAD

The sample is extracted with a strong base for 16 hours, and then filtered. The filtrate is then distilled where the cyanide is converted to cyanogen chloride by reacting with chloramine-T, the cyanogen chloride then reacts with a combination of barbituric acid and isonicotinic acid to form a highly colored complex.

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).

CR-CR6-IC-R511-WT Soil Hex Chrom-O.Reg 153/04 (July 2011) SW846 3060A/7199 R511

Soil sample undergoes a alkaline digestion process where the sample is acidified and derivatized with 1,5-diphenylcarbazide (DPC) using ion chromatography.

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).

EC-R511-WT Soil Conductivity-O.Reg 153/04 (July 2011) MOEE E3138

A representative subsample is tumbled with de-ionized (DI) water. The ratio of water to soil is 2:1 v/w. After tumbling the sample is then analyzed by a conductivity meter.

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).

F1-F4-511-CALC-WT Soil F1-F4 Hydrocarbon Calculated Parameters CCME CWS-PHC DEC-2000 - PUB# 1310-S

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed , F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT Soil F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS

Fraction F1 is determined by extracting a soil or sediment sample as received with methanol, then analyzing by headspace-GC/FID.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

Reference Information

F2-F4-511-WT	Soil	F2-F4-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1
Fractions F2, F3 and F4 are determined by extracting a soil sample with a solvent mix. The solvent recovered from the extracted soil sample is dried and treated to remove polar material. The extract is analyzed by GC/FID.			
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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
F4G-ADD-511-WT	Soil	F4G SG-O.Reg 153/04 (July 2011)	MOE DECPH-E3398/CCME TIER 1
F4G, gravimetric analysis, is determined if the chromatogram does not return to baseline at or before C50. A soil sample is extracted with a solvent mix, the solvent is evaporated and the weight of the residue is determined.			
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).			
HG-R511-WT	Soil	Mercury-O.Reg 153/04 (July 2011)	SW846 3050B/7471
Solid sample is digested with a heated, strong, mixed acid solution to convert all forms of mercury to divalent mercury. The divalent mercury is then reduced to elemental mercury, sparged from solution and analyzed by CVAAS.			
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).			
MET-UG/G-CCMS-WT	Soil	Metal Scan Collision Cell ICPMS	EPA 200.2/6020A
Sample is vigorously digested with nitric and hydrochloric acid. Analysis is conducted by ICP/MS.			
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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
METHYLNAPS-CALC-WT	Soil	ABN-Calculated Parameters	SW846 8270
MOISTURE-WT	Soil	% Moisture	Gravimetric: Oven Dried
PAH-511-WT	Soil	PAH-O.Reg 153/04 (July 2011)	SW846 3510/8270
A representative sub-sample of soil is fortified with deuterium-labelled surrogates and a mechanical shaking technique is used to extract the sample with a mixture of methanol and toluene. The extracts are concentrated and analyzed by GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.			
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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
PH-R511-WT	Soil	pH-O.Reg 153/04 (July 2011)	MOEE E3137A
A minimum 10g portion of the sample 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 and then analyzed using a pH meter and electrode.			
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).			
SAR-R511-WT	Soil	SAR-O.Reg 153/04 (July 2011)	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.			
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).			
VOC-1,3-DCP-CALC-WT	Soil	Regulation 153 VOCs	SW8260B/SW8270C
VOC-511-HS-WT	Soil	VOC-O.Reg 153/04 (July 2011)	SW846 8260 (511)
Soil and sediment samples are extracted in methanol and analyzed by headspace-GC/MS.			
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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
XYLENES-SUM-CALC-WT	Soil	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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.

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
B-HWS-R511-WT		Soil							
Batch	R2672313								
WG1725999-4	DUP	WG1725999-3							
Boron (B), Hot Water Ext.			0.25		ug/g	2.9	40	14-AUG-13	
WG1725999-2	LCS								
Boron (B), Hot Water Ext.			91.4		%		70-130	14-AUG-13	
WG1725999-1	MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	14-AUG-13	
WG1725999-5	MS	WG1725999-3							
Boron (B), Hot Water Ext.			89.6		%		60-140	14-AUG-13	
CN-WAD-R511-WT		Soil							
Batch	R2672800								
WG1726525-3	CVS								
Cyanide, Weak Acid Diss			106.0		%		80-120	14-AUG-13	
WG1725300-3	DUP	L1345273-30							
Cyanide, Weak Acid Diss			<0.050	<0.050	RPD-NA	ug/g	N/A	35	14-AUG-13
WG1725300-2	LCS								
Cyanide, Weak Acid Diss			110.0		%		80-120	14-AUG-13	
WG1725300-1	MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	14-AUG-13	
WG1725300-4	MS	L1345273-30							
Cyanide, Weak Acid Diss			105		%		70-130	14-AUG-13	
CR-CR6-IC-R511-WT		Soil							
Batch	R2672480								
WG1725279-4	CRM	WT-SQC012							
Chromium, Hexavalent			101.9		%		80-120	14-AUG-13	
WG1725279-3	DUP	L1345273-30							
Chromium, Hexavalent			<0.20	<0.20	RPD-NA	ug/g	N/A	35	14-AUG-13
WG1725279-2	LCS								
Chromium, Hexavalent			103.0		%		80-120	14-AUG-13	
WG1725279-1	MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	14-AUG-13	
EC-R511-WT		Soil							
Batch	R2672457								
WG1726000-2	DUP	L1346763-11							
Conductivity			1.79	1.87		mS/cm	3.9	20	14-AUG-13
WG1726058-1	LCS								
Conductivity			98.1		%		90-110	14-AUG-13	
WG1726000-1	MB								



Quality Control Report

Workorder: L1346763

Report Date: 15-AUG-13

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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-R511-WT								
Soil								
Batch	R2672457							
WG1726000-1	MB							
Conductivity			<0.0040		mS/cm		0.004	14-AUG-13
F1-HS-511-WT								
Soil								
Batch	R2672060							
WG1723200-1	CVS							
F1 (C6-C10)			87.1		%		80-120	13-AUG-13
WG1725201-3	DUP	WG1725201-5						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	50	14-AUG-13
WG1725201-2	LCS							
F1 (C6-C10)			90.6		%		80-120	14-AUG-13
WG1725201-1	MB							
F1 (C6-C10)			<5.0		ug/g		5	14-AUG-13
Surrogate: 3,4-Dichlorotoluene			97.4		%		60-140	14-AUG-13
WG1725201-7	MS	WG1725201-6						
F1 (C6-C10)			101.7		%		60-140	14-AUG-13
F2-F4-511-WT								
Soil								
Batch	R2672864							
WG1726514-1	CVS							
F2 (C10-C16)			97.8		%		80-120	15-AUG-13
F3 (C16-C34)			101.7		%		80-120	15-AUG-13
F4 (C34-C50)			106.1		%		80-120	15-AUG-13
WG1725601-3	DUP	WG1725601-7						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	40	15-AUG-13
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	40	15-AUG-13
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	15-AUG-13
WG1725601-2	LCS							
F2 (C10-C16)			109.9		%		80-120	15-AUG-13
F3 (C16-C34)			114.5		%		80-120	15-AUG-13
F4 (C34-C50)			113.7		%		80-120	15-AUG-13
WG1725601-5	LCSD	WG1725601-2						
F2 (C10-C16)		109.9	104.8		%	4.7	50	15-AUG-13
F3 (C16-C34)		114.5	112.0		%	2.2	50	15-AUG-13
F4 (C34-C50)		113.7	112.3		%	1.2	50	15-AUG-13
WG1725601-1	MB							
F2 (C10-C16)			<10		ug/g		10	15-AUG-13
F3 (C16-C34)			<50				50	



Quality Control Report

Workorder: L1346763

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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT Soil								
Batch	R2672864							
WG1725601-1 MB								
F3 (C16-C34)			<50		ug/g		50	15-AUG-13
F4 (C34-C50)			<50		ug/g		50	15-AUG-13
Surrogate: 2-Bromobenzotrifluoride			98.7		%		50-140	15-AUG-13
WG1725601-4 MS		WG1725601-7						
F2 (C10-C16)			101.7		%		60-140	15-AUG-13
F3 (C16-C34)			108.2		%		60-140	15-AUG-13
F4 (C34-C50)			108.7		%		60-140	15-AUG-13
F4G-ADD-511-WT Soil								
Batch	R2672943							
WG1727404-2 LCS								
F4G-SG (GHH-Silica)			78.9		%		60-140	15-AUG-13
WG1727404-3 LCSD		WG1727404-2						
F4G-SG (GHH-Silica)		78.9	75.9		%	3.9	50	15-AUG-13
WG1727404-1 MB								
F4G-SG (GHH-Silica)			<250		mg/kg		250	15-AUG-13
HG-R511-WT Soil								
Batch	R2671814							
WG1726002-2 CRM		WT-SS-1						
Mercury (Hg)			106.8		%		70-130	14-AUG-13
WG1726002-6 DUP		WG1726002-5						
Mercury (Hg)		0.519	0.475		ug/g	8.8	30	14-AUG-13
WG1726002-4 LCS								
Mercury (Hg)			95.0		%		80-120	14-AUG-13
WG1726002-1 MB								
Mercury (Hg)			<0.010		ug/g		0.01	14-AUG-13
WG1726002-7 MS		WG1726002-5						
Mercury (Hg)			N/A	MS-B	%		-	14-AUG-13
MET-UG/G-CCMS-WT Soil								
Batch	R2672583							
WG1726386-2 CVS								
Antimony (Sb)			96.0		%		70-130	14-AUG-13
Arsenic (As)			103.5		%		70-130	14-AUG-13
Barium (Ba)			104.6		%		70-130	14-AUG-13
Beryllium (Be)			97.7		%		70-130	14-AUG-13
Boron (B)			98.2		%		70-130	14-AUG-13



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT		Soil						
Batch	R2672583							
WG1726386-2	CVS							
Cadmium (Cd)			102.1		%		70-130	14-AUG-13
Chromium (Cr)			99.0		%		70-130	14-AUG-13
Cobalt (Co)			99.7		%		70-130	14-AUG-13
Copper (Cu)			100.7		%		70-130	14-AUG-13
Lead (Pb)			97.3		%		70-130	14-AUG-13
Molybdenum (Mo)			97.6		%		70-130	14-AUG-13
Nickel (Ni)			99.7		%		70-130	14-AUG-13
Selenium (Se)			99.7		%		70-130	14-AUG-13
Silver (Ag)			102.9		%		70-130	14-AUG-13
Thallium (Tl)			95.8		%		70-130	14-AUG-13
Uranium (U)			96.1		%		70-130	14-AUG-13
Vanadium (V)			98.8		%		70-130	14-AUG-13
Zinc (Zn)			97.0		%		70-130	14-AUG-13
WG1726002-6	DUP	WG1726002-5						
Antimony (Sb)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	14-AUG-13
Arsenic (As)		6.11	6.12		ug/g	0.2	30	14-AUG-13
Barium (Ba)		84.7	84.2		ug/g	0.6	40	14-AUG-13
Beryllium (Be)		<0.50	0.51	RPD-NA	ug/g	N/A	30	14-AUG-13
Boron (B)		7.8	7.5		ug/g	4.2	30	14-AUG-13
Cadmium (Cd)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	14-AUG-13
Chromium (Cr)		16.3	15.6		ug/g	4.6	30	14-AUG-13
Cobalt (Co)		8.8	8.8		ug/g	0.4	30	14-AUG-13
Copper (Cu)		39.0	38.6		ug/g	1.0	30	14-AUG-13
Lead (Pb)		59.9	57.5		ug/g	4.1	40	14-AUG-13
Molybdenum (Mo)		<1.0	<1.0	RPD-NA	ug/g	N/A	40	14-AUG-13
Nickel (Ni)		16.0	15.9		ug/g	0.9	30	14-AUG-13
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	14-AUG-13
Silver (Ag)		<0.20	<0.20	RPD-NA	ug/g	N/A	40	14-AUG-13
Thallium (Tl)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	14-AUG-13
Uranium (U)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	14-AUG-13
Vanadium (V)		26.5	25.2		ug/g	4.9	30	14-AUG-13
Zinc (Zn)		97.8	95.7		ug/g	2.1	30	14-AUG-13
WG1726002-8	DUP	L1347004-2						

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT		Soil						
Batch	R2672583							
WG1726002-8	DUP	L1347004-2						
Antimony (Sb)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	14-AUG-13
Arsenic (As)		11.2	13.4		ug/g	18	30	14-AUG-13
Barium (Ba)		53.9	59.0		ug/g	9.0	40	14-AUG-13
Beryllium (Be)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	14-AUG-13
Boron (B)		6.9	7.2		ug/g	4.7	30	14-AUG-13
Cadmium (Cd)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	14-AUG-13
Chromium (Cr)		6.7	7.9		ug/g	17	30	14-AUG-13
Cobalt (Co)		3.5	4.3		ug/g	20	30	14-AUG-13
Copper (Cu)		28.0	34.1		ug/g	20	30	14-AUG-13
Lead (Pb)		62.2	74.8		ug/g	18	40	14-AUG-13
Molybdenum (Mo)		<1.0	<1.0	RPD-NA	ug/g	N/A	40	14-AUG-13
Nickel (Ni)		6.3	7.9		ug/g	22	30	14-AUG-13
Selenium (Se)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	14-AUG-13
Silver (Ag)		<0.20	<0.20	RPD-NA	ug/g	N/A	40	14-AUG-13
Thallium (Tl)		<0.50	<0.50	RPD-NA	ug/g	N/A	30	14-AUG-13
Uranium (U)		<1.0	<1.0	RPD-NA	ug/g	N/A	30	14-AUG-13
Vanadium (V)		12.7	15.1		ug/g	17	30	14-AUG-13
Zinc (Zn)		118	135		ug/g	14	30	14-AUG-13
WG1726002-3	LCS							
Antimony (Sb)			99.8		%		80-120	14-AUG-13
Arsenic (As)			98.9		%		80-120	14-AUG-13
Barium (Ba)			96.9		%		80-120	14-AUG-13
Beryllium (Be)			91.1		%		80-120	14-AUG-13
Boron (B)			101.2		%		80-120	14-AUG-13
Cadmium (Cd)			100.7		%		80-120	14-AUG-13
Chromium (Cr)			103.6		%		80-120	14-AUG-13
Cobalt (Co)			99.4		%		80-120	14-AUG-13
Copper (Cu)			99.99		%		80-120	14-AUG-13
Lead (Pb)			97.0		%		80-120	14-AUG-13
Molybdenum (Mo)			101.7		%		80-120	14-AUG-13
Nickel (Ni)			101.6		%		80-120	14-AUG-13
Selenium (Se)			106.9		%		80-120	14-AUG-13
Silver (Ag)			104.1		%		80-120	14-AUG-13



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT		Soil						
Batch	R2672583							
WG1726002-3	LCS							
Thallium (Tl)			95.5		%		80-120	14-AUG-13
Uranium (U)			96.7		%		80-120	14-AUG-13
Vanadium (V)			101.3		%		80-120	14-AUG-13
Zinc (Zn)			98.3		%		80-120	14-AUG-13
WG1726002-1	MB							
Antimony (Sb)			<1.0		ug/g		1	14-AUG-13
Arsenic (As)			<0.20		ug/g		0.2	14-AUG-13
Barium (Ba)			<1.0		ug/g		1	14-AUG-13
Beryllium (Be)			<0.50		ug/g		0.5	14-AUG-13
Boron (B)			<5.0		ug/g		5	14-AUG-13
Cadmium (Cd)			<0.50		ug/g		0.5	14-AUG-13
Chromium (Cr)			<1.0		ug/g		1	14-AUG-13
Cobalt (Co)			<1.0		ug/g		1	14-AUG-13
Copper (Cu)			<1.0		ug/g		1	14-AUG-13
Lead (Pb)			<1.0		ug/g		1	14-AUG-13
Molybdenum (Mo)			<1.0		ug/g		1	14-AUG-13
Nickel (Ni)			<1.0		ug/g		1	14-AUG-13
Selenium (Se)			<1.0		ug/g		1	14-AUG-13
Silver (Ag)			<0.20		ug/g		0.2	14-AUG-13
Thallium (Tl)			<0.50		ug/g		0.5	14-AUG-13
Uranium (U)			<1.0		ug/g		1	14-AUG-13
Vanadium (V)			<1.0		ug/g		1	14-AUG-13
Zinc (Zn)			<5.0		ug/g		5	14-AUG-13
WG1726002-7	MS	WG1726002-5						
Antimony (Sb)			102.4		%		70-130	14-AUG-13
Arsenic (As)			N/A	MS-B	%		-	14-AUG-13
Barium (Ba)			N/A	MS-B	%		-	14-AUG-13
Beryllium (Be)			110.5		%		70-130	14-AUG-13
Boron (B)			N/A	MS-B	%		-	14-AUG-13
Cadmium (Cd)			103.2		%		70-130	14-AUG-13
Chromium (Cr)			N/A	MS-B	%		-	14-AUG-13
Cobalt (Co)			N/A	MS-B	%		-	14-AUG-13
Copper (Cu)			N/A	MS-B	%		-	14-AUG-13
Lead (Pb)			N/A	MS-B	%		-	14-AUG-13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-UG/G-CCMS-WT		Soil						
Batch	R2672583							
WG1726002-7	MS	WG1726002-5						
Molybdenum (Mo)			112.3		%		70-130	14-AUG-13
Nickel (Ni)			N/A	MS-B	%		-	14-AUG-13
Selenium (Se)			109.8		%		70-130	14-AUG-13
Silver (Ag)			97.0		%		70-130	14-AUG-13
Thallium (Tl)			91.0		%		70-130	14-AUG-13
Uranium (U)			102.9		%		70-130	14-AUG-13
Vanadium (V)			N/A	MS-B	%		-	14-AUG-13
Zinc (Zn)			N/A	MS-B	%		-	14-AUG-13
WG1726002-9	MS	L1347004-2						
Antimony (Sb)			109.2		%		70-130	14-AUG-13
Arsenic (As)			N/A	MS-B	%		-	14-AUG-13
Barium (Ba)			N/A	MS-B	%		-	14-AUG-13
Beryllium (Be)			107.6		%		70-130	14-AUG-13
Boron (B)			N/A	MS-B	%		-	14-AUG-13
Cadmium (Cd)			113.4		%		70-130	14-AUG-13
Chromium (Cr)			N/A	MS-B	%		-	14-AUG-13
Cobalt (Co)			N/A	MS-B	%		-	14-AUG-13
Copper (Cu)			N/A	MS-B	%		-	14-AUG-13
Lead (Pb)			N/A	MS-B	%		-	14-AUG-13
Molybdenum (Mo)			111.7		%		70-130	14-AUG-13
Nickel (Ni)			N/A	MS-B	%		-	14-AUG-13
Selenium (Se)			107.0		%		70-130	14-AUG-13
Silver (Ag)			99.4		%		70-130	14-AUG-13
Thallium (Tl)			86.4		%		70-130	14-AUG-13
Uranium (U)			96.3		%		70-130	14-AUG-13
Vanadium (V)			N/A	MS-B	%		-	14-AUG-13
Zinc (Zn)			N/A	MS-B	%		-	14-AUG-13
MOISTURE-WT		Soil						
Batch	R2671547							
WG1725694-3	DUP	L1346755-1						
% Moisture		11.3	9.73		%	15	30	14-AUG-13
WG1725694-2	LCS							
% Moisture			91.8		%		70-130	14-AUG-13
WG1725694-1	MB							



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT		Soil						
Batch	R2671547							
WG1725694-1 MB								
% Moisture			<0.10		%		0.1	14-AUG-13
Batch	R2672436							
WG1726059-3 DUP		L1347025-8						
% Moisture		9.86	9.47		%	4.0	30	14-AUG-13
WG1726059-2 LCS								
% Moisture			99.1		%		70-130	14-AUG-13
WG1726059-1 MB								
% Moisture			<0.10		%		0.1	14-AUG-13
PAH-511-WT		Soil						
Batch	R2672029							
WG1726091-1 CVS								
1-Methylnaphthalene			96.3		%		50-140	14-AUG-13
2-Methylnaphthalene			98.8		%		50-140	14-AUG-13
Acenaphthene			96.2		%		50-140	14-AUG-13
Acenaphthylene			101.5		%		50-140	14-AUG-13
Anthracene			94.3		%		50-140	14-AUG-13
Benzo(a)anthracene			95.4		%		50-140	14-AUG-13
Benzo(a)pyrene			93.3		%		50-140	14-AUG-13
Benzo(b)fluoranthene			83.4		%		50-140	14-AUG-13
Benzo(g,h,i)perylene			91.3		%		50-140	14-AUG-13
Benzo(k)fluoranthene			93.6		%		50-140	14-AUG-13
Chrysene			93.4		%		50-140	14-AUG-13
Dibenzo(ah)anthracene			95.5		%		50-140	14-AUG-13
Fluoranthene			95.7		%		50-140	14-AUG-13
Fluorene			98.9		%		50-140	14-AUG-13
Indeno(1,2,3-cd)pyrene			95.3		%		50-140	14-AUG-13
Naphthalene			89.5		%		50-140	14-AUG-13
Phenanthrene			90.3		%		50-140	14-AUG-13
Pyrene			96.7		%		50-140	14-AUG-13
WG1725936-5 DUP		WG1725936-4						
1-Methylnaphthalene		0.074	0.073		ug/g	1.0	40	14-AUG-13
2-Methylnaphthalene		0.118	0.116		ug/g	2.3	40	14-AUG-13
Acenaphthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Acenaphthylene		<0.050	<0.050		ug/g			14-AUG-13



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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT		Soil						
Batch	R2672029							
WG1725936-5	DUP	WG1725936-4						
Acenaphthylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Benzo(a)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Benzo(a)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Benzo(b)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Benzo(g,h,i)perylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Benzo(k)fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Chrysene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Dibenzo(ah)anthracene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Fluoranthene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Fluorene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Indeno(1,2,3-cd)pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Naphthalene		0.055	0.050		ug/g	8.8	40	14-AUG-13
Phenanthrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Pyrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
WG1725936-2	LCS							
1-Methylnaphthalene			99.0		%		50-140	14-AUG-13
2-Methylnaphthalene			99.5		%		50-140	14-AUG-13
Acenaphthene			97.5		%		50-140	14-AUG-13
Acenaphthylene			101.4		%		50-140	14-AUG-13
Anthracene			99.9		%		50-140	14-AUG-13
Benzo(a)anthracene			98.3		%		50-140	14-AUG-13
Benzo(a)pyrene			92.6		%		50-140	14-AUG-13
Benzo(b)fluoranthene			82.7		%		50-140	14-AUG-13
Benzo(g,h,i)perylene			91.6		%		50-140	14-AUG-13
Benzo(k)fluoranthene			96.3		%		50-140	14-AUG-13
Chrysene			101.9		%		50-140	14-AUG-13
Dibenzo(ah)anthracene			92.0		%		50-140	14-AUG-13
Fluoranthene			101.2		%		50-140	14-AUG-13
Fluorene			99.7		%		50-140	14-AUG-13
Indeno(1,2,3-cd)pyrene			87.5		%		50-140	14-AUG-13
Naphthalene			100.3		%		50-140	14-AUG-13
Phenanthrene			96.0		%		50-140	14-AUG-13

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT		Soil						
Batch	R2672029							
WG1725936-2	LCS							
Pyrene			101.8		%		50-140	14-AUG-13
WG1725936-3	LCSD	WG1725936-2						
1-Methylnaphthalene		99.0	96.3		%	2.8	50	14-AUG-13
2-Methylnaphthalene		99.5	97.7		%	1.8	50	14-AUG-13
Acenaphthene		97.5	95.4		%	2.2	50	14-AUG-13
Acenaphthylene		101.4	98.2		%	3.2	50	14-AUG-13
Anthracene		99.9	98.0		%	2.0	50	14-AUG-13
Benzo(a)anthracene		98.3	97.0		%	1.3	50	14-AUG-13
Benzo(a)pyrene		92.6	89.0		%	4.0	50	14-AUG-13
Benzo(b)fluoranthene		82.7	81.7		%	1.2	50	14-AUG-13
Benzo(g,h,i)perylene		91.6	87.8		%	4.3	50	14-AUG-13
Benzo(k)fluoranthene		96.3	93.5		%	3.0	50	14-AUG-13
Chrysene		101.9	96.5		%	5.4	50	14-AUG-13
Dibenzo(ah)anthracene		92.0	91.5		%	0.6	50	14-AUG-13
Fluoranthene		101.2	97.8		%	3.3	50	14-AUG-13
Fluorene		99.7	98.2		%	1.5	50	14-AUG-13
Indeno(1,2,3-cd)pyrene		87.5	87.8		%	0.3	50	14-AUG-13
Naphthalene		100.3	89.9		%	11	50	14-AUG-13
Phenanthrene		96.0	94.1		%	2.0	50	14-AUG-13
Pyrene		101.8	99.0		%	2.8	50	14-AUG-13
WG1725936-1	MB							
1-Methylnaphthalene			<0.030		ug/g		0.03	14-AUG-13
2-Methylnaphthalene			<0.030		ug/g		0.03	14-AUG-13
Acenaphthene			<0.050		ug/g		0.05	14-AUG-13
Acenaphthylene			<0.050		ug/g		0.05	14-AUG-13
Anthracene			<0.050		ug/g		0.05	14-AUG-13
Benzo(a)anthracene			<0.050		ug/g		0.05	14-AUG-13
Benzo(a)pyrene			<0.050		ug/g		0.05	14-AUG-13
Benzo(b)fluoranthene			<0.050		ug/g		0.05	14-AUG-13
Benzo(g,h,i)perylene			<0.050		ug/g		0.05	14-AUG-13
Benzo(k)fluoranthene			<0.050		ug/g		0.05	14-AUG-13
Chrysene			<0.050		ug/g		0.05	14-AUG-13
Dibenzo(ah)anthracene			<0.050		ug/g		0.05	14-AUG-13

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT		Soil						
Batch	R2672029							
WG1725936-1	MB							
Fluoranthene			<0.050		ug/g		0.05	14-AUG-13
Fluorene			<0.050		ug/g		0.05	14-AUG-13
Indeno(1,2,3-cd)pyrene			<0.050		ug/g		0.05	14-AUG-13
Naphthalene			<0.050		ug/g		0.05	14-AUG-13
Phenanthrene			<0.050		ug/g		0.05	14-AUG-13
Pyrene			<0.050		ug/g		0.05	14-AUG-13
Surrogate: 2-Fluorobiphenyl			106.1		%		50-140	14-AUG-13
Surrogate: p-Terphenyl d14			105.9		%		50-140	14-AUG-13
WG1725936-6	MS	WG1725936-4						
1-Methylnaphthalene			91.6		%		50-140	14-AUG-13
2-Methylnaphthalene			93.2		%		50-140	14-AUG-13
Acenaphthene			94.3		%		50-140	14-AUG-13
Acenaphthylene			96.5		%		50-140	14-AUG-13
Anthracene			93.7		%		50-140	14-AUG-13
Benzo(a)anthracene			97.8		%		50-140	14-AUG-13
Benzo(a)pyrene			89.6		%		50-140	14-AUG-13
Benzo(b)fluoranthene			80.2		%		50-140	14-AUG-13
Benzo(g,h,i)perylene			84.9		%		50-140	14-AUG-13
Benzo(k)fluoranthene			90.9		%		50-140	14-AUG-13
Chrysene			96.3		%		50-140	14-AUG-13
Dibenzo(ah)anthracene			88.6		%		50-140	14-AUG-13
Fluoranthene			98.5		%		50-140	14-AUG-13
Fluorene			97.5		%		50-140	14-AUG-13
Indeno(1,2,3-cd)pyrene			86.9		%		50-140	14-AUG-13
Naphthalene			92.8		%		50-140	14-AUG-13
Phenanthrene			92.5		%		50-140	14-AUG-13
Pyrene			101.3		%		50-140	14-AUG-13
PH-R511-WT		Soil						
Batch	R2672715							
WG1725904-1	DUP	L1346763-9						
pH		8.40	8.43	J	pH units	0.03	0.3	15-AUG-13
WG1726953-1	LCS							
pH			7.02		pH units		6.7-7.3	15-AUG-13
SAR-R511-WT		Soil						



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KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT		Soil						
Batch	R2672315							
WG1726000-2	DUP	L1346763-11						
Calcium (Ca)		7.0	8.3		mg/L	16	40	14-AUG-13
Sodium (Na)		380	396		mg/L	4.2	40	14-AUG-13
Magnesium (Mg)		<1.0	<1.0	RPD-NA	mg/L	N/A	40	14-AUG-13
WG1726000-1	MB							
Calcium (Ca)			<1.0		mg/L		1	14-AUG-13
Sodium (Na)			<1.0		mg/L		1	14-AUG-13
Magnesium (Mg)			<1.0		mg/L		1	14-AUG-13
VOC-511-HS-WT		Soil						
Batch	R2672060							
WG1723200-1	CVS							
1,1,1,2-Tetrachloroethane			94.5		%		75-125	13-AUG-13
1,1,2,2-Tetrachloroethane			90.3		%		75-125	13-AUG-13
1,1,1-Trichloroethane			105.3		%		75-125	13-AUG-13
1,1,2-Trichloroethane			97.1		%		75-125	13-AUG-13
1,1-Dichloroethane			99.5		%		75-125	13-AUG-13
1,1-Dichloroethylene			86.3		%		70-130	13-AUG-13
1,2-Dibromoethane			85.2		%		75-125	13-AUG-13
1,2-Dichlorobenzene			95.0		%		75-125	13-AUG-13
1,2-Dichloroethane			102.6		%		75-125	13-AUG-13
1,2-Dichloropropane			96.1		%		75-125	13-AUG-13
1,3-Dichlorobenzene			100.3		%		70-130	13-AUG-13
1,4-Dichlorobenzene			96.5		%		75-125	13-AUG-13
Acetone			98.7		%		70-130	13-AUG-13
Benzene			94.0		%		75-125	13-AUG-13
Bromodichloromethane			100.2		%		75-125	13-AUG-13
Bromoform			94.4		%		70-130	13-AUG-13
Bromomethane			94.1		%		70-130	13-AUG-13
Carbon tetrachloride			101.3		%		75-125	13-AUG-13
Chlorobenzene			95.6		%		75-125	13-AUG-13
Chloroform			101.6		%		75-125	13-AUG-13
cis-1,2-Dichloroethylene			95.0		%		75-125	13-AUG-13
cis-1,3-Dichloropropene			110.4		%		75-125	13-AUG-13
Dibromochloromethane			96.9		%		75-125	13-AUG-13
Dichlorodifluoromethane			82.6		%		70-130	13-AUG-13



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353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R2672060							
WG1723200-1	CVS							
Ethyl Benzene			100.5		%		75-125	13-AUG-13
n-Hexane			92.1		%		75-125	13-AUG-13
Methylene Chloride			97.7		%		75-125	13-AUG-13
MTBE			86.5		%		75-125	13-AUG-13
m+p-Xylenes			103.0		%		70-130	13-AUG-13
Methyl Ethyl Ketone			94.0		%		70-130	13-AUG-13
Methyl Isobutyl Ketone			100.8		%		70-130	13-AUG-13
o-Xylene			100.7		%		75-125	13-AUG-13
Styrene			99.1		%		75-125	13-AUG-13
Tetrachloroethylene			92.1		%		75-125	13-AUG-13
Toluene			97.8		%		75-125	13-AUG-13
trans-1,2-Dichloroethylene			96.4		%		75-125	13-AUG-13
trans-1,3-Dichloropropene			110.2		%		75-125	13-AUG-13
Trichloroethylene			95.6		%		70-130	13-AUG-13
Trichlorofluoromethane			110.0		%		70-130	13-AUG-13
Vinyl chloride			84.5		%		70-130	13-AUG-13
WG1725201-3	DUP	WG1725201-5						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	14-AUG-13
Benzene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	14-AUG-13
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13



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KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R2672060							
WG1725201-3	DUP	WG1725201-5						
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	14-AUG-13
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Ethyl Benzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	14-AUG-13
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	14-AUG-13
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	14-AUG-13
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	14-AUG-13
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Toluene		<0.20	<0.20	RPD-NA	ug/g	N/A	40	14-AUG-13
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	14-AUG-13
Trichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	14-AUG-13
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	14-AUG-13
WG1725201-2	LCS							
1,1,1,2-Tetrachloroethane			91.1		%		60-130	14-AUG-13
1,1,1,2,2-Tetrachloroethane			78.9		%		60-130	14-AUG-13
1,1,1-Trichloroethane			121.0		%		60-130	14-AUG-13
1,1,2-Trichloroethane			84.5		%		60-130	14-AUG-13
1,1-Dichloroethane			105.5		%		60-130	14-AUG-13
1,1-Dichloroethylene			97.5		%		60-130	14-AUG-13
1,2-Dibromoethane			71.7		%		70-130	14-AUG-13
1,2-Dichlorobenzene			92.5		%		70-130	14-AUG-13



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KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R2672060							
WG1725201-2	LCS							
1,2-Dichloroethane			98.2		%		60-130	14-AUG-13
1,2-Dichloropropane			90.4		%		70-130	14-AUG-13
1,3-Dichlorobenzene			100.5		%		70-130	14-AUG-13
1,4-Dichlorobenzene			95.4		%		70-130	14-AUG-13
Acetone			91.1		%		60-140	14-AUG-13
Benzene			95.1		%		70-130	14-AUG-13
Bromodichloromethane			100.7		%		50-140	14-AUG-13
Bromoform			87.3		%		70-130	14-AUG-13
Bromomethane			102.1		%		50-140	14-AUG-13
Carbon tetrachloride			124.1		%		70-130	14-AUG-13
Chlorobenzene			92.9		%		70-130	14-AUG-13
Chloroform			109.6		%		70-130	14-AUG-13
cis-1,2-Dichloroethylene			98.6		%		70-130	14-AUG-13
cis-1,3-Dichloropropene			100.3		%		70-130	14-AUG-13
Dibromochloromethane			91.4		%		60-130	14-AUG-13
Dichlorodifluoromethane			102.0		%		50-140	14-AUG-13
Ethyl Benzene			89.1		%		70-130	14-AUG-13
n-Hexane			100.2		%		70-130	14-AUG-13
Methylene Chloride			99.5		%		70-130	14-AUG-13
MTBE			83.9		%		70-130	14-AUG-13
m+p-Xylenes			101.7		%		70-130	14-AUG-13
Methyl Ethyl Ketone			74.3		%		60-140	14-AUG-13
Methyl Isobutyl Ketone			77.4		%		60-140	14-AUG-13
o-Xylene			89.1		%		70-130	14-AUG-13
Styrene			84.2		%		70-130	14-AUG-13
Tetrachloroethylene			100.3		%		60-130	14-AUG-13
Toluene			83.1		%		70-130	14-AUG-13
trans-1,2-Dichloroethylene			106.3		%		60-130	14-AUG-13
trans-1,3-Dichloropropene			93.7		%		70-130	14-AUG-13
Trichloroethylene			103.9		%		60-130	14-AUG-13
Trichlorofluoromethane			130.3		%		50-140	14-AUG-13
Vinyl chloride			89.1		%		70-130	14-AUG-13
WG1725201-1	MB							
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	14-AUG-13



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353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R2672060							
WG1725201-1	MB							
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	14-AUG-13
1,1,1-Trichloroethane			<0.050		ug/g		0.05	14-AUG-13
1,1,2-Trichloroethane			<0.050		ug/g		0.05	14-AUG-13
1,1-Dichloroethane			<0.050		ug/g		0.05	14-AUG-13
1,1-Dichloroethylene			<0.050		ug/g		0.05	14-AUG-13
1,2-Dibromoethane			<0.050		ug/g		0.05	14-AUG-13
1,2-Dichlorobenzene			<0.050		ug/g		0.05	14-AUG-13
1,2-Dichloroethane			<0.050		ug/g		0.05	14-AUG-13
1,2-Dichloropropane			<0.050		ug/g		0.05	14-AUG-13
1,3-Dichlorobenzene			<0.050		ug/g		0.05	14-AUG-13
1,4-Dichlorobenzene			<0.050		ug/g		0.05	14-AUG-13
Acetone			<0.50		ug/g		0.5	14-AUG-13
Benzene			<0.020		ug/g		0.02	14-AUG-13
Bromodichloromethane			<0.050		ug/g		0.05	14-AUG-13
Bromoform			<0.050		ug/g		0.05	14-AUG-13
Bromomethane			<0.050		ug/g		0.05	14-AUG-13
Carbon tetrachloride			<0.050		ug/g		0.05	14-AUG-13
Chlorobenzene			<0.050		ug/g		0.05	14-AUG-13
Chloroform			<0.050		ug/g		0.05	14-AUG-13
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	14-AUG-13
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	14-AUG-13
Dibromochloromethane			<0.050		ug/g		0.05	14-AUG-13
Dichlorodifluoromethane			<0.050		ug/g		0.05	14-AUG-13
Ethyl Benzene			<0.050		ug/g		0.05	14-AUG-13
n-Hexane			<0.050		ug/g		0.05	14-AUG-13
Methylene Chloride			<0.050		ug/g		0.05	14-AUG-13
MTBE			<0.050		ug/g		0.05	14-AUG-13
m+p-Xylenes			<0.030		ug/g		0.03	14-AUG-13
Methyl Ethyl Ketone			<0.50		ug/g		0.5	14-AUG-13
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	14-AUG-13
o-Xylene			<0.020		ug/g		0.02	14-AUG-13
Styrene			<0.050		ug/g		0.05	14-AUG-13
Tetrachloroethylene			<0.050		ug/g		0.05	14-AUG-13



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353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Soil						
Batch	R2672060							
WG1725201-1 MB								
Toluene			<0.20		ug/g		0.2	14-AUG-13
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	14-AUG-13
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	14-AUG-13
Trichloroethylene			<0.050		ug/g		0.05	14-AUG-13
Trichlorofluoromethane			<0.050		ug/g		0.05	14-AUG-13
Vinyl chloride			<0.020		ug/g		0.02	14-AUG-13
Surrogate: 1,4-Difluorobenzene			113.9		%		70-130	14-AUG-13
Surrogate: 4-Bromofluorobenzene			129.7		%		70-130	14-AUG-13
WG1725201-4 MS		WG1725201-5						
1,1,1,2-Tetrachloroethane			107.9		%		50-140	14-AUG-13
1,1,2,2-Tetrachloroethane			98.2		%		50-140	14-AUG-13
1,1,1-Trichloroethane			138.5		%		50-140	14-AUG-13
1,1,2-Trichloroethane			101.9		%		50-140	14-AUG-13
1,1-Dichloroethane			122.4		%		50-140	14-AUG-13
1,1-Dichloroethylene			108.3		%		50-140	14-AUG-13
1,2-Dibromoethane			88.0		%		50-140	14-AUG-13
1,2-Dichlorobenzene			107.5		%		50-140	14-AUG-13
1,2-Dichloroethane			118.1		%		50-140	14-AUG-13
1,2-Dichloropropane			109.0		%		50-140	14-AUG-13
1,3-Dichlorobenzene			113.5		%		50-140	14-AUG-13
1,4-Dichlorobenzene			110.8		%		50-140	14-AUG-13
Acetone			110.7		%		50-140	14-AUG-13
Benzene			112.2		%		50-140	14-AUG-13
Bromodichloromethane			121.1		%		50-140	14-AUG-13
Bromoform			106.7		%		50-140	14-AUG-13
Bromomethane			113.9		%		50-140	14-AUG-13
Carbon tetrachloride			139.0		%		50-140	14-AUG-13
Chlorobenzene			109.0		%		50-140	14-AUG-13
Chloroform			128.0		%		50-140	14-AUG-13
cis-1,2-Dichloroethylene			115.2		%		50-140	14-AUG-13
cis-1,3-Dichloropropene			119.3		%		50-140	14-AUG-13
Dibromochloromethane			109.3		%		50-140	14-AUG-13
Dichlorodifluoromethane			99.3		%		50-140	14-AUG-13
Ethyl Benzene			107.3		%		50-140	14-AUG-13



Quality Control Report

Workorder: L1346763 Report Date: 15-AUG-13 Page 18 of 19

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Soil							
Batch	R2672060							
WG1725201-4 MS		WG1725201-5						
n-Hexane			110.1		%		50-140	14-AUG-13
Methylene Chloride			117.7		%		50-140	14-AUG-13
MTBE			99.1		%		50-140	14-AUG-13
m+p-Xylenes			118.8		%		50-140	14-AUG-13
Methyl Ethyl Ketone			93.5		%		50-140	14-AUG-13
Methyl Isobutyl Ketone			99.3		%		50-140	14-AUG-13
o-Xylene			108.0		%		50-140	14-AUG-13
Styrene			103.8		%		50-140	14-AUG-13
Tetrachloroethylene			111.6		%		50-140	14-AUG-13
Toluene			99.9		%		50-140	14-AUG-13
trans-1,2-Dichloroethylene			120.5		%		50-140	14-AUG-13
trans-1,3-Dichloropropene			109.1		%		50-140	14-AUG-13
Trichloroethylene			119.5		%		50-140	14-AUG-13
Trichlorofluoromethane			138.6		%		50-140	14-AUG-13
Vinyl chloride			98.6		%		50-140	14-AUG-13

Quality Control Report

Workorder: L1346763

Report Date: 15-AUG-13

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Page 19 of 19

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

151047

C of C # 00000

60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8

Phone: (519) 886-6910

Fax: (519) 886-9047

Toll Free: 1-800-668-9878



CHAIN OF CUSTODY / ANALYTICAL SERVICES REQUEST FORM

Page 1 of 1

Note: all TAT Quoted material is in business days which exclude statutory holidays and weekends. TAT samples received past 3:00 pm or Saturday/Sunday begin the next day.

Specify date required

Service requested

5 day (regular)

X

2 day TAT (50%)

Next day TAT (100%)

3-4 day (25%)

Same day TAT (200%)

COMPANY NAME LVM		CRITERIA Criteria on report YES ☒ NO ☐		ANALYSIS REQUEST										PLEASE INDICATE FILTERED, PRESERVED OR BOTH <---- (F, P, F/P)		
OFFICE Kitchener		Reg 153/04 ☐ Reg 511/09 ☒														
PROJECT MANAGER Karen Thrams		Table ① 2 3 4 5 6 7 8 9														
PROJECT # 160-P-0003883-0-01-100-01		TCLP _____ MISA _____ PWQO _____												SUBMISSION #: L1346763		
PHONE 519.741.1313 FAX 519.741.5422		ODWS _____ OTHER _____												ENTERED BY: as		
ACCOUNT #		REPORT FORMAT/DISTRIBUTION												DATE/TIME ENTERED: 13/8/13 15:21		
QUOTATION #		EMAIL ☒ FAX _____ BOTH _____												BIN #: B435		
PO # 209255		SELECT: PDF ☒ DIGITAL _____ BOTH _____												COMMENTS		
SAMPLING INFORMATION		EMAIL 1 _____												LAB ID		
Sample Date/Time		EMAIL 2 _____														
TYPE																
MATRIX																
Date (dd-mm-yy)	Time (24hr) (hh:mm)	COMP	GRAB	WATER	SOIL	OTHER	SAMPLE DESCRIPTION TO APPEAR ON REPORT	NUMBER OF CONTAINERS	PHC	FI-F4	BTEX	VOC	PAH	Retards / Inorganics		
2013-08-12	13:00		X		X		BH-01-13, AS-1	4	X	X						
	13:00		V		V		BH-01-13, SS-2	2	X							
	13:00		V		V		BH-01-13, SS-3	1		X						
	14:00		X		V		BH-02-13, SS-1	3	X							
	14:00		V		V		BH-02-13, SS-1 + SS-2	1		X						
	11:00		V		V		BH-03-13, SS-1	4	X	X						
	11:00		V		V		BH-03-13, SS-2	3	X							
	11:00		V		V		BH-03-13, SS-2+3	1		X						
	9:00		V		V		BH-04-13, AS-1	4	X	X						
	9:00		V		V		BH-04-13, SS-2	4	X	X						
	16:00		V		V		BH-05-13, SS-1	4	X	X						
	16:00		V		V		BH-05-13, SS-2	4	X	X						
	16:00		V		V		BH-05-13, SS-3	4	X	X						



L1346763-COFC

SPECIAL INSTRUCTIONS/COMMENTS

THE QUESTIONS BELOW MUST BE ANSWERED FOR WATER SAMPLES (CHECK Yes OR No)

SAMPLE CONDITION

Are any samples taken from a regulated DW System?

Yes ☐ No ☐

If yes, an authorized drinking water COC MUST be used for this submission.

Is the water sampled intended to be potable for human consumption?

Yes ☐ No ☐

FROZEN

☐

COLD

☒

COOLING INITIATED

☐

AMBIENT

☐

MEAN TEMP

OBSERVATIONS

INIT

Yes ☐ No ☐

If yes add SIF

☒

Notes

1. Quote number must be provided to ensure proper pricing

2. TAT may vary dependent on complexity of analysis and lab workload at time of submission. 3. Any known or suspected hazards relating to a sample must be noted on the chain of custody in comments section.



LVM INC.
ATTN: KAREN THRAMS
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5

Date Received: 16-AUG-13
Report Date: 23-AUG-13 09:44 (MT)
Version: FINAL

Client Phone: 519-741-1313

Certificate of Analysis

Lab Work Order #: L1349197
Project P.O. #: 209281
Job Reference: 160-P-0003883-0-01-100-01
C of C Numbers: 143651
Legal Site Desc:

Nancy Smith
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
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ANALYTICAL GUIDELINE REPORT

L1349197 CONTD....

Page 2 of 8

23-AUG-13 09:44 (MT)

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1349197-1	BH-03-13									
Sampled By: J. STROEDER on 16-AUG-13 @ 1										
Matrix: WATER										
Physical Tests										
	Conductivity	2.43		0.0030	mS/cm	17-AUG-13				
	pH	7.78		0.10	pH units	17-AUG-13				
Metals										
	Sodium Adsorption Ratio	7.8		0.030	SAR	16-AUG-13				
Dissolved Metals										
	Dissolved Metals Filtration Location	LAB			No Unit	17-AUG-13				
	Antimony (Sb)-Dissolved	<0.50		0.50	ug/L	17-AUG-13	1.5			
	Arsenic (As)-Dissolved	<1.0		1.0	ug/L	17-AUG-13	13			
	Barium (Ba)-Dissolved	76.8		2.0	ug/L	17-AUG-13	610			
	Beryllium (Be)-Dissolved	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Boron (B)-Dissolved	59		10	ug/L	19-AUG-13	1700			
	Cadmium (Cd)-Dissolved	<0.10		0.10	ug/L	17-AUG-13	0.5			
	Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	17-AUG-13	11			
	Cobalt (Co)-Dissolved	<0.50		0.50	ug/L	17-AUG-13	3.8			
	Copper (Cu)-Dissolved	1.2		1.0	ug/L	17-AUG-13	5			
	Lead (Pb)-Dissolved	<1.0		1.0	ug/L	17-AUG-13	1.9			
	Molybdenum (Mo)-Dissolved	4.88		0.50	ug/L	17-AUG-13	23			
	Nickel (Ni)-Dissolved	1.4		1.0	ug/L	17-AUG-13	14			
	Selenium (Se)-Dissolved	<5.0		5.0	ug/L	17-AUG-13	5			
	Silver (Ag)-Dissolved	<0.10		0.10	ug/L	17-AUG-13	0.3			
	Sodium (Na)-Dissolved	369000	DLM	5000	ug/L	17-AUG-13	490000			
	Thallium (Tl)-Dissolved	<0.30		0.30	ug/L	17-AUG-13	0.5			
	Uranium (U)-Dissolved	<2.0		2.0	ug/L	17-AUG-13	8.9			
	Vanadium (V)-Dissolved	<0.50		0.50	ug/L	17-AUG-13	3.9			
	Zinc (Zn)-Dissolved	7.1		3.0	ug/L	17-AUG-13	160			
Volatile Organic Compounds										
	Acetone	<30		30	ug/L	19-AUG-13	2700			
	Benzene	2.43		0.50	ug/L	19-AUG-13	*0.5			
	Bromodichloromethane	<2.0		2.0	ug/L	19-AUG-13	2			
	Bromoform	<5.0		5.0	ug/L	19-AUG-13	5			
	Bromomethane	<0.50		0.50	ug/L	19-AUG-13	0.89			
	Carbon tetrachloride	<0.20		0.20	ug/L	19-AUG-13	0.2			
	Chlorobenzene	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Dibromochloromethane	<2.0		2.0	ug/L	19-AUG-13	2			
	Chloroform	<1.0		1.0	ug/L	19-AUG-13	2			
	1,2-Dibromoethane	<0.20		0.20	ug/L	19-AUG-13	0.2			
	1,2-Dichlorobenzene	<0.50		0.50	ug/L	19-AUG-13	0.5			
	1,3-Dichlorobenzene	<0.50		0.50	ug/L	19-AUG-13	0.5			
	1,4-Dichlorobenzene	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Dichlorodifluoromethane	<2.0		2.0	ug/L	19-AUG-13	590			
	1,1-Dichloroethane	<0.50		0.50	ug/L	19-AUG-13	0.5			
	1,2-Dichloroethane	<0.50		0.50	ug/L	19-AUG-13	0.5			
	1,1-Dichloroethylene	<0.50		0.50	ug/L	19-AUG-13	0.5			
	cis-1,2-Dichloroethylene	<0.50		0.50	ug/L	19-AUG-13	1.6			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Ground Water-All Types of Property Uses

#1: T1-Ground Water-All Types of Property Uses



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1349197-1	BH-03-13									
Sampled By: J. STROEDER on 16-AUG-13 @ 1							#1			
Matrix: WATER										
Volatile Organic Compounds										
	trans-1,2-Dichloroethylene	<0.50		0.50	ug/L	19-AUG-13	1.6			
	1,3-Dichloropropene (cis & trans)	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Methylene Chloride	<5.0		5.0	ug/L	19-AUG-13	5			
	1,2-Dichloropropane	<0.50		0.50	ug/L	19-AUG-13	0.5			
	cis-1,3-Dichloropropene	<0.30		0.30	ug/L	19-AUG-13				
	trans-1,3-Dichloropropene	<0.30		0.30	ug/L	19-AUG-13				
	Ethyl Benzene	0.88		0.50	ug/L	19-AUG-13	*0.5			
	n-Hexane	<0.50		0.50	ug/L	19-AUG-13	5			
	Methyl Ethyl Ketone	<20		20	ug/L	19-AUG-13	400			
	Methyl Isobutyl Ketone	<20		20	ug/L	19-AUG-13	640			
	MTBE	<2.0		2.0	ug/L	19-AUG-13	15			
	Styrene	<0.50		0.50	ug/L	19-AUG-13	0.5			
	1,1,1,2-Tetrachloroethane	<0.50		0.50	ug/L	19-AUG-13	1.1			
	1,1,2,2-Tetrachloroethane	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Tetrachloroethylene	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Toluene	<0.70	DLM	0.70	ug/L	19-AUG-13	0.8			
	1,1,1-Trichloroethane	<0.50		0.50	ug/L	19-AUG-13	0.5			
	1,1,2-Trichloroethane	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Trichloroethylene	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Trichlorofluoromethane	<5.0		5.0	ug/L	19-AUG-13	150			
	Vinyl chloride	<0.50		0.50	ug/L	19-AUG-13	0.5			
	o-Xylene	0.33		0.30	ug/L	19-AUG-13				
	m+p-Xylenes	<0.40		0.40	ug/L	19-AUG-13				
	Xylenes (Total)	<0.50		0.50	ug/L	19-AUG-13	72			
	Surrogate: 4-Bromofluorobenzene	110.1		70-130	%	19-AUG-13				
	Surrogate: 1,4-Difluorobenzene	99.9		70-130	%	19-AUG-13				
Hydrocarbons										
	F1 (C6-C10)	91		25	ug/L	19-AUG-13	420			
	F1-BTEX	88		25	ug/L	23-AUG-13	420			
	F2 (C10-C16)	<100		100	ug/L	20-AUG-13	150			
	F2-Naphth	<100		100	ug/L	23-AUG-13				
	F3 (C16-C34)	<250		250	ug/L	20-AUG-13	500			
	F3-PAH	<250		250	ug/L	23-AUG-13				
	F4 (C34-C50)	<250		250	ug/L	20-AUG-13	500			
	Total Hydrocarbons (C6-C50)	<250		250	ug/L	23-AUG-13				
	Chrom. to baseline at nC50	YES			No Unit	20-AUG-13				
	Surrogate: 2-Bromobenzotrifluoride	65.0		60-140	%	20-AUG-13				
	Surrogate: 3,4-Dichlorotoluene	87.5		60-140	%	19-AUG-13				
Polycyclic Aromatic Hydrocarbons										
	Acenaphthene	0.125		0.020	ug/L	23-AUG-13	4.1			
	Acenaphthylene	1.56		0.020	ug/L	23-AUG-13	*1			
	Anthracene	<0.020		0.020	ug/L	23-AUG-13	0.1			
	Benzo(a)anthracene	<0.020		0.020	ug/L	23-AUG-13	0.2			
	Benzo(a)pyrene	<0.010		0.010	ug/L	23-AUG-13	0.01			
	Benzo(b)fluoranthene	<0.020		0.020	ug/L	23-AUG-13	0.1			

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Ground Water-All Types of Property Uses

#1: T1-Ground Water-All Types of Property Uses



ANALYTICAL GUIDELINE REPORT

160-P-0003883-0-01-100-01

Sample Details		Result	Qualifier	D.L.	Units	Analyzed	Guideline Limits			
Grouping	Analyte									
L1349197-1	BH-03-13									
Sampled By: J. STROEDER on 16-AUG-13 @ 1							#1			
Matrix: WATER										
Polycyclic Aromatic Hydrocarbons										
	Benzo(g,h,i)perylene	<0.020		0.020	ug/L	23-AUG-13	0.2			
	Benzo(k)fluoranthene	<0.020		0.020	ug/L	23-AUG-13	0.1			
	Chrysene	<0.020		0.020	ug/L	23-AUG-13	0.1			
	Dibenzo(ah)anthracene	<0.020		0.020	ug/L	23-AUG-13	0.2			
	Fluoranthene	<0.020		0.020	ug/L	23-AUG-13	0.4			
	Fluorene	0.210		0.020	ug/L	23-AUG-13	120			
	Indeno(1,2,3-cd)pyrene	<0.020		0.020	ug/L	23-AUG-13	0.2			
	1+2-Methylnaphthalenes	<0.028		0.028	ug/L	23-AUG-13	2			
	1-Methylnaphthalene	0.023		0.020	ug/L	23-AUG-13	2			
	2-Methylnaphthalene	<0.020		0.020	ug/L	23-AUG-13	2			
	Naphthalene	8.84		0.020	ug/L	23-AUG-13	*7			
	Phenanthrene	0.028		0.020	ug/L	23-AUG-13	0.1			
	Pyrene	<0.020		0.020	ug/L	23-AUG-13	0.2			
	Surrogate: 2-Fluorobiphenyl	103.7		50-140	%	23-AUG-13				
	Surrogate: d14-Terphenyl	100.5		50-140	%	23-AUG-13				
Report Remarks : DLM-Detection limits were raised due to interference from F1.										
L1349197-2	BH-04-13									
Sampled By: J. STROEDER on 16-AUG-13 @ 1							#1			
Matrix: WATER										
Physical Tests										
	Conductivity	2.28		0.0030	mS/cm	17-AUG-13				
	pH	7.81		0.10	pH units	17-AUG-13				
Metals										
	Sodium Adsorption Ratio	5.77		0.030	SAR	16-AUG-13				
Dissolved Metals										
	Dissolved Metals Filtration Location	LAB			No Unit	17-AUG-13				
	Antimony (Sb)-Dissolved	<0.50		0.50	ug/L	17-AUG-13	1.5			
	Arsenic (As)-Dissolved	1.2		1.0	ug/L	17-AUG-13	13			
	Barium (Ba)-Dissolved	82.9		2.0	ug/L	17-AUG-13	610			
	Beryllium (Be)-Dissolved	<0.50		0.50	ug/L	19-AUG-13	0.5			
	Boron (B)-Dissolved	48		10	ug/L	19-AUG-13	1700			
	Cadmium (Cd)-Dissolved	<0.10		0.10	ug/L	17-AUG-13	0.5			
	Chromium (Cr)-Dissolved	<0.50		0.50	ug/L	17-AUG-13	11			
	Cobalt (Co)-Dissolved	<0.50		0.50	ug/L	17-AUG-13	3.8			
	Copper (Cu)-Dissolved	2.3		1.0	ug/L	17-AUG-13	5			
	Lead (Pb)-Dissolved	<1.0		1.0	ug/L	17-AUG-13	1.9			
	Molybdenum (Mo)-Dissolved	2.38		0.50	ug/L	17-AUG-13	23			
	Nickel (Ni)-Dissolved	<1.0		1.0	ug/L	17-AUG-13	14			
	Selenium (Se)-Dissolved	<5.0		5.0	ug/L	17-AUG-13	5			
	Silver (Ag)-Dissolved	<0.10		0.10	ug/L	17-AUG-13	0.3			
	Sodium (Na)-Dissolved	305000	DLM	5000	ug/L	17-AUG-13	490000			
	Thallium (Tl)-Dissolved	<0.30		0.30	ug/L	17-AUG-13	0.5			
	Uranium (U)-Dissolved	<2.0		2.0	ug/L	17-AUG-13	8.9			
	Vanadium (V)-Dissolved	0.67		0.50	ug/L	17-AUG-13				

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

* Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Ground Water-All Types of Property Uses

#1: T1-Ground Water-All Types of Property Uses



L1349197 CONTD....

Page 5 of 8

23-AUG-13 09:44 (MT)

160-P-0003883-0-01-100-01

* Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Ground Water-All Types of Property Uses

#1: T1-Ground Water-All Types of Property Uses



L1349197 CONTD....

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23-AUG-13 09:44 (MT)

160-P-0003883-0-01-100-01

** Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

T1-Ground Water-All Types of Property Uses

#1: T1-Ground Water-All Types of Property Uses

Reference Information

Sample Parameter Qualifier key listed:

Qualifier	Description
DLM	Detection Limit Adjusted For Sample Matrix Effects

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
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EC-R511-WT Water Conductivity-O.Reg 153/04 (July 2011)
 Water samples can be measured directly by immersing the conductivity cell into the sample.

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).

ETL-SAR-CALC-WT Water Sodium Adsorption Ratio Calculation

F1-F4-511-CALC-WT Water F1-F4 Hydrocarbon Calculated Parameters CCME CWS-PHC DEC-2000 - PUB# 1310-L

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

F1-HS-511-WT Water F1-O.Reg 153/04 (July 2011) E3398/CCME TIER 1-HS

Fraction F1 is determined by analyzing by headspace-GC/FID.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

F2-F4-511-WT Water F2-F4-O.Reg 153/04 (July 2011) MOE DECPH-E3398/CCME TIER 1

Fractions F2, F3 and F4 are determined by liquid/liquid extraction with a solvent. The solvent recovered from the extracted sample is dried and treated to remove polar material. The extract is then analyzed by GC/FID.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

MET-D-UG/L-MS-WT Water Diss. Metals in Water by ICPMS (ug/L) EPA 200.8

The metal constituents of a non-acidified sample that pass through a membrane filter prior to ICP/MS analysis.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

METHYLNAPS-CALC-WT Water PAH-Calculated Parameters SW846 8270

PAH-511-WT Water PAH-O. Reg 153/04 (July 2011) SW846 3510/8270

Aqueous samples, fortified with surrogates, are extracted using liquid/liquid extraction technique. For Benzo (a) pyrene analysis samples are filtered. The sample extracts are concentrated and then analyzed using GC/MS. Depending on the analytical GC/MS column used benzo(j)fluoranthene may chromatographically co-elute with benzo(b)fluoranthene or benzo(k)fluoranthene.

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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).

PH-R511-WT Water pH-O. Reg 153/04 (July 2011) MOEE E3137A-R511

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).

VOC-1,3-DCP-CALC-WT Water Regulation 153 VOCs SW8260B/SW8270C

Reference Information

VOC-511-HS-WT	Water	VOC by GCMS HS O.Reg 153/04 (July 2011)	SW846 8260
Liquid samples are analyzed by headspace GC/MSD.			
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), unless a subset of the Analytical Test Group (ATG) has been requested (the Protocol states that all analytes in an ATG must be reported).			
XYLENES-SUM-CALC-WT	Water	Sum of Xylene Isomer Concentrations	CALCULATION
Total xylenes represents the sum of o-xylene and m&p-xylene.			

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:			
143651			
The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:			
Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg ww - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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.



Quality Control Report

Workorder: L1349197

Report Date: 23-AUG-13

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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-R511-WT		Water						
Batch	R2675383							
WG1728603-5	DUP	WG1728603-4						
Conductivity		2.43	2.43		mS/cm	0.0	10	17-AUG-13
WG1728603-3	LCS							
Conductivity			102.3		%		90-110	17-AUG-13
WG1728603-1	MB							
Conductivity			<0.0030		mS/cm		0.003	17-AUG-13
F1-HS-511-WT		Water						
Batch	R2674719							
WG1726069-1	CVS							
F1 (C6-C10)			93.8		%		80-120	19-AUG-13
WG1726069-4	DUP	WG1726069-3						
F1 (C6-C10)		<25	<25	RPD-NA	ug/L	N/A	30	19-AUG-13
WG1726069-2	MB							
F1 (C6-C10)			<25		ug/L		25	19-AUG-13
Surrogate: 3,4-Dichlorotoluene			94.4		%		60-140	19-AUG-13
WG1726069-5	MS	WG1726069-3						
F1 (C6-C10)			104.4		%		60-140	19-AUG-13
F2-F4-511-WT		Water						
Batch	R2675475							
WG1729861-1	CVS							
F2 (C10-C16)			95.0		%		65-135	20-AUG-13
F3 (C16-C34)			94.7		%		65-135	20-AUG-13
F4 (C34-C50)			106.0		%		65-135	20-AUG-13
WG1728995-2	LCS							
F2 (C10-C16)			91.5		%		65-135	20-AUG-13
F3 (C16-C34)			108.1		%		65-135	20-AUG-13
F4 (C34-C50)			112.5		%		65-135	20-AUG-13
WG1728995-3	LCSD	WG1728995-2						
F2 (C10-C16)		91.5	85.6		%	6.6	50	20-AUG-13
F3 (C16-C34)		108.1	102.3		%	5.5	50	20-AUG-13
F4 (C34-C50)		112.5	107.7		%	4.4	50	20-AUG-13
WG1728995-1	MB							
F2 (C10-C16)			<100		ug/L		100	20-AUG-13
F3 (C16-C34)			<250		ug/L		250	20-AUG-13
F4 (C34-C50)			<250		ug/L		250	20-AUG-13
Surrogate: 2-Bromobenzotrifluoride			74.7		%		60-140	20-AUG-13



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Client:

LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5

Contact:

KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch	R2674545							
WG1728760-1		CVS						
Antimony (Sb)-Dissolved			99.98		%		80-120	17-AUG-13
Arsenic (As)-Dissolved			102.5		%		80-120	17-AUG-13
Barium (Ba)-Dissolved			102.3		%		80-120	17-AUG-13
Beryllium (Be)-Dissolved			99.8		%		80-120	17-AUG-13
Boron (B)-Dissolved			100.9		%		80-120	17-AUG-13
Cadmium (Cd)-Dissolved			102.2		%		80-120	17-AUG-13
Chromium (Cr)-Dissolved			98.4		%		80-120	17-AUG-13
Cobalt (Co)-Dissolved			99.0		%		80-120	17-AUG-13
Copper (Cu)-Dissolved			99.1		%		80-120	17-AUG-13
Lead (Pb)-Dissolved			99.9		%		80-120	17-AUG-13
Molybdenum (Mo)-Dissolved			98.3		%		80-120	17-AUG-13
Nickel (Ni)-Dissolved			98.7		%		80-120	17-AUG-13
Selenium (Se)-Dissolved			99.0		%		80-120	17-AUG-13
Silver (Ag)-Dissolved			103.6		%		80-120	17-AUG-13
Sodium (Na)-Dissolved			100.1		%		80-120	17-AUG-13
Thallium (Tl)-Dissolved			99.3		%		80-120	17-AUG-13
Uranium (U)-Dissolved			98.7		%		80-120	17-AUG-13
Vanadium (V)-Dissolved			99.3		%		80-120	17-AUG-13
Zinc (Zn)-Dissolved			100.4		%		80-120	17-AUG-13
WG1728760-3		CVS						
Antimony (Sb)-Dissolved			97.9		%		80-120	19-AUG-13
Arsenic (As)-Dissolved			101.9		%		80-120	19-AUG-13
Barium (Ba)-Dissolved			101.8		%		80-120	19-AUG-13
Beryllium (Be)-Dissolved			103.2		%		80-120	19-AUG-13
Boron (B)-Dissolved			103.7		%		80-120	19-AUG-13
Cadmium (Cd)-Dissolved			102.4		%		80-120	19-AUG-13
Chromium (Cr)-Dissolved			99.7		%		80-120	19-AUG-13
Cobalt (Co)-Dissolved			100.4		%		80-120	19-AUG-13
Copper (Cu)-Dissolved			98.7		%		80-120	19-AUG-13
Lead (Pb)-Dissolved			100.3		%		80-120	19-AUG-13
Molybdenum (Mo)-Dissolved			96.8		%		80-120	19-AUG-13
Nickel (Ni)-Dissolved			100.4		%		80-120	19-AUG-13
Selenium (Se)-Dissolved			97.2		%		80-120	19-AUG-13
Silver (Ag)-Dissolved			103.5		%		80-120	19-AUG-13



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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch R2674545								
WG1728760-3 CVS								
Sodium (Na)-Dissolved			103.8		%		80-120	19-AUG-13
Thallium (Tl)-Dissolved			100.9		%		80-120	19-AUG-13
Uranium (U)-Dissolved			99.0		%		80-120	19-AUG-13
Vanadium (V)-Dissolved			99.4		%		80-120	19-AUG-13
Zinc (Zn)-Dissolved			100.2		%		80-120	19-AUG-13
WG1728760-5 CVS								
Antimony (Sb)-Dissolved			97.3		%		80-120	21-AUG-13
Arsenic (As)-Dissolved			105.4		%		80-120	21-AUG-13
Barium (Ba)-Dissolved			102.8		%		80-120	21-AUG-13
Beryllium (Be)-Dissolved			104.0		%		80-120	21-AUG-13
Boron (B)-Dissolved			100.5		%		80-120	21-AUG-13
Cadmium (Cd)-Dissolved			101.2		%		80-120	21-AUG-13
Chromium (Cr)-Dissolved			98.7		%		80-120	21-AUG-13
Cobalt (Co)-Dissolved			103.5		%		80-120	21-AUG-13
Copper (Cu)-Dissolved			105.0		%		80-120	21-AUG-13
Lead (Pb)-Dissolved			100.5		%		80-120	21-AUG-13
Molybdenum (Mo)-Dissolved			99.6		%		80-120	21-AUG-13
Nickel (Ni)-Dissolved			103.4		%		80-120	21-AUG-13
Selenium (Se)-Dissolved			98.6		%		80-120	21-AUG-13
Silver (Ag)-Dissolved			101.5		%		80-120	21-AUG-13
Sodium (Na)-Dissolved			92.8		%		80-120	21-AUG-13
Thallium (Tl)-Dissolved			99.8		%		80-120	21-AUG-13
Uranium (U)-Dissolved			103.0		%		80-120	21-AUG-13
Vanadium (V)-Dissolved			99.1		%		80-120	21-AUG-13
Zinc (Zn)-Dissolved			102.8		%		80-120	21-AUG-13
WG1728760-7 CVS								
Antimony (Sb)-Dissolved			98.4		%		80-120	22-AUG-13
Arsenic (As)-Dissolved			104.0		%		80-120	22-AUG-13
Barium (Ba)-Dissolved			103.6		%		80-120	22-AUG-13
Beryllium (Be)-Dissolved			114.1		%		80-120	22-AUG-13
Boron (B)-Dissolved			108.7		%		80-120	22-AUG-13
Cadmium (Cd)-Dissolved			100.7		%		80-120	22-AUG-13
Chromium (Cr)-Dissolved			99.5		%		80-120	22-AUG-13
Cobalt (Co)-Dissolved			100.1		%		80-120	22-AUG-13



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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch	R2674545							
WG1728760-7 CVS								
Copper (Cu)-Dissolved			100.3		%		80-120	22-AUG-13
Lead (Pb)-Dissolved			99.1		%		80-120	22-AUG-13
Molybdenum (Mo)-Dissolved			99.1		%		80-120	22-AUG-13
Nickel (Ni)-Dissolved			100.3		%		80-120	22-AUG-13
Selenium (Se)-Dissolved			96.1		%		80-120	22-AUG-13
Silver (Ag)-Dissolved			98.9		%		80-120	22-AUG-13
Sodium (Na)-Dissolved			105.6		%		80-120	22-AUG-13
Thallium (Tl)-Dissolved			98.2		%		80-120	22-AUG-13
Uranium (U)-Dissolved			97.3		%		80-120	22-AUG-13
Vanadium (V)-Dissolved			101.6		%		80-120	22-AUG-13
Zinc (Zn)-Dissolved			100.0		%		80-120	22-AUG-13
WG1728756-4 DUP		WG1728756-3						
Antimony (Sb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	17-AUG-13
Arsenic (As)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	17-AUG-13
Barium (Ba)-Dissolved		<2.0	<2.0	RPD-NA	ug/L	N/A	20	17-AUG-13
Beryllium (Be)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	17-AUG-13
Boron (B)-Dissolved		<10	<10	RPD-NA	ug/L	N/A	20	17-AUG-13
Cadmium (Cd)-Dissolved		0.100	0.096		ug/L	4.1	20	17-AUG-13
Chromium (Cr)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	17-AUG-13
Cobalt (Co)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	17-AUG-13
Copper (Cu)-Dissolved		2.6	2.6		ug/L	0.6	20	17-AUG-13
Lead (Pb)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	17-AUG-13
Molybdenum (Mo)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	17-AUG-13
Nickel (Ni)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	17-AUG-13
Selenium (Se)-Dissolved		<0.20	<0.20	RPD-NA	ug/L	N/A	20	17-AUG-13
Silver (Ag)-Dissolved		<0.020	0.021	RPD-NA	ug/L	N/A	20	17-AUG-13
Sodium (Na)-Dissolved		<500	<500	RPD-NA	ug/L	N/A	20	17-AUG-13
Thallium (Tl)-Dissolved		<0.060	<0.060	RPD-NA	ug/L	N/A	20	17-AUG-13
Uranium (U)-Dissolved		<1.0	<1.0	RPD-NA	ug/L	N/A	20	17-AUG-13
Vanadium (V)-Dissolved		<0.50	<0.50	RPD-NA	ug/L	N/A	20	17-AUG-13
Zinc (Zn)-Dissolved		5.8	4.3	J	ug/L	1.5	6	17-AUG-13
WG1728756-2 LCS								
Antimony (Sb)-Dissolved			101.1		%		80-120	17-AUG-13



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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch	R2674545							
WG1728756-2	LCS							
Arsenic (As)-Dissolved			100.5		%		80-120	17-AUG-13
Barium (Ba)-Dissolved			100.6		%		80-120	17-AUG-13
Beryllium (Be)-Dissolved			103.8		%		80-120	19-AUG-13
Boron (B)-Dissolved			99.5		%		80-120	19-AUG-13
Cadmium (Cd)-Dissolved			102.2		%		80-120	17-AUG-13
Chromium (Cr)-Dissolved			96.4		%		80-120	17-AUG-13
Cobalt (Co)-Dissolved			100.4		%		80-120	17-AUG-13
Copper (Cu)-Dissolved			99.8		%		80-120	17-AUG-13
Lead (Pb)-Dissolved			99.1		%		80-120	17-AUG-13
Molybdenum (Mo)-Dissolved			98.2		%		80-120	17-AUG-13
Nickel (Ni)-Dissolved			100.1		%		80-120	17-AUG-13
Selenium (Se)-Dissolved			102.7		%		80-120	17-AUG-13
Silver (Ag)-Dissolved			102.2		%		80-120	17-AUG-13
Sodium (Na)-Dissolved			119.7		%		80-120	17-AUG-13
Thallium (Tl)-Dissolved			97.7		%		80-120	17-AUG-13
Uranium (U)-Dissolved			98.8		%		80-120	17-AUG-13
Vanadium (V)-Dissolved			97.4		%		80-120	17-AUG-13
Zinc (Zn)-Dissolved			102.6		%		80-120	17-AUG-13
WG1728756-1	MB							
Antimony (Sb)-Dissolved			<0.50		ug/L		0.5	17-AUG-13
Arsenic (As)-Dissolved			<1.0		ug/L		1	17-AUG-13
Barium (Ba)-Dissolved			<2.0		ug/L		2	17-AUG-13
Beryllium (Be)-Dissolved			<0.50		ug/L		0.5	19-AUG-13
Boron (B)-Dissolved			<10		ug/L		10	19-AUG-13
Cadmium (Cd)-Dissolved			<0.090		ug/L		0.09	17-AUG-13
Chromium (Cr)-Dissolved			<0.50		ug/L		0.5	17-AUG-13
Cobalt (Co)-Dissolved			<0.50		ug/L		0.5	17-AUG-13
Copper (Cu)-Dissolved			<1.0		ug/L		1	17-AUG-13
Lead (Pb)-Dissolved			<0.50		ug/L		0.5	17-AUG-13
Molybdenum (Mo)-Dissolved			<0.50		ug/L		0.5	17-AUG-13
Nickel (Ni)-Dissolved			<1.0		ug/L		1	17-AUG-13
Selenium (Se)-Dissolved			<0.20		ug/L		0.2	17-AUG-13
Silver (Ag)-Dissolved			<0.020		ug/L		0.02	17-AUG-13
Sodium (Na)-Dissolved			<500		ug/L		500	17-AUG-13



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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-UG/L-MS-WT		Water						
Batch	R2674545							
WG1728756-1 MB								
Thallium (Tl)-Dissolved			<0.060		ug/L		0.06	17-AUG-13
Uranium (U)-Dissolved			<1.0		ug/L		1	17-AUG-13
Vanadium (V)-Dissolved			<0.50		ug/L		0.5	17-AUG-13
Zinc (Zn)-Dissolved			<3.0		ug/L		3	17-AUG-13
WG1728756-5 MS		WG1728756-3						
Antimony (Sb)-Dissolved			102.3		%		70-130	17-AUG-13
Arsenic (As)-Dissolved			102.8		%		70-130	17-AUG-13
Barium (Ba)-Dissolved			100.9		%		70-130	17-AUG-13
Beryllium (Be)-Dissolved			110.2		%		70-130	17-AUG-13
Boron (B)-Dissolved			102.0		%		70-130	17-AUG-13
Cadmium (Cd)-Dissolved			98.2		%		70-130	17-AUG-13
Chromium (Cr)-Dissolved			100.6		%		70-130	17-AUG-13
Cobalt (Co)-Dissolved			91.2		%		70-130	17-AUG-13
Copper (Cu)-Dissolved			93.8		%		70-130	17-AUG-13
Lead (Pb)-Dissolved			90.2		%		70-130	17-AUG-13
Molybdenum (Mo)-Dissolved			102.3		%		70-130	17-AUG-13
Nickel (Ni)-Dissolved			93.3		%		70-130	17-AUG-13
Selenium (Se)-Dissolved			103.2		%		70-130	17-AUG-13
Silver (Ag)-Dissolved			94.2		%		70-130	17-AUG-13
Sodium (Na)-Dissolved			109.8		%		70-130	17-AUG-13
Thallium (Tl)-Dissolved			89.5		%		70-130	17-AUG-13
Uranium (U)-Dissolved			80.3		%		70-130	17-AUG-13
Vanadium (V)-Dissolved			98.9		%		70-130	17-AUG-13
Zinc (Zn)-Dissolved			97.2		%		70-130	17-AUG-13
PAH-511-WT		Water						
Batch	R2675337							
WG1729783-1 CVS								
1-Methylnaphthalene			94.7		%		50-140	20-AUG-13
2-Methylnaphthalene			95.9		%		50-140	20-AUG-13
Acenaphthene			92.7		%		50-140	20-AUG-13
Acenaphthylene			95.8		%		50-140	20-AUG-13
Anthracene			94.3		%		50-140	20-AUG-13
Benzo(a)anthracene			90.6		%		50-140	20-AUG-13
Benzo(a)pyrene			92.8		%		50-140	20-AUG-13



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KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT		Water						
Batch	R2675337							
WG1729783-1	CVS							
Benzo(b)fluoranthene			86.2		%		50-140	20-AUG-13
Benzo(g,h,i)perylene			93.2		%		50-140	20-AUG-13
Benzo(k)fluoranthene			92.4		%		50-140	20-AUG-13
Chrysene			96.5		%		50-140	20-AUG-13
Dibenzo(ah)anthracene			94.9		%		50-140	20-AUG-13
Fluoranthene			92.4		%		50-140	20-AUG-13
Fluorene			93.2		%		50-140	20-AUG-13
Indeno(1,2,3-cd)pyrene			86.8		%		50-140	20-AUG-13
Naphthalene			98.3		%		50-140	20-AUG-13
Phenanthrene			90.1		%		50-140	20-AUG-13
Pyrene			94.1		%		50-140	20-AUG-13
WG1729783-2	CVS							
1-Methylnaphthalene			98.5		%		50-140	23-AUG-13
2-Methylnaphthalene			99.8		%		50-140	23-AUG-13
Acenaphthene			97.7		%		50-140	23-AUG-13
Acenaphthylene			101.9		%		50-140	23-AUG-13
Anthracene			97.5		%		50-140	23-AUG-13
Benzo(a)anthracene			90.7		%		50-140	23-AUG-13
Benzo(a)pyrene			86.5		%		50-140	23-AUG-13
Benzo(b)fluoranthene			86.8		%		50-140	23-AUG-13
Benzo(g,h,i)perylene			91.2		%		50-140	23-AUG-13
Benzo(k)fluoranthene			91.2		%		50-140	23-AUG-13
Chrysene			95.9		%		50-140	23-AUG-13
Dibenzo(ah)anthracene			91.0		%		50-140	23-AUG-13
Fluoranthene			89.8		%		50-140	23-AUG-13
Fluorene			98.0		%		50-140	23-AUG-13
Indeno(1,2,3-cd)pyrene			80.3		%		50-140	23-AUG-13
Naphthalene			92.1		%		50-140	23-AUG-13
Phenanthrene			91.2		%		50-140	23-AUG-13
Pyrene			91.1		%		50-140	23-AUG-13
WG1728994-2	LCS							
1-Methylnaphthalene			87.7		%		50-140	23-AUG-13
2-Methylnaphthalene			84.8		%		50-140	23-AUG-13
Acenaphthene			96.6		%		50-140	23-AUG-13

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353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT		Water						
Batch	R2675337							
WG1728994-2	LCS							
Acenaphthylene			98.5		%		50-140	23-AUG-13
Anthracene			94.8		%		50-140	23-AUG-13
Benzo(a)anthracene			91.5		%		50-140	23-AUG-13
Benzo(a)pyrene			91.1		%		50-140	23-AUG-13
Benzo(b)fluoranthene			89.5		%		50-140	23-AUG-13
Benzo(g,h,i)perylene			95.6		%		50-140	23-AUG-13
Benzo(k)fluoranthene			96.6		%		50-140	23-AUG-13
Chrysene			99.1		%		50-140	23-AUG-13
Dibenzo(ah)anthracene			94.8		%		50-140	23-AUG-13
Fluoranthene			94.3		%		50-140	23-AUG-13
Fluorene			100.3		%		50-140	23-AUG-13
Indeno(1,2,3-cd)pyrene			86.3		%		50-140	23-AUG-13
Naphthalene			85.9		%		50-140	23-AUG-13
Phenanthrene			93.4		%		50-140	23-AUG-13
Pyrene			94.5		%		50-140	23-AUG-13
WG1728994-1	MB							
1-Methylnaphthalene			<0.020		ug/L		0.02	21-AUG-13
2-Methylnaphthalene			<0.020		ug/L		0.02	21-AUG-13
Acenaphthene			<0.020		ug/L		0.02	21-AUG-13
Acenaphthylene			<0.020		ug/L		0.02	21-AUG-13
Anthracene			<0.020		ug/L		0.02	21-AUG-13
Benzo(a)anthracene			<0.020		ug/L		0.02	21-AUG-13
Benzo(a)pyrene			<0.010		ug/L		0.01	21-AUG-13
Benzo(b)fluoranthene			<0.020		ug/L		0.02	21-AUG-13
Benzo(g,h,i)perylene			<0.020		ug/L		0.02	21-AUG-13
Benzo(k)fluoranthene			<0.020		ug/L		0.02	21-AUG-13
Chrysene			<0.020		ug/L		0.02	21-AUG-13
Dibenzo(ah)anthracene			<0.020		ug/L		0.02	21-AUG-13
Fluoranthene			<0.020		ug/L		0.02	21-AUG-13
Fluorene			<0.020		ug/L		0.02	21-AUG-13
Indeno(1,2,3-cd)pyrene			<0.020		ug/L		0.02	21-AUG-13
Naphthalene			<0.020		ug/L		0.02	21-AUG-13
Phenanthrene			<0.020		ug/L		0.02	21-AUG-13
Pyrene			<0.020		ug/L		0.02	21-AUG-13



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Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-511-WT								
Water								
Batch	R2675337							
WG1728994-1 MB								
Surrogate: 2-Fluorobiphenyl			78.1		%		50-140	21-AUG-13
Surrogate: d14-Terphenyl			97.4		%		50-140	21-AUG-13
PH-R511-WT								
Water								
Batch	R2675374							
WG1728599-3 DUP		WG1728599-2						
pH		8.20	8.26	J	pH units	0.06	0.2	17-AUG-13
WG1728599-1 LCS								
pH			7.01		pH units		6.9-7.1	17-AUG-13
VOC-511-HS-WT								
Water								
Batch	R2674719							
WG1726069-1 CVS								
1,1,1,2-Tetrachloroethane			111.4		%		75-125	19-AUG-13
1,1,2,2-Tetrachloroethane			103.1		%		75-125	19-AUG-13
1,1,1-Trichloroethane			91.8		%		75-125	19-AUG-13
1,1,2-Trichloroethane			108.6		%		75-125	19-AUG-13
1,1-Dichloroethane			102.6		%		75-125	20-AUG-13
1,1-Dichloroethylene			88.6		%		75-125	20-AUG-13
1,2-Dibromoethane			111.6		%		70-130	19-AUG-13
1,2-Dichlorobenzene			96.1		%		75-125	19-AUG-13
1,2-Dichloroethane			106.7		%		75-125	19-AUG-13
1,2-Dichloropropane			88.1		%		75-125	19-AUG-13
1,3-Dichlorobenzene			90.4		%		75-125	19-AUG-13
1,4-Dichlorobenzene			88.3		%		75-125	19-AUG-13
Acetone			100.8		%		70-130	19-AUG-13
Benzene			85.0		%		75-125	19-AUG-13
Bromodichloromethane			102.4		%		75-125	19-AUG-13
Bromoform			124.3		%		70-130	19-AUG-13
Bromomethane			83.3		%		70-130	19-AUG-13
Carbon tetrachloride			93.7		%		75-125	19-AUG-13
Chlorobenzene			96.0		%		75-125	19-AUG-13
Chloroform			98.0		%		75-125	19-AUG-13
cis-1,2-Dichloroethylene			91.6		%		75-125	19-AUG-13
cis-1,3-Dichloropropene			85.7		%		75-125	19-AUG-13
Dibromochloromethane			116.6		%		75-125	19-AUG-13



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KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R2674719							
WG1726069-1	CVS							
Dichlorodifluoromethane			77.9		%		70-130	20-AUG-13
Ethyl Benzene			103.8		%		75-125	19-AUG-13
n-Hexane			96.6		%		75-125	20-AUG-13
m+p-Xylenes			97.9		%		75-125	19-AUG-13
Methyl Ethyl Ketone			94.6		%		70-130	19-AUG-13
Methyl Isobutyl Ketone			109.6		%		70-130	19-AUG-13
Methylene Chloride			84.6		%		75-125	19-AUG-13
MTBE			82.2		%		75-125	19-AUG-13
o-Xylene			109.9		%		75-125	19-AUG-13
Styrene			113.0		%		75-125	19-AUG-13
Tetrachloroethylene			97.8		%		75-125	19-AUG-13
Toluene			101.5		%		75-125	19-AUG-13
trans-1,2-Dichloroethylene			82.5		%		75-125	19-AUG-13
trans-1,3-Dichloropropene			105.4		%		75-125	19-AUG-13
Trichloroethylene			94.6		%		75-125	19-AUG-13
Trichlorofluoromethane			95.5		%		70-130	19-AUG-13
Vinyl chloride			79.4		%		70-130	19-AUG-13
WG1726069-4	DUP	WG1726069-3						
1,1,1,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,1,2,2-Tetrachloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,1,1-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,1,2-Trichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,1-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,1-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,2-Dibromoethane		<0.20	<0.20	RPD-NA	ug/L	N/A	30	19-AUG-13
1,2-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,2-Dichloroethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,2-Dichloropropane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,3-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
1,4-Dichlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
Acetone		<30	<30	RPD-NA	ug/L	N/A	30	19-AUG-13
Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
Bromodichloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-AUG-13



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KITCHENER ON N2K 2Y5
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R2674719							
WG1726069-4	DUP	WG1726069-3						
Bromoform		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-AUG-13
Bromomethane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
Carbon tetrachloride		<0.20	<0.20	RPD-NA	ug/L	N/A	30	19-AUG-13
Chlorobenzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
Chloroform		<1.0	<1.0	RPD-NA	ug/L	N/A	30	19-AUG-13
cis-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
cis-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	19-AUG-13
Dibromochloromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-AUG-13
Dichlorodifluoromethane		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-AUG-13
Ethyl Benzene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
n-Hexane		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
m+p-Xylenes		<0.40	<0.40	RPD-NA	ug/L	N/A	30	19-AUG-13
Methyl Ethyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	19-AUG-13
Methyl Isobutyl Ketone		<20	<20	RPD-NA	ug/L	N/A	30	19-AUG-13
Methylene Chloride		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-AUG-13
MTBE		<2.0	<2.0	RPD-NA	ug/L	N/A	30	19-AUG-13
o-Xylene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	19-AUG-13
Styrene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
Tetrachloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
Toluene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
trans-1,2-Dichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
trans-1,3-Dichloropropene		<0.30	<0.30	RPD-NA	ug/L	N/A	30	19-AUG-13
Trichloroethylene		<0.50	<0.50	RPD-NA	ug/L	N/A	30	19-AUG-13
Trichlorofluoromethane		<5.0	<5.0	RPD-NA	ug/L	N/A	30	19-AUG-13
Vinyl chloride		0.66	0.71		ug/L	7.3	30	19-AUG-13
WG1726069-2	MB							
1,1,1,2-Tetrachloroethane			<0.50		ug/L		0.5	19-AUG-13
1,1,2,2-Tetrachloroethane			<0.50		ug/L		0.5	19-AUG-13
1,1,1-Trichloroethane			<0.50		ug/L		0.5	19-AUG-13
1,1,2-Trichloroethane			<0.50		ug/L		0.5	19-AUG-13
1,1-Dichloroethane			<0.50		ug/L		0.5	19-AUG-13
1,1-Dichloroethylene			<0.50		ug/L		0.5	19-AUG-13
1,2-Dibromoethane			<0.20		ug/L		0.2	19-AUG-13



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KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R2674719							
WG1726069-2	MB							
1,2-Dichlorobenzene			<0.50		ug/L		0.5	19-AUG-13
1,2-Dichloroethane			<0.50		ug/L		0.5	19-AUG-13
1,2-Dichloropropane			<0.50		ug/L		0.5	19-AUG-13
1,3-Dichlorobenzene			<0.50		ug/L		0.5	19-AUG-13
1,4-Dichlorobenzene			<0.50		ug/L		0.5	19-AUG-13
Acetone			<30		ug/L		30	19-AUG-13
Benzene			<0.50		ug/L		0.5	19-AUG-13
Bromodichloromethane			<2.0		ug/L		2	19-AUG-13
Bromoform			<5.0		ug/L		5	19-AUG-13
Bromomethane			<0.50		ug/L		0.5	19-AUG-13
Carbon tetrachloride			<0.20		ug/L		0.2	19-AUG-13
Chlorobenzene			<0.50		ug/L		0.5	19-AUG-13
Chloroform			<1.0		ug/L		1	19-AUG-13
cis-1,2-Dichloroethylene			<0.50		ug/L		0.5	19-AUG-13
cis-1,3-Dichloropropene			<0.30		ug/L		0.3	19-AUG-13
Dibromochloromethane			<2.0		ug/L		2	19-AUG-13
Dichlorodifluoromethane			<2.0		ug/L		2	19-AUG-13
Ethyl Benzene			<0.50		ug/L		0.5	19-AUG-13
n-Hexane			<0.50		ug/L		0.5	19-AUG-13
m+p-Xylenes			<0.40		ug/L		0.4	19-AUG-13
Methyl Ethyl Ketone			<20		ug/L		20	19-AUG-13
Methyl Isobutyl Ketone			<20		ug/L		20	19-AUG-13
Methylene Chloride			<5.0		ug/L		5	19-AUG-13
MTBE			<2.0		ug/L		2	19-AUG-13
o-Xylene			<0.30		ug/L		0.3	19-AUG-13
Styrene			<0.50		ug/L		0.5	19-AUG-13
Tetrachloroethylene			<0.50		ug/L		0.5	19-AUG-13
Toluene			<0.50		ug/L		0.5	19-AUG-13
trans-1,2-Dichloroethylene			<0.50		ug/L		0.5	19-AUG-13
trans-1,3-Dichloropropene			<0.30		ug/L		0.3	19-AUG-13
Trichloroethylene			<0.50		ug/L		0.5	19-AUG-13
Trichlorofluoromethane			<5.0		ug/L		5	19-AUG-13
Vinyl chloride			<0.50		ug/L		0.5	19-AUG-13



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Client: LVM INC.
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KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R2674719							
WG1726069-2 MB								
Surrogate: 1,4-Difluorobenzene			97.8		%		70-130	19-AUG-13
Surrogate: 4-Bromofluorobenzene			116.2		%		70-130	19-AUG-13
WG1726069-5 MS		WG1726069-3						
1,1,1,2-Tetrachloroethane			114.5		%		50-150	19-AUG-13
1,1,2,2-Tetrachloroethane			99.6		%		50-150	19-AUG-13
1,1,1-Trichloroethane			109.4		%		50-150	19-AUG-13
1,1,2-Trichloroethane			105.0		%		50-150	19-AUG-13
1,1-Dichloroethane			66.1		%		50-150	19-AUG-13
1,1-Dichloroethylene			84.0		%		50-150	19-AUG-13
1,2-Dibromoethane			105.0		%		50-150	19-AUG-13
1,2-Dichlorobenzene			95.6		%		50-150	19-AUG-13
1,2-Dichloroethane			109.2		%		50-150	19-AUG-13
1,2-Dichloropropane			87.7		%		50-150	19-AUG-13
1,3-Dichlorobenzene			92.0		%		50-150	19-AUG-13
1,4-Dichlorobenzene			86.4		%		50-150	19-AUG-13
Acetone			98.8		%		50-150	19-AUG-13
Benzene			89.5		%		50-150	19-AUG-13
Bromodichloromethane			105.4		%		50-150	19-AUG-13
Bromoform			122.7		%		50-150	19-AUG-13
Bromomethane			88.5		%		50-150	19-AUG-13
Carbon tetrachloride			114.1		%		50-150	19-AUG-13
Chlorobenzene			100.5		%		50-150	19-AUG-13
Chloroform			106.1		%		50-150	19-AUG-13
cis-1,2-Dichloroethylene			94.6		%		50-150	19-AUG-13
cis-1,3-Dichloropropene			77.8		%		50-150	19-AUG-13
Dibromochloromethane			115.2		%		50-150	19-AUG-13
Dichlorodifluoromethane			77.9		%		50-150	19-AUG-13
Ethyl Benzene			97.7		%		50-150	19-AUG-13
n-Hexane			82.8		%		50-150	19-AUG-13
m+p-Xylenes			101.6		%		50-150	19-AUG-13
Methyl Ethyl Ketone			81.7		%		50-150	19-AUG-13
Methyl Isobutyl Ketone			93.4		%		50-150	19-AUG-13
Methylene Chloride			88.9		%		50-150	19-AUG-13
MTBE			82.7		%		50-150	19-AUG-13



Quality Control Report

Workorder: L1349197

Report Date: 23-AUG-13

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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT		Water						
Batch	R2674719							
WG1726069-5 MS		WG1726069-3						
o-Xylene			102.0		%		50-150	19-AUG-13
Styrene			101.4		%		50-150	19-AUG-13
Tetrachloroethylene			105.2		%		50-150	19-AUG-13
Toluene			96.8		%		50-150	19-AUG-13
trans-1,2-Dichloroethylene			93.7		%		50-150	19-AUG-13
trans-1,3-Dichloropropene			89.2		%		50-150	19-AUG-13
Trichloroethylene			99.0		%		50-150	19-AUG-13
Trichlorofluoromethane			122.5		%		50-150	19-AUG-13
Vinyl chloride			92.0		%		50-150	19-AUG-13
WG1726069-6 MS		L1349153-2						
1,1,1,2-Tetrachloroethane			97.0		%		50-150	20-AUG-13
1,1,2,2-Tetrachloroethane			113.1		%		50-150	20-AUG-13
1,1,1-Trichloroethane			88.2		%		50-150	20-AUG-13
1,1,2-Trichloroethane			109.7		%		50-150	20-AUG-13
1,1-Dichloroethane			102.5		%		50-150	20-AUG-13
1,1-Dichloroethylene			48.2	K	%		50-150	20-AUG-13
1,2-Dibromoethane			105.0		%		50-150	20-AUG-13
1,2-Dichlorobenzene			97.1		%		50-150	20-AUG-13
1,2-Dichloroethane			118.5		%		50-150	20-AUG-13
1,2-Dichloropropane			101.8		%		50-150	20-AUG-13
1,3-Dichlorobenzene			91.3		%		50-150	20-AUG-13
1,4-Dichlorobenzene			88.6		%		50-150	20-AUG-13
Acetone			145.5		%		50-150	20-AUG-13
Benzene			96.8		%		50-150	20-AUG-13
Bromodichloromethane			105.0		%		50-150	20-AUG-13
Bromoform			114.0		%		50-150	20-AUG-13
Bromomethane			88.5		%		50-150	20-AUG-13
Carbon tetrachloride			86.2		%		50-150	20-AUG-13
Chlorobenzene			99.8		%		50-150	20-AUG-13
Chloroform			103.8		%		50-150	20-AUG-13
cis-1,2-Dichloroethylene			62.2		%		50-150	20-AUG-13
cis-1,3-Dichloropropene			0.0	K	%		50-150	20-AUG-13
Dibromochloromethane			102.5		%		50-150	20-AUG-13
Dichlorodifluoromethane			66.7		%		50-150	20-AUG-13



Quality Control Report

Workorder: L1349197

Report Date: 23-AUG-13

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Client:

LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5

Contact:

KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	Water							
Batch	R2674719							
WG1726069-6	MS	L1349153-2						
Ethyl Benzene			87.5		%		50-150	20-AUG-13
n-Hexane			77.8		%		50-150	20-AUG-13
m+p-Xylenes			86.6		%		50-150	20-AUG-13
Methyl Ethyl Ketone			123.3		%		50-150	20-AUG-13
Methyl Isobutyl Ketone			120.4		%		50-150	20-AUG-13
Methylene Chloride			107.6		%		50-150	20-AUG-13
MTBE			84.3		%		50-150	20-AUG-13
o-Xylene			92.2		%		50-150	20-AUG-13
Styrene			0.0	K	%		50-150	20-AUG-13
Tetrachloroethylene			81.2		%		50-150	20-AUG-13
Toluene			79.6		%		50-150	20-AUG-13
trans-1,2-Dichloroethylene			0.31	K	%		50-150	20-AUG-13
trans-1,3-Dichloropropene			0.0	K	%		50-150	20-AUG-13
Trichloroethylene			68.2		%		50-150	20-AUG-13
Trichlorofluoromethane			90.7		%		50-150	20-AUG-13
Vinyl chloride			6.4	K	%		50-150	20-AUG-13

COMMENTS: This matrix spike relates only to samples containing Potassium Permanganate. Low recoveries are due to sample matrix.

Quality Control Report

Workorder: L1349197

Report Date: 23-AUG-13

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Page 16 of 16

Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
AIN	Approximate Result: Interference Suspected
J	Duplicate results and limits are expressed in terms of absolute difference.
K	Matrix Spike recovery outside ALS DQO due to sample matrix effects.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910
Fax: (519) 886-9047
Toll Free: 1-800-668-9878



CHAIN OF CUSTODY / ANALYTICAL SERVICES REQUEST FORM

143651
C of C # 00000

Page 1 of 1

Note: all TAT Quoted material is in business days which exclude statutory holidays and weekends. TAT samples received past 3:00 pm or Saturday/Sunday begin the next day.

Specify date required

Service requested

2 day TAT (50%)

5 day (regular)

Next day TAT (100%)

3-4 day (25%)

Same day TAT (200%)

COMPANY NAME LVM
OFFICE Kildare
PROJECT MANAGER Karen Thomas
PROJECT # 160-P-003883-0-01-100-01
PHONE 519.741.1313 FAX 519.741.5422
ACCOUNT #
QUOTATION # PO # 209281

CRITERIA

Criteria on report YES ☒ NO ☐

Reg 153/04 ☐

Reg 511/09 ☒

Table 1 2 3 4 5 6 7 8 9

TCLP ☐ MISA ☐ PWQO ☐

ODWS ☐ OTHER ☐

REPORT FORMAT/DISTRIBUTION

EMAIL ☒ FAX ☐ BOTH ☐

SELECT: PDF ☒ DIGITAL ☐ BOTH ☐

EMAIL 1

EMAIL 2

ANALYSIS REQUEST

PLEASE INDICATE FILTERED,

PRESERVED OR BOTH

<---- (F, P, F/P)

SUBMISSION #:

L1349192

ENTERED BY:

YH

DATE/TIME ENTERED:

Aug 16, 2013

BIN #:

B516

COMMENTS

LAB ID

SAMPLING INFORMATION

Sample Date/Time TYPE MATRIX

Date (dd-mm-yy)	Time (24hr) (hh:mm)	COMP	GRAB	WATER	SOIL	OTHER
16-08-13	15:15			☒		
16-08-13	16:35			☒		

SAMPLE DESCRIPTION TO APPEAR ON REPORT

BH-03-13

BH-04-13

NUMBER OF CONTAINERS

Metal Can

PH, EC, SAR

VOL, PHC FI-F4, BTEX

PAH



L1349197-COFC

SPECIAL INSTRUCTIONS/COMMENTS

LAB FILTER FOR METALS

THE QUESTIONS BELOW MUST BE ANSWERED FOR WATER SAMPLES (CHECK Yes OR No)

Are any samples taken from a regulated DW System?

Yes ☐ No ☒

If yes, an authorized drinking water COC MUST be used for this submission.

Is the water sampled intended to be potable for human consumption?

Yes ☐ No ☒

SAMPLE CONDITION

FROZEN ☐

COLD ☒

COOLING INITIATED ☐

AMBIENT ☐

OBSERVATIONS

Yes ☐ No ☐

*Yes add SIF

MEAN TEMP

5.1

INIT

aj

SAMPLED BY: J. STROEDER

RELINQUISHED BY: [Signature]

DATE & TIME

Aug 16/13

RECEIVED BY:

Aug 16/13 6:20

RECEIVED AT LAB BY:

DATE & TIME

Aug 16/13 18:20

Notes

1. Quote number must be provided to ensure proper pricing

2. TAT may vary dependent on complexity of analysis and lab workload at time of submission. 3. Any known or suspected hazardous materials must be noted on the Chain of Custody. 4. Comments section.



LVM INC.
ATTN: KAREN THRAMS
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5

Date Received: 22-AUG-13
Report Date: 29-AUG-13 14:43 (MT)
Version: FINAL REV. 2

Client Phone: 519-741-1313

Certificate of Analysis

Lab Work Order #: L1351922
Project P.O. #: 209814
Job Reference: 160-P-0003883-0-01-100-01
C of C Numbers:
Legal Site Desc:

Nancy Smith
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047
ALS CANADA LTD Part of the ALS Group A Campbell Brothers Limited Company



L1351922 CONTD....

Page 2 of 3

29-AUG-13 14:43 (MT)

160-P-0003883-0-01-100-01

* Detection Limit for result exceeds Guideline Limit. Assessment against Guideline Limit cannot be made.

Analytical result for this parameter exceeds Guideline Limit listed on this report. Guideline Limits applied:

Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90

#1: Ontario Ministry of the Environment, General Waste Control Regulation No. 347/90

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference***
CN-TCLP-WT	Waste	Cyanide for O. Reg 347	APHA 4500CN C E
F-TCLP-WT	Waste	Fluoride (F) for O. Reg 347	APHA 4110 B-Ion Chromatography
HG-TCLP-WT	Waste	Mercury (CVAA) for O.Reg 347	SW846 7470A
MET-TCLP-WT	Waste	O.Reg 347 TCLP Leachable Metals	EPA 200.8
N2N3-TCLP-WT	Waste	Nitrate/Nitrite-N for O. Reg 347	APHA 4110 B-Ion Chromatography
VOC-TCLP-WT	Waste	VOC for O. Reg 347	SW846 8260

A sample of waste is leached in a zero headspace extractor at 30–2 rpm for 18–2.0 hours with the appropriate leaching solution. After tumbling the leachate is analyzed directly by purge and trap technology, followed by GC/MS using internal standard quantitation.

*** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Chain of Custody numbers:

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location	Laboratory Definition Code	Laboratory Location
WT	ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA		

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

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.



Quality Control Report

Workorder: L1351922

Report Date: 29-AUG-13

Page 1 of 6

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CN-TCLP-WT		Waste						
Batch	R2679591							
WG1733937-4	CVS							
Cyanide, Weak Acid Diss			101.6		%		85-115	26-AUG-13
WG1733937-2	DUP	L1351214-1						
Cyanide, Weak Acid Diss		<0.0020	<0.0020	RPD-NA	mg/L	N/A	25	26-AUG-13
WG1733937-3	LCS							
Cyanide, Weak Acid Diss			101.6		%		80-120	26-AUG-13
WG1733937-1	MB							
Cyanide, Weak Acid Diss			<0.0020		mg/L		0.002	26-AUG-13
F-TCLP-WT		Waste						
Batch	R2681461							
WG1734829-4	DUP	L1351922-1						
Fluoride (F)		<10	<10	RPD-NA	mg/L	N/A	20	27-AUG-13
WG1734829-2	LCS							
Fluoride (F)			104.6		%		75-125	27-AUG-13
WG1734829-3	LCSD	WG1734829-2						
Fluoride (F)		104.6	103.9		%	0.7	25	27-AUG-13
WG1734829-1	MB							
Fluoride (F)			<0.50		mg/L		0.5	27-AUG-13
HG-TCLP-WT		Waste						
Batch	R2680410							
WG1733969-3	DUP	L1351214-1						
Mercury (Hg)		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	27-AUG-13
WG1733969-2	LCS							
Mercury (Hg)			99.5		%		70-130	27-AUG-13
WG1733969-1	MB							
Mercury (Hg)			<0.00010		mg/L		0.0001	27-AUG-13
WG1733969-4	MS	L1351872-1						
Mercury (Hg)			107.0		%		70-130	27-AUG-13
MET-TCLP-WT		Waste						
Batch	R2679037							
WG1733512-6	CVS							
Silver (Ag)			106.2		%		70-130	24-AUG-13
Arsenic (As)			106.1		%		80-120	24-AUG-13
Boron (B)			97.5		%		70-130	24-AUG-13
Barium (Ba)			104.2		%		80-120	24-AUG-13
Cadmium (Cd)			102.4		%		80-120	24-AUG-13
Chromium (Cr)			96.5		%		70-130	24-AUG-13



Quality Control Report

Workorder: L1351922

Report Date: 29-AUG-13

Page 2 of 6

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-TCLP-WT		Waste						
Batch	R2679037							
WG1733512-6	CVS							
Lead (Pb)			99.3		%		80-120	24-AUG-13
Selenium (Se)			98.8		%		80-120	24-AUG-13
Uranium (U)			101.0		%		80-120	24-AUG-13
WG1733512-4	DUP	WG1733512-3						
Silver (Ag)		<0.0050	<0.0050	RPD-NA	mg/L	N/A	30	24-AUG-13
Arsenic (As)		<0.050	<0.050	RPD-NA	mg/L	N/A	30	24-AUG-13
Boron (B)		<2.5	<2.5	RPD-NA	mg/L	N/A	30	24-AUG-13
Barium (Ba)		0.52	0.52		mg/L	1.4	30	24-AUG-13
Cadmium (Cd)		0.0177	0.0179		mg/L	1.1	30	24-AUG-13
Chromium (Cr)		<0.050	<0.050	RPD-NA	mg/L	N/A	30	24-AUG-13
Lead (Pb)		<0.050	<0.050	RPD-NA	mg/L	N/A	30	24-AUG-13
Selenium (Se)		<0.25	<0.25	RPD-NA	mg/L	N/A	30	24-AUG-13
Uranium (U)		<0.25	<0.25	RPD-NA	mg/L	N/A	30	24-AUG-13
WG1733512-2	LCS							
Silver (Ag)			95.9		%		70-130	24-AUG-13
Arsenic (As)			98.2		%		70-130	24-AUG-13
Boron (B)			104.6		%		70-130	24-AUG-13
Barium (Ba)			98.5		%		70-130	24-AUG-13
Cadmium (Cd)			96.7		%		70-130	24-AUG-13
Chromium (Cr)			96.7		%		70-130	24-AUG-13
Lead (Pb)			93.4		%		70-130	24-AUG-13
Selenium (Se)			99.9		%		70-130	24-AUG-13
Uranium (U)			92.5		%		70-130	24-AUG-13
WG1733512-1	MB							
Silver (Ag)			<0.0050		mg/L		0.005	24-AUG-13
Arsenic (As)			<0.050		mg/L		0.05	24-AUG-13
Boron (B)			<2.5		mg/L		2.5	24-AUG-13
Barium (Ba)			<0.50		mg/L		0.5	24-AUG-13
Cadmium (Cd)			<0.0050		mg/L		0.005	24-AUG-13
Chromium (Cr)			<0.050		mg/L		0.05	24-AUG-13
Lead (Pb)			<0.050		mg/L		0.05	24-AUG-13
Selenium (Se)			<0.25		mg/L		0.25	24-AUG-13
Uranium (U)			<0.25		mg/L		0.25	24-AUG-13

N2N3-TCLP-WT **Waste**



Quality Control Report

Workorder: L1351922

Report Date: 29-AUG-13

Page 3 of 6

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
N2N3-TCLP-WT		Waste						
Batch	R2681461							
WG1734829-4	DUP	L1351922-1						
Nitrate-N		<2.0	<2.0	RPD-NA	mg/L	N/A	30	27-AUG-13
Nitrite-N		<2.0	<2.0	RPD-NA	mg/L	N/A	30	27-AUG-13
WG1734829-2	LCS							
Nitrate-N			102.2		%		60-140	27-AUG-13
Nitrite-N			102.3		%		60-140	27-AUG-13
WG1734829-3	LCSD	WG1734829-2						
Nitrate-N		102.2	102.1		%	0.2	25	27-AUG-13
Nitrite-N		102.3	101.9		%	0.4	25	27-AUG-13
WG1734829-1	MB							
Nitrate-N			<0.10		mg/L		0.1	27-AUG-13
Nitrite-N			<0.10		mg/L		0.1	27-AUG-13
VOC-TCLP-WT		Waste						
Batch	R2680473							
WG1734447-1	CVS							
1,1-Dichloroethylene			77.4		%		70-130	27-AUG-13
1,2-Dichlorobenzene			96.3		%		70-130	27-AUG-13
1,2-Dichloroethane			97.2		%		70-130	27-AUG-13
1,4-Dichlorobenzene			95.7		%		70-130	27-AUG-13
Benzene			89.2		%		70-130	27-AUG-13
Carbon tetrachloride			89.0		%		60-140	27-AUG-13
Chlorobenzene			94.6		%		70-130	27-AUG-13
Chloroform			94.6		%		70-130	27-AUG-13
Dichloromethane			91.8		%		70-130	27-AUG-13
Methyl Ethyl Ketone			78.5		%		50-150	27-AUG-13
Tetrachloroethylene			90.4		%		70-130	27-AUG-13
Trichloroethylene			90.1		%		70-130	27-AUG-13
Vinyl chloride			81.8		%		60-130	27-AUG-13
WG1734447-4	DUP	WG1734447-3						
1,1-Dichloroethylene		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
1,2-Dichlorobenzene		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
1,2-Dichloroethane		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
1,4-Dichlorobenzene		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
Benzene		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
Carbon tetrachloride		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13



Quality Control Report

Workorder: L1351922

Report Date: 29-AUG-13

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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-TCLP-WT		Waste						
Batch	R2680473							
WG1734447-4	DUP	WG1734447-3						
Chlorobenzene		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
Chloroform		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
Dichloromethane		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
Methyl Ethyl Ketone		<1.0	<1.0	RPD-NA	mg/L	N/A	50	27-AUG-13
Tetrachloroethylene		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
Trichloroethylene		<0.025	<0.025	RPD-NA	mg/L	N/A	50	27-AUG-13
Vinyl chloride		<0.050	<0.050	RPD-NA	mg/L	N/A	50	27-AUG-13
WG1734447-2	MB							
1,1-Dichloroethylene			<0.025		mg/L		0.025	27-AUG-13
1,2-Dichlorobenzene			<0.025		mg/L		0.025	27-AUG-13
1,2-Dichloroethane			<0.025		mg/L		0.025	27-AUG-13
1,4-Dichlorobenzene			<0.025		mg/L		0.025	27-AUG-13
Benzene			<0.025		mg/L		0.025	27-AUG-13
Carbon tetrachloride			<0.025		mg/L		0.025	27-AUG-13
Chlorobenzene			<0.025		mg/L		0.025	27-AUG-13
Chloroform			<0.025		mg/L		0.025	27-AUG-13
Dichloromethane			<0.025		mg/L		0.025	27-AUG-13
Methyl Ethyl Ketone			<1.0		mg/L		1	27-AUG-13
Tetrachloroethylene			<0.025		mg/L		0.025	27-AUG-13
Trichloroethylene			<0.025		mg/L		0.025	27-AUG-13
Vinyl chloride			<0.050		mg/L		0.05	27-AUG-13
Surrogate: 1,2-Dichloroethane d4			95.1		%		70-130	27-AUG-13
Surrogate: Toluene-d8			98.3		%		70-130	27-AUG-13
Surrogate: 4-Bromofluorobenzene			98.8		%		70-130	27-AUG-13
WG1734447-5	MS	WG1734447-3						
1,1-Dichloroethylene			91.2		%		50-150	27-AUG-13
1,2-Dichlorobenzene			94.7		%		50-150	27-AUG-13
1,2-Dichloroethane			98.8		%		50-150	27-AUG-13
1,4-Dichlorobenzene			97.0		%		50-150	27-AUG-13
Benzene			95.7		%		50-150	27-AUG-13
Carbon tetrachloride			103.1		%		50-150	27-AUG-13
Chlorobenzene			99.3		%		50-150	27-AUG-13
Chloroform			104.8		%		50-150	27-AUG-13
Dichloromethane			96.4		%		50-150	27-AUG-13



Quality Control Report

Workorder: L1351922

Report Date: 29-AUG-13

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Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-TCLP-WT	Waste							
Batch	R2680473							
WG1734447-5 MS		WG1734447-3						
Methyl Ethyl Ketone			64.1		%		50-150	27-AUG-13
Tetrachloroethylene			101.4		%		50-150	27-AUG-13
Trichloroethylene			98.0		%		50-150	27-AUG-13
Vinyl chloride			94.4		%		50-150	27-AUG-13

Quality Control Report

Workorder: L1351922

Report Date: 29-AUG-13

Client: LVM INC.
353 BRIDGE ST. E.
KITCHENER ON N2K 2Y5
Contact: KAREN THRAMS

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Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

143652
C of C # 00000

60 NORTHLAND ROAD, UNIT 1
WATERLOO, ON N2V 2B8
Phone: (519) 886-6910
Fax: (519) 886-9047
Toll Free: 1-800-668-9878



CHAIN OF CUSTODY / ANALYTICAL SERVICES REQUEST FORM Page ____ of ____

Note: all TAT Quoted material is in business days which exclude statutory holidays and weekends. TAT samples received past 3:00 pm or Saturday/Sunday begin the next day.

Specify date required

Service requested

2 day TAT (50%)

5 day (regular)

Next day TAT (100%)

3-4 day (25%)

Same day TAT (200%)

COMPANY NAME LVM inc
OFFICE Kitchener
PROJECT MANAGER Karen Thomas
PROJECT # 160-1-0003483-D-01-100-01
PHONE 519.741.1313 FAX 519.741.5422
ACCOUNT #
QUOTATION # PO # 209814

CRITERIA

Criteria on report YES ☒ NO ☐Reg 153/04 ☐Reg 511/09 ☐

Table 1 2 3 4 5 6 7 8 9

TCLP ☒ MISA _____ PWQO _____
ODWS _____ OTHER _____

REPORT FORMAT/DISTRIBUTION

EMAIL ☒ FAX _____ BOTH _____SELECT: PDF ☒ DIGITAL _____ BOTH _____

EMAIL 1 K.T.

EMAIL 2 _____

SAMPLING INFORMATION

Sample Date/Time

TYPE

MATRIX

Date (dd-mm-yy)	Time (24hr) (hh:mm)	COMP	GRAB	WATER	SOIL	OTHER
2013-08-12	9:00		Y		X	

SAMPLE DESCRIPTION TO APPEAR ON REPORT

BH-04-13, AS-1

NUMBER OF CONTAINERS

TCLP- Newalta Package

ANALYSIS REQUEST

PLEASE INDICATE FILTERED,
PRESERVED OR BOTH
<---- (F, P, F/P)

SUBMISSION #:

L1351922

ENTERED BY:

NS

DATE/TIME ENTERED:

22-Aug-13
16:45

BIN #:

B435

COMMENTS

LAB ID

-1



L1351922-COFC

SPECIAL INSTRUCTIONS/COMMENTS

Sample Also:
L1346763-9

SAMPLED BY: Dan Souk

RELINQUISHED BY: Karen Thomas

THE QUESTIONS BELOW MUST BE ANSWERED FOR WATER SAMPLES (CHECK Yes OR No)

Are any samples taken from a regulated DW System?

Yes ☐ No ☐

If yes, an authorized drinking water COC MUST be used for this submission.

Is the water sampled intended to be potable for human consumption?

Yes ☐ No ☐

DATE & TIME

RECEIVED BY:

DATE & TIME

DATE & TIME

RECEIVED AT LAB BY:

DATE & TIME

SAMPLE CONDITION

FROZEN ☐COLD ☒COOLING INITIATED ☐AMBIENT ☐

OBSERVATIONS

Yes ☐ No ☐

If yes add SIF

MEAN
TEMP

1.1

INIT

NS

Notes

1. Quote number must be provided to ensure proper pricing

2. TAT may vary dependent on complexity of analysis and lab workload at time of submission. 3. Any known or suspected hazards relating to a sample must be noted on the chain of custody in comments section.

Please contact the lab to confirm TATs.

