Functional Servicing and Stormwater Management Report
Proposed 9 Lot Residential Development
Golf Course Road

TPC Marlwood Inc.
31 Marlwood Avenue
Wasaga Beach ON L9Z 1S8

R.J. Burnside & Associates Limited
3 Ronell Crescent
Collingwood ON L9Y 4J6 CANADA

September 27, 2017
300039210.0000

Distribution List

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1	Yes	Yes	NVCA
1	Yes	Yes	TPC Marlwood Inc.

Record of Revisions

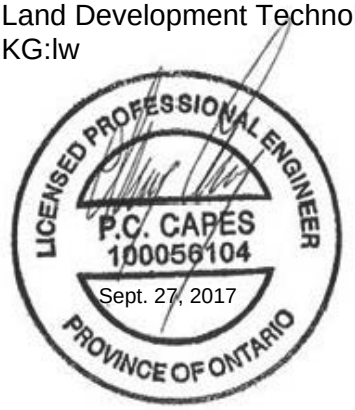
Revision	Date	Description
0	April 21, 2017	Initial Draft Submission to Planner, Client and Team
1	September 27, 2017	Town of Wasaga Beach

R.J. Burnside & Associates Limited

Report Prepared By:

Kevin Griffin, C.E.T.
Land Development Technologist
KG:lw

Report Reviewed By:



Clayton Capes, P.Eng.
Project Engineer
CC:lw

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1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) has been retained by TPC at Marlwood Inc. to prepare a Functional Servicing and Stormwater Management Report (FSR) in support of an Official Plan Amendment (OPA), a Zoning By-Law Amendment (ZBA), and Draft Plan Approval for the development of a property located south and east of Golf Course Road in the Town of Wasaga Beach. The site location plan is shown on Figure 1. The Report provides sufficient detail to later move towards detailed design.

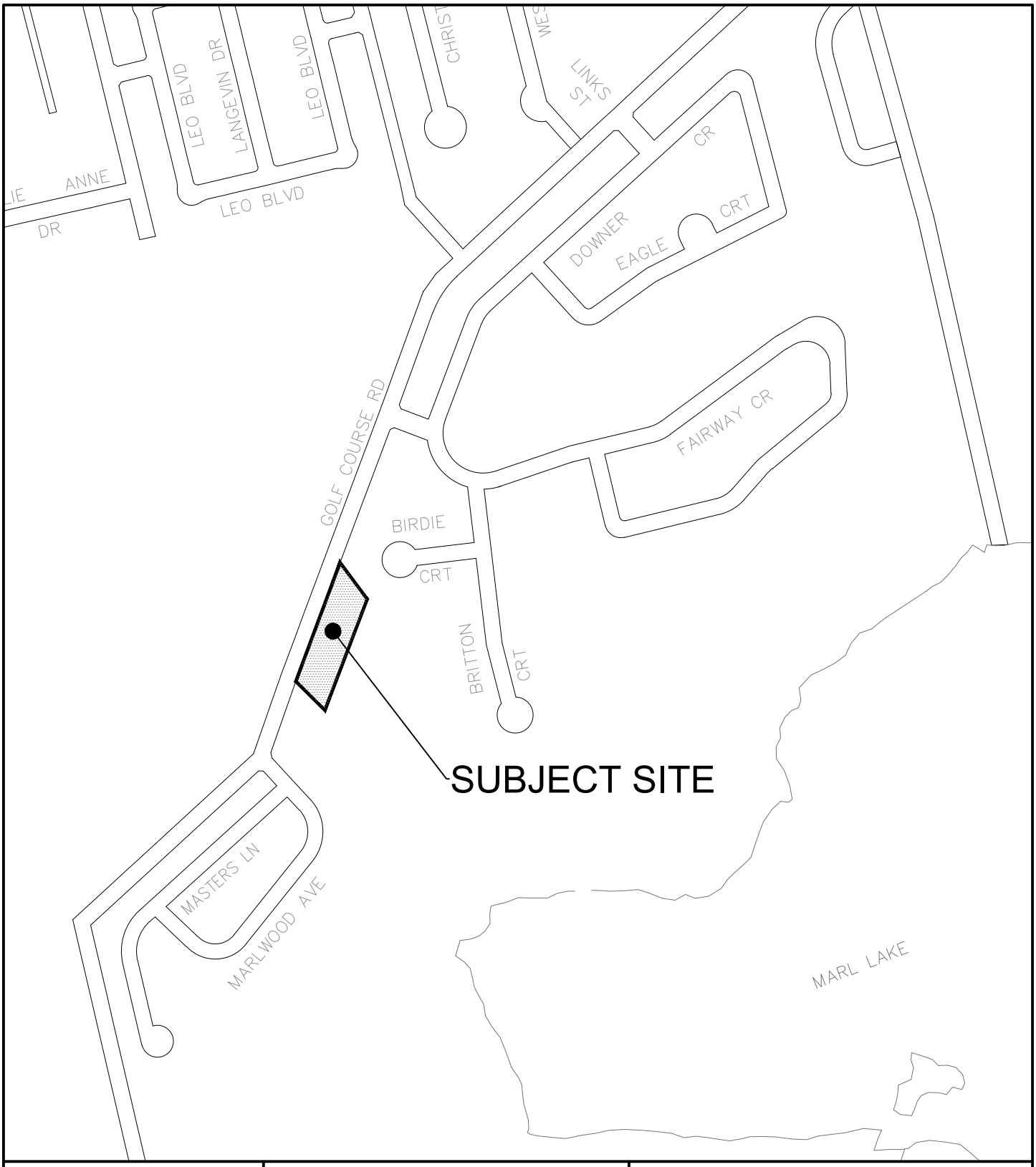
The same proponent is also proposing an extension of Master Lane which will be covered under a separate FSR as the two properties are independent of each other from a grading, servicing and drainage perspective. The property subject to this report can be thought of as an "infill" development as no new roads are required, and services are already available with the simple extension of service laterals.

1.1 Objectives

The objectives of this FSR for the nine proposed single-family lots fronting onto Golf Course Road are to:

- Identify any engineering constraints on development limits.
- Confirm location of existing infrastructure both internal and adjacent to the subject site.
- Not available supply of municipal water to the frontage of the property to be confirmed by the Town's water model.
- Identify sewage generation rates.
- Evaluate stormwater management opportunities and constraints and to design post development stormwater management controls to ensure:
  - A safe overland flow route from the site.
  - Required stormwater quality and quantity controls.
  - Review Geotechnical findings to evaluate soil conditions for soak away pits for roof and driveway areas.

All of the above will be done in accordance with accepted engineering practices and municipal standards.



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BURNSIDE

3 Ronell Crescent, Collingwood, Ontario, L9Y 4J6
telephone (705) 446-0515 **fax** (705) 446-2399

Client

TPC MARLWOOD INC.

31 MARLWOOD AVENUE
WASAGA BEACH, ON
L9Z1S8

Drawing Title

MARLWOOD (10 LOTS)

KEY MAP

Drawn	Checked	Date	Drawing No.
KAG	EDT	17/09/25	1
Scale		Project No.	
NTS		300039210	

File Name: 039210 - KEY MAP.dwg Date Plotted: September 26, 2017 - 9:33 AM

1.2 Existing Conditions

The approximately 0.86 hectare site is currently partially a vacant lot with trees, includes the remnants of the old entrance to the golf course, and includes portions of the first hole and second tee deck of the Marlwood Golf and Country Club. There are no existing structures with the exception of existing utilities along the frontage of Golf Course Road. There are existing single family homes to the north and south part of Marlwood Estates. The subject site slopes are split, with grades draining towards Golf Course Road, and the majority of the grades draining towards the Golf Course. The lands are fairly hummocky with depression storage available to trap runoff. Refer to Figure 2.

1.3 Development Limits

Development limits as noted are Golf Course Road municipal right-of-way (R.O.W.) and existing neighborhoods to the north and south. An existing easement along the south end of the proposed nine lots is a drainage swale in favour of the Town of Wasaga Beach. It appears this drainage easement services the drainage from Municipal Addresses 1, 3 and 5 Marlwood Avenue. It also appears to be an allowance for drainage of a future overland flow route from Golf Course Road through the golf course towards Marl Lake. The easement description and purpose are provided in Appendix A.

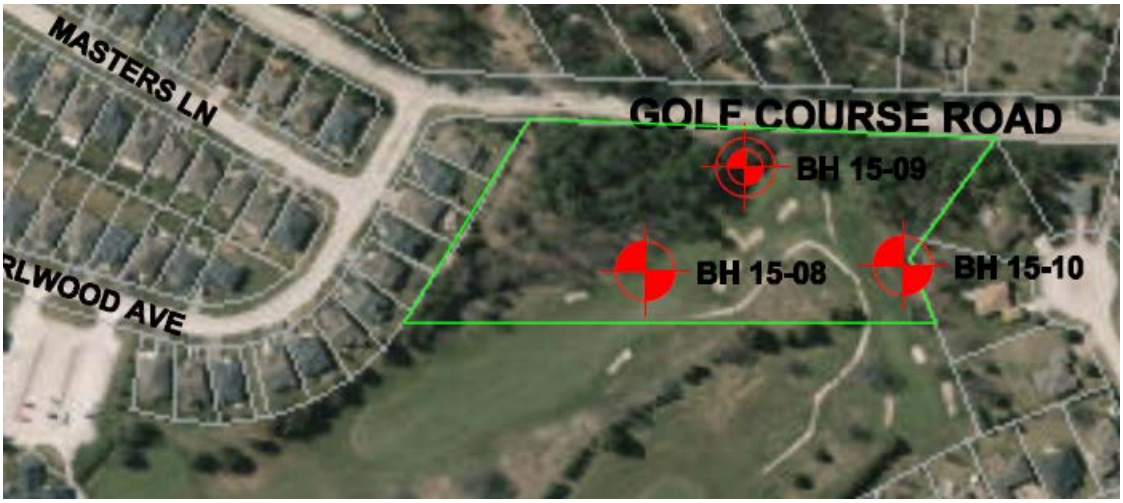
The proposed 0.86 ha development is not adjacent to any wetlands or watercourse features within 200 m. However the woodlot component of the area has been assessed through an EIS prepared by Azimuth under separate cover. It was noted as medium constraint.

The Draft Plan lot fabric has also been established, based on respecting existing municipal and utility infrastructure on Golf Course Road, to have utilities at property lines where possible (examples would include hydro poles and utility pedestals). The lot fabric also establishes frontages and lot sizes similar to those immediately to the north and south.

1.4 Geotechnical Investigation

A Preliminary Geotechnical Investigation was undertaken by SPL/WSP, dated November 2015. Refer to Appendix E for enclosure of the full Report. Boreholes and a groundwater monitoring well were completed at the following locations. Refer to image below. This report will be updated shortly to Final and submitted to the Town for review.

Image 1 Borehole Locations

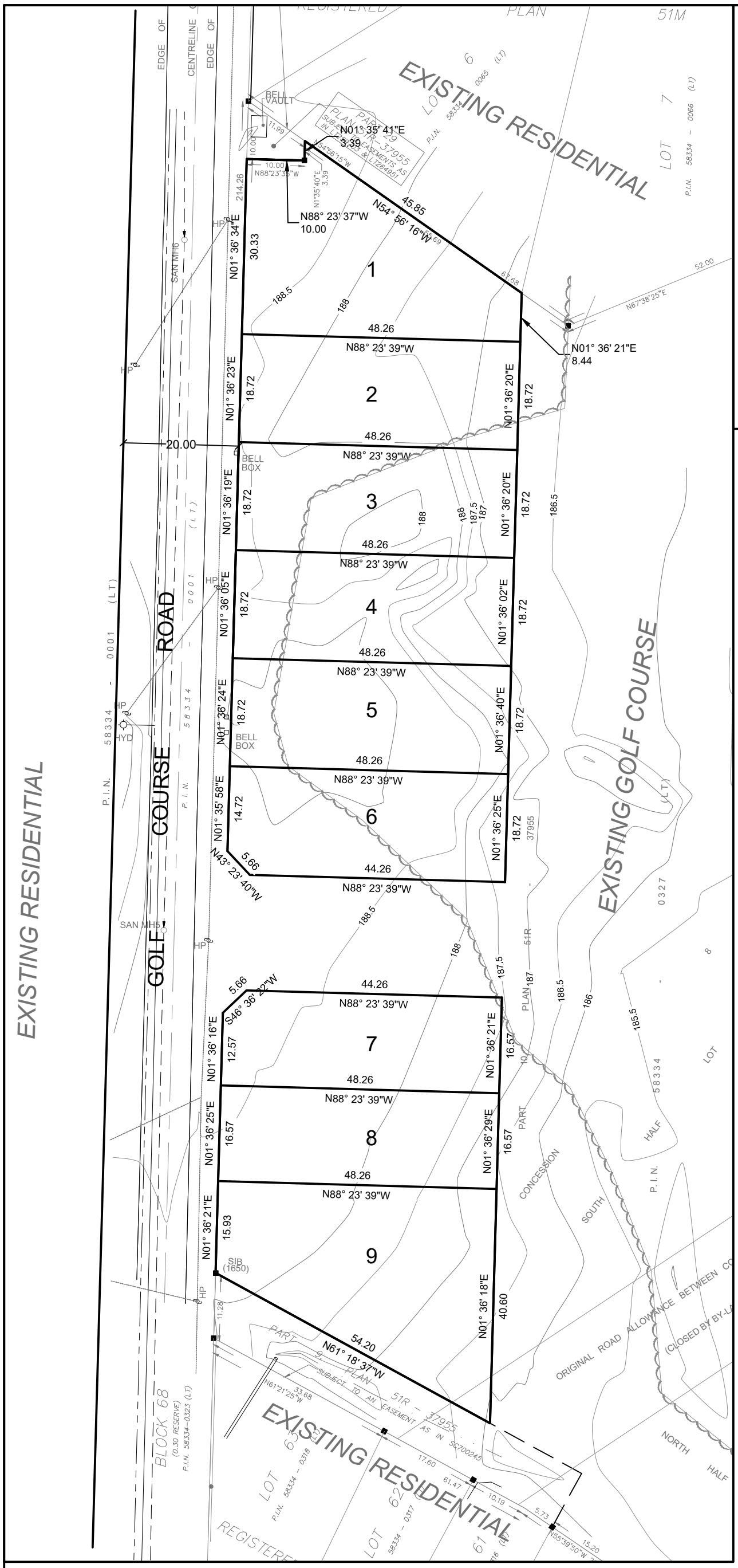


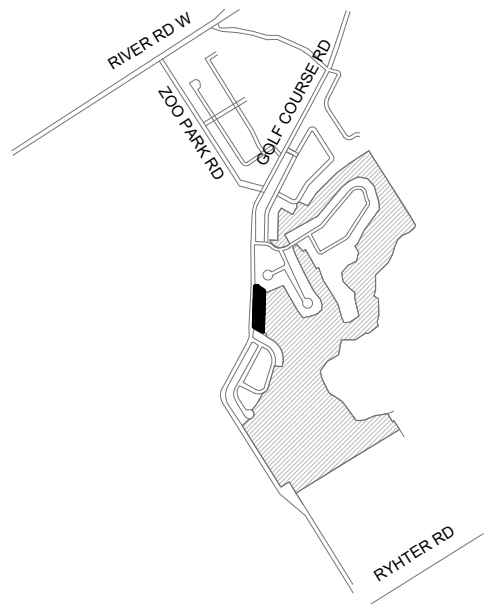
1.4.1 Soil Types

Generally, boreholes sampled on site (BH 15-08 to BH 15-10) revealed the soils to be sand with a layer of marl at varying depths, with a layer of topsoil ranging from 5 to 15 cm in depth. The marl was generally shallow enough for footings to extend below the bottom of the marl layer. Infiltration practices will also be effective if extended below the marl layer.

1.4.2 Groundwater Conditions

Groundwater was observed in Borehole 15-09 at a depth of 4.9 mbg in September 2015. A seasonal high level reading was taken in April of 2016 at 4.38 mbg, and the Summary Table is included in Appendix E.





KEY PLAN N.T.S.

SUBJECT PROPERTY

ADDITIONAL LANDS OWNED BY APPLICANT

ADDITIONAL INFORMATION

As required under Section 51(17) of the Planning Act.

a), b), e), f), g) & j) – on plan
c) – on key plan
d) – see statistics
h) – piped water to be installed by developer
i) – sandy
k) – all municipal services to be made available
l) – DO WE HAVE TO INCLUDE THE BELL EASEMENT AND DRAINAGE BLOCK TO THE SOUTH IN THIS DRAFT PLAN

STATISTICS

PROPOSED LAND USE	LOT/BLOCK	AREA
SINGLE DETACHED RESIDENTIAL	1-9	0.86ha

APPROVED SUBJECT TO CONDITIONS IN ACCORDANCE WITH SECTION 51(31) OF THE PLANNING ACT, RSO, CAP. P.13, AS AMENDED,

THIS _____ DAY OF _____,_____

DIRECTOR OF PLANNING, DEVELOPMENT AND TOURISM, COUNTY OF SIMCOE

OWNER'S CERTIFICATE

We authorize LOFT Planning Inc. to prepare and submit this Plan of Subdivision for approval.

A.S.O. _____

TPC MARLWOOD INC. date

SURVEYOR'S CERTIFICATE

I hereby certify that the boundaries of the lands being subdivided and their relationship to the adjacent lands are accurately and correctly shown.

RUDY MAK SURVEYING LTD. date

I-T-0003

DRAFT PLAN OF SUBDIVISION

Part of south half of Lot 26
Concession 7
Town of Wasaga Beach
County of Simcoe
(Geographic Township of Flos)

Date: September 25, 2017

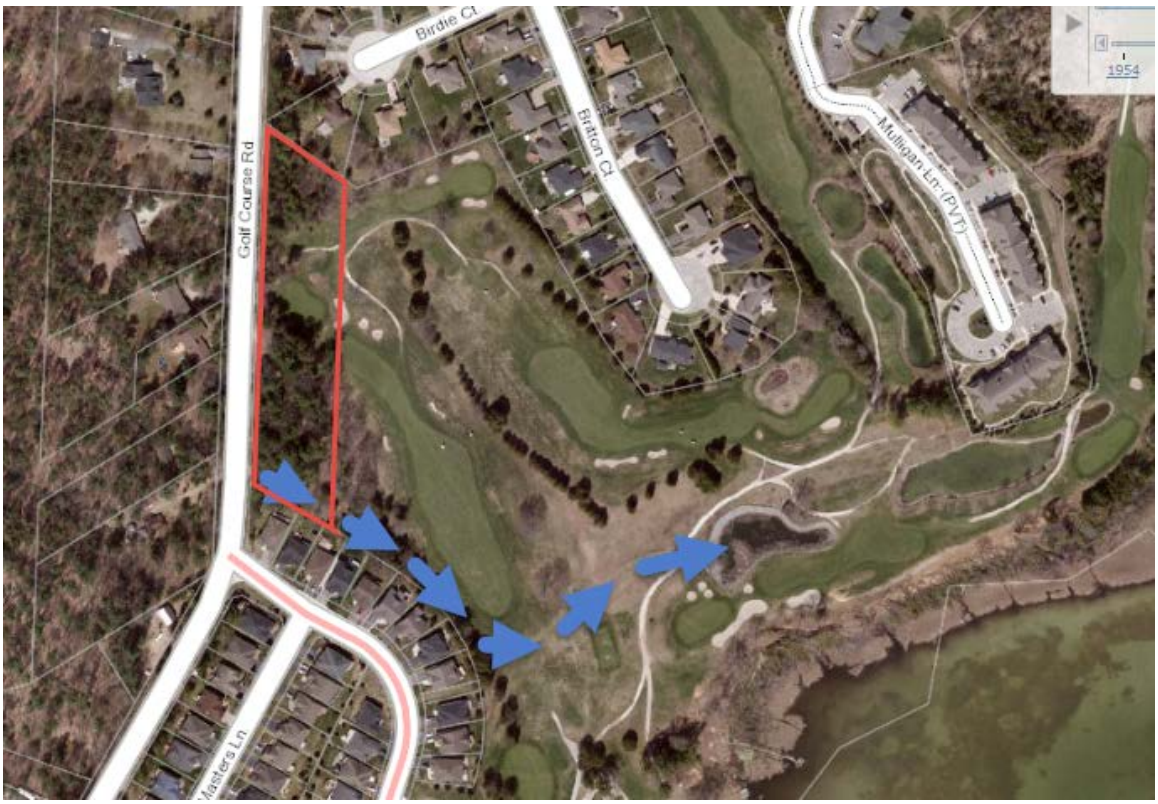
N

1.5 Proposed Development

The proposed development is to consist of a nine single-family homes fronting onto Golf Course Road with approximately 60ft frontages. This description does not include the additional lots proposed for the extension of Masters Lane where a second FSR will be submitted.

The proposed development will be graded to ensure that the impact of the development will not adversely affect adjacent private property, and that drainage will be directed to stormwater management system(s). An emergency overland flow route will direct runoff through the Golf Course via the public easement to an existing Golf Course SWM pond adjacent to the Marl Lake, as illustrated below.

Image 2 Emergency Overland Flow Route



BURNSIDE

Figure Title

MARLWOOD (10 LOTS)

EXISTING CONDITIONS

Client

TPC MARLWOOD INC.

Drawn	Checked	Date	Figure No.
KAG	EDT	17/09/25	**3**
Scale		Project No.	
1:750		300039210	

File: \\OSCAR\Shared Work Areas\039210 - Marlwood Golf Course 10 Lots\04_Preliminary\003_ProductionDwg\039210 - Existing Conditions.dwg Date Plotted: September 26, 2017 - 9:34 AM

2.0 Water Supply and Distribution

Water servicing for the proposed nine single family lots will be an extension of service laterals from the existing watermain on Golf Course Road. The Town's consultant will run the additional demand of these nine lots when evaluating the extension of watermain on Master's Lane.

2.1 Existing Water Infrastructure

Based on the available information shown on Town of Wasaga Beach Record Drawing SW6-RD (refer to Appendix B), the existing water infrastructure in proximity to the site consists of a 400 mm diameter watermain along the north side of Golf Course Road that provides an existing fire hydrant located centrally in front of proposed Lot 5 of 9 on the opposite side of the road.

2.2 Proposed Water Servicing

The water demand for the development has been calculated to be 0.74 L/s + 38 L/s fire flow, for a total of 38.74 L/s. Water Demand Calculations for the proposed development have been included in Appendix C.

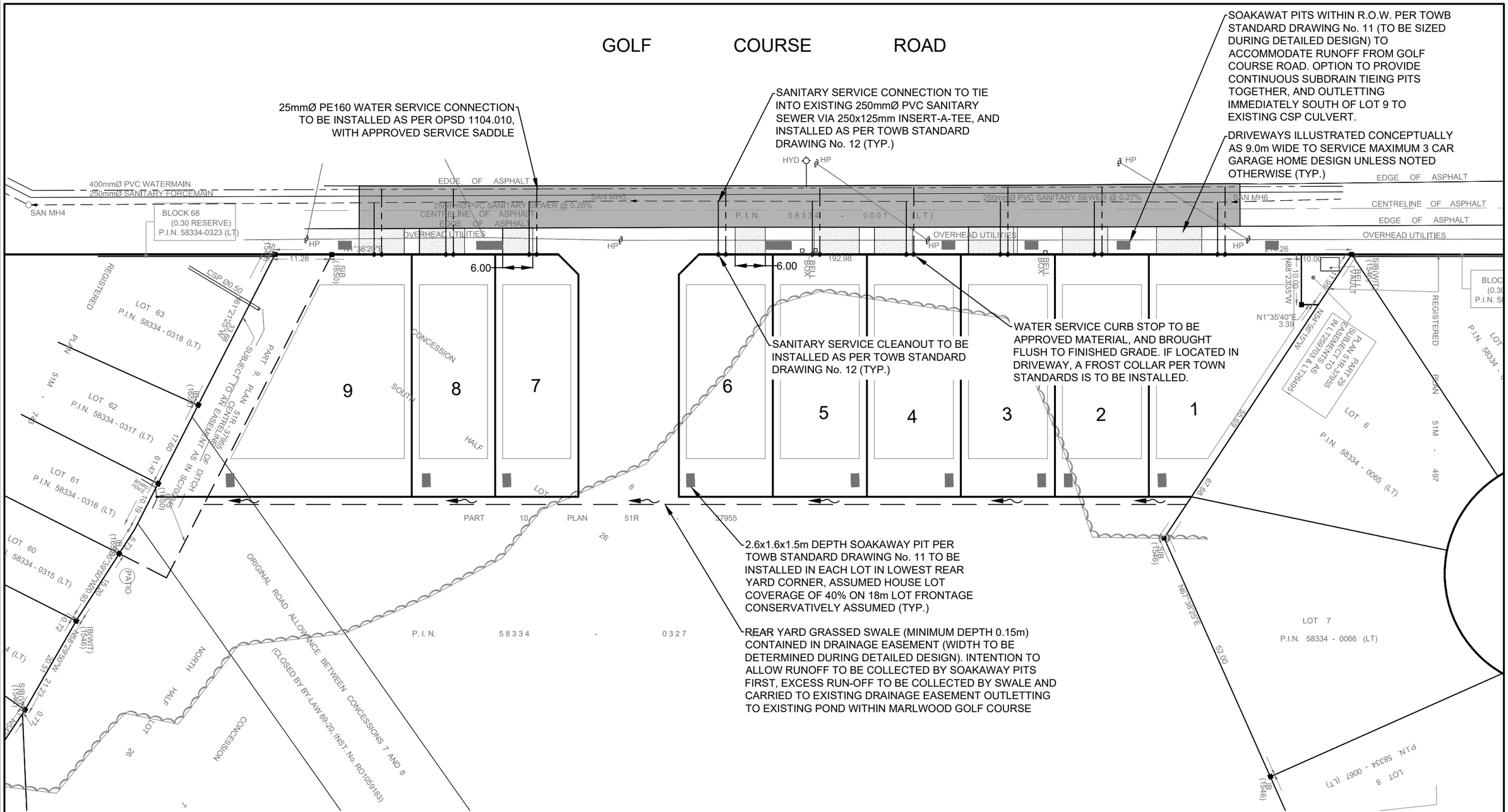
Refer to Drawing Site Servicing Plan (Figure 4) for the proposed water service layouts.

3.0 Sanitary Servicing

Sanitary servicing for the nine proposed lots will be an extension of sanitary laterals from the 250 mm PVC sewer generally running down the centerline of Golf Course Road. Refer to Appendix B, Drawings SW6-RD and FM5-RD for existing 'as-built' conditions. The sewer has sufficient depth to allow for a full basement construction if desired for any of the nine proposed lots. The sewer continues across the entire frontage of the proposed nine lots.

The sanitary service connection to each lot will be 125 mm and is to be constructed as per the Town of Wasaga Beach STD. DWG. No. 12.

Refer to Drawing Site Servicing Plan (Figure 4) for the proposed sanitary lateral layout.



LEGEND

- SANITARY SEWER/MANHOLE
- SANITARY SINGLE HOUSE CONNECTION WITH CLEANOUT
- WATER CONNECTION
- EXISTING SANITARY SEWER
- EXISTING WATERMAIN
- SOAKAWAY PIT

N

0 10 20 40 60
Metres

BURNSIDE

Client: **TPC MARLWOOD INC.**

Figure Title: **MARLWOOD (10 LOTS)**

PRELIMINARY UNDERGROUND SERVICING

Drawn	Checked	Date	Figure No.
KAG	EDT	17/09/25	4
Scale: 1:750		Project No.: 300039210	

Date Plotted: September 26, 2017 - 9:38 AM

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4.0 Stormwater Management Plan

4.1 Existing Storm Drainage System

The proposed nine lots are generally vacant land with a woodlot and portions of the first and second holes of the Marlwood Golf Course. The lands also include the former access to the golf course club house. The subject site topography generally drains east to southeast towards the golf course, and the existing pond on the golf course property. Refer to Figure 5. There is no existing internal stormwater infrastructure on the site. There is currently no existing stormwater infrastructure on Golf Course Road along the frontage of the subject site.

4.2 Proposed Storm Drainage System

The proposed development for the site includes the nine single-family residential units. Given the lack of a storm sewer outlet and the fact local sandy soils provide the opportunity for infiltration practices, all impervious area will drain internally to soak away pits per Town of Wasaga Beach Standard Detail 11. Although the nine lots exceed what would be considered by definition “infill”, the total proposed area of the nine lots is approximately 0.86 ha. The Ministry of the Environment and Climate Change (MOECC) recommends lot-level controls (LID measures) for developments of this size given the sandy soil type generally in the area.

Water quality and quantity control will be provided via surface storage and the soak-away pits. By default, Low Impact Development (LID) design elements will be utilized further downstream, as all the drainage will pass through a series of drainage networks of more than 200 m of overland flow through the golf course prior to reaching the existing golf course SWM pond. The same SWM pond services the majority of the existing development of Masters Lane. This flow path is only anticipated to be required during a major infrequent rainfall event or emergency runoff event (spring rain on snow).

The site will be graded to provide an overland flow route to the existing golf course overland flow route to the stormwater management facility for the major storm events prior to reaching the outlet to Marl Lake.

Image 3 Overland Flow Route

Water level monitoring by SPL Consultants completed April 2016 indicates that the groundwater level is approximately 4.38 m below existing ground elevation (mbg). The groundwater is deep and will not impact the design of the soak-away pits for the nine lots.

5.0 Site Grading

The site grading design will take into consideration the following requirements and constraints:

- Conform to the Town of Wasaga Beach grading criteria.
- Match existing and proposed boundary grading conditions.
- Minimize required earthworks.
- Provide more than minimum cover on proposed servicing.
- Provide a design that is compatible with the proposed grading for the adjacent lands.

Grading will provide an emergency overland flow route to the golf course drainage system to the golf course SWM pond for the majority of flows. Smaller drainage areas near the driveways along Golf Course road will be directed to the roadside soak-away pits or to a possible new shallow roadside ditch with driveway culverts and headwalls. This arrangement generally conforms to the pre-development drainage patterns on site. See the Preliminary Grading Plan Figure 5.

EXISTING ASPHALT TO BE REMOVED, AND REPLACED TO MATCH EXISTING GRADE FOLLOWING INSTALLATION OF SERVICE CONNECTIONS. PLACEMENT AND COMPACTION OF GRANULARS AND ASPHALT TO FOLLOW TOWB STANDARDS

FINISHED GRADE AT LIMIT OF R.O.W. TO BE RE-GRADED FROM EXISTING, AS REQUIRED, TO MATCH EDGE OF PAVEMENT, IN ORDER TO ASSIST IN ACHIEVING MINIMUM 300mm APRON GRADE ABOVE EXISTING EDGE OF PAVEMENT

FINISHED GRADE AT R.O.W. SOAKAWAY PITS TO BE MINIMUM 0.15m BELOW EDGE OF DRIVEWAY AND GRADE AT LIMIT OF R.O.W. LOCALIZED SHALLOW SWALES/DEPRESSIONS TO BE GRADED BETWEEN DRIVEWAYS TO DIRECT FLOW TO SOAKAWAY PIT (TO BE ILLUSTRATED DURING DETAILED DESIGN)

GOLF COURSE ROAD

MATCH INTO EXISTING GRADE AT LIMIT OF PROPERTY (TYP.)

REAR YARD GRASSED SWALE (MINIMUM DEPTH 0.15m) CONTAINED IN DRAINAGE EASEMENT (WIDTH TO BE DETERMINED DURING DETAILED DESIGN). INTENTION TO ALLOW RUNOFF TO BE COLLECTED BY SOAKAWAY PITS FIRST, EXCESS RUN-OFF TO BE COLLECTED BY SWALE AND CARRIED TO EXISTING DRAINAGE EASEMENT OUTLETTING TO EXISTING POND WITHIN MARLWOOD GOLF COURSE

EXISTING DRAINAGE EASEMENT OUTLETTING AT EXISTING POND IN MARLWOOD GOLF COURSE

LEGEND

227.20 × 227.20 — PROPOSED GRADE WITH EXISTING GRADE

227.20 — APRON GRADE (MINIMUM 300mm ABOVE EDGE OF PAVEMENT)

PROPOSED SWALE

MAXIMUM 3:1 SLOPE UNLESS OTHERWISE NOTED

SD — SPLIT DRAINAGE LOT TYPE

SOAKAWAY PIT

EXISTING OVERLAND FLOW ROUTE

PROPOSED OVERLAND FLOW ROUTE

0 10 20 40 60 Metres

BURNSIDE

Figure Title: **MARLWOOD (10 LOTS)**

PRELIMINARY GRADING

Client: **TPC MARLWOOD INC.**

Drawn	Checked	Date	Figure No.
KAG	EDT	17/09/25	5
Scale		Project No.	
1:750		300039210	

File: \\OSCAR\Shared Work Areas\039210 - Marlwood Golf Course 10 Lots\04_Preliminary\003_Production\Dwg\039210 - PRELIMINARY GRADING.dwg Date Plotted: September 26, 2017 - 9:42 AM

6.0 Erosion and Sediment Control

Given the generally flat topography and the small drainage area of 0.86 ha, the subject lands are considered to have a low-to-moderate erosive potential. Effective environmental and sedimentation controls must be in place on a temporary basis, both during the construction period and as permanent features of the completed development of the site.

To ensure stormwater quality control during construction, it is imperative that effective environmental and sedimentation control be in place on a temporary basis throughout the entire area prior to construction activities.

It is recommended that, during the construction phase, the following practices be implemented and maintained throughout to mitigate the off-site transportation of eroded soils:

- Restoration of exposed surfaces with vegetative and non-vegetative material as soon as construction schedules permit.
- Provision of silt control fences for the duration of construction activities in all areas where surface drainage flows over distributed area and off the site.

Prior to the commencement of construction activities, a siltation control fence should be installed in strategic locations so as to filter such surface runoff. This fence will delineate areas for construction activities.

All proposed catchbasins and area drains on site shall have the underside of the grates covered with Terrafix 240R non-woven geotextile material and include a sediment containment ring around these inlets during construction period to protect them from filling with sediment. The Contractor shall regularly clean the sediment and debris filtered out by these structures. The Contractor shall remove and dispose of the geotextile material at the end of the construction period.

Image 4 Sediment Containment Ring

Through the implementation of the proposed construction practices discussed above and regular maintenance of these controls, it can be ensured that satisfactory protection of the surrounding areas will occur during the construction stage of the proposed development.

7.0 Traffic Impacts

Traffic impacts have been assessed by Burnside under separate cover.

8.0 Conclusion and Recommendations

The proposed development has been reviewed with respect to the Town of Wasaga Beach Engineering Standards and the servicing analysis within the Report has shown that the proposed development can be serviced by the surrounding municipal infrastructure.

The servicing analysis provided within this Report is summarized as follows:

Development Limits

- Development limits are defined by existing legal fabric, drainage easements and providing a lot depth that minimizes impacts into the Marlwood Golf Course.
- The development of the nine lots is not governed by any setbacks from any environmental features. The woodlot was characterized as medium constraint. Marl Lake is approximately 240 m to the south and east and does not have an impact on this development from setbacks nor flood hazard.

Water Servicing

- The development will be serviced by connecting water services to the existing 400 mm watermain on Golf Course Road.
- An existing hydrant is centrally located on the opposite side of the road from proposed Lot 5 for fire protection.

Sanitary

- Sanitary is to be serviced through extensions of service laterals from the existing 250 mm sanitary sewer on Golf Course Road.

Storm

- The overland flow route remains the same pre-development to post-development conditions.

- The 0.86 ha development of each lot will be treated as “infill” from a stormwater perspective that each lot will provide soak-away pits per Town Standard Detail 11 for all impervious areas to promote infiltration, minimize runoff, maintain the hydrologic cycle.
- LID practices are achieved based on the native sandy soil to infiltrate runoff. A layer of Marl exists based on the 3 Boreholes, however the marl layer can be excavated or the LID measure can be cut through this layer.

Erosion and Sedimentation Control

- Sediment controls will be installed around all new infiltration intakes.
- Construction fencing with siltation barrier will be required on site and will act as sediment control barrier.
- The development area is less than 2 ha and thus a sediment basin is not required.

Traffic Impact (Under separate cover)

The Traffic Impact Study (TIS) prepared by Burnside has been submitted under separate cover.

This Functional Servicing and Stormwater Management Report has been designed to be in support of the OPA, Zoning and Draft Plan approval. The findings of this Report indicate that the proposed development can be constructed to the Town of Wasaga Beach Engineering Standards, and these recommendations will assist with the development of the detailed engineering in support of a future Subdivision Agreement.

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[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Drainage Easement Description

EASEMENT IN GROSS

1. Grant of Easement

The Transferor does hereby grant, convey, and transfer unto the Transferee, its successors and assigns, the right, liberty, privilege, and easement in, over, along, upon, under and through the lands or tract herein described to lay down, construct, operate, maintain, inspect, patrol, alter, remove, replace, reconstruct, or repair or use for municipal works purposes required by the Transferee, including without limitation all such structures, communication systems, equipment and appurtenances whether or not similar to that foregoing as may be necessary, useful or convenient in connection therewith or incidental thereto for the purposes of storm sewer and surface water drainage.

2. Right of Ingress and Egress

Together with the right of ingress and egress to, from, in an over the tract for itself, its servants, agents, contractors, subcontractors, with or without vehicles, machinery and equipment for all purposes, useful or convenient in connection with or incidental to the exercise and enjoyment of the right, privilege, and easement herein granted, conveyed and transferred as and from the date hereof and continuing in perpetuity or until the Transferee shall execute and deliver a surrender thereof.

3. Terms and Conditions

The aforesaid right, liberty, privilege and easement is herein granted, conveyed and transferred on the following terms, stipulations and conditions which are hereby mutually covenanted and agreed to by and between the Transferee and Transferor and such other parties as are designated herein.

(a) Right of Transferor

The Transferor shall have the right fully to use and enjoy the tract including without limitation:

(i) the right to construct such work or works as the Transferor may be obligated to construct pursuant to any agreement or undertaking given to the Transferee;

(ii) the right to repair existing drains and fences, except as may be necessary for any of the purposes hereby granted, conveyed and transferred to the Transferee;

(iii) provided that without the prior written consent of the Transferee the Transferor shall not, after construction of the works, remove or permit to be removed any soil from the Tract nor shall the Transferor excavate, drill, install, erect or permit to be excavated, drilled, installed or erected in, over, upon, under or through the tract, any pit, well, foundation, pavement, building or other structure or other installation;

(iv) notwithstanding the foregoing, the Transferee upon request shall consent to the Transferor erecting new fences, constructing new drains, repairing the existing drains, regrading or landscaping the tract, surfacing or repairing lanes, roads, driveways, pathways and walks across, on and over the tract or any portion or portions thereof, provided that before commencing any of the work referred to herein, the Transferor:

(A) shall give the Transferee 30 days notice of the work to be carried out;
(B) shall exercise a high degree of care in carrying out such work;
(C) shall perform any such work in such a manner as not to endanger or damage any municipal works therein.

(b) Transferee's Rights Not to be Interrupted

The Transferee performing and observing the covenants and conditions on its part to be observed and performed, shall and may peaceably hold and enjoy the right, liberty, privilege and easement herein granted, conveyed, and transferred without hindrance, molestation or interruption on the part of the Transferor or by any person claiming by, through, under or in trust for the Transferor.

(c) Transferor' Title

If it shall appear that at the date hereof the Transferor is not the sole owner of the tract, this Indenture shall nevertheless bind the Transferor to the full extent of his interest therein, and if he shall after acquire a greater or the entire interest, this Indenture shall likewise be extended to such after-acquired interests.

(d) Additional Documents

The Transferor will, if so requested by the Transferee, execute such further and other documents of title and assurances in respect of the tract as may be requisite and such documents shall be prepared at the expense of the Transferee.

(e) Condition of Easement Tract

The Transferee covenants after the performance of any work on the tract, to restore the surface of the tract as far as practicable to the same condition as it was prior to the commencement of any work performed by the Transferee.

(f) Notices

All Notices to be given hereunder may be given by registered letter addressed to:

Transferor at Unit 12, 1140 Sheppard Ave.West, North York, Ontario M3K 2A2
Transferee at 30 Lewis Street,Wasaga Beach, Ontario L9Z 1A1

or such other address as the Transferor and Transferee may respectively from time to time designate in writing, and any such Notice shall be deemed to have been given and received by the addressee three (3) days after the mailing thereof, postage prepaid and registered.

4. Covenants

(a) Running with the Land - The right, liberty, privilege and easement herein granted, conveyed and transferred, and the burden herein set forth, shall be of the same force and effect to all intents and purposes as a covenant running with the tract, and each and every part thereof.

5. Successors and Assigns

This Indenture, including all the covenants and conditions herein contained shall extend to, be binding upon and enure to the benefit of each of the parties hereto, all of the heirs, executors, administrators, successors-in-title, and assigns of the parties hereto respectively and wherever the singular or masculine is used in this Indenture, it shall be construed as if the plural or the feminine or the neuter, as the case may be, had been used, where the context of the Party or Parties hereto so require, and the rest of the sentence shall be construed as if the grammatical and terminological changes thereby rendered necessary had been made.

Properties

PIN	58334 − 0327 LT	*Interest/Estate*	Fee Simple	☑ Add Easement
Description	PT N1/2 LT 26 CON 7 FLOS, PT S1/2 LT 26 CON 8 FLOS, PT ORIG RDAL BTN CON 7 & 8 FLOS (STOPPED UP & CLOSED BY BY−LAW 89−20 AS IN RO1059183), PART 1, PLAN 51R35934; WASAGA BEACH			
Address	WASAGA BEACH			

Consideration

Consideration $2.00

Transferor(s)

The transferor(s) hereby transfers the easement to the transferee(s).

Name MARLWOOD GOLF & COUNTRY CLUB INC.

Address for Service Unit 12, 1140 Sheppard Avenue West
North York, Ontario
M3K 2A2

I, Ralph Canonaco, A.S.O., have the authority to bind the corporation.
This document is not authorized under Power of Attorney by this party.

Transferee(s) *Capacity* *Share*

Name THE CORPORATION OF THE TOWN OF WASAGA BEACH

Address for Service 30 Lewis Street
Wasaga Beach, Ontario
L9Z 1A1

Statements

Schedule: See Schedules

Signed By

Janet Lynne White		150 Hurontario St., PO Box 100 Collingwood L9Y 3Z4	acting for Transferor(s)	Signed	2008 11 19
Tel	7054454930				
Fax	7054451871				
Janet Lynne White		150 Hurontario St., PO Box 100 Collingwood L9Y 3Z4	acting for Transferee(s)	Signed	2008 11 19
Tel	7054454930				
Fax	7054451871				

Submitted By

BAULKE AUGAITIS STAHR LLP	150 Hurontario St., PO Box 100 Collingwood L9Y 3Z4		2008 12 15
Tel 7054454930			
Fax 7054451871			

Fees/Taxes/Payment

Statutory Registration Fee	$60.00
Provincial Land Transfer Tax	$0.00
Total Paid	$60.00

LAND TRANSFER TAX STATEMENTS

In the matter of the conveyance of: 58334 − 0327 PT N1/2 LT 26 CON 7 FLOS, PT S1/2 LT 26 CON 8 FLOS, PT ORIG RDAL BTN CON 7 & 8 FLOS (STOPPED UP & CLOSED BY BY−LAW 89−20 AS IN RO1059183), PART 1, PLAN 51R35934; WASAGA BEACH

BY: MARLWOOD GOLF & COUNTRY CLUB INC.

TO: THE CORPORATION OF THE TOWN OF WASAGA BEACH

1. GEORGE VADENBONCOEUR

I am

☐ (a) A person in trust for whom the land conveyed in the above−described conveyance is being conveyed;

☐ (b) A trustee named in the above−described conveyance to whom the land is being conveyed;

☐ (c) A transferee named in the above−described conveyance;

☑ (d) The authorized agent or solicitor acting in this transaction for THE CORPORATION OF THE TOWN OF WASAGA BEACH described in paragraph(s) (c) above.

☐ (e) The President, Vice−President, Manager, Secretary, Director, or Treasurer authorized to act for _____ described in paragraph(s) (_) above.

☐ (f) A transferee described in paragraph() and am making these statements on my own behalf and on behalf of _____who is my spouse described in paragraph(_) and as such, I have personal knowledge of the facts herein deposed to.

3. **The total consideration for this transaction is allocated as follows:**

(a) Monies paid or to be paid in cash	2.00
(b) Mortgages (i) assumed (show principal and interest to be credited against purchase price)	0.00
(ii) Given Back to Vendor	0.00
(c) Property transferred in exchange (detail below)	0.00
(d) Fair market value of the land(s)	0.00
(e) Liens, legacies, annuities and maintenance charges to which transfer is subject	0.00
(f) Other valuable consideration subject to land transfer tax (detail below)	0.00
(g) Value of land, building, fixtures and goodwill subject to land transfer tax (total of (a) to (f))	2.00
(h) VALUE OF ALL CHATTELS −items of tangible personal property	0.00
(i) Other considerations for transaction not included in (g) or (h) above	0.00
(j) Total consideration	2.00

4.

Explanation for nominal considerations:

o) Transfer of easement or right of way for no consideration.

5. The land is subject to encumbrance

PROPERTY Information Record

A. Nature of Instrument: Transfer Easement

LRO 51 Registration No. SC700245 Date: 2008/11/19

B. Property(s): PIN 58334 − 0327 Address WASAGA BEACH Assessment Roll No −

C. Address for Service: 30 Lewis Street
Wasaga Beach, Ontario
L9Z 1A1

D. (i) Last Conveyance(s): PIN 58334 − 0327 Registration No. SC621858

(ii) Legal Description for Property Conveyed: Same as in last conveyance? Yes ☐ No ☑ Not known ☐

E. Tax Statements Prepared By: Janet Lynne White
150 Hurontario St., PO Box 100
Collingwood L9Y 3Z4

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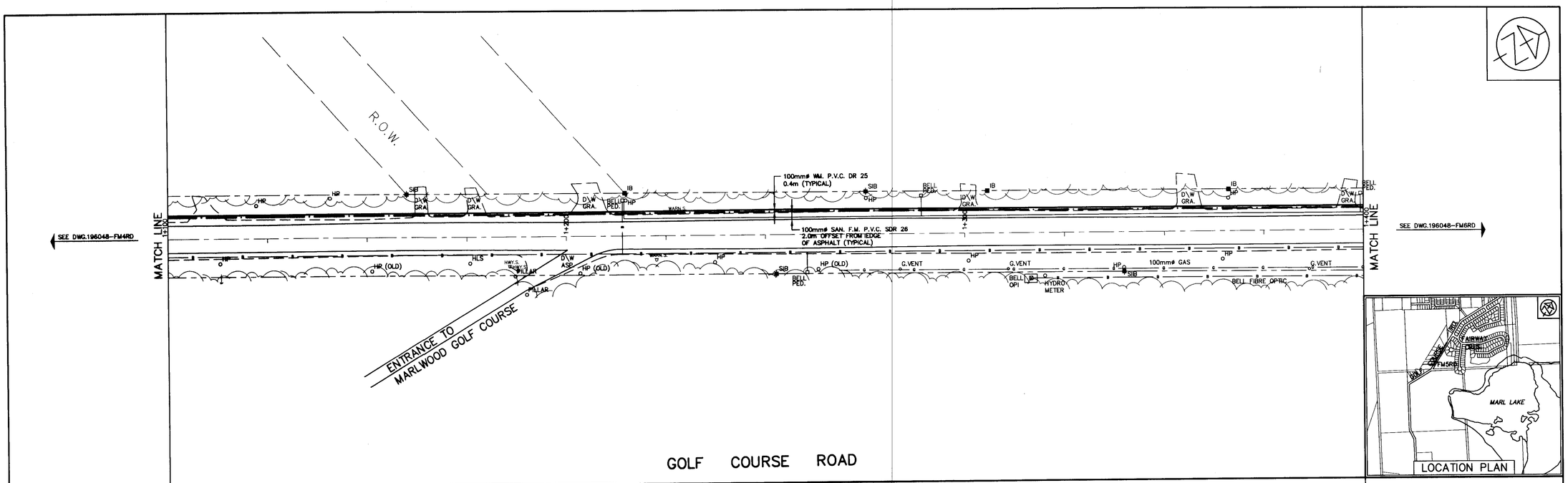
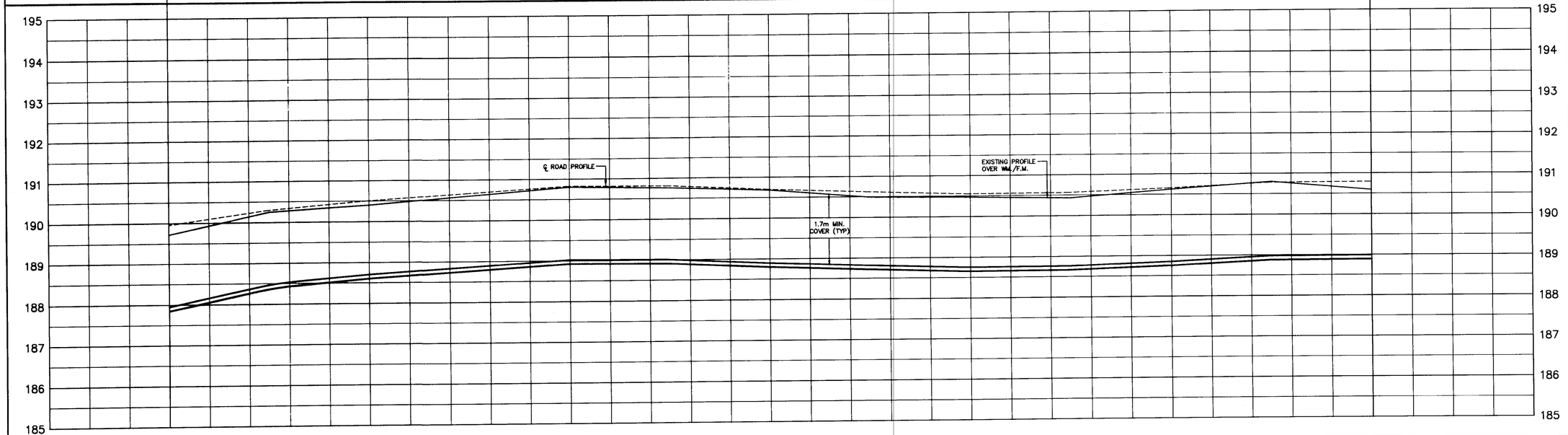
Appendix B

As-Built Drawings – Golf Course Road





CHAINAGE	1+100	1+125	1+150	1+175	1+200	1+225	1+250	1+275	1+300	1+325	1+350	1+375	1+400
℄ ROAD	189.95	190.29	190.50	190.66	190.82	190.81	190.70	190.62	190.055	190.56	190.65	190.78	190.79
℄ WM./F.M.	189.72	190.25	190.40	190.60	190.80	190.76	190.68	190.49	190.47	190.43	190.62	190.80	190.59

LEGEND

- PROPERTY LINE
- BURIED BELL CABLE
- BURIED BELL CONDUIT
- BURIED GAS MAIN
- PROPOSED WATER MAIN AND VALVE
- EX. SANITARY SEWER & M.H.
- PROPOSED SANITARY FORCEMAIN
- GV. PROPOSED GATE VALVE

NOTES :
1) LOCATION OF UTILITIES ARE APPROXIMATE.

PLOT: 1=5

RECORD DRAWING

COMPILED BY: D.H.	DATE: MAR. 1998
CHECKED BY: R.H.M.	DATE: MAR. 1998
DRAWN BY: D.H.	DATE: SEP. 1998
CHECKED BY: R.H.M.	DATE: SEP. 1998

NO.	REVISIONS	DATE	INITIAL
	REVISED RECORD DRAWING	SEP. 1998	R.H.M.

RECORD DRAWING
NOTICE TO USERS

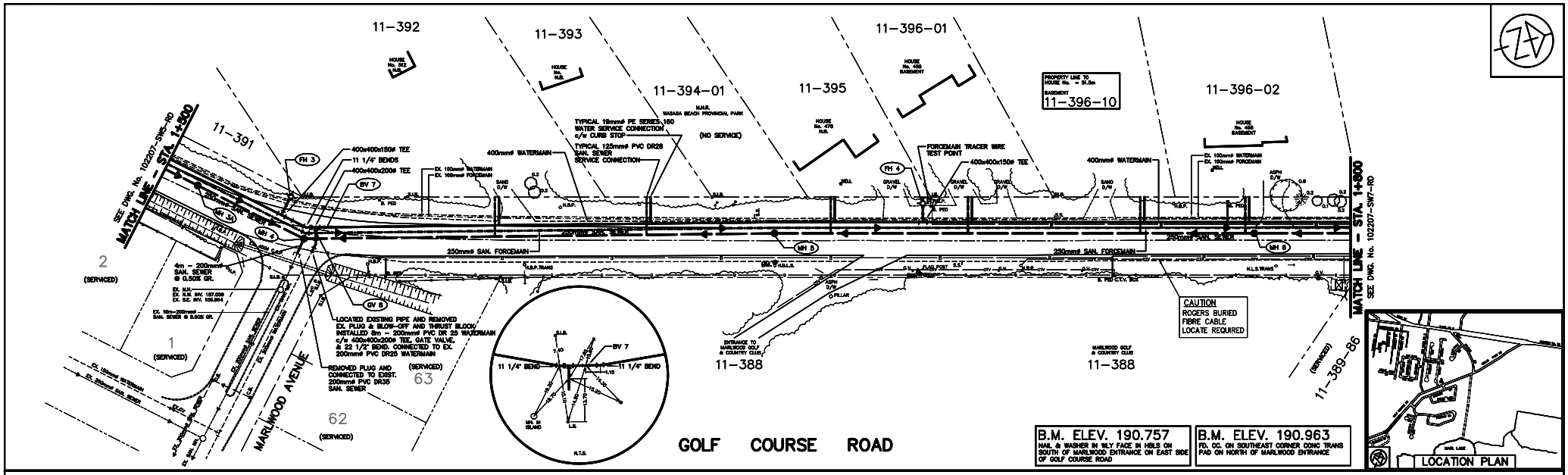
This Record Drawing may include information provided by others. Ainley & Associates Limited believes this information to be reliable but has not verified its accuracy and/or completeness and, accordingly, shall not be responsible for any errors or omissions which may result from its incorporation herein.

TOWN OF WASAGA BEACH
PROPOSED R.V. PARK SERVICING

PLAN & PROFILE
GOLF COURSE RD. STA. 1+100 TO SAT. 1+400

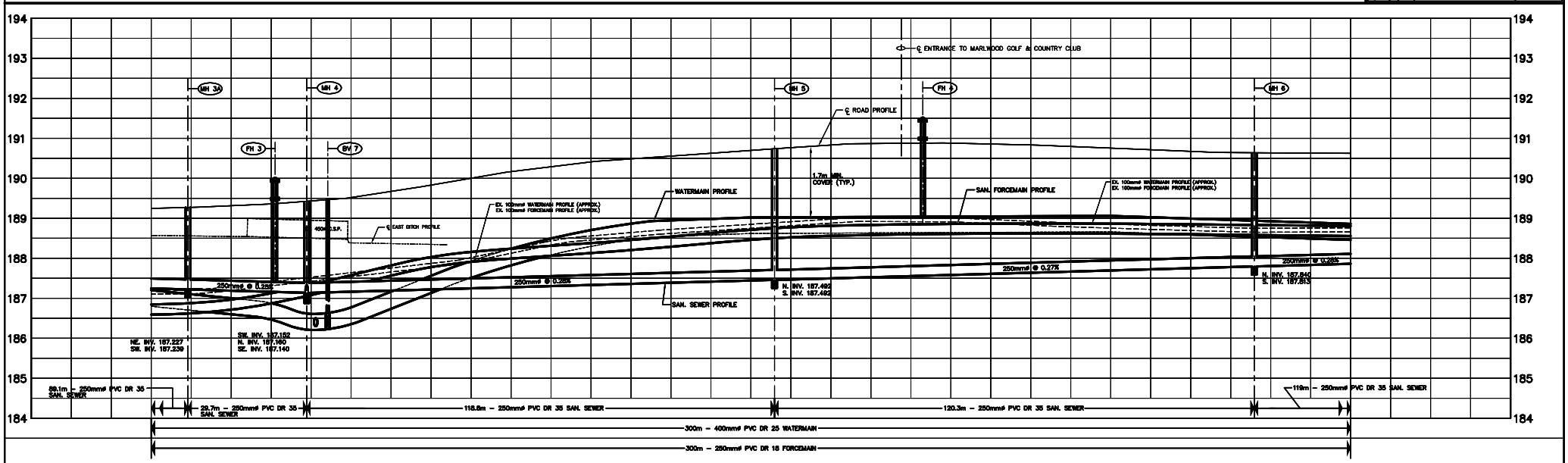
Ainley & Associates Limited
Consulting Engineers and Planners
Collingwood – Barrie – Belleville – Ottawa

SCALE: HORIZ: 1:500 VERT: 1:50			
DESIGN: R.H.M.	CHECKED: D.B.E.	DWG. 196048-FM5RD
DRAWN: D.P.	DATE: FEB. 1997	



B.M. ELEV. 190.757
NAIL & WASHER IN WLY FACE IN HBLS ON SOUTH OF MARLWOOD ENTRANCE ON EAST SIDE OF GOLF COURSE ROAD

B.M. ELEV. 190.963
FD. CC. ON SOUTHEAST CORNER CONC TRANS PAD ON NORTH OF MARLWOOD ENTRANCE



CHAINAGE: 1+500 | 1+525 | 1+550 | 1+575 | 1+600 | 1+625 | 1+650 | 1+675 | 1+700 | 1+725 | 1+750 | 1+775 | 1+800
PLOT 1=0.5

LEGEND

- PROPERTY LINE
- BURIED BELL CABLE
- BURIED GAS MAIN
- EXISTING WATER MAIN AND VALVE
- EX. SANITARY SEWER & M.H.
- PROPOSED WATER MAIN AND VALVE
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY FORCEMAIN

- MH PROPOSED SANITARY M.H.
- GV PROPOSED GATE VALVE
- FH PROPOSED FIRE HYDRANT, VALVE & HYDRANT LEAD
- BV PROPOSED BUTTERFLY VALVE

NOTE : 1) LOCATIONS OF UTILITIES ARE APPROXIMATE.

RECORD DRAWING

COMPILED BY: J.S.	DATE: OCT. 2004	
CHECKED BY: J.S.	DATE: OCT. 2004	
DRAWN BY: L.G.B.	DATE: OCT. 2004	
CHECKED BY: D.B.E.	DATE: OCT. 2004	

NO.	REVISIONS	DATE	INITIAL
	REVISED AS RECORD DRAWING	OCT. 2004	D.B.E.

RECORD DRAWING
NOTICE TO USERS

Information contained on this drawing may have changed since the completion of construction. Further, this drawing may contain information provided by others. While Ainley & Associates Limited believes this information to be reliable and correct as of the completion of construction, no warranty is provided as to its accuracy and/or completeness. As such, Ainley & Associates Limited shall not be responsible for any errors or omissions which may result from incorporation of the information herein.

SCALE:	HORZ. 1=250 VERT. 1=50
DESIGN:	D.B.E.
DRAWN:	P.C.S.
CHECKED:	B.K.O.
DATE:	MAR. 2004

TOWN OF WASAGA BEACH

EAST END SERVICING

PLAN & PROFILE
GOLF COURSE ROAD
STA. 1+500 TO STA. 1+800

Ainley Group — CONSULT ENGINEER PLANNER

CONTRACT No. 7A | DWG. 102207-SW6-RD

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Appendix C

Water Demand Calculations

BURNSIDE

2017/09/26 | 039210 | C. Scoble
Date | File No. | Name

Marlwood G.C Development - FSR
Project

Units : 9

Residential Density : 2.8 PPU

Population : 26

Domestic Water Demand: 270 - 450 $\frac{L}{Cap.\ Day}$ (MOECC, 3-9)

Peaking Factor: 5.4

Peak Water Demand: $= 450 \frac{L}{Cap.\ Day} \times 26 \times 5.4$

$= 0.74\ L/s$

Min. Fire Flow = 38 L/s @ 20.3 PSI (MOECC Standard)

Total Flow = 0.74 + 38
= 38.74 L/s

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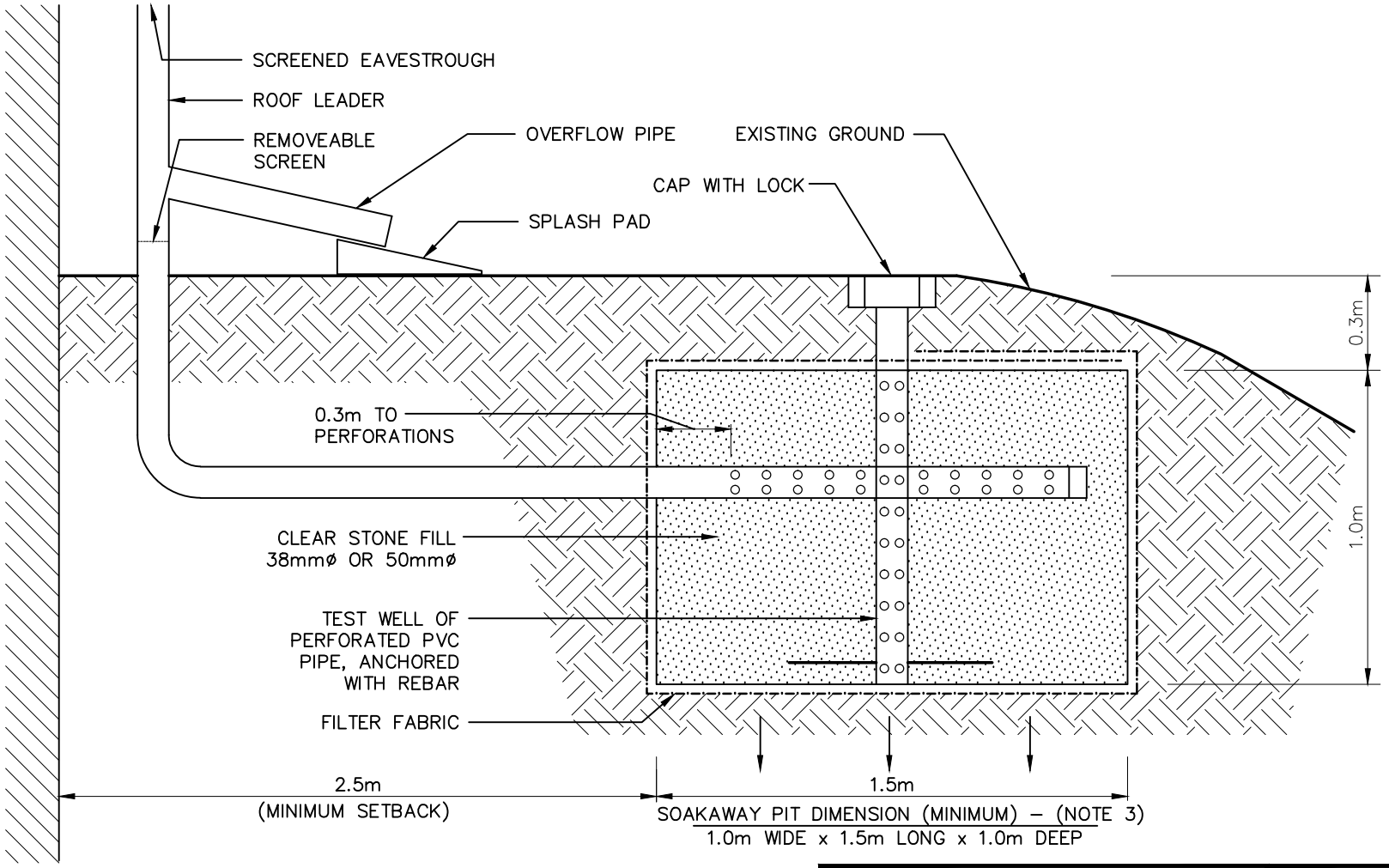
Appendix D

Stormwater Management Calculations



NOTE:

1. FILTER FABRIC TERRAFIX 270R OR EQUAL.
2. PROVIDE MINIMUM 0.5m CLEARANCE TO WATER TABLE FROM BOTTOM OF PIT.
3. SOAKAWAY PIT DIMENSIONS SHALL BE SIZED PER DESIGN ENGINEER RECOMMENDATION.
4. SOAKAWAY PIT TO BE INSPECTED BY DEVELOPER'S ENGINEER PRIOR TO BACKFILL.

TOWN OF WASAGA BEACH	
ROOF LEADER SOAKAWAY PIT DETAIL	
DRAWN: TMM	SCALE: N.T.S.
DESIGN: MJP	PLOT: 1=1
CHECKED: MJP	DATE: MAR 2015

TOWN OF WASAGA BEACH • INCORPORATED 1974 •

STD.DWG.No.11

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Appendix E

Geotechnical Report

REPORT ON
PRELIMINARY GEOTECHNICAL INVESTIGATION
MARLWOOD GOLF & COUNTRY CLUB
PROPOSED RESIDENTIAL DEVELOPMENT
31 MARLWOOD AVENUE, WASAGA BEACH, ONTARIO

Prepared For:

Marlwood Golf and Country Club
31Marlwood Avenue
Wasaga Beach, Ontario
L9Z 1S8

SPL Project No.:10002397
November 20, 2015

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Drawings

Drawing 1
Borehole Location Plan

Drawing 2
Drawing Drainage and Backfill Recommendations

Appendices

Appendix A
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Borehole Logs (Encl. Nos. 2 to 13)

Appendix B
Grain Size Analyses

Appendix C
General Requirements for Engineered Fill

Appendix D
Soil Characterization Letter

1. INTRODUCTION

SPL Consultants Limited (SPL) was retained by Marlwood Golf and Country Club to undertake a geotechnical investigation for the proposed residential development of the Marlwood Golf & Country Club located at 31 Marlwood Avenue in the Town of Wasaga Beach.

The subject property (site) is identified by civic address 31 Marlwood Avenue in the Town of Wasaga Beach. The site is situated on a relatively flat to gently sloping terrain, and abuts Golf Course Road, Marlwood Avenue and Masters Lane on the west side, Birdie Court, Britton Court, Mulligan Lane on the north side. The residential development of Park Place is located along the south boundary and Marl Lake is located along the east boundary. The property currently occupies Marlwood Golf and Country Club.

It is understood that the proposed development will consist of single family residential dwellings and will include internal roads, and associated municipal sewers and water supply. We also understand that the construction of a new clubhouse is being considered. The layout plan of the proposed development has not been prepared yet, as such, the finish floor elevations of the proposed construction and the invert of the site services is not known to us at the time of writing this report.

The purpose of this geotechnical investigation was to obtain information about the subsurface conditions by means of 12 boreholes and from the findings to make recommendations pertaining to the geotechnical design of site grading, underground utilities, subdivision roads, and to comment on the foundation conditions for general house construction.

This report is provided on the basis of the terms of reference presented above and on the assumption that the design will be in accordance with the applicable codes and standards. If there are any changes in the design features relevant to the geotechnical analyses, or if any questions arise concerning the geotechnical aspects of the codes and standards, this office should be contacted to review the design.

The site investigation and recommendations follow generally accepted practice for geotechnical consultants in Ontario. The format and contents are guided by client specific needs and economics and do not conform to generalized standards for services. Laboratory testing follows ASTM or CSA Standards or modifications of these standards that have become standard practice.

This report has been prepared for Marlwood Golf & Country Club and their designers. Third party use of this report without SPL Consultants Limited consent is prohibited.

2. FIELD AND LABORATORY WORK

The field investigation consisted of drilling 12 boreholes (BH15-01 through BH15-12) at the site between September 3rd and 9th, 2015. The boreholes were drilled to depths ranging from 5.2 m to 8.2 m below existing ground surface with hollow stem continuous flight auger equipment, supplied and operated by

a drilling sub-contractor under the direction and supervision of SPL Consultants Limited personnel. Samples were retrieved at regular intervals with a 50 mm O.D. split-barrel sampler driven with a hammer weighing 624 N and dropping 760 mm in accordance with the Standard Penetration Test (ASTM D 1586) method. This sampling method recovers samples from the soil strata, and the number of blows required to drive the sampler 0.3 m depth into the undisturbed soil (SPT 'N'-values) gives an indication of the compactness condition or consistency of the sampled soil material. The SPT 'N' values are indicated on the Borehole Logs (Enclosures 2 to 13, Appendix A).

Soil samples were visually classified in the field and later re-evaluated by a senior engineer in our laboratory. All soil samples were tested for moisture contents. Laboratory Grain Size Analyses were carried out on four samples, and the results are enclosed in Appendix B.

Water level observations were made during drilling and in the open boreholes at the completion of the drilling operations. Groundwater levels were measured in the monitoring wells installed at BH15-01, BH15-05, BH15-07, BH15-09 and BH15-12 upon completion of the installations.

Selected soil samples were subjected to chemical analysis to assess the environmental quality of the soils to assist in determining off-site disposal options. Chemical Testing Results are presented in Appendix D.

3. SUBSURFACE CONDITIONS

The borehole locations are shown on Drawing 1. Notes on soil sample descriptions are presented on Enclosure 1 in Appendix A. The subsurface conditions at the boreholes (BH15-01 through BH15-12) are presented on the individual borehole logs (Enclosures 2 to 13) enclosed in Appendix A, and are summarized in the following paragraphs.

3.1 Soil Conditions

Topsoil: A layer of surficial topsoil ranging from 50 to 230 mm in thickness was encountered at each of the borehole locations. It should be noted that topsoil quantities should not be calculated from the borehole information, as large variations in depth may exist between boreholes.

Disturbed Soils: A layer of disturbed soils was encountered in most of the boreholes underlying the surficial topsoil, and extending to depths ranging between 0.3 m to 1.5 m below existing ground surface. The disturbed soils consisted of silty sand to sandy silt materials, with inclusions of rootlets. The reworked soil was typically in a loose state.

Marl: Marl was encountered in boreholes (BH15-02, BH15-04 and BH15-06 to BH15-12), and extended to depths ranged between 0.3 m to 2.3 m below existing ground surface.

A tested sample of the Marl (BH15-04/SS3) contained 0% gravel, 20% sand, 52% silt and 28% clay size particles, indicating a composition of clayey silt sized particles. The grain size distribution curves for the samples are presented on Figure 1 in Appendix B.

Standard Penetration Tests performed of the Marl deposit yielded 'N'-values generally ranging from 5 to 16 blows per 0.3 m penetration indicating a soft to firm condition. The measured natural moisture content of the samples from these materials ranges from 8 to 41%, indicating moist to saturated condition.

It should be noted that the Marl deposit encountered throughout the site is not considered suitable for supporting structures such as buildings and roads. This deposit should be completely removed in areas where such structures are proposed.

Sand to Silty Sand and Sand and Gravel: Underlying the topsoil, disturbed soils, and/or Marl (clayey silt) deposits, the predominant native soils are sand to silty sand and sand and gravel. Clayey silt seams or pockets of up to 30 mm in thickness were encountered in BH15-05 and BH15-06, at a depth of 3.1 m below existing ground surface.

Two (2) tested samples of the sand deposits (BH15-07/SS6 and BH15-09/SS5) contained 0% gravel, 95 to 96% sand, 2 to 5% silt and 0 to 2% clay size particles. The grain size distribution curves for the samples are presented on Figure 1 in Appendix B.

Standard Penetration Tests performed of the sand deposits yielded 'N'-values generally ranging from 2 to 100 blows per 0.3 m penetration indicating a very loose to very dense condition. Very loose to loose conditions were encountered within the sand deposits in boreholes, BH15-05 between 0.8 m to 3.5 m below existing ground surface, BH15-06 between 3.1 m and 3.9 m below existing ground surface, BH15-07 between 4.6 m and 5.4 m below existing ground surface, BH15-10 between 3.0 m and 3.8 m below existing ground surface, and BH15-11 from 2.3 m below existing ground surface to beyond the explored depth of BH15-11. The measured natural moisture content of the samples from these materials ranges from 2 to 27%, indicating moist to saturated condition.

A tested sample of the sand and gravel deposit (BH15-02/SS5) contained 45% gravel, 48% sand, 5% silt and 2% clay size particles. The grain size distribution curves for the samples are presented on Figure 1 in Appendix B.

Standard Penetration Tests performed of the sand and gravel deposits yielded 'N'-values generally ranging from 20 to 95 blows per 0.3 m penetration indicating a compact to very dense. The measured natural moisture content of the samples from these materials ranges from 1 to 18%, indicating moist to saturated condition.

3.2 Groundwater Conditions

During drilling and at the completion of drilling, groundwater and/or wet soil conditions were found in all boreholes at various depths as indicated in the individual borehole logs (Appendix A Enclosures 2 to 13).

The water levels observed in the monitoring wells installed at borehole locations BH 15-01, BH 15-05, BH 15-07, BH 15-09 and BH 15-12 between September 3rd and October 14th, 2015 were recorded at depths ranging between 1.4 m and 4.9 m below the existing ground surface, as summarized in Table 1 below.

Table 1: Groundwater Levels Observed in Boreholes

BH No.	Date of Drilling	Date of Water Measurement	Depth of Groundwater below existing ground (m)	Elevation of Groundwater (m)
BH 15-01	September 9, 2015	September 9, 2015	3.1	????
		October 14, 2015	3.1	????
BH 15-05	September 8, 2015	September 8, 2015	1.4	????
		October 14, 2015	1.6	????
BH 15-07	September 4, 2015	September 4, 2015	3.2	????
		October 14, 2015	3.2	????
BH 15-09	September 3, 2015	September 3, 2015	4.8	????
		October 14, 2015	4.9	????
BH 15-12	September 9, 2015	September 9, 2015	2.1	????
		October 14, 2015	2.2	????

It should be noted that the groundwater levels can vary and are subject to seasonal fluctuations in response to major weather events.

4. DISCUSSION AND RECOMMENDATIONS

4.1 The Site and General Discussion

The subject property is situated on a relatively flat to gently sloping terrain, and abuts Golf Course Road, Marlwood Avenue and Masters Lane on the west side, Birdie Court, Britton Court, Mulligan Lane on the north side. The residential development of Park Place is located along the south boundary and Marl Lake is located along the east boundary. The property currently occupies Marlwood Golf and Country Club.

Cohesionless deposits of sand to silty sand, and sand and gravel are predominant on the site and encountered in all boreholes. Most of the site is characterized to have relatively high groundwater levels, up to 1.4 m below existing ground surface.

Marl was encountered in boreholes (BH15-02, BH15-04 and BH15-06 to BH15-12), and extended to depths ranged between 0.3 m to 2.3 m below existing ground surface. It should be noted that the Marl encountered throughout the site is not considered suitable for supporting structures such as buildings, underground services and roads. These deposits should be completely removed in areas where such structures are proposed.

4.2 The Project

It is understood that the proposed development will consist of single family residential dwellings and will include internal roads, and associated municipal sewers and water supply. We also understand that the construction of a new clubhouse is being considered. The layout plan of the proposed development has not been prepared yet, as such, the finish floor elevations of the proposed construction and the invert of the site services is not known to us at the time of writing this report.

4.3 Roads

The investigation has shown that the predominant subgrade soil after stripping any topsoil and loose surface material, Marl (clayey silt), any organic or otherwise unsuitable soils will be deposits of sand with varying amounts of silt and gravel content.

Based on the above and assuming that traffic usage will be residential minor local or local, the following minimum pavement thickness is recommended:

40 mm HL3 Asphaltic Concrete
50 mm HL8 Asphaltic Concrete
200 mm Granular 'A'
300 mm Granular 'B'

For bus routes and collector roads, the following minimum pavement thickness is recommended:

50 mm HL3 Asphaltic Concrete
90 mm HL8 Asphaltic Concrete
200 mm Granular 'A'
400 mm Granular 'B'

These values may need to be adjusted according to Town of Wasaga Beach Standards. The site subgrade and weather conditions (i.e. if wet) at the time of construction may necessitate the placement of geogrid/filter fabric and/or thicker granular sub-base layer in order to facilitate the construction. Furthermore, heavy construction equipment may have to be kept off the newly constructed roads before the placement of asphalt and/or immediately thereafter, to avoid damaging the weak subgrade by heavy truck traffic.

4.3.1 Stripping, Subexcavation and Grading

The site should be stripped of all topsoil, disturbed soils and fill (if any) and any organic or otherwise unsuitable soils to the full depth of the roads, both in cut and fill areas. To avoid settlement of the proposed structures, the Marl deposit must be completely removed.

All excavation should conform to the current Ontario Provincial Specification (OPS) for grading.

Following stripping, the site should be graded to the subgrade level and approved. The subgrade should then be proof-rolled, in the presence of the Geotechnical Engineer, by at least several passes of a heavy compactor having a rated capacity of at least 8 tonnes. Any soft spots thus exposed should be removed and replaced by select fill material, similar to the existing subgrade soil and approved by the Geotechnical Engineer. The subgrade should then be recompacted from the surface to at least 98% of its Standard Proctor Maximum Dry Density (SPMDD). The final subgrade should be cambered or otherwise shaped properly to facilitate rapid drainage and to prevent the formation of local depressions in which water could accumulate. Proper cambering and allowing the water to escape towards the sides (where it can be removed by means of subdrains) is considered to be beneficial for this project. Otherwise, any water collected in the granular sub-base could be trapped thus causing problems due to softened subgrade, differential frost heave, etc. For the same reason, damaging the subgrade during and after the placement of the granular materials by heavy construction traffic should be avoided.

Any fill required for re-grading the site or backfill should be select, clean material, free of topsoil, organic or other foreign and unsuitable matter. It should be noted that some of the excavated native materials will be wet and must be aerated and left to dry out before they can be used for backfill. The fill should be placed in thin layers and compacted to at least 95% of its SPMDD. The degree of compaction should be increased to 98% within the top 1.0 m of the subgrade, or as per Town Standards. The compaction of the new fill should be checked by frequent field density tests.

4.3.2 Construction

Once the subgrade has been inspected and approved, the granular base and sub-base course materials should be placed in layers not exceeding 200 mm (uncompacted thickness) and should be compacted to at least 100% of their respective SPMDD. The grading of the material should conform to current OPS Specifications.

The placing, spreading and rolling of the asphalt should be in accordance with OPS Specifications or, as required by the local authorities.

Frequent field density tests should be carried out on both the asphalt and granular base and sub-base materials to ensure that the required degree of compaction is achieved.

4.3.3 Drainage

Installation of full-length subdrains is required on all roads. The subdrains should be properly filtered to prevent the loss of (and clogging by) soil fines.

All paved surfaces should be sloped to provide satisfactory drainage towards catchbasins. As discussed in Section 4.3.1, by means of good planning any water trapped in the granular sub-base materials should be drained rapidly towards subdrains or other interceptors.

4.4 Sewers

As a part of the site development, a network of new storm and sanitary sewers is to be constructed in the subdivision area.

4.4.1 Trenching, Excavation, Trench Support, and Dewatering

As noted above, at the time of investigation, the groundwater levels were encountered between 1.4 m and 4.9 m below the existing grades. Dewatering will be required for any excavation in the sand to silty sand, or sand and gravel deposits below the water table. Where the anticipated trench base is below the groundwater level, positive dewatering such as well points/eductors will be required to lower the water table to at least 1.0 m below the excavation base. Otherwise, it will result in an unstable base and flowing sides. A hydrogeological investigation would assess potential dewatering rates and determine the need for a Permit to Take Water from the MOECC, and is recommended for this site.

Excavation of the soils can be carried out with heavy hydraulic backhoes. Provisions must be made in the excavation contract for the removal of possible boulders in native soils. All organic material, boulders over 150 mm, or otherwise unsuitable material should be removed from road base to a depth of at least 1.2 m below finished grade and replaced with suitable approved fill material.

All excavations must be carried out in accordance with the most recent Occupational Health and Safety Act (OHSA). In accordance with OHSA, the cohesionless soils (sand to silty sand, sand and gravel) can be classified as Type 3 soil above groundwater table and Type 4 below groundwater table.

In the planning of the trenches' shoring and excavation, the presence of any adjacent existing buried service pipes should be considered. In addition to the stability of these existing adjacent pipes, which must be maintained without detrimental settlements, the backfill in these trenches and especially the granular bedding surrounding the existing service pipes, manholes, etc. may be a source of water, which, if encountered, must be dealt with.

In the sand to silty sand deposits where the soil exhibits dilatancy during construction, the soils may have to be stabilized. Any form of soil stabilization and/or dewatering to facilitate construction (e.g. well points, etc.) must be designed and performed being cognizant of the fact that dewatering may induce settlements of existing structures in the vicinity, including existing service pipes. Although unlikely, basal instability could possibly occur if a relatively coarser stratum (such as silty sand) under excess hydrostatic pressure occurs below the base of the excavation comprised of relatively impervious soils (e.g. sandy silt/clayey silt/silty clay). Should this occur, these layers must be depressurized. For this reason the bases of the excavated trenches should be monitored for evidence of basal heave.

For all these reasons, it would be prudent to open the trenches in relatively short sections and carry out the laying of the pipe and backfilling expeditiously in order to reduce the length of time the trench would be open.

We provide the following soil parameters to determine the earth pressure acting on the sheeting and bracing.

γ = Unit weight of soil above groundwater table, assuming 20 kN/m^3;

γ_1 = Submerged unit weight of soil below water table, assuming 10 kN/m^3;

A determination of the actual lateral earth pressure can be provided, if required, after the design has been finalized.

All excavated soil should be placed at least the depth of the trench away from the edge of the trench for safety reasons.

It is recommended that the excavations for service trenches below the groundwater table be carried out in short sections using a suitable 'geofabric' below the bedding (fine migration prevention) and backfilling the trench section immediately after service placement.

4.4.2 Bedding

The soils above the groundwater level, or properly dewatered if encountered below the groundwater level, will provide adequate support for the sewer pipes and allow the use of normal Class B type bedding. The recommended minimum thickness of granular bedding below the invert of the pipes is 150 mm. The thickness of the bedding may, however, have to be increased depending on the pipe diameter or in accordance with local standards or if wet or weak subgrade conditions are encountered, especially when the soil at the trench base level consists of wet, dilatant silt. The bedding material should consist of well graded granular material such as Granular 'A' or equivalent. After installing the pipe on the bedding, a granular surround of approved bedding material, which extends at least 300 mm above the obvert of the pipe, or as set out by the local Authority, should be placed.

To avoid the loss of soil fines from the subgrade, uniformly graded clear stone should not be used unless, below the granular bedding material, a suitable, approved filter fabric (geotextile) is placed. The geotextile should extend along the sides of the trench and should be wrapped all around the poorly graded bedding material.

Localized, wet and unstable soils encountered within generally stable soil zones can be stabilized by 'punching' a 50 mm clear crushed limestone or 50 mm well graded crusher run limestone pad into the soft subgrade prior to bedding placement. The thickness of the 'pad' will depend on field conditions.

In areas where the soils become wet, unstable and dilatant (easily disturbed) such as saturated silts, careful construction techniques and dewatering should be followed, as discussed earlier. If the pipes are laid on disturbed, dilatant soil, significant post-construction settlements could occur after the

trenches are backfilled. In such cases, the bottom of the trenches will have to be stabilized by dewatering.

Sewer pipe bedding recommended for wet, unstable soils is a Class 'A' bedding. The rigid concrete bedding (lean mix) should be laid from manhole to manhole and this concrete 'pad' may sit directly on disturbed native subgrade. In isolated situations, where exposed subgrade tends to be wet and unstable, the concrete 'pad' should be poured on a HL-6 stone layer. It is recommended that the HL-6 bed be encircled with an approved filter fabric to prevent the migration of fines.

Where the sewer pipe is placed in water bearing soils below the water table, the joints connecting the sewer sections should be very well sealed to prevent piping of fines into the sewer pipe and manhole catch basin risers.

4.4.3 Backfilling of Trenches

The excavated soils can be used as construction backfill provided their moisture content at the time of placement is within 2% of the optimum moisture content. Some moisture conditioning may be required if excess pore air and pore water pressures are generated during compaction process. If bulking is noted, delaying the placement of subsequent lifts may be necessary, to allow for the dissipation of such induced excess pressures.

For the granular soils, smooth drum type vibratory rollers are recommended. The cohesive soils can be best compacted with sheepsfoot type vibratory compactors. Loose lifts of soil, which are to be compacted, should not exceed 300mm.

It is preferable that the native soils be re-used from approximately the position at which they are excavated so that frost response characteristics of the soils after construction remain essentially similar. Consideration may also be given to backfilling trenches with a well graded, compacted granular soil such as Granular 'B' material. The use of such material, if thoroughly compacted, would reduce the post construction settlements to a negligible amount and may also expedite the compaction process. In this instance, however, frost response characteristics of non-frost susceptible granular fill and the frost susceptible indigenous soils would be different giving rise to differential frost heave. In this case, it would be prudent to use as backfill the on-site excavated naturally occurring soils to match the existing conditions within the frost zone (i.e. within about 1.5 m below the road surface elevation) as well as to provide a frost taper zone (i.e. to provide a zone of taper to prevent a sudden change in frost heave characteristics to reduce the effects of frost heave).

It should be noted that the excavated soils are subject to moisture content increase during wet weather which would make these materials too wet for adequate compaction. Stockpiles should therefore be compacted at the surface or be covered with tarpaulins to help minimize moisture uptake.

The degree of compaction of the trench backfill under the roads or other areas where future settlements would be of concern should be at least 98% Standard Proctor Maximum Dry Density

(SPMDD) within 2 m of the road surface. The granular pavement sub-base and base materials should be compacted to at least 100% of their respective SPMDD.

4.5 Engineered Fill

In the areas where earth fill is required for site grading purposes, an engineered fill may be constructed below house foundations, roads, boulevards, etc.

General guidelines for the placement and preparation of engineered fill are presented on Appendix D. A geotechnical reaction of 75 kPa at the serviceability limit states (SLS), and a factored geotechnical resistance of 125 kPa at the ultimate limit states (ULS) can be used on engineered fill, provided that all requirements on Appendix C are adhered to. To reduce the risk of improperly placed engineered compacted fill, full-time supervision of the contractor is essential. Despite full time supervision, it has been found that contractors frequently bulldoze loose fill into areas and compact only the surface. The owner and his representatives must accept the risk involved in the use of engineered fill and offset this risk with the monetary savings of avoiding deep foundations. This potential problem must be recognized and discussed at a pre-construction meeting. Procedures can then be instigated to reduce the risk of settlement resulting from un-compacted fill.

The following is a recommended procedure for an engineered fill:

1. Prior to site work involving engineered fill, a site meeting to discuss all aspects must be convened. The surveyor, contractor, design engineer and geotechnical engineer must attend the meeting. At this meeting, the limits of the engineered fill will be defined. The contractor must make known where all fill material will be obtained and samples must be provided to the geotechnical engineer for review, and approval before filling begins.

2. Detailed drawings indicating the lower boundaries as well as the upper boundaries of the engineered fill must be available at the site meeting and be approved by the geotechnical engineer.

3. The building footprint and base of the pad, including basements, garages, etc. must be defined by offset stakes that remain in place until the footings and service connections are all constructed. Confirmation that the footings are within the pad, service lines are in place, and that the grade conforms to drawings, must be obtained by the owner in writing from the surveyor and SPL Consultants Limited. Without this confirmation no responsibility for the performance of the structure can be accepted by SPL Consultants Limited. Survey drawing of the pre and post fill location and elevations will also be required.

4. The area must be stripped of all topsoil, disturbed soils, loose fill (if any) and any organic or otherwise unsuitable soils (ie. Marl). Subgrade must be proof-rolled. Soft spots must be dug out. The stripped native subgrade must be examined and approved by a SPL Consultants Limited engineer prior to placement of fill.

5. The approved engineered fill must be compacted to 100% Standard Proctor Maximum Dry Density throughout. Granular Fill preferred. Engineered fill should not be placed (where it will support footings) during the winter months. Due to the natural variation of the fill materials placed as engineered fill compacted to 100% SPMDD will settle under its own weight approximately 0.5% of the fill height and the structural engineer must be aware of this settlement. In addition to the settlement of the fill, additional settlement due to consolidation of the underlying soils from the structural and fill loads will occur.

6. Full-time geotechnical inspection by SPL Consultants Limited during placement of engineered fill is required. Work cannot commence or continue without the presence of the SPL representative.

7. The fill must be placed such that the specified geometry is achieved. Refer to sketches for minimum requirements. Take careful note that the projection of the compacted pad beyond the footing at footing level is a minimum of 2 m. The base of the compacted pad extends 2 m plus the depth of excavation beyond the edge of the footing.

8. A geotechnical reaction of 75 kPa at the serviceability limit states (SLS), and a factored geotechnical resistance of 125 kPa at the ultimate limit states (ULS) can be used on engineered fill, provided that all requirements on Appendix C are adhered to. A minimum footing width of 500 mm (20 inches) is suggested and footings should be provided with nominal steel reinforcement.

9. All excavations must be done in accordance with the Occupational Health and Safety Regulations of Ontario.

10. After completion of the pad a second contractor may be selected to install footings. All excavations must be backfilled under full time supervision by SPL Consultants to the same degree as the engineered fill pad. Surface water cannot be allowed to pond in excavations or to be trapped in clear stone backfill. Clear stone backfill can only be used with the approval of SPL Consultants.

11. After completion of compaction, the surface of the pad must be protected from disturbance from traffic, rain and frost.

12. If there is a delay in construction, the engineered fill pad must be inspected and accepted by the geotechnical engineer. The location of the structure must be reconfirmed that it remains within the pad.

The inorganic cohesionless deposits of sand encountered on the site are considered suitable for use as engineered fill, provided that their moisture contents at the time of construction are at or near optimum. Soils excavated from below the groundwater level will have higher than optimum in-situ moisture content, and will have to be aerated prior to use as engineered fill. It is therefore imperative

that the earth works are carried out in summer months, at favorable conditions, so there is an opportunity to aerate the soils prior to their re-use.

4.6 Foundation Conditions

As noted above in Section 4.2, single family residential dwellings are proposed to be constructed.

Based on the borehole information, the proposed building can be supported by conventional spread and strip footings founded on either on undisturbed native soils or on engineered fill.

4.6.1 Footings on Native Soils

Boreholes BH15-01 to BH15-05, BH15-08 to BH15-12 advanced in the proposed residential development area revealed native sand and sand & gravel below a disturbed soil layer and Marl deposits. While boreholes BH15-06 and BH15-07 advanced in the area being considered for the clubhouse relocation revealed subsurface conditions comprised of similar materials.

However, boreholes BH15-05, revealed loose to very loose sand was present below a depth of 0.8 m. Prior to a finalizing development plan in vicinity of this borehole, SPL should be consulted to comment on the bearing capacity and settlement.

Based upon field testing and observations, it is our considered opinion that proposed structures may be supported by conventional spread and strip footings founded on the compact undisturbed sand and sand & gravel. Furthermore, Standard Penetration Testing has established that a Design Bearing Resistance of 75 kPa at the Serviceability Limit States (SLS), and for a factored geotechnical resistance of 125 kPa at the Ultimate Limit States (ULS).

The bearing values and the corresponding founding elevations at the borehole locations are summarized on Table 1.

Table 2: Bearing Values and Founding Levels for Spread and Strip Footings

BH No.	Material	Bearing Capacity at SLS (kPa)	Factored Geotechnical Resistance at ULS (kPa)	Minimum Depth below Existing Ground (m)	Founding Level At or Below Elevation (m)	Note (if any)
BH15-01	Sand	75	125	0.9	????	Reworked soil in area
BH15-02	Sand	75	125	0.9	????	Marl in area
BH15-03	Sand	75	125	1.6	????	Fill in area
BH15-04	Sand	75	125	2.1	????	Marl in area
BH15-06	Sand	75	125	0.9	????	Marl in area

BH No.	Material	Bearing Capacity at SLS (kPa)	Factored Geotechnical Resistance at ULS (kPa)	Minimum Depth below Existing Ground (m)	Founding Level At or Below Elevation (m)	Note (if any)
BH15-07	Sand	75	125	1.8	????	Marl in area
BH15-08	Sand	75	125	1.8	????	Marl in area
BH15-09	Sand	75	125	2.4	????	Marl in area
BH15-10	Sand	75	125	0.6	????	Marl in area
BH15-11	Sand	75	125	0.7	????	Marl in area
BH15-12	Sand	75	125	1.1	????	Marl in area

4.6.2 Foundations on Engineered Fill

For the construction of single family dwellings , where the grades needs to be raised, proposed structures supported by spread and strip footings founded on engineered fill. The engineered fill can provide a geotechnical reaction of 75 kPa at SLS, and a factored geotechnical resistance of 125 kPa at ULS, provided the requirements in preceding section 4.5 and Appendix C are adhered to.

Prior to the placement of the engineered fill, all of the existing fill and surficially softened/loosened native soils must be removed and the exposed subgrade proof-rolled. Any soft spots revealed during proof-rolling must be sub-excavated and re-engineered. To reduce the risk of improperly placed engineered compacted fill, full-time supervision of the contractor is essential.

Where engineered fill is used to support the foundations, the floor slab can also be supported by engineered fill.

4.6.3 Floor Slab Construction and Drainage

In the event that basements are being considered for the proposed design of the residential buildings and/or clubhouse, the floor slab can be supported on grade. The floor slabs can be supported on grade provided the base is thoroughly proof rolled and any soft and unstable areas detected are sub-excavated and replaced with compacted fill materials. Fill required to raise the grade can consist of inorganic soil, placed in shallow lifts and compacted to at least 98 percent of Standard Proctor Maximum Dry Density (SPMDD).

A moisture barrier consisting of at least 200 mm of 19 mm clear crushed stone should be installed under the floor slab.

Where the floor slab is below the water table, perimeter and underfloor drainage must be installed. A typical drainage and excavation scheme is shown on Drawing 2. As sandy soils with varying silt content

are exposed below the groundwater table, filter cloth such as Terrafix 270R or equivalent must cover the subgrade, all drains, clear stone and other openings.

It is recommended to keep footings as high as possible to avoid or minimize penetration below groundwater levels, as de-watering will be required below the groundwater table.

4.6.4 Other Comments on Foundations

Dewatering will be required for any excavation in the sand to silty sand, or gravelly sand below the water table. Otherwise, it will result in an unstable excavation base and flowing sides. The groundwater table must be lowered one meter below the lowest excavation level. Test pit should be carried out in the area prior to the excavation to further explore the groundwater and seepage conditions. A specialized dewatering contractor should install the dewatering system.

It is recommended to keep footings as high as possible to avoid or minimize penetration below groundwater levels.

Variations in the soil conditions are expected in between the borehole locations, and during construction, the soil bearing pressures should be confirmed by the Geotechnical Engineer.

Foundations designed to the specified bearing values are expected to settle less than 25 mm total and 20 mm differential.

All footings exposed to seasonal freezing conditions should be provided with at least 1.5 m of earth cover or equivalent thermal insulation against frost.

Where it is necessary to place footings at different levels, the upper footing must be founded below an imaginary 10 horizontal to 7 vertical line drawn up from the base of the lower footing. The lower footing must be installed first to help minimize the risk of undermining the upper foundations.

Note, the sandy soils at the base of footings can be easily disturbed by construction machinery and foot traffic or lose their strength in contact with surface water. We recommend that an allowance to be made for placing a 50 mm thick skim coat of concrete on the founding subgrade immediately after its approval, to prevent its disturbance by construction activities and from ground or surface water, where necessary.

During winter construction, foundations and slab on grades must not be poured on frozen soil. Foundations must be adequately protected at all times from cold weather and freezing conditions.

In the vicinity of the existing buried utilities, all footings must be lowered to undisturbed native soils, or alternatively the services must be structurally bridged.

Standard geotechnical site investigations will not determine dewatering requirements for situation where there is planned excavation or construction below the groundwater table. To quantify conditions for dewatering purposes and to apply for required permits, both for construction and long term

drainage, hydrogeological study and carefully controlled pumping tests are necessary to adequately engineer a construction dewatering system and/or permanent groundwater control. SPL Consultants Limited advises that the geotechnical conditions at this site require such hydrogeological study and analysis. The company is qualified and prepared to undertake this analysis upon proper authorization. Otherwise SPL accepts no responsibility for the design and construction of the dewatering details.

It should be noted that a permit to take water, issued by the Ontario Ministry of the Environment and Climate Change, will be required if the dewatering system/sumps result in a water taking of more than 50 m^3/day. In addition, a permit to discharge the collected water to the sewer system/water body will be required from the applicable agency.

It is essential that imported free-draining OPSS Granular 'B' type fill be used as backfill against foundation walls and used as 'under-floor' (structural fill). Backfilling of the footing wall excavations (and under-floor) is recommended to be placed in 200 mm thick lifts, compacted to 100% SPMDD to proposed sub-grade elevations (see Drawing 2).

It should be noted that the recommended bearing capacities have been calculated by SPL from the borehole information for the design stage only. The investigation and comments are necessarily on-going as new information of the underground conditions becomes available. For example, more specific information is available with respect to conditions between boreholes when foundation construction is underway. The interpretation between boreholes and the recommendations of this report must therefore be checked through field inspections provided by SPL to validate the information for use during the construction stage.

4.7 Chemical Characterization of Soils

Forty-four (44) selected soil samples and five (5) duplicate samples (DUP 1 to DUP 5) were collected from the geotechnical boreholes advanced on the property in September 2015 to assess the environmental quality of the soils, to assist in determining off-site disposal options. The chemical testing report and results are enclosed in Appendix D.

5. GENERAL COMMENTS

SPL Consultants Limited should be retained for a general review of the final design and specifications to verify that this report has been properly interpreted and implemented. If not accorded the privilege of making this review, SPL Consultants Limited will assume no responsibility for interpretation of the recommendations in the report.

The comments given in this report are intended only for the guidance of design engineers. The number of boreholes required to determine the localized underground conditions between boreholes affecting construction costs, techniques, sequencing, equipment, scheduling, etc., would be much greater than has been carried out for design purposes. Contractors bidding on or undertaking the works should, in this light, decide on their own investigations, as well as their own interpretations of the factual borehole

results, so that they may draw their own conclusions as to how the subsurface conditions may affect them.

6. LIMITATIONS OF REPORT

This report is intended solely for the Client named. The material in it reflects our best judgment in light of the information available to SPL Consultants Limited at the time of preparation. Unless otherwise agreed in writing by SPL Consultants Limited, it shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. No portion of this report may be used as a separate entity, it is written to be read in its entirety.

The conclusions and recommendations given in this report are based on information determined at the test hole locations. The information contained herein in no way reflects on the environment aspects of the project, unless otherwise stated. Subsurface and groundwater conditions between and beyond the test holes may differ from those encountered at the test hole locations, and conditions may become apparent during construction, which could not be detected or anticipated at the time of the site investigation. The benchmark and elevations used in this report are primarily to establish relative elevation differences between the test hole locations and should not be used for other purposes, such as grading, excavating, planning, development, etc.

The design recommendations given 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.

The comments made in this report on potential construction problems and possible methods are intended only for the guidance of the designer. The number of test holes may not be sufficient to determine all the factors that may affect construction methods and costs. For example, the thickness of surficial topsoil or fill layers may vary markedly and unpredictably. The contractors bidding on this project or undertaking the construction should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the subsurface conditions may affect their work. This work has been undertaken in accordance with normally accepted geotechnical engineering practices.

Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. SPL Consultants Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We accept no responsibility for any decisions made or actions taken as a result of this report unless we are specifically advised of and participate in such action, in which case our responsibility will be as agreed to at that time.

We trust that the information contained in this report is satisfactory. Should you have any questions, please do not hesitate to contact this office.

SPL CONSULTANTS LIMITED

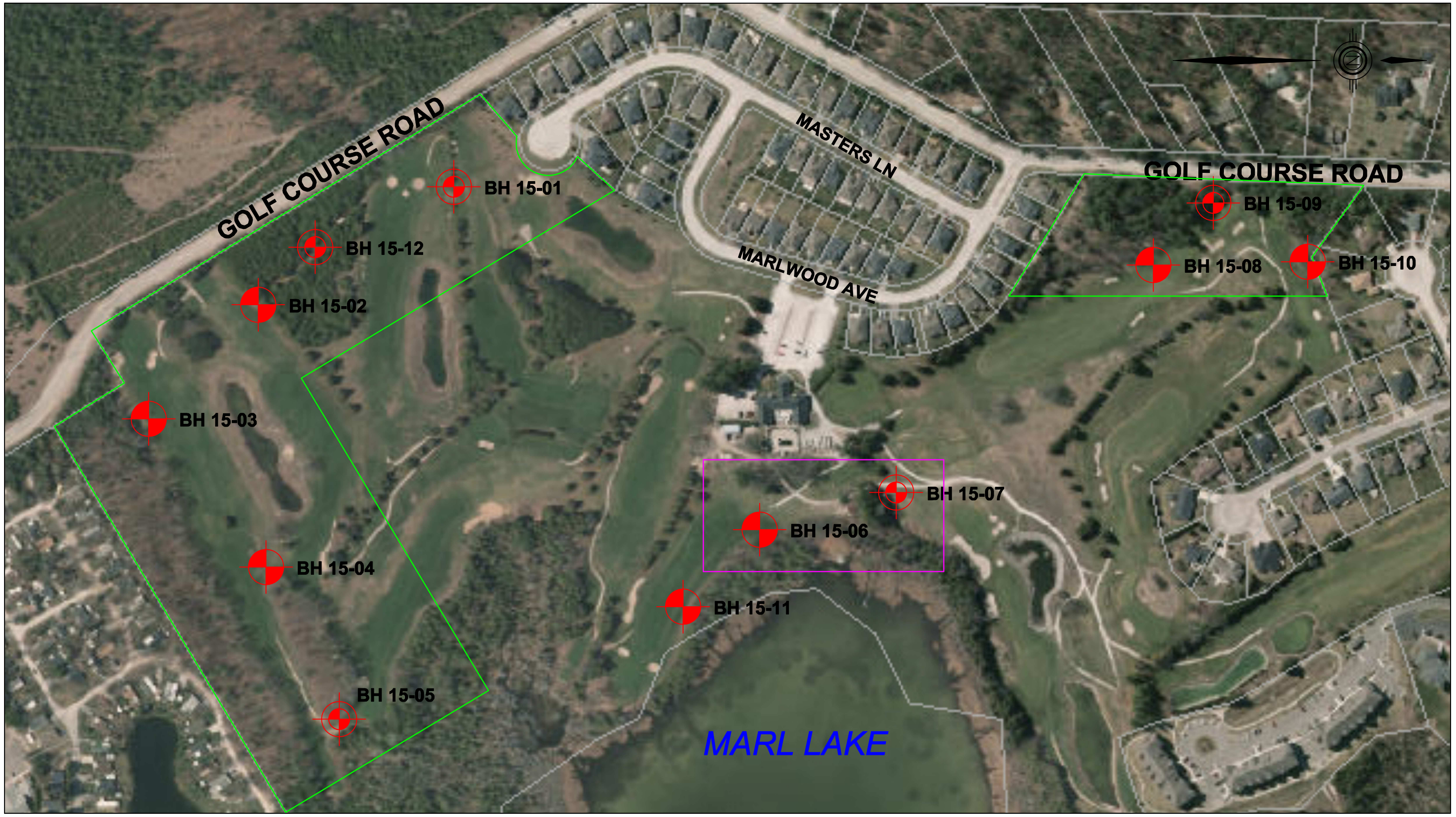
Marco Visentin, BASc

Gord Jarvis, Project Manager
Branch Manager, Collingwood

Kent Malcolm, P.Eng.
Principal Engineer

Drawings

- **Borehole Location and Infiltration Test Location Plan (Drawing 1)**
- **Drainage and Backfill Recommendations (Drawing 2)**



LEGEND

BH 15-XX Borehole Location

BH 15-XX Borehole Location with Groundwater Monitoring Well Installed

APPROXIMATE SCALE

0m 10m 25m 50m 100m

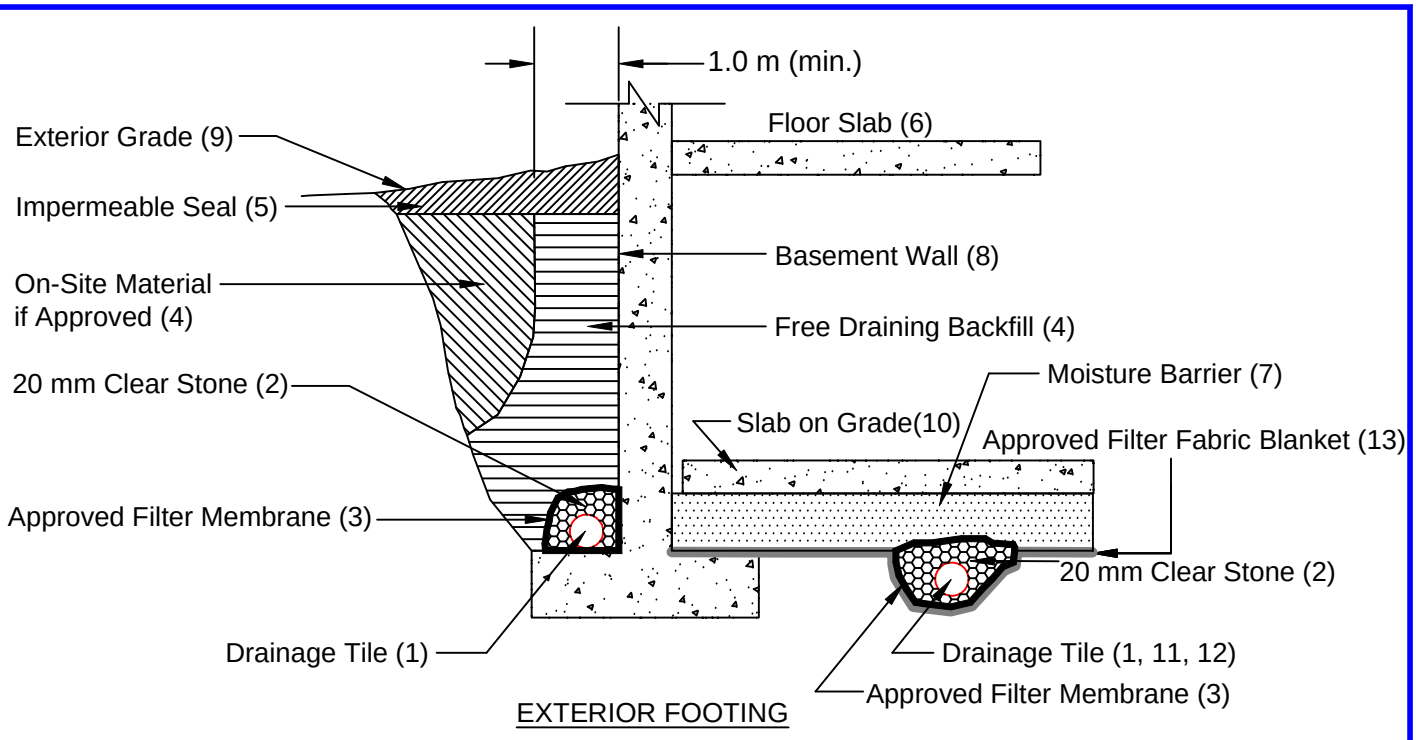
Approximate Area of Investigation for Proposed Residential Development

Approximate Area of Investigation for Proposed Relocation of Clubhouse

Client:	MARLWOOD GOLF AND COUNTRY CLUB			Project No.: 10002397	Figure No.: 1
Drawn:	MV	Approved:	GJ	Title:	BOREHOLE LOCATION PLAN
Date:	NOVEMBER, 2015	Scale:	AS SHOWN	Project:	PRELIMINARY GEOTECHNICAL INVESTIGATION 31 MARLWOOD AVE, WASAGA BEACH, ONTARIO
Original Size:	TABLOID	Rev:	1		SPL Consultants Limited | ENGINEERING SOLUTIONS

Project: 10002397

Drawing No. 2



EXTERIOR FOOTING

Notes

1. Drainage tile to consist of 100 mm (4") diameter weeping tile or equivalent perforated pipe leading to a positive sump or outlet.
2. 20 mm (3/4") clear stone - 150 mm (6") top and side of drain. If drain is not on footing, place100 mm (4 inches) of stone below drain .
3. Wrap the clear stone with an approved filter membrane (Terrafix 270R or equivalent).
4. Free Draining backfill - OPSS Granular B or equivalent compacted to the specified density. Do not use heavy compaction equipment within 450 mm (18") of the wall. Use hand controlled light compaction equipment within 1.8 m (6') of wall. The minimum width of the Granular 'B' backfill must be 1.0 m.
5. Impermeable backfill seal - compacted clay, clayey silt or equivalent. If original soil is free-draining, seal may be omitted. Maximum thickness of seal to be 0.5 m.
6. Do not backfill until wall is supported by basement and floor slabs or adequate bracing.
7. Moisture barrier to be at least 200 mm (8") of compacted clear 20 mm (3/4") stone or equivalent free draining material. A vapour barrier may be required for specialty floors.
8. Basement wall to be damp proofed /water proofed.
9. Exterior grade to slope away from building.
10. Slab on grade should not be structurally connected to the wall or footing.
11. Underfloor drain invert to be at least 300 mm (12") below underside of floor slab.
12. Drainage tile placed in parallel rows 6 to 8 m (20 to 25') centers one way. Place drain on 100 mm (4") clear stone with 150 mm (6") of clear stone on top and sides. Enclose stone with filter fabric as noted in (3).
13. The entire subgrade to be sealed with approved filter fabric (Terrafix 270R or equivalent) if non-cohesive (sandy) soils below ground water table encountered.
14. Do not connect the underfloor drains to perimeter drains.
15. Review the geotechnical report for specific details.

DRAINAGE AND BACKFILL RECOMMENDATIONS
Basement with Underfloor Drainage

(not to scale)

APPENDIX A

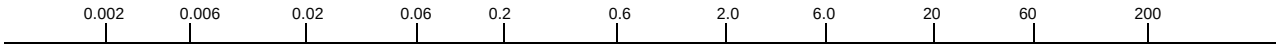
- **Explanation of Terms Used in the Log of Boreholes (Encl. 1)**
- **Borehole Logs (Encl. 2 to 13)**

Notes On Sample Descriptions

1. All sample descriptions included in this report follow the Canadian Foundations Engineering Manual soil classification system. This system follows the standard proposed by the International Society for Soil Mechanics and Foundation Engineering. Laboratory grain size analyses provided by SPL also follow the same system. Different classification systems may be used by others; one such system is the Unified Soil Classification. Please note that, with the exception of those samples where a grain size analysis has been made, all samples are classified visually. Visual classification is not sufficiently accurate to provide exact grain sizing or precise differentiation between size classification systems.

ISSMFE SOIL CLASSIFICATION

CLAY	SILT			SAND			GRAVEL			COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE	FINE	MEDIUM	COARSE		



EQUIVALENT GRAIN DIAMETER IN MILLIMETRES

CLAY (PLASTIC) TO	FINE	MEDIUM	CRS.	FINE	COARSE
SILT (NONPLASTIC)	SAND			GRAVEL	

UNIFIED SOIL CLASSIFICATION

2. Fill: Where fill is designated on the borehole log it is defined as indicated by the sample recovered during the boring process. The reader is cautioned that fills are heterogeneous in nature and variable in density or degree of compaction. The borehole description may therefore not be applicable as a general description of site fill materials. All fills should be expected to contain obstruction such as wood, large concrete pieces or subsurface basements, floors, tanks, etc., none of these may have been encountered in the boreholes. Since boreholes cannot accurately define the contents of the fill, test pits are recommended to provide supplementary information. Despite the use of test pits, the heterogeneous nature of fill will leave some ambiguity as to the exact composition of the fill. Most fills contain pockets, seams, or layers of organically contaminated soil. This organic material can result in the generation of methane gas and/or significant ongoing and future settlements. Fill at this site may have been monitored for the presence of methane gas and, if so, the results are given on the borehole logs. The monitoring process does not indicate the volume of gas that can be potentially generated nor does it pinpoint the source of the gas. These readings are to advise of the presence of gas only, and a detailed study is recommended for sites where any explosive gas/methane is detected. Some fill material may be contaminated by toxic/hazardous waste that renders it unacceptable for deposition in any but designated land fill sites; unless specifically stated the fill on this site has not been tested for contaminants that may be considered toxic or hazardous. This testing and a potential hazard study can be undertaken if requested. In most residential/commercial areas undergoing reconstruction, buried oil tanks are common and are generally not detected in a conventional preliminary geotechnical site investigation.

3. Till: The term till on the borehole logs indicates that the material originates from a geological process associated with glaciation. Because of this geological process the till must be considered heterogeneous in composition and as such may contain pockets and/or seams of material such as sand, gravel, silt or clay. Till often contains cobbles (60 to 200 mm) or boulders (over 200 mm). Contractors may therefore encounter cobbles and boulders during excavation, even if they are not indicated by the borings. It should be appreciated that normal sampling equipment cannot differentiate the size or type of any obstruction. Because of the horizontal and vertical variability of till, the sample description may be applicable to a very limited zone; caution is therefore essential when dealing with sensitive excavations or dewatering programs in till materials.

LOG OF BOREHOLE BH15-01

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/09/2015

REF. NO.: 10002397
ENCL NO.: 2

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 230mm							OC Pesticides
0.2	**SILTY SAND(reworked):** some sand layers, trace organics, trace rootlets, brown, moist, loose		1	SS	9			
0.8	**SAND:** trace silt, light brown, damp, compact		2	SS	13			OC Pesticides, Metals & Inorganics
			3	SS	16			
2.0	stratified colours							
2.3	some gravel to gravelly, large gravel/cobble pieces at 2.4 and 2.7m, very dense		4	SS	100			
3.1	**SAND AND GRAVEL:** trace silt, brown, wet, very dense		5	SS	74		W. L. 3.1 mBGL Oct 14, 2015	PHCs & VOCs
4.7	**SAND:** some silt to silty, grey, wet, very dense		6	SS	78			
5.2	**END OF BOREHOLE**							

Notes:
-Installed monitoring well upon completion
-Water level was 3.06 mbg upon completion

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE

PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-02

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/08/2015

REF. NO.: 10002397
ENCL NO.: 3

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 180mm											
0.2	**MARL (Clayey Silt):** some sand to sandy, beige, moist, very stiff		1	SS	16							OC Pesticides
0.8	**SAND:** trace silt, light brown, damp, compact		2	SS	23				○			OC Pesticides, Metals & Inorganics
1.5	some gravel		3	SS	22				○			
2.3	**SAND AND GRAVEL:** trace silt, trace clay, trace cobble pieces, brown, wet, very dense		4	SS	72				○			
			5	SS	73				○			45 48 5 2
4.6	trace to some silt		6	SS	53				○			
5.2	**END OF BOREHOLE** Notes: -Borehole caved to 2.2mbg upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-03

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/08/2015

REF. NO.: 10002397
ENCL NO.: 4

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 130mm							
0.1	**SAND (reworked):** trace silt, trace rootlets, light brown, damp, loose		1	SS	8			OC Pesticides
1			2	SS	7			OC Pesticides, Metals & Inorganics
1.5	**SAND:** trace silt, light brown, damp, stratified colours, compact		3	SS	20			
2			4	SS	28			
3								
3.1	some gravel to gravelly, wet		5	SS	26			
4								
4.6	trace to some silt, trace gravel, wet, compact to dense		6	SS	32			
5								
6			7	SS	12			
7								
8			8	SS	37			PHCs & VOCs
8.2	**END OF BOREHOLE**							

Notes:
-Borehole caved to 3.1mbg upon completion.

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-04

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/08/2015

REF. NO.: 10002397
ENCL NO.: 5

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT w_P / NATURAL MOISTURE CONTENT w / LIQUID LIMIT w_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 130mm											
0.1	**SAND(reworked):** trace silt, trace rootlets, orangish brown, damp, loose		1	SS	6							OC Pesticides
0.4	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, firm		2	SS	6							OC Pesticides, Metals & Inorganics
1			3	SS	5				40.6			0 20 52 28
2.0	**SAND:** trace silt, brown, moist, loose compact to dense		4	SS	30							
2.6	**SAND AND GRAVEL:** trace silt, brown, some black, wet, compact to dense		5	SS	20							
3												
4												
			6	SS	25							
5												
5.2	**END OF BOREHOLE** Notes: -Borehole caved to 2.5mbg upon completion.											

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES + 3, × 3: Numbers refer to Sensitivity ○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-05

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/08/2015

REF. NO.: 10002397
ENCL NO.: 6

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 100mm							
0.1	**SILTY SAND(reworked):** some sand layers, trace organics, trace rootlets, brown, moist, compact		1	SS	14			OC Pesticides
0.8	**SAND:** trace silt, brown, moist, very loose		2	SS	2			Metals & Inorganics
1.3	some clayey silt layers, wet, very loose to loose		3	SS	2		W. L. 1.5 mBGL Oct 14, 2015	OC Pesticides
			4	SS	4			
3.1	30mm clayey silt seam at 3.1 mbg, loose		5	SS	9			
3.5	**SAND AND GRAVEL:** trace silt, brown, wet, loose		6	SS	22			
4.9	**SAND:** some silt to silty, grey, wet, dilitant, compact							
5.2	**END OF BOREHOLE**							

Notes:
-Installed monitoring well upon completion
-Water level was 1.44 mbg upon completion

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT W_P | NATURAL MOISTURE CONTENT W | LIQUID LIMIT W_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-06

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/04/2015

REF. NO.: 10002397
ENCL NO.: 7

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 150mm							OC Pesticides
0.2	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff		1	SS	12			
0.8	**SAND:** trace silt, brown, moist, gravel piece at 1.3 mbg, compact		2	SS	19			Metals & Inorganics
1.5	very dense		3	SS	52			OC Pesticides
2.3	trace gravel, wet, compact		4	SS	13			PHCs & VOCs
3.1	clayey pockets at 3.1 mbg, loose		5	SS	5			
3.5	orangish brown							
4.6	some gravel to gravelly, compact		6	SS	18			
5.2	**END OF BOREHOLE** Notes: -Borehole caved to 2.0mbg upon completion.							

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-07

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/04/2015

REF. NO.: 10002397
ENCL NO.: 8

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 150mm							OC Pesticides
0.2	**SILTY SAND(reworked):** some sand layers, trace organics, trace rootlets, brown, moist, compact		1	SS	22			
0.6	**MARL (Clayey Silt):** some sand to sandy, beige, moist, trace topsoil/organics, stiff		2	SS	14			OC Pesticides, Metals & Inorganics
1.7	**SAND:** trace silt, brown, damp to moist, compact		3	SS	12			
2.3	trace gravel, dense		4	SS	31			
3.1	some gravel, wet, compact		5	SS	22		W. L. 3.2 mBGL Oct 14, 2015	PHCs & VOCs
4.6	occassional gravel, very loose to loose		6	SS	4			0 96 2 2
6.1	compact		7	SS	12			
			8	SS	25			
8.2	**END OF BOREHOLE**							

Notes:
-Installed monitoring well upon completion
-Water level was 3.19 mbg upon completion

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED
● QUICK TRIAXIAL
+ FIELD VANE & Sensitivity
× LAB VANE

PLASTIC LIMIT W_P — NATURAL MOISTURE CONTENT W — LIQUID LIMIT W_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st 2nd 3rd 4th

GRAPH NOTES
+3, ×3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-08

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/03/2015

REF. NO.: 10002397
ENCL NO.: 9

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 150mm							OC Pesticides
0.2	**SAND:** trace organics, dry to damp, very loose to loose		1	SS	4			
0.8	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, firm to stiff		2	SS	8			Metals & Inorganics
								OC Pesticides
1.7	**SAND:** trace silt, brown, damp to moist, stratified colours, compact		3	SS	11			
			4	SS	22			
3.1	loose to compact		5	SS	10			
4.6	trace to some silt, wet, dilitant, dense		6	SS	35			
5.2	**END OF BOREHOLE** Notes: -Borehole caved to 3.96mbg upon completion.							

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)

SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED + FIELD VANE & Sensitivity
● QUICK TRIAXIAL × LAB VANE

PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)

POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

LOG OF BOREHOLE BH15-09

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/03/2015

REF. NO.: 10002397
ENCL NO.: 10

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	BLOWS / 0.3 m "N"	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 130mm							OC Pesticides
0.1	**SAND:** trace silt, trace organics, orangish brown, dry to damp, loose		1	SS	5			
0.8	100mm wood/organic layer							Metals & Inorganics
0.9	brown, moist, stratified colours, loose to compact		2	SS	10			
			3	SS	10			OC Pesticides
1.8	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff							
2.3	**SAND:** trace silt, trace mollusks, brown, moist, compact		4	SS	26			
			5	SS	27			0 95 5 0
			6	SS	30			PHCs & VOCs
4.9	wet, compact to dense					W. L. 4.9 mBGL Oct 14, 2015		
6.1	some silt to silty, brown/grey, 50mm orange layer, dense		7	SS	40			
7.6	trace to some gravel, compact		8	SS	29			
8.2	**END OF BOREHOLE** -Installed monitoring well upon completion -Water level was 4.78 mbg upon completion							

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: $+^3$, $\times^3$: Numbers refer to Sensitivity; ○ $^{\varepsilon}$=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-10

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/03/2015

REF. NO.: 10002397
ENCL NO.: 11

SOIL PROFILE (m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES NUMBER	TYPE	"N" BLOWS 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT 20 40 60 80 100 / SHEAR STRENGTH (kPa) ○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE 20 40 60 80 100	PLASTIC LIMIT W_P / NATURAL MOISTURE CONTENT W / LIQUID LIMIT W_L WATER CONTENT (%) 10 20 30	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 50mm										
0.1	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff		1	SS	11						OC Pesticides
0.3	**SAND:** trace silt, brown, moist, compact		2	SS	21				○		OC Pesticides, Metals & Inorganics
1			3	SS	26				○		
2											
2.3	stratified colours		4	SS	15				○		
3											
3.1	some silt to silty, trace clay, greyish brown, wet, dilitant, loose		5	SS	5				○		
4											
4.9	grey, some silt, very dense		6	SS	57				○		
5.2	**END OF BOREHOLE**										

Notes:
-Borehole caved to 2.44mbg upon completion.

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-11

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/04/2015

REF. NO.: 10002397
ENCL NO.: 12

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: "N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100) / SHEAR STRENGTH (kPa): ○ UNCONFINED, ● QUICK TRIAXIAL, + FIELD VANE & Sensitivity, × LAB VANE (20 40 60 80 100)	PLASTIC LIMIT W_P / NATURAL MOISTURE CONTENT W / LIQUID LIMIT W_L — WATER CONTENT (%) (10 20 30)	POCKET PEN. (Cu) (kPa)	NATURAL UNIT WT (kN/m³)	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 180mm											
0.2	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff		1	SS	12							
0.5	**SAND:** trace silt, brown, damp, compact											
0.8	100mm silty sand layer, brown, moist		2	SS	18				○			
1												
			3	SS	14				○			
2												
2.3	trace to some silt, wet, loose		4	SS	6				○			
3												
3.1	trace to some gravel		5	SS	6				○			
4												
4.6	very loose		6	SS	2				○			
5												
5.2	**END OF BOREHOLE**											

Notes:
-Borehole caved to 1.7mbg upon completion.

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES: + 3, × 3: Numbers refer to Sensitivity; ○ ε=3% Strain at Failure

SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

LOG OF BOREHOLE BH15-12

PROJECT: Geotechnical Investigation
CLIENT: Marlwood Golf & Country Club
PROJECT LOCATION: 31 Marlwood Avenue, Wasaga Beach, ON
DATUM: Geodetic
BH LOCATION:

DRILLING DATA
Method: Hollow Stem Auger
Diameter: 200mm
Date: Sep/09/2015

REF. NO.: 10002397
ENCL NO.: 13

(m) ELEV / DEPTH	DESCRIPTION	STRATA PLOT	NUMBER	TYPE	"N" BLOWS / 0.3 m	GROUND WATER CONDITIONS	ELEVATION	REMARKS AND GRAIN SIZE DISTRIBUTION (%) GR SA SI CL
0.0	**TOPSOIL:** 200mm							OC Pesticides
0.2	**MARL (Clayey Silt):** some sand to sandy, beige, moist, layers of topsoil/organics, stiff		1	SS	10			Metals & Inorganics
1.0	**SAND:** trace silt, brown, damp, dense		2	SS	32			OC Pesticides
1.5	some gravel		3	SS	33			
2.3	**SAND AND GRAVEL:** trace silt, brown, wet, compact		4	SS	27	W. L. 2.2 mBGL Oct 14, 2015		PHCs & VOCs
3.1	very dense		5	SS	88/ 280mm			
4.6	**SAND:** trace silt, trace gravel, brown, wet, compact		6	SS	29			
5.2	**END OF BOREHOLE**							

Notes:
-Borehole caved to 1.7mbg upon completion.

DYNAMIC CONE PENETRATION RESISTANCE PLOT (20 40 60 80 100)
SHEAR STRENGTH (kPa) (20 40 60 80 100)
○ UNCONFINED ● QUICK TRIAXIAL + FIELD VANE & Sensitivity × LAB VANE
PLASTIC LIMIT w_P | NATURAL MOISTURE CONTENT w | LIQUID LIMIT w_L
WATER CONTENT (%) (10 20 30)
POCKET PEN. (Cu) (kPa)
NATURAL UNIT WT (kN/m³)

GROUNDWATER ELEVATIONS
Measurement 1st ▽ 2nd ▼ 3rd ▼ 4th ▼

GRAPH NOTES
+ 3, × 3: Numbers refer to Sensitivity
○ ε=3% Strain at Failure

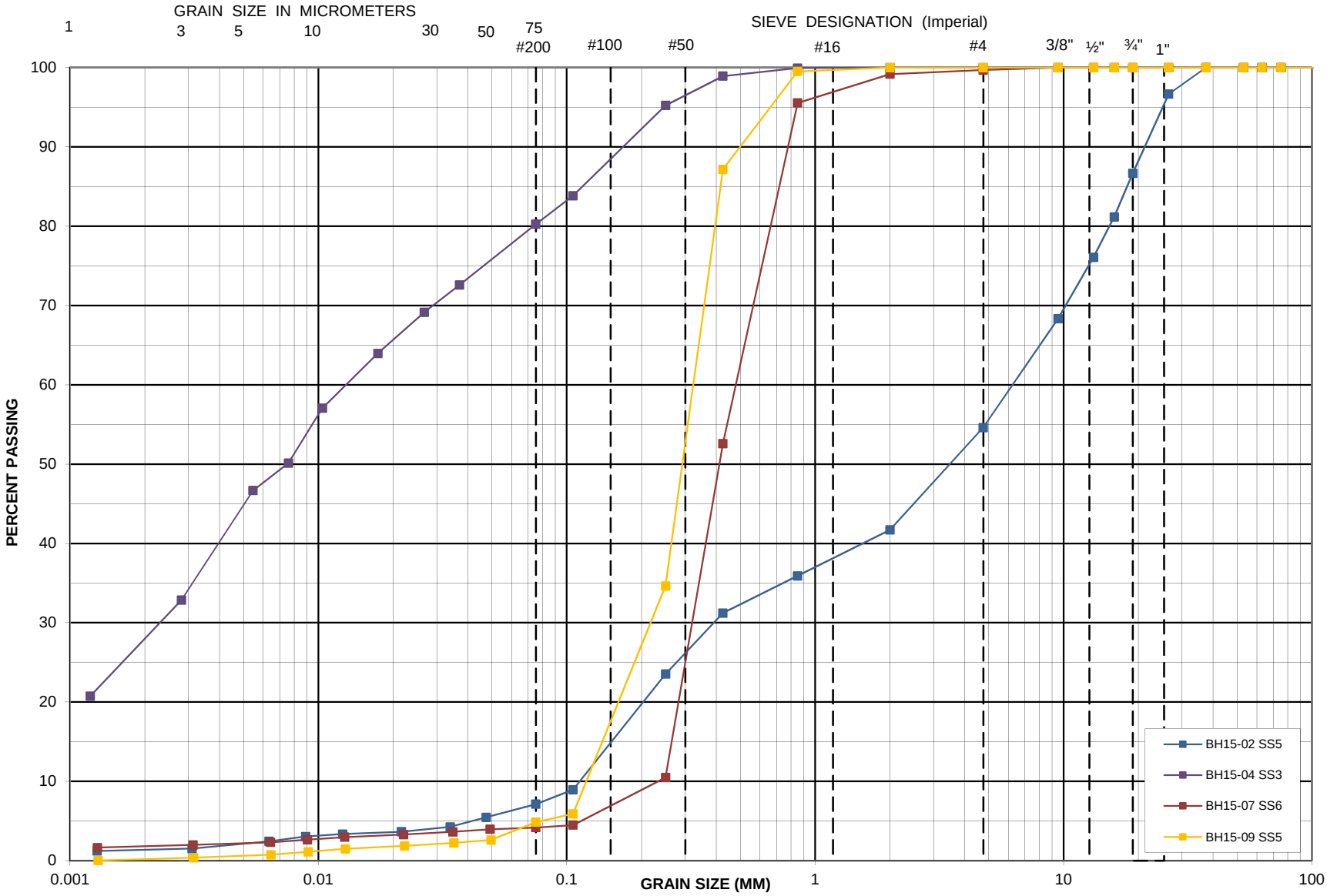
SPL SOIL LOG 10002397 BH LOGS.GPJ SPL.GDT 11/20/15

APPENDIX B

- **Grain Size Analyses**

UNIFIED SOIL CLASSIFICATION SYSTEM

CLAY AND SILT	SAND			GRAVEL	
	Fine	Medium	Coarse	Fine	Coarse



SPL Consultants Limited
Geotechnical Environmental Materials Hydrogeology

GRAIN SIZE DISTRIBUTION

Marlwood Golf and Country Club, Wasaga Beach

Figure No:	1
Project No.	10002397
Date :	September, 2015

APPENDIX C

- **General Requirements for Engineered Fill**

GENERAL REQUIREMENTS FOR ENGINEERED FILL

Compacted imported soil that meets specific engineering requirements and is free of organics and debris and that has been continually monitored on a full-time basis by a qualified geotechnical representative is classified as engineered fill. Engineered fill that meets these requirements and is bearing on suitable native subsoil can be used for the support of foundations.

Imported soil used as engineered fill can be removed from other portions of a site or can be brought in from other sites. In general, most of Ontario soils are too wet to achieve the 100% Standard Proctor Maximum Dry Density (SPMDD) and will require drying and careful site management if they are to be considered for engineered fill. Imported non-cohesive granular soil is preferred for all engineered fill. For engineered fill, we recommend use of OPSS Granular 'B' sand and gravel fill material.

Adverse weather conditions such as rain make the placement of engineered fill to the required degree of density difficult or impossible; engineered fill cannot be placed during freezing conditions, i.e. normally not between December 15 and April 1 of each year.

The location of the foundations on the engineered fill pad is critical and certification by a qualified surveyor that the foundations are within the stipulated boundaries is mandatory. Since layout stakes are often damaged or removed during fill placement, offset stakes must be installed and maintained by the surveyors during the course of fill placement so that the contractor and engineering staff are continually aware of where the engineered fill limits lie. Excavations within the engineered fill pad must be backfilled with the same conditions and quality control as the original pad.

To perform satisfactorily, engineered fill requires the cooperation of the designers, engineers, contractors and all parties must be aware of the requirements. The minimum requirements are as follows, however, the geotechnical report must be reviewed for specific information and requirements.

1. Prior to site work involving engineered fill, a site meeting to discuss all aspects must be convened. The surveyor, contractor, design engineer and geotechnical engineer must attend the meeting. At this meeting, the limits of the engineered fill will be defined. The contractor must make known where all fill material will be obtained from and samples must be provided to the geotechnical engineer for review, and approval before filling begins.

2. Detailed drawings indicating the lower boundaries as well as the upper boundaries of the engineered fill must be available at the site meeting and be approved by the geotechnical engineer.

3. The building footprint and base of the pad, including basements, garages, etc. must be defined by offset stakes that remain in place until the footings and service connections are all constructed. Confirmation that the footings are within the pad, service lines are in place, and that the grade conforms to drawings, must be obtained by the owner in writing from the surveyor and SPL Consultants Limited. Without this confirmation no responsibility for the performance of the structure can be accepted by SPL Consultants Limited. Survey drawing of the pre and post fill location and elevations will also be required.

4. The area must be stripped of all topsoil and fill materials. Subgrade must be proof-rolled. Soft spots must be dug out. The stripped native subgrade must be examined and approved by a SPL Consultants Limited engineer prior to placement of fill.

5. The approved engineered fill material must be compacted to 100% Standard Proctor Maximum Dry Density throughout. Engineered fill should not be placed during the winter months. Engineered fill compacted to 100% SPMDD will settle under its own weight approximately 0.5% of the fill height and the structural engineer must be aware of this settlement. In addition to the settlement of the fill, additional settlement due to consolidation of the underlying soils from the structural and fill loads will occur and should be evaluated prior to placing the fill.

6. Full-time geotechnical inspection by SPL Consultants Limited during placement of engineered fill is required. Work cannot commence or continue without the presence of the SPL Consultants Limited representative.

7. The fill must be placed such that the specified geometry is achieved. Refer to the attached sketches for minimum requirements. Take careful note that the projection of the compacted pad beyond the footing at footing level is a minimum of 2 m. The base of the compacted pad extends 2 m plus the depth of excavation beyond the edge of the footing.

8. A bearing capacity of 150 kPa at SLS (225 kPa at ULS) can be used provided that all conditions outlined above are adhered to. A minimum footing width of 500 mm (20 inches) is suggested and footings must be provided with nominal steel reinforcement.

9. All excavations must be done in accordance with the Occupational Health and Safety Regulations of Ontario.

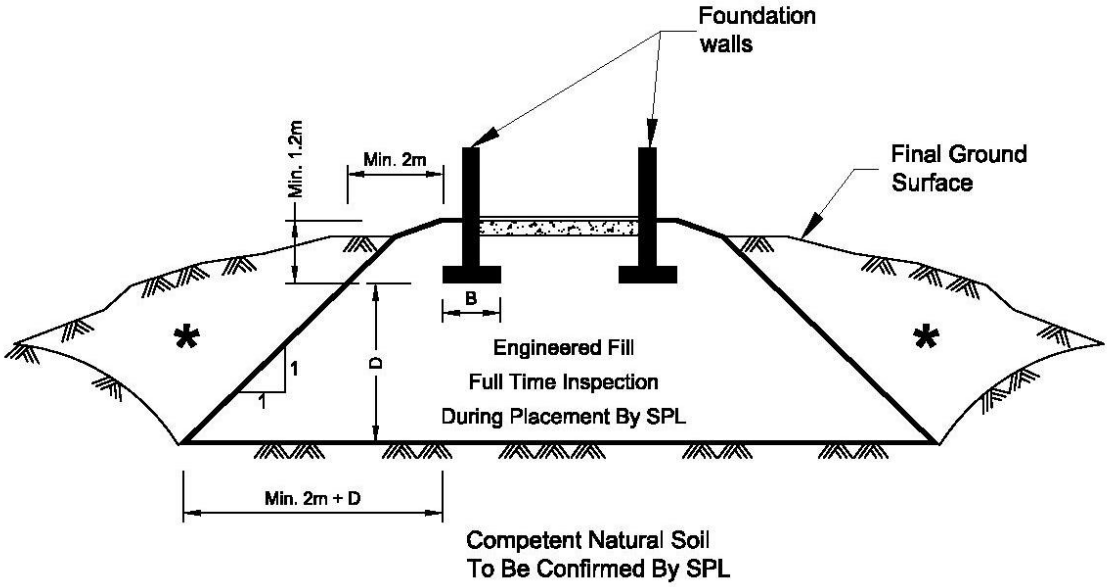
10. After completion of the engineered fill pad a second contractor may be selected to install footings. The prepared footing bases must be evaluated by engineering staff from SPL Consultants Limited prior to footing concrete placements. All excavations must be backfilled under full time supervision by SPL Consultants Limited to the same degree as the engineered fill pad. Surface water cannot be allowed to pond in excavations or to be trapped in clear stone backfill. Clear stone backfill can only be used with the approval of SPL Consultants Limited.

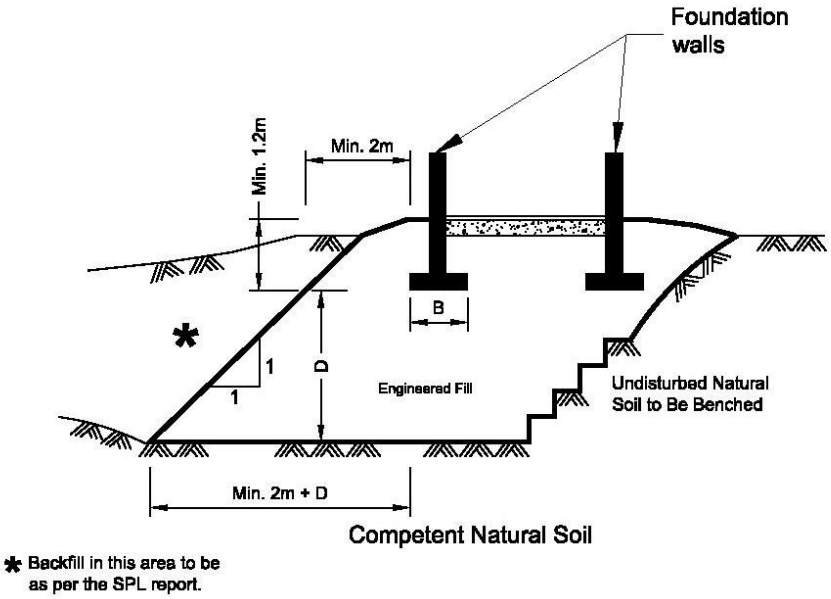
11. After completion of compaction, the surface of the engineered fill pad must be protected from disturbance from traffic, rain and frost. During the course of fill placement, the engineered fill must be smooth-graded, proof-rolled and sloped/crowned at the end of each day, prior to weekends and any stoppage in work in order to promote rapid runoff of rainwater and to avoid any ponding surface water. Any stockpiles of fill intended for use as engineered fill must also be smooth-bladed to promote runoff and/or protected from excessive moisture take up.

12. If there is a delay in construction, the engineered fill pad must be inspected and accepted by the geotechnical engineer. The location of the structure must be reconfirmed that it remains within the pad.

13. The geometry of the engineered fill as illustrated in these General Requirements is general in nature. Each project will have its own unique requirements. For example, if perimeter sidewalks are to be constructed around the building, then the projection of the engineered fill beyond the foundation wall may need to be greater.

14. These guidelines are to be read in conjunction with SPL Consultants Limited report attached.





APPENDIX D

- **Soil Characterization Letter**

SPL Consultants Limited | ENGINEERING SOLUTIONS

Project: 10002397-110 **October 7, 2015**

Marlwood Golf and Country Club
31 Marlwood Avenue
Wasaga Beach, Ontario
L9Z 1S8

Attention: Mr. Alex Smardenka

Re: Soil Quality Assessment Letter
Marlwood Golf and Country Club, Wasaga Beach, Ontario

SPL Consultants (SPL) was retained by Marlwood Golf and Country Club to provide a soil quality assessment at the Marlwood Golf and Country Club in Wasaga Beach, Ontario.

In order to assess options for potential offsite disposal of soils during the proposed residential development, a total of forty-four (44) soil samples and five (5) duplicate soil samples (DUP 1 to DUP 5) were collected from the geotechnical boreholes advanced on the property in September 2015. The borehole locations are shown on the attached Figure 1. Soil samples were collected by SPL and submitted for analysis of Organochlorine pesticides (OC Pesticides), metals and inorganics (M&Is), petroleum hydrocarbons (PHCs) and volatile organic compounds (VOCs), as set out in O.Reg. 153/04 as amended, Section XV.1 of the Environmental Protection Act (EPA). The **Certificates of Analysis** are attached. Sampling locations and parameters analyzed are provided in the following table.

TABLE 1: SOIL QUALITY SAMPLING AND ANALYSIS PROGRAM

Sample ID	Sample Date	Parameter(s)	Location	Depth (mbg)
BH15-01 SS1	September 9, 2015	OC Pesticides	South portion of the site	0-0.6 Top soil overlying sandy silt with trace organics
BH15-01 SS2	September 9, 2015	OC Pesticides, M&Is	South portion of the site	0.8-1.4 Sand, trace silt
BH15-01 SS5	September 9, 2015	PHCs, VOCs	South portion of the site	3.1-3.7 Sand and Gravel, trace silt
BH15-02 SS1	September 8, 2015	OC Pesticides (DUP 4)	South portion of the site	0-0.6 Top soil overlying clayey silt, some sand
BH15-02 SS2	September 8, 2015	OC Pesticides, M&Is	South portion of the site	0.8-1.4 Sand, trace silt
BH15-03 SS1	September 8, 2015	OC Pesticides	South portion of the site	0-0.6 Top soil overlying sand, trace silt
BH15-03 SS2	September 8, 2015	OC Pesticides, M&Is	South portion of the site	0-0.6 Sand, trace silt

Sample ID	Sample Date	Parameter(s)	Location	Depth (mbg)
BH15-03 SS8	September 8, 2015	PHCs, VOCs	South portion of the site	7.6-8.2 Sand, trace silt, trace gravel
BH15-04 SS1	September 8, 2015	OC Pesticides (DUP 3)	South portion of the site	0-0.6 Top soil overlying sand trace silt
BH15-04 SS2	September 8, 2015	OC Pesticides, M&Is	South portion of the site	0.8-1.4 Clayey silt, some sand
BH15-05 SS1	September 8, 2015	OC Pesticides	South portion of the site	0-0.6 Top soil overlying sandy silt with trace organics
BH15-05 SS2	September 8, 2015	M&Is	South portion of the site	0.8-1.4 Sand, trace silt
BH15-05 SS3	September 8, 2015	OC Pesticides	South portion of the site	1.5-2.1 Sand, trace silt
BH15-06 SS1	September 4, 2015	OC Pesticides	Central portion of the site	0-0.6 Top soil overlying clayey silt, some sand
BH15-06 SS2	September 4, 2015	M&Is	Central portion of the site	0.8-1.4 Sand, trace silt
BH15-06 SS3	September 4, 2015	OC Pesticides	Central portion of the site	1.5-2.1 Sand, trace silt
BH15-06 SS4	September 4, 2015	PHCs, VOCs (DUP 4)	Central portion of the site	2.3-2.9 Sand, trace silt, trace gravel
BH15-07 SS1	September 4, 2015	OC Pesticides (DUP 1)	Central portion of the site	0-0.6 Top soil overlying sandy silt with trace organics
BH15-07 SS2	September 4, 2015	OC Pesticides, M&Is	Central portion of the site	0.8-1.4 Clayey silt, some sand
BH15-07 SS5	September 4, 2015	PHCs, VOCs	Central portion of the site	3.1-3.7 Sand, some gravel
BH15-08 SS1	September 3, 2015	OC Pesticides	West Central portion of the site	0-0.6 Top soil overlying sand, trace silt with trace organics
BH15-08 SS2	September 3, 2015	M&Is	West Central portion of the site	0.8-1.4 Clayey silt, some sand
BH15-08 SS3	September 3, 2015	OC Pesticides	West Central portion of the site	1.5-2.1 Sand, trace silt
BH15-09 SS1	September 3, 2015	OC Pesticides	West Central portion of the site	0-0.6 Top soil overlying, trace silt with trace organics

Sample ID	Sample Date	Parameter(s)	Location	Depth (mbg)
BH15-09 SS2	September 3, 2015	M&Is	West Central portion of the site	0.8-1.4 Sand, trace silt
BH15-09 SS3	September 3, 2015	OC Pesticides	West Central portion of the site	1.5-2.1 Sand, trace silt overlying clayey silt, some sand
BH15-09 SS6	September 3, 2015	PHCs, VOCs	West Central portion of the site	4.6-5.2 Sand, trace silt
BH15-10 SS1	September 3, 2015	OC Pesticides	West Central portion of the site	0-0.6 Top soil overlying clayey silt, some sand
BH15-10 SS2	September 3, 2015	OC Pesticides, M&Is	West Central portion of the site	0.8-1.4 Sand, trace silt
BH15-12 SS1	September 9, 2015	OC Pesticides (DUP 5)	South portion of the site	0-0.6 Top soil overlying clayey silt, some sand
BH15-12 SS2	September 9, 2015	M&Is	South portion of the site	Clayey Silt, some sand overlying sand, trace silt
BH15-12 SS3	September 9, 2015	OC Pesticides	South portion of the site	1.5-2.1 Silt, trace silt, some gravel
BH15-12 SS5	September 9, 2015	PHCs, VOCs	South portion of the site	3.1-3.7 Sand and Gravel

Soil samples were collected and handled in accordance with generally accepted procedures used by the environmental consulting industry. Prior to each sampling event, new disposable gloves were used to transfer samples in plastic bags and glass jars supplied by the laboratory. All soil samples were kept under refrigerated conditions during field storage and transportation to the environmental analytical laboratory.

No visual or olfactory evidence of environmental impact (debris or staining) was noted in any of the soil samples collected.

The chemical analysis was conducted by ALS Environmental (ALS) located in Mississauga, Ontario. ALS is a member of the Canadian Association for Laboratory Accreditation (CALA) and meets the requirements of Section 47 of O.Reg. 153/04 certifying that the analytical laboratory be accredited in accordance with the International Standard ISO/IEC 17025 and with standards developed by the Standards Council of Canada.

For the purposes of soil disposal, the results of chemical analyses were compared to the Background Site Condition Standards for Use within 30 m of a Water Body in a Non-Potable Groundwater Condition for All Property Uses other than Agricultural as contained in Table 9 of the "Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act," published by the Ministry of Environment (MOE) on April 15, 2011.

Based on the results of the chemical analysis, SPL provides the following conclusions/recommendations:

- When compared to MOE Table 9 property use standards all samples meet with the exception of Dieldrin from sample BH13-07 SS1;
- When compared to MOE Table 9 property use standards, assessment against the guide limit could not be made due to the detection limit exceeding the guide limit for Endrin in BH15-09 SS1;
- The vertical and lateral extents of the exceedances are unknown.
- Separation and re-testing may be an option to reduce disposal cost.
- The results of this testing evaluates the environmental quality of the soil and does not pertain to the geotechnical suitability of the material.
- Acceptance of any excavated soil will be at the discretion of the receiving site.

The purpose of this testing was to chemically characterize the soils analyzed and does not constitute a Phase Two Environmental Site Assessment as defined in O.Reg.153/04, as amended.

It should be noted that if any aesthetically impacted soils are identified during excavation it is recommended that SPL be notified in order to conduct further assessment and/or testing of the material in question.

This report was prepared for Marlwood Golf and Country Club. The material in this report reflects SPL's judgment in light of the information available to it at the time of preparation. Any use, which a Third Party not noted above makes of this report, or any reliance on decisions to be made based on it, are the responsibility of such Third Parties. SPL Consultants Limited accepts no responsibility for damages, if any, suffered by any Third Party as a result of decisions made or actions based on this report.

Thank you for the opportunity to be of service on this project. Should you have any questions or wish to review the contents of this letter in more detail, please do not hesitate to contact the undersigned.

Yours Very Truly,

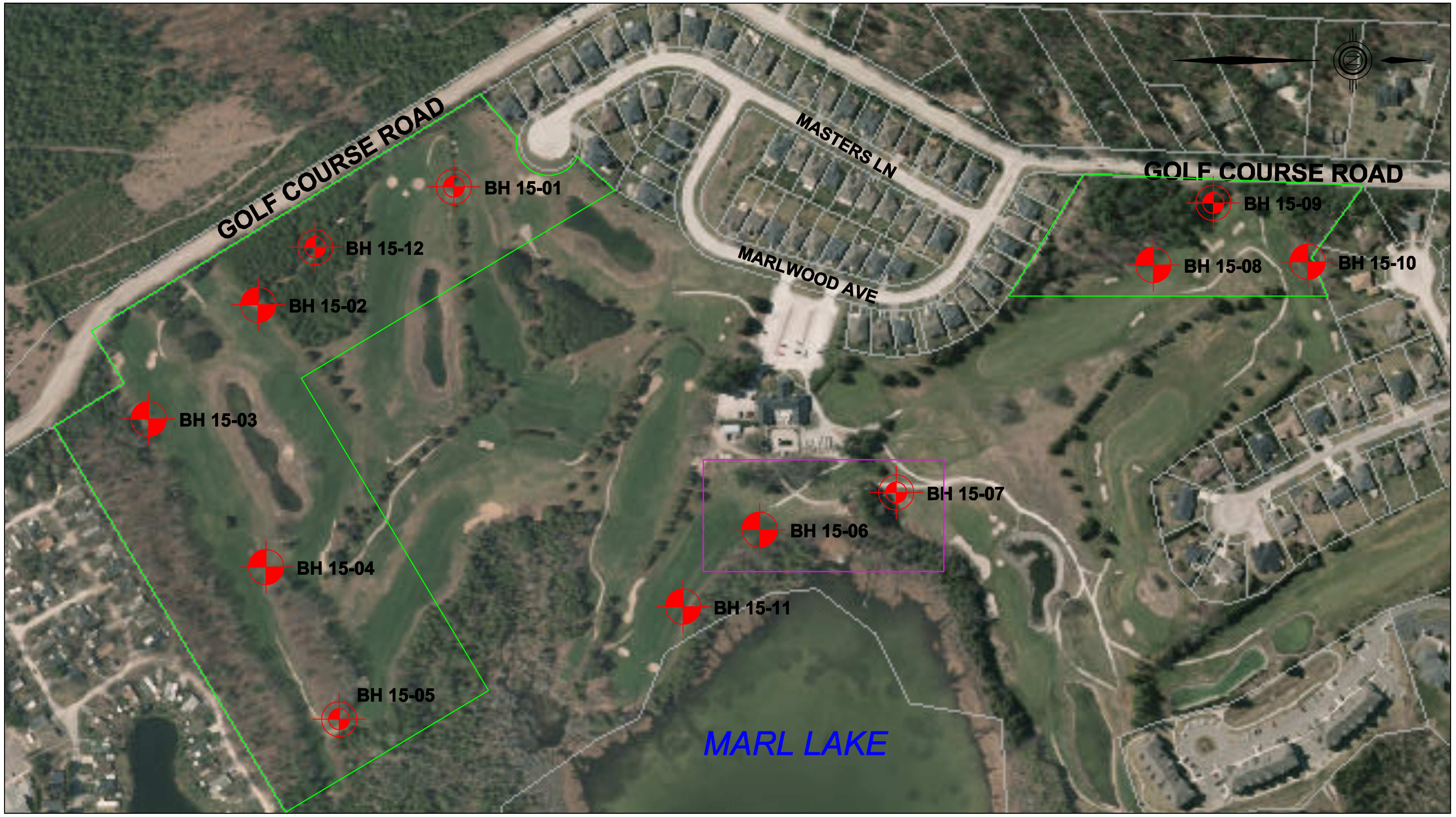
SPL Consultants Limited

Gord Jarvis
Branch Manager, Collingwood

Attachments:

Figure 1

Laboratory Certificates of Analysis



LEGEND

BH 15-XX Borehole Location

BH 15-XX Borehole Location with Groundwater Monitoring Well Installed

APPROXIMATE SCALE

0m 10m 25m 50m 100m

Approximate Area of Investigation for Proposed Residential Development

Approximate Area of Investigation for Proposed Relocation of Clubhouse

Client:	MARLWOOD GOLF AND COUNTRY CLUB			Project No.: 10002397	Figure No.: 1
Drawn:	MV	Approved:	GJ	Title:	BOREHOLE LOCATION PLAN
Date:	NOVEMBER, 2015	Scale:	AS SHOWN	Project:	PRELIMINARY GEOTECHNICAL INVESTIGATION 31 MARLWOOD AVE, WASAGA BEACH, ONTARIO
Original Size:	TABLOID	Rev:	1		SPL Consultants Limited | ENGINEERING SOLUTIONS

SPL CONSULTANTS LIMITED (Collingwood)
ATTN: NICOLE COLLINS
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7

Date Received: 11-SEP-15
Report Date: 22-SEP-15 14:57 (MT)
Version: FINAL

Client Phone: 705-445-0064

Certificate of Analysis

Lab Work Order #: L1672015

Project P.O. #:	NOT SUBMITTED
Job Reference:	10002397
C of C Numbers:	14-465016, 14-465017, 14-465018, 14-465019
Legal Site Desc:	

Emerson Perez, B.S.E
Account Manager

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

Analyte	Unit	**Guide Limit	L1672015-1 09-SEP-15 - **BH15-01 SS1**	L1672015-2 09-SEP-15 - **BH15-01 SS2**	L1672015-3 09-SEP-15 - **BH15-01 SS5**	L1672015-4 08-SEP-15 12:00 **BH15-02 SS1**	L1672015-5 08-SEP-15 12:00 **BH15-02 SS2**	L1672015-6 08-SEP-15 12:00 **BH15-03 SS1**
Conductivity	mS/cm	0.7		0.0801			0.0749	
% Moisture	%	-	17.0	9.13	13.1	16.0	21.0	10.8
pH	pH units	-		7.96			7.94	

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

			ALS ID	L1672015-7	L1672015-8	L1672015-9	L1672015-10	L1672015-11	L1672015-12
			Sampled Date	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15
			Sampled Time	12:00	12:00	-	-	-	-
			Sample ID	**BH15-03 SS2**	**BH15-03 SS8**	**BH15-04 SS1**	**BH15-04 SS2**	**BH15-05 SS1**	**BH15-05 SS2**
Analyte	Unit	**Guide Limit							
Conductivity	mS/cm	0.7		0.0774			0.140		0.145
% Moisture	%	-		22.5	19.7	36.2	21.6	14.0	7.12
pH	pH units	-		8.01			7.67		7.60

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

			ALS ID	L1672015-13	L1672015-14	L1672015-15	L1672015-16	L1672015-17	L1672015-18
			Sampled Date	08-SEP-15	04-SEP-15	04-SEP-15	04-SEP-15	04-SEP-15	04-SEP-15
			Sampled Time	-	-	-	-	-	-
			Sample ID	**BH15-05 SS3**	**BH15-06 SS1**	**BH15-06 SS2**	**BH15-06 SS3**	**BH15-06 SS4**	**BH15-07 SS1**
Analyte	Unit	**Guide Limit							
Conductivity	mS/cm	0.7				0.0937			
% Moisture	%	-		21.1	25.4	7.01	5.87	19.8	24.2
pH	pH units	-				7.92			

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

Analyte	Unit	**Guide Limit	ALS ID Sampled Date Sampled Time Sample ID L1672015-19 04-SEP-15 - **BH15-07 SS2**	L1672015-20 04-SEP-15 - **BH15-07 SS5**	L1672015-21 03-SEP-15 - **BH15-08 SS1**	L1672015-22 03-SEP-15 - **BH15-08 SS2**	L1672015-23 03-SEP-15 - **BH15-08 SS3**	L1672015-24 03-SEP-15 - **BH15-09 SS1**
Conductivity	mS/cm	0.7	0.128			0.135		
% Moisture	%	-	22.3	20.4	25.1	23.6	30.7	6.36
pH	pH units	-	7.81			7.71		

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

Analyte	Unit	**Guide Limit	ALS ID / Sampled Date / Sampled Time / Sample ID					
			L1672015-25 03-SEP-15 - **BH15-09 SS2**	L1672015-26 03-SEP-15 - **BH15-09 SS3**	L1672015-27 03-SEP-15 - **BH15-09 SS6**	L1672015-28 03-SEP-15 12:00 **BH15-10 SS1**	L1672015-29 03-SEP-15 12:00 **BH15-10 SS2**	L1672015-30 09-SEP-15 - **BH15-12 SS1**
Conductivity	mS/cm	0.7	0.0722				0.0593	
% Moisture	%	-	17.3	16.1	21.4	6.54	19.1	31.3
pH	pH units	-	7.78				8.01	

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

Analyte	Unit	**Guide Limit	ALS ID Sampled Date Sampled Time Sample ID L1672015-31 09-SEP-15 - **BH15-12 SS2**	L1672015-32 09-SEP-15 - **BH15-12 SS3**	L1672015-33 09-SEP-15 - **BH15-12 SS5**	L1672015-34 09-SEP-15 - **DUP1**	L1672015-35 09-SEP-15 - **DUP2**	L1672015-36 09-SEP-15 - **DUP3**
Conductivity	mS/cm	0.7	0.139					
% Moisture	%	-	22.9	7.54	11.9	16.6	19.8	15.0
pH	pH units	-	8.02					

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Physical Tests (SOIL)

		ALS ID	L1672015-37	L1672015-38
		Sampled Date	09-SEP-15	09-SEP-15
		Sampled Time	-	-
		Sample ID	**DUP4**	**DUP5**
Analyte	Unit	**Guide Limit		
Conductivity	mS/cm	0.7		
% Moisture	%	-	16.3	28.9
pH	pH units	-		

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Cyanides (SOIL)

			ALS ID	L1672015-2	L1672015-5	L1672015-7	L1672015-10	L1672015-12	L1672015-15
			Sampled Date	09-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	04-SEP-15
			Sampled Time	-	12:00	12:00	-	-	-
			Sample ID	**BH15-01 SS2**	**BH15-02 SS2**	**BH15-03 SS2**	**BH15-04 SS2**	**BH15-05 SS2**	**BH15-06 SS2**
Analyte	Unit	**Guide Limit							
Cyanide, Weak Acid Diss	ug/g	0.051		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

****T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Ontario Regulation 153/04 - April 15, 2011 Standards - Cyanides (SOIL)

			ALS ID	L1672015-19	L1672015-22	L1672015-25	L1672015-29	L1672015-31
			Sampled Date	04-SEP-15	03-SEP-15	03-SEP-15	03-SEP-15	09-SEP-15
			Sampled Time	-	-	-	12:00	-
			Sample ID	**BH15-07 SS2**	**BH15-08 SS2**	**BH15-09 SS2**	**BH15-10 SS2**	**BH15-12 SS2**
Analyte	Unit	**Guide Limit						
Cyanide, Weak Acid Diss	ug/g	0.051		<0.050	<0.050	<0.050	<0.050	<0.050

****T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Saturated Paste Extractables (SOIL)

Analyte	Unit	**Guide Limit	ALS ID: L1672015-2 Sampled Date: 09-SEP-15 Sampled Time: - Sample ID: **BH15-01 SS2**	ALS ID: L1672015-5 Sampled Date: 08-SEP-15 Sampled Time: 12:00 Sample ID: **BH15-02 SS2**	ALS ID: L1672015-7 Sampled Date: 08-SEP-15 Sampled Time: 12:00 Sample ID: **BH15-03 SS2**	ALS ID: L1672015-10 Sampled Date: 08-SEP-15 Sampled Time: - Sample ID: **BH15-04 SS2**	ALS ID: L1672015-12 Sampled Date: 08-SEP-15 Sampled Time: - Sample ID: **BH15-05 SS2**	ALS ID: L1672015-15 Sampled Date: 04-SEP-15 Sampled Time: - Sample ID: **BH15-06 SS2**
SAR	SAR	5	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q
Calcium (Ca)	mg/L	-	30.7	45.1	50.9	64.3	51.2	49.7
Magnesium (Mg)	mg/L	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sodium (Na)	mg/L	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Ontario Regulation 153/04 - April 15, 2011 Standards - Saturated Paste Extractables (SOIL)

Analyte	Unit	**Guide Limit	ALS ID: L1672015-19 Sampled Date: 04-SEP-15 Sampled Time: - Sample ID: **BH15-07 SS2**	ALS ID: L1672015-22 Sampled Date: 03-SEP-15 Sampled Time: - Sample ID: **BH15-08 SS2**	ALS ID: L1672015-25 Sampled Date: 03-SEP-15 Sampled Time: - Sample ID: **BH15-09 SS2**	ALS ID: L1672015-29 Sampled Date: 03-SEP-15 Sampled Time: 12:00 Sample ID: **BH15-10 SS2**	ALS ID: L1672015-31 Sampled Date: 09-SEP-15 Sampled Time: - Sample ID: **BH15-12 SS2**
SAR	SAR	5	<0.10 SAR:Q	<0.10	<0.10 SAR:Q	<0.10 SAR:Q	<0.10 SAR:Q
Calcium (Ca)	mg/L	-	26.7	26.3	37.2	18.4	60.9
Magnesium (Mg)	mg/L	-	<1.0	1.0	<1.0	<1.0	<1.0
Sodium (Na)	mg/L	-	<1.0	1.7	<1.0	<1.0	<1.0

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Metals (SOIL)

Analyte	Unit	**Guide Limit	L1672015-2 09-SEP-15 - BH15-01 SS2	L1672015-5 08-SEP-15 12:00 BH15-02 SS2	L1672015-7 08-SEP-15 12:00 BH15-03 SS2	L1672015-10 08-SEP-15 - BH15-04 SS2	L1672015-12 08-SEP-15 - BH15-05 SS2	L1672015-15 04-SEP-15 - BH15-06 SS2
Antimony (Sb)	ug/g	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	<1.0	<1.0	<1.0	1.8	1.4	<1.0
Barium (Ba)	ug/g	220	8.8	14.9	13.7	129	89.2	16.5
Beryllium (Be)	ug/g	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Boron (B)	ug/g	36	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Boron (B), Hot Water Ext.	ug/g	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	ug/g	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	5.1	5.2	4.1	8.0	7.4	4.3
Cobalt (Co)	ug/g	22	1.3	1.6	1.4	2.0	2.0	1.1
Copper (Cu)	ug/g	92	1.1	1.6	1.3	8.9	5.3	1.5
Lead (Pb)	ug/g	120	1.2	1.4	<1.0	2.1	3.2	<1.0
Mercury (Hg)	ug/g	0.27	<0.0050	<0.0050	<0.0050	0.0068	0.0187	<0.0050
Molybdenum (Mo)	ug/g	2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	ug/g	82	3.6	3.7	3.3	8.3	4.8	2.5
Selenium (Se)	ug/g	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	14.1	10.9	8.3	15.6	11.3	9.3
Zinc (Zn)	ug/g	290	<5.0	5.6	5.4	9.1	12.3	<5.0

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Metals (SOIL)

Analyte	Unit	**Guide Limit	ALS ID Sampled Date Sampled Time Sample ID L1672015-19 04-SEP-15 - **BH15-07 SS2**	L1672015-22 03-SEP-15 - **BH15-08 SS2**	L1672015-25 03-SEP-15 - **BH15-09 SS2**	L1672015-29 03-SEP-15 12:00 **BH15-10 SS2**	L1672015-31 09-SEP-15 - **BH15-12 SS2**
Antimony (Sb)	ug/g	1.3	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic (As)	ug/g	18	<1.0	<1.0	<1.0	<1.0	<1.0
Barium (Ba)	ug/g	220	159	107	6.8	11.3	121
Beryllium (Be)	ug/g	2.5	<0.50	<0.50	<0.50	<0.50	<0.50
Boron (B)	ug/g	36	<5.0	<5.0	<5.0	<5.0	<5.0
Boron (B), Hot Water Ext.	ug/g	1.5	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	ug/g	1.2	<0.50	<0.50	<0.50	<0.50	<0.50
Chromium (Cr)	ug/g	70	6.5	6.2	4.6	10.3	4.1
Cobalt (Co)	ug/g	22	2.0	<1.0	1.2	2.1	1.3
Copper (Cu)	ug/g	92	6.6	1.9	<1.0	1.7	9.5
Lead (Pb)	ug/g	120	1.9	1.8	<1.0	1.2	1.3
Mercury (Hg)	ug/g	0.27	0.0137	0.0205	<0.0050	<0.0050	<0.0050
Molybdenum (Mo)	ug/g	2	<1.0	<1.0	<1.0	<1.0	<1.0
Nickel (Ni)	ug/g	82	4.7	2.3	2.9	3.8	2.9
Selenium (Se)	ug/g	1.5	<1.0	<1.0	<1.0	<1.0	<1.0
Silver (Ag)	ug/g	0.5	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (Tl)	ug/g	1	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium (U)	ug/g	2.5	<1.0	<1.0	<1.0	<1.0	<1.0
Vanadium (V)	ug/g	86	11.0	5.6	10.5	33.4	7.1
Zinc (Zn)	ug/g	290	8.1	7.5	<5.0	7.2	<5.0

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Speciated Metals (SOIL)

Analyte	Unit	**Guide Limit	ALS ID / Sampled Date / Sampled Time / Sample ID					
			L1672015-2 09-SEP-15 - **BH15-01 SS2**	L1672015-5 08-SEP-15 12:00 **BH15-02 SS2**	L1672015-7 08-SEP-15 12:00 **BH15-03 SS2**	L1672015-10 08-SEP-15 - **BH15-04 SS2**	L1672015-12 08-SEP-15 - **BH15-05 SS2**	L1672015-15 04-SEP-15 - **BH15-06 SS2**
Chromium, Hexavalent	ug/g	0.66	<0.20	<0.20	<0.20	0.24	<0.20	<0.20

****T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Ontario Regulation 153/04 - April 15, 2011 Standards - Speciated Metals (SOIL)

Analyte	Unit	**Guide Limit	ALS ID / Sampled Date / Sampled Time / Sample ID				
			L1672015-19 04-SEP-15 - **BH15-07 SS2**	L1672015-22 03-SEP-15 - **BH15-08 SS2**	L1672015-25 03-SEP-15 - **BH15-09 SS2**	L1672015-29 03-SEP-15 12:00 **BH15-10 SS2**	L1672015-31 09-SEP-15 - **BH15-12 SS2**
Chromium, Hexavalent	ug/g	0.66	<0.20	<0.20	<0.20	<0.20	<0.20

****T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Volatile Organic Compounds (SOIL)

			L1672015-3	L1672015-8	L1672015-17	L1672015-20	L1672015-27	L1672015-33
ALS ID			L1672015-3	L1672015-8	L1672015-17	L1672015-20	L1672015-27	L1672015-33
Sampled Date			09-SEP-15	08-SEP-15	04-SEP-15	04-SEP-15	03-SEP-15	09-SEP-15
Sampled Time			-	12:00	-	-	-	-
Sample ID			**BH15-01 SS5**	**BH15-03 SS8**	**BH15-06 SS4**	**BH15-07 SS5**	**BH15-09 SS6**	**BH15-12 SS5**
Analyte	Unit	**Guide Limit						
Acetone	ug/g	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Benzene	ug/g	0.02	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068	<0.0068
Bromodichloromethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromoform	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Bromomethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Carbon tetrachloride	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chlorobenzene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dibromochloromethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chloroform	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dibromoethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichlorobenzene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichlorobenzene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,4-Dichlorobenzene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Dichlorodifluoromethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1-Dichloroethylene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,2-Dichloroethylene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
trans-1,2-Dichloroethylene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,3-Dichloropropene (cis & trans)	ug/g	0.05	<0.042	<0.042	<0.042	<0.042	<0.042	<0.042
Methylene Chloride	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,2-Dichloropropane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
cis-1,3-Dichloropropene	ug/g	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
trans-1,3-Dichloropropene	ug/g	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Ethylbenzene	ug/g	0.05	<0.018	<0.018	<0.018	<0.018	<0.018	<0.018
n-Hexane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Methyl Ethyl Ketone	ug/g	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl Isobutyl Ketone	ug/g	0.5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
MTBE	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Styrene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,1,2-Tetrachloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1,1,2,2-Tetrachloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Tetrachloroethylene	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	ug/g	0.2	<0.080	<0.080	<0.080	<0.080	<0.080	<0.080
1,1,1-Trichloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Volatile Organic Compounds (SOIL)

			ALS ID	L1672015-35
			Sampled Date	09-SEP-15
			Sampled Time	-
			Sample ID	**DUP2**
Analyte	Unit	**Guide Limit		
Acetone	ug/g	0.5		<0.50
Benzene	ug/g	0.02		<0.0068
Bromodichloromethane	ug/g	0.05		<0.050
Bromoform	ug/g	0.05		<0.050
Bromomethane	ug/g	0.05		<0.050
Carbon tetrachloride	ug/g	0.05		<0.050
Chlorobenzene	ug/g	0.05		<0.050
Dibromochloromethane	ug/g	0.05		<0.050
Chloroform	ug/g	0.05		<0.050
1,2-Dibromoethane	ug/g	0.05		<0.050
1,2-Dichlorobenzene	ug/g	0.05		<0.050
1,3-Dichlorobenzene	ug/g	0.05		<0.050
1,4-Dichlorobenzene	ug/g	0.05		<0.050
Dichlorodifluoromethane	ug/g	0.05		<0.050
1,1-Dichloroethane	ug/g	0.05		<0.050
1,2-Dichloroethane	ug/g	0.05		<0.050
1,1-Dichloroethylene	ug/g	0.05		<0.050
cis-1,2-Dichloroethylene	ug/g	0.05		<0.050
trans-1,2-Dichloroethylene	ug/g	0.05		<0.050
1,3-Dichloropropene (cis & trans)	ug/g	0.05		<0.042
Methylene Chloride	ug/g	0.05		<0.050
1,2-Dichloropropane	ug/g	0.05		<0.050
cis-1,3-Dichloropropene	ug/g	-		<0.030
trans-1,3-Dichloropropene	ug/g	-		<0.030
Ethylbenzene	ug/g	0.05		<0.018
n-Hexane	ug/g	0.05		<0.050
Methyl Ethyl Ketone	ug/g	0.5		<0.50
Methyl Isobutyl Ketone	ug/g	0.5		<0.50
MTBE	ug/g	0.05		<0.050
Styrene	ug/g	0.05		<0.050
1,1,1,2-Tetrachloroethane	ug/g	0.05		<0.050
1,1,2,2-Tetrachloroethane	ug/g	0.05		<0.050
Tetrachloroethylene	ug/g	0.05		<0.050
Toluene	ug/g	0.2		<0.080
1,1,1-Trichloroethane	ug/g	0.05		<0.050

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Volatile Organic Compounds (SOIL)

Analyte	Unit	**Guide Limit	ALS ID Sampled Date Sampled Time Sample ID L1672015-3 09-SEP-15 - **BH15-01 SS5**	L1672015-8 08-SEP-15 12:00 **BH15-03 SS8**	L1672015-17 04-SEP-15 - **BH15-06 SS4**	L1672015-20 04-SEP-15 - **BH15-07 SS5**	L1672015-27 03-SEP-15 - **BH15-09 SS6**	L1672015-33 09-SEP-15 - **BH15-12 SS5**
1,1,2-Trichloroethane	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Trichloroethylene	ug/g	0.05	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Trichlorofluoromethane	ug/g	0.25	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Vinyl chloride	ug/g	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylenes	ug/g	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Xylenes (Total)	ug/g	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Surrogate: 4-Bromofluorobenzene	%	-	91.2	93.0	89.1	91.7	87.1	97.1
Surrogate: 1,4-Difluorobenzene	%	-	96.8	96.9	95.1	96.3	95.6	97.5

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Volatile Organic Compounds (SOIL)

			ALS ID	L1672015-35
			Sampled Date	09-SEP-15
			Sampled Time	-
			Sample ID	**DUP2**
Analyte	Unit	**Guide Limit		
1,1,2-Trichloroethane	ug/g	0.05		<0.050
Trichloroethylene	ug/g	0.05		<0.010
Trichlorofluoromethane	ug/g	0.25		<0.050
Vinyl chloride	ug/g	0.02		<0.020
o-Xylene	ug/g	-		<0.020
m+p-Xylenes	ug/g	-		<0.030
Xylenes (Total)	ug/g	0.05		<0.050
Surrogate: 4-Bromofluorobenzene	%	-		91.3
Surrogate: 1,4-Difluorobenzene	%	-		97.3

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Ontario Regulation 153/04 - April 15, 2011 Standards - Hydrocarbons (SOIL)

			ALS ID	L1672015-3	L1672015-8	L1672015-17	L1672015-20	L1672015-27	L1672015-33
			Sampled Date	09-SEP-15	08-SEP-15	04-SEP-15	04-SEP-15	03-SEP-15	09-SEP-15
			Sampled Time	-	12:00	-	-	-	-
			Sample ID	**BH15-01 SS5**	**BH15-03 SS8**	**BH15-06 SS4**	**BH15-07 SS5**	**BH15-09 SS6**	**BH15-12 SS5**
Analyte	Unit	**Guide Limit							
F1 (C6-C10)	ug/g	25		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F1-BTEX	ug/g	25		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
F2 (C10-C16)	ug/g	10		<10	<10	<10	<10	<10	<10
F3 (C16-C34)	ug/g	240		<50	<50	<50	<50	<50	50
F4 (C34-C50)	ug/g	120		<50	<50	<50	<50	<50	<50
Total Hydrocarbons (C6-C50)	ug/g	-		<72	<72	<72	<72	<72	<72
Chrom. to baseline at nC50	No Unit	-		YES	YES	YES	YES	YES	YES
Surrogate: 2-Bromobenzotrifluoride	%	-		86.1	90.0	94.5	91.1	85.0	81.3
Surrogate: 3,4-Dichlorotoluene	%	-		98.3	97.7	93.1	94.0	80.5	113.5

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

		ALS ID	L1672015-1	L1672015-2	L1672015-4	L1672015-5	L1672015-6	L1672015-7
		Sampled Date	09-SEP-15	09-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15
		Sampled Time	-	-	12:00	12:00	12:00	12:00
		Sample ID	**BH15-01 SS1**	**BH15-01 SS2**	**BH15-02 SS1**	**BH15-02 SS2**	**BH15-03 SS1**	**BH15-03 SS2**
Analyte	Unit	**Guide Limit						
Aldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	ug/g	0.04	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	93.8	97.3	94.5	96.7	93.5	96.2
Surrogate: d14-Terphenyl	%	-	98.1	106.8	94.2	99.9	95.3	101.9

****T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

	ALS ID		L1672015-9	L1672015-10	L1672015-11	L1672015-13	L1672015-14	L1672015-16
	Sampled Date		08-SEP-15	08-SEP-15	08-SEP-15	08-SEP-15	04-SEP-15	04-SEP-15
	Sampled Time		-	-	-	-	-	-
	Sample ID		**BH15-04 SS1**	**BH15-04 SS2**	**BH15-05 SS1**	**BH15-05 SS3**	**BH15-06 SS1**	**BH15-06 SS3**
Analyte	Unit	**Guide Limit						
Aldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	ug/g	0.04	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	93.8	94.9	99.7	96.9	92.7	97.6
Surrogate: d14-Terphenyl	%	-	99.3	99.0	104.0	101.4	104.7	98.9

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

Analyte	Unit	**Guide Limit	ALS ID Sampled Date Sampled Time Sample ID L1672015-18 04-SEP-15 - BH15-07 SS1	L1672015-19 04-SEP-15 - BH15-07 SS2	L1672015-21 03-SEP-15 - BH15-08 SS1	L1672015-23 03-SEP-15 - BH15-08 SS3	L1672015-24 03-SEP-15 - BH15-09 SS1	L1672015-26 03-SEP-15 - BH15-09 SS3
Aldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	0.033	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	0.033	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	0.027	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	0.063	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.045 DLUI	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028	<0.028	<0.028	<0.049	<0.028
Endrin	ug/g	0.04	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	93.7	94.7	92.8	89.7	93.4	91.4
Surrogate: d14-Terphenyl	%	-	93.2	94.8	92.2	93.8	89.8	98.1

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

		ALS ID	L1672015-28	L1672015-29	L1672015-30	L1672015-32	L1672015-34	L1672015-36
		Sampled Date	03-SEP-15	03-SEP-15	09-SEP-15	09-SEP-15	09-SEP-15	09-SEP-15
		Sampled Time	12:00	12:00	-	-	-	-
		Sample ID	**BH15-10 SS1**	**BH15-10 SS2**	**BH15-12 SS1**	**BH15-12 SS3**	**DUP1**	**DUP3**
Analyte	Unit	**Guide Limit						
Aldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
a-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Chlordane (Total)	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
g-chlordane	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
op-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDD	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDD	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
o,p-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDE	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDE	ug/g	0.05	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
op-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
pp-DDT	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Total DDT	ug/g	1.4	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Dieldrin	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	0.025	<0.020
Endosulfan I	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan II	ug/g	-	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Endosulfan (Total)	ug/g	0.04	<0.028	<0.028	<0.028	<0.028	<0.028	<0.028
Endrin	ug/g	0.04	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Hexachlorobenzene	ug/g	0.02	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Hexachloroethane	ug/g	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Methoxychlor	ug/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-	92.8	100.6	93.1	94.8	95.5	93.4
Surrogate: d14-Terphenyl	%	-	94.3	102.9	99.5	103.3	100.6	93.9

****T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use**

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

ANALYTICAL REPORT

Ontario Regulation 153/04 - April 15, 2011 Standards - Organochlorine Pesticides (SOIL)

			ALS ID	L1672015-37	L1672015-38
			Sampled Date	09-SEP-15	09-SEP-15
			Sampled Time	-	-
			Sample ID	**DUP4**	**DUP5**
Analyte	Unit	**Guide Limit			
Aldrin	ug/g	0.05		<0.020	<0.020
gamma-hexachlorocyclohexane	ug/g	-		<0.010	<0.010
a-chlordane	ug/g	-		<0.020	<0.020
Chlordane (Total)	ug/g	0.05		<0.028	<0.028
g-chlordane	ug/g	-		<0.020	<0.020
op-DDD	ug/g	-		<0.020	<0.020
pp-DDD	ug/g	-		<0.020	<0.020
Total DDD	ug/g	0.05		<0.028	<0.028
o,p-DDE	ug/g	-		<0.020	<0.020
pp-DDE	ug/g	-		<0.020	<0.020
Total DDE	ug/g	0.05		<0.028	<0.028
op-DDT	ug/g	-		<0.020	<0.020
pp-DDT	ug/g	-		<0.020	<0.020
Total DDT	ug/g	1.4		<0.028	<0.028
Dieldrin	ug/g	0.05		<0.020	<0.020
Endosulfan I	ug/g	-		<0.020	<0.020
Endosulfan II	ug/g	-		<0.020	<0.020
Endosulfan (Total)	ug/g	0.04		<0.028	<0.028
Endrin	ug/g	0.04		<0.020	<0.020
Heptachlor	ug/g	0.05		<0.020	<0.020
Heptachlor Epoxide	ug/g	0.05		<0.020	<0.020
Hexachlorobenzene	ug/g	0.02		<0.010	<0.010
Hexachlorobutadiene	ug/g	0.01		<0.010	<0.010
Hexachloroethane	ug/g	0.01		<0.010	<0.010
Methoxychlor	ug/g	0.05		<0.020	<0.020
Surrogate: 2-Fluorobiphenyl	%	-		93.0	96.9
Surrogate: d14-Terphenyl	%	-		98.2	100.9

**T9-Soil-Res/Park/Inst/Ind/Com/Commu Property Use

Detection Limit for result exceeds Guide Limit. Assessment against Guide Limit cannot be made.
Analytical result for this parameter exceeds Guide Limit listed on this report.
* Please refer to the Reference Information section for an explanation of any qualifiers noted.

Reference Information

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLUI	Detection Limit Raised: Unknown Interference generated an apparent false positive test result.
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**
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).

CHLORDANE-T-CALC-WT	Soil	Chlordane Total sums	CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

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-WT	Soil	Hexavalent Chromium in Soil	SW846 3060A/7199

This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Method 7199, published by the United States Environmental Protection Agency (EPA). The procedure involves analysis for chromium (VI) by ion chromatography using diphenylcarbazide in a sulphuric acid solution.

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).

DDD-DDE-DDT-CALC-WT	Soil	DDD, DDE, DDT sums	CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

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).

ENDOSULFAN-T-CALC-WT	Soil	Endosulfan Total sums	CALCULATION

Aqueous sample is extracted by liquid/liquid extraction with a solvent mix. After extraction, a number of clean up techniques may be applied, depending on the sample matrix and analyzed by GC/MS.

F1-F4-511-CALC-WT	Soil	F1-F4 Hydrocarbon Calculated Parameters	CCME CWS-PHC, Pub #1310, Dec 2001-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,

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**

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).

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).

HG-200.2-CVAA-WT Soil Mercury in Soil by CVAAS EPA 200.2/1631E (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis 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-200.2-CCMS-WT Soil Metals in Soil by CRC ICPMS EPA 200.2/6020A (mod)

Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CRC ICPMS.

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. This method does not dissolve all silicate materials and may result in a partial extraction. depending on the sample matrix, for some metals, including, but not limited to Al, Ba, Be, Cr, Sr, Ti, Tl, and V.

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).

MOISTURE-WT Soil % Moisture Gravimetric: Oven Dried

PEST-OC-511-WT Soil OC Pesticides-O.Reg 153/04 (July 2011) SW846 8270 (511)

Soil sample is extracted in a solvent, after extraction a number of clean up techniques may be applied, depending on the sample matrix and analyzed by 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).

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).

Reference Information

Methods Listed (if applicable):

ALS Test Code	Matrix	Test Description	Method Reference**
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.

Chain of Custody numbers:

14-465016 14-465017 14-465018 14-465019

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
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.

Quality Control Report

Workorder: L1672015 Report Date: 22-SEP-15

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
B-HWS-R511-WT	**Soil**							
Batch R3267134								
WG2171575-3 DUP		**L1672107-1**						
Boron (B), Hot Water Ext.		0.48	0.47		ug/g	1.1	40	16-SEP-15
WG2171575-2 IRM		**SALINITY_SOIL4**						
Boron (B), Hot Water Ext.			83.0		%		70-130	16-SEP-15
WG2171575-1 MB								
Boron (B), Hot Water Ext.			<0.10		ug/g		0.1	16-SEP-15
WG2171575-4 MS		**L1672107-1**						
Boron (B), Hot Water Ext.			87.2		%		60-140	16-SEP-15
CN-WAD-R511-WT	**Soil**							
Batch R3267097								
WG2171216-3 DUP		**L1672015-12**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	16-SEP-15
WG2171216-2 LCS								
Cyanide, Weak Acid Diss			94.1		%		80-120	16-SEP-15
WG2171216-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	16-SEP-15
WG2171216-4 MS		**L1672015-12**						
Cyanide, Weak Acid Diss			93.7		%		70-130	16-SEP-15
Batch R3268457								
WG2170709-3 DUP		**L1671979-1**						
Cyanide, Weak Acid Diss		<0.050	<0.050	RPD-NA	ug/g	N/A	35	17-SEP-15
WG2170709-2 LCS								
Cyanide, Weak Acid Diss			100.3		%		80-120	17-SEP-15
WG2170709-1 MB								
Cyanide, Weak Acid Diss			<0.050		ug/g		0.05	17-SEP-15
WG2170709-4 MS		**L1671979-1**						
Cyanide, Weak Acid Diss			91.4		%		70-130	17-SEP-15
CR-CR6-IC-WT	**Soil**							
Batch R3267157								
WG2171215-4 CRM		**WT-SQC012**						
Chromium, Hexavalent			85.0		%		70-130	16-SEP-15
WG2171215-3 DUP		**L1672015-2**						
Chromium, Hexavalent		<0.20	<0.20	RPD-NA	ug/g	N/A	35	16-SEP-15
WG2171215-2 LCS								
Chromium, Hexavalent			87.8		%		80-120	16-SEP-15
WG2171215-1 MB								
Chromium, Hexavalent			<0.20		ug/g		0.2	16-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
EC-R511-WT	**Soil**							
Batch R3267005								
WG2171578-4 DUP		**WG2171578-3**						
Conductivity		0.0593	0.0681		mS/cm	14	20	16-SEP-15
WG2171760-1 LCS								
Conductivity			98.9		%		90-110	16-SEP-15
WG2171578-1 MB								
Conductivity			<0.0040		mS/cm		0.044	16-SEP-15
F1-HS-511-WT	**Soil**							
Batch R3266043								
WG2169950-4 DUP		**WG2169950-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	50	15-SEP-15
WG2169950-2 LCS								
F1 (C6-C10)			89.9		%		80-120	15-SEP-15
WG2169950-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	15-SEP-15
Surrogate: 3,4-Dichlorotoluene			82.9		%		60-140	15-SEP-15
WG2169950-7 MS		**WG2169950-6**						
F1 (C6-C10)			96.8		%		60-140	15-SEP-15
Batch R3266448								
WG2170539-4 DUP		**WG2170539-3**						
F1 (C6-C10)		<5.0	<5.0	RPD-NA	ug/g	N/A	50	15-SEP-15
WG2170539-2 LCS								
F1 (C6-C10)			100.4		%		80-120	15-SEP-15
WG2170539-1 MB								
F1 (C6-C10)			<5.0		ug/g		5	15-SEP-15
Surrogate: 3,4-Dichlorotoluene			84.9		%		60-140	15-SEP-15
WG2170539-7 MS		**WG2170539-6**						
F1 (C6-C10)			93.0		%		60-140	15-SEP-15
F2-F4-511-WT	**Soil**							
Batch R3267561								
WG2170737-3 CRM		**ALS PHC2 IRM**						
F2 (C10-C16)			103.8		%		70-130	16-SEP-15
F3 (C16-C34)			118.4		%		70-130	16-SEP-15
F4 (C34-C50)			123.5		%		70-130	16-SEP-15
WG2170737-5 DUP		**WG2170737-4**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	40	16-SEP-15
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	40	16-SEP-15
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	16-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-F4-511-WT	**Soil**							
Batch R3267561								
WG2170737-2 LCS								
F2 (C10-C16)			93.8		%		80-120	16-SEP-15
F3 (C16-C34)			107.4		%		80-120	16-SEP-15
F4 (C34-C50)			108.6		%		80-120	16-SEP-15
WG2170737-1 MB								
F2 (C10-C16)			<10		ug/g		10	16-SEP-15
F3 (C16-C34)			<50		ug/g		50	16-SEP-15
F4 (C34-C50)			<50		ug/g		50	16-SEP-15
Surrogate: 2-Bromobenzotrifluoride			84.9		%		60-140	16-SEP-15
WG2170737-6 MS		**WG2170737-4**						
F2 (C10-C16)			89.5		%		60-140	16-SEP-15
F3 (C16-C34)			105.3		%		60-140	16-SEP-15
F4 (C34-C50)			110.5		%		60-140	16-SEP-15
Batch R3269040								
WG2169937-3 CRM		**ALS PHC2 IRM**						
F2 (C10-C16)			87.7		%		70-130	16-SEP-15
F3 (C16-C34)			109.2		%		70-130	16-SEP-15
F4 (C34-C50)			111.1		%		70-130	16-SEP-15
WG2169937-8 DUP		**WG2169937-7**						
F2 (C10-C16)		<10	<10	RPD-NA	ug/g	N/A	40	16-SEP-15
F3 (C16-C34)		<50	<50	RPD-NA	ug/g	N/A	40	16-SEP-15
F4 (C34-C50)		<50	<50	RPD-NA	ug/g	N/A	40	16-SEP-15
WG2169937-2 LCS								
F2 (C10-C16)			84.4		%		80-120	16-SEP-15
F3 (C16-C34)			108.3		%		80-120	16-SEP-15
F4 (C34-C50)			113.1		%		80-120	16-SEP-15
WG2169937-1 MB								
F2 (C10-C16)			<10		ug/g		10	16-SEP-15
F3 (C16-C34)			<50		ug/g		50	16-SEP-15
F4 (C34-C50)			<50		ug/g		50	16-SEP-15
Surrogate: 2-Bromobenzotrifluoride			87.0		%		60-140	16-SEP-15
WG2169937-9 MS		**WG2169937-7**						
F2 (C10-C16)			92.9		%		60-140	16-SEP-15
F3 (C16-C34)			111.9		%		60-140	16-SEP-15
F4 (C34-C50)			125.2		%		60-140	16-SEP-15
HG-200.2-CVAA-WT	**Soil**							

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-200.2-CVAA-WT	**Soil**							
Batch R3267026								
WG2171581-2 CRM		**WT-CANMET-TILL1**						
Mercury (Hg)			90.6		%		70-130	16-SEP-15
WG2171581-6 DUP		**WG2171581-5**						
Mercury (Hg)		<0.0050	<0.0050	RPD-NA	ug/g	N/A	40	16-SEP-15
WG2171581-4 LCS								
Mercury (Hg)			96.6		%		80-120	16-SEP-15
WG2171581-1 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	16-SEP-15
MET-200.2-CCMS-WT	**Soil**							
Batch R3268559								
WG2171581-2 CRM		**WT-CANMET-TILL1**						
Antimony (Sb)			114.6		%		70-130	16-SEP-15
Arsenic (As)			119.7		%		70-130	16-SEP-15
Barium (Ba)			122.1		%		70-130	16-SEP-15
Beryllium (Be)			113.2		%		70-130	16-SEP-15
Cadmium (Cd)			116.3		%		70-130	16-SEP-15
Chromium (Cr)			122.6		%		70-130	16-SEP-15
Cobalt (Co)			117.4		%		70-130	16-SEP-15
Copper (Cu)			113.9		%		70-130	16-SEP-15
Lead (Pb)			107.1		%		70-130	16-SEP-15
Molybdenum (Mo)			109.6		%		70-130	16-SEP-15
Nickel (Ni)			117.5		%		70-130	16-SEP-15
Selenium (Se)			102.6		%		70-130	16-SEP-15
Silver (Ag)			118.2		%		70-130	16-SEP-15
Thallium (Tl)			121.1		%		70-130	16-SEP-15
Uranium (U)			129.8		%		70-130	16-SEP-15
Vanadium (V)			125.1		%		70-130	16-SEP-15
Zinc (Zn)			115.8		%		70-130	16-SEP-15
WG2171581-6 DUP		**WG2171581-5**						
Antimony (Sb)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	16-SEP-15
Arsenic (As)		0.62	0.51		ug/g	21	30	16-SEP-15
Barium (Ba)		8.83	7.28		ug/g	19	40	16-SEP-15
Beryllium (Be)		<0.10	<0.10	RPD-NA	ug/g	N/A	30	16-SEP-15
Boron (B)		<5.0	<5.0	RPD-NA	ug/g	N/A	30	16-SEP-15
Cadmium (Cd)		<0.020	<0.020	RPD-NA	ug/g	N/A	30	16-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3268559								
WG2171581-6 DUP		**WG2171581-5**						
Chromium (Cr)		5.09	4.05		ug/g	23	30	16-SEP-15
Cobalt (Co)		1.30	1.14		ug/g	13	30	16-SEP-15
Copper (Cu)		1.13	1.01		ug/g	11	30	16-SEP-15
Lead (Pb)		1.18	0.77	J	ug/g	0.41	1	16-SEP-15
Molybdenum (Mo)		0.14	<0.10	RPD-NA	ug/g	N/A	40	16-SEP-15
Nickel (Ni)		3.65	3.10		ug/g	16	30	16-SEP-15
Selenium (Se)		<0.20	<0.20	RPD-NA	ug/g	N/A	30	16-SEP-15
Silver (Ag)		<0.10	<0.10	RPD-NA	ug/g	N/A	40	16-SEP-15
Thallium (Tl)		<0.050	<0.050	RPD-NA	ug/g	N/A	30	16-SEP-15
Uranium (U)		0.453	0.309	DUP-H	ug/g	38	30	16-SEP-15
Vanadium (V)		14.1	11.0		ug/g	25	30	16-SEP-15
Zinc (Zn)		4.8	4.4		ug/g	7.9	30	16-SEP-15
WG2171581-3 LCS								
Antimony (Sb)			115.3		%		80-120	16-SEP-15
Arsenic (As)			109.6		%		80-120	16-SEP-15
Barium (Ba)			111.5		%		80-120	16-SEP-15
Beryllium (Be)			110.7		%		80-120	16-SEP-15
Boron (B)			104.2		%		80-120	16-SEP-15
Cadmium (Cd)			113.7		%		80-120	16-SEP-15
Chromium (Cr)			107.7		%		80-120	16-SEP-15
Cobalt (Co)			108.4		%		80-120	16-SEP-15
Copper (Cu)			106.3		%		80-120	16-SEP-15
Lead (Pb)			111.3		%		80-120	16-SEP-15
Molybdenum (Mo)			112.5		%		80-120	16-SEP-15
Nickel (Ni)			107.0		%		80-120	16-SEP-15
Selenium (Se)			108.4		%		80-120	16-SEP-15
Silver (Ag)			116.4		%		80-120	16-SEP-15
Thallium (Tl)			114.3		%		80-120	16-SEP-15
Uranium (U)			113.6		%		80-120	16-SEP-15
Vanadium (V)			110.4		%		80-120	16-SEP-15
Zinc (Zn)			103.7		%		80-120	16-SEP-15
WG2171581-1 MB								
Antimony (Sb)			<0.10		mg/kg		0.1	16-SEP-15
Arsenic (As)			<0.10				0.1	

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-WT	**Soil**							
Batch R3268559								
WG2171581-1 MB								
Arsenic (As)			<0.10		mg/kg		0.1	16-SEP-15
Barium (Ba)			<0.50		mg/kg		0.5	16-SEP-15
Beryllium (Be)			<0.10		mg/kg		0.1	16-SEP-15
Boron (B)			<5.0		mg/kg		5	16-SEP-15
Cadmium (Cd)			<0.020		mg/kg		0.02	16-SEP-15
Chromium (Cr)			<0.50		mg/kg		0.5	16-SEP-15
Cobalt (Co)			<0.10		mg/kg		0.1	16-SEP-15
Copper (Cu)			<0.50		mg/kg		0.5	16-SEP-15
Lead (Pb)			<0.50		mg/kg		0.5	16-SEP-15
Molybdenum (Mo)			<0.10		mg/kg		0.1	16-SEP-15
Nickel (Ni)			<0.50		mg/kg		0.5	16-SEP-15
Selenium (Se)			<0.20		mg/kg		0.2	16-SEP-15
Silver (Ag)			<0.10		mg/kg		0.1	16-SEP-15
Thallium (Tl)			<0.050		mg/kg		0.05	16-SEP-15
Uranium (U)			<0.050		mg/kg		0.05	16-SEP-15
Vanadium (V)			<0.20		mg/kg		0.2	16-SEP-15
Zinc (Zn)			<2.0		mg/kg		2	16-SEP-15
MOISTURE-WT	**Soil**							
Batch R3265992								
WG2170362-3 DUP		**L1672015-8**						
% Moisture		19.7	19.3		%	2.2	20	15-SEP-15
WG2170362-2 LCS								
% Moisture			97.2		%		90-110	15-SEP-15
WG2170362-1 MB								
% Moisture			<0.10		%		0.1	15-SEP-15
Batch R3266783								
WG2170782-3 DUP		**L1672015-25**						
% Moisture		17.3	17.8		%	2.8	20	16-SEP-15
WG2170782-2 LCS								
% Moisture			104.1		%		90-110	16-SEP-15
WG2170782-1 MB								
% Moisture			<0.10		%		0.1	16-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-WT	**Soil**							
Batch R3266786								
WG2170740-3 DUP		**L1672015-27**						
% Moisture		21.4	21.5		%	0.8	20	16-SEP-15
WG2170740-2 LCS								
% Moisture			102.0		%		90-110	16-SEP-15
WG2170740-1 MB								
% Moisture			<0.10		%		0.1	16-SEP-15
Batch R3266788								
WG2171157-3 DUP		**L1672015-1**						
% Moisture		17.0	16.3		%	3.8	20	16-SEP-15
WG2171157-2 LCS								
% Moisture			96.2		%		90-110	16-SEP-15
WG2171157-1 MB								
% Moisture			<0.10		%		0.1	16-SEP-15
Batch R3271950								
WG2175261-2 LCS								
% Moisture			95.7		%		90-110	22-SEP-15
WG2175261-1 MB								
% Moisture			<0.10		%		0.1	22-SEP-15
PEST-OC-511-WT	**Soil**							
Batch R3269371								
WG2170719-4 DUP		**WG2170719-3**						
Aldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
a-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
g-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
op-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
pp-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
o,p-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
pp-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
op-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
pp-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Dieldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Endosulfan I		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Endosulfan II		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Endrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
gamma-hexachlorocyclohexane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-SEP-15
Heptachlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	**Soil**							
Batch R3269371								
WG2170719-4 DUP		**WG2170719-3**						
Heptachlor Epoxide		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
Hexachlorobenzene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-SEP-15
Hexachlorobutadiene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-SEP-15
Hexachloroethane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	18-SEP-15
Methoxychlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	18-SEP-15
WG2170719-2 LCS								
Aldrin			106.1		%		50-140	18-SEP-15
a-chlordane			98.0		%		50-140	18-SEP-15
g-chlordane			101.1		%		50-140	18-SEP-15
op-DDD			88.4		%		50-140	18-SEP-15
pp-DDD			87.4		%		50-140	18-SEP-15
o,p-DDE			91.2		%		50-140	18-SEP-15
pp-DDE			89.1		%		50-140	18-SEP-15
op-DDT			100.6		%		50-140	18-SEP-15
pp-DDT			96.4		%		50-140	18-SEP-15
Dieldrin			91.8		%		50-140	18-SEP-15
Endosulfan I			94.2		%		50-140	18-SEP-15
Endosulfan II			96.6		%		50-140	18-SEP-15
Endrin			89.0		%		50-140	18-SEP-15
gamma-hexachlorocyclohexane			90.5		%		50-140	18-SEP-15
Heptachlor			91.2		%		50-140	18-SEP-15
Heptachlor Epoxide			93.9		%		50-140	18-SEP-15
Hexachlorobenzene			88.2		%		50-140	18-SEP-15
Hexachlorobutadiene			93.2		%		50-140	18-SEP-15
Hexachloroethane			90.9		%		50-140	18-SEP-15
Methoxychlor			87.4		%		50-140	18-SEP-15
WG2170719-1 MB								
Aldrin			<0.020		ug/g		0.02	18-SEP-15
a-chlordane			<0.020		ug/g		0.02	18-SEP-15
g-chlordane			<0.020		ug/g		0.02	18-SEP-15
op-DDD			<0.020		ug/g		0.02	18-SEP-15
pp-DDD			<0.020		ug/g		0.02	18-SEP-15
o,p-DDE			<0.020		ug/g		0.02	18-SEP-15
pp-DDE			<0.020		ug/g		0.02	18-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	**Soil**							
Batch R3269371								
WG2170719-1 MB								
op-DDT			<0.020		ug/g		0.02	18-SEP-15
pp-DDT			<0.020		ug/g		0.02	18-SEP-15
Dieldrin			<0.020		ug/g		0.02	18-SEP-15
Endosulfan I			<0.020		ug/g		0.02	18-SEP-15
Endosulfan II			<0.020		ug/g		0.02	18-SEP-15
Endrin			<0.020		ug/g		0.02	18-SEP-15
gamma-hexachlorocyclohexane			<0.010		ug/g		0.01	18-SEP-15
Heptachlor			<0.020		ug/g		0.02	18-SEP-15
Heptachlor Epoxide			<0.020		ug/g		0.02	18-SEP-15
Hexachlorobenzene			<0.010		ug/g		0.01	18-SEP-15
Hexachlorobutadiene			<0.010		ug/g		0.01	18-SEP-15
Hexachloroethane			<0.010		ug/g		0.01	18-SEP-15
Methoxychlor			<0.020		ug/g		0.02	18-SEP-15
Surrogate: 2-Fluorobiphenyl			101.0		%		50-140	18-SEP-15
Surrogate: d14-Terphenyl			101.9		%		50-140	18-SEP-15
WG2170719-5 MS		**WG2170719-3**						
Aldrin			101.0		%		50-140	18-SEP-15
a-chlordane			101.3		%		50-140	18-SEP-15
g-chlordane			111.9		%		50-140	18-SEP-15
op-DDD			96.7		%		50-140	18-SEP-15
pp-DDD			94.6		%		50-140	18-SEP-15
o,p-DDE			102.4		%		50-140	18-SEP-15
pp-DDE			97.8		%		50-140	18-SEP-15
op-DDT			110.1		%		50-140	18-SEP-15
pp-DDT			104.0		%		50-140	18-SEP-15
Dieldrin			92.2		%		50-140	18-SEP-15
Endosulfan I			98.1		%		50-140	18-SEP-15
Endosulfan II			90.3		%		50-140	18-SEP-15
Endrin			106.8		%		50-150	18-SEP-15
gamma-hexachlorocyclohexane			87.6		%		50-140	18-SEP-15
Heptachlor			95.8		%		50-140	18-SEP-15
Heptachlor Epoxide			99.7		%		50-140	18-SEP-15
Hexachlorobenzene			86.5		%		50-140	18-SEP-15
Hexachlorobutadiene			93.3		%		50-140	18-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	**Soil**							
Batch R3269371								
WG2170719-5 MS		**WG2170719-3**						
Hexachloroethane			91.3		%		50-140	18-SEP-15
Methoxychlor			95.3		%		50-140	18-SEP-15
Batch R3270747								
WG2170866-4 DUP		**WG2170866-3**						
Aldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
a-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
g-chlordane		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
op-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
pp-DDD		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
o,p-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
pp-DDE		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
op-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
pp-DDT		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Dieldrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Endosulfan I		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Endosulfan II		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Endrin		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
gamma-hexachlorocyclohexane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-SEP-15
Heptachlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Heptachlor Epoxide		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
Hexachlorobenzene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-SEP-15
Hexachlorobutadiene		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-SEP-15
Hexachloroethane		<0.010	<0.010	RPD-NA	ug/g	N/A	40	21-SEP-15
Methoxychlor		<0.020	<0.020	RPD-NA	ug/g	N/A	40	21-SEP-15
WG2170866-2 LCS								
Aldrin			95.4		%		50-140	21-SEP-15
a-chlordane			97.2		%		50-140	21-SEP-15
g-chlordane			101.1		%		50-140	21-SEP-15
op-DDD			90.6		%		50-140	21-SEP-15
pp-DDD			93.6		%		50-140	21-SEP-15
o,p-DDE			86.4		%		50-140	21-SEP-15
pp-DDE			92.9		%		50-140	21-SEP-15
op-DDT			98.5		%		50-140	21-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	**Soil**							
Batch	**R3270747**							
WG2170866-2	**LCS**							
pp-DDT			95.7		%		50-140	21-SEP-15
Dieldrin			87.4		%		50-140	21-SEP-15
Endosulfan I			89.0		%		50-140	21-SEP-15
Endosulfan II			92.4		%		50-140	21-SEP-15
Endrin			122.0		%		50-140	21-SEP-15
gamma-hexachlorocyclohexane			92.6		%		50-140	21-SEP-15
Heptachlor			92.7		%		50-140	21-SEP-15
Heptachlor Epoxide			95.7		%		50-140	21-SEP-15
Hexachlorobenzene			89.9		%		50-140	21-SEP-15
Hexachlorobutadiene			95.7		%		50-140	21-SEP-15
Hexachloroethane			95.2		%		50-140	21-SEP-15
Methoxychlor			101.0		%		50-140	21-SEP-15
WG2170866-1	**MB**							
Aldrin			<0.020		ug/g		0.02	21-SEP-15
a-chlordane			<0.020		ug/g		0.02	21-SEP-15
g-chlordane			<0.020		ug/g		0.02	21-SEP-15
op-DDD			<0.020		ug/g		0.02	21-SEP-15
pp-DDD			<0.020		ug/g		0.02	21-SEP-15
o,p-DDE			<0.020		ug/g		0.02	21-SEP-15
pp-DDE			<0.020		ug/g		0.02	21-SEP-15
op-DDT			<0.020		ug/g		0.02	21-SEP-15
pp-DDT			<0.020		ug/g		0.02	21-SEP-15
Dieldrin			<0.020		ug/g		0.02	21-SEP-15
Endosulfan I			<0.020		ug/g		0.02	21-SEP-15
Endosulfan II			<0.020		ug/g		0.02	21-SEP-15
Endrin			<0.020		ug/g		0.02	21-SEP-15
gamma-hexachlorocyclohexane			<0.010		ug/g		0.01	21-SEP-15
Heptachlor			<0.020		ug/g		0.02	21-SEP-15
Heptachlor Epoxide			<0.020		ug/g		0.02	21-SEP-15
Hexachlorobenzene			<0.010		ug/g		0.01	21-SEP-15
Hexachlorobutadiene			<0.010		ug/g		0.01	21-SEP-15
Hexachloroethane			<0.010		ug/g		0.01	21-SEP-15
Methoxychlor			<0.020		ug/g		0.02	21-SEP-15
Surrogate: 2-Fluorobiphenyl			91.9		%		50-140	21-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PEST-OC-511-WT	**Soil**							
Batch R3270747								
WG2170866-1 MB								
Surrogate: d14-Terphenyl			93.1		%		50-140	21-SEP-15
WG2170866-5 MS		**WG2170866-3**						
Aldrin			94.6		%		50-140	21-SEP-15
a-chlordane			96.5		%		50-140	21-SEP-15
g-chlordane			101.8		%		50-140	21-SEP-15
op-DDD			92.8		%		50-140	21-SEP-15
pp-DDD			96.8		%		50-140	21-SEP-15
o,p-DDE			89.7		%		50-140	21-SEP-15
pp-DDE			94.7		%		50-140	21-SEP-15
op-DDT			92.1		%		50-140	21-SEP-15
pp-DDT			89.4		%		50-140	21-SEP-15
Dieldrin			94.1		%		50-140	21-SEP-15
Endosulfan I			80.8		%		50-140	21-SEP-15
Endosulfan II			97.3		%		50-140	21-SEP-15
Endrin			107.2		%		50-150	21-SEP-15
gamma-hexachlorocyclohexane			87.7		%		50-140	21-SEP-15
Heptachlor			82.4		%		50-140	21-SEP-15
Heptachlor Epoxide			97.7		%		50-140	21-SEP-15
Hexachlorobenzene			83.8		%		50-140	21-SEP-15
Hexachlorobutadiene			88.1		%		50-140	21-SEP-15
Hexachloroethane			86.0		%		50-140	21-SEP-15
Methoxychlor			93.8		%		50-140	21-SEP-15
PH-R511-WT	**Soil**							
Batch R3267065								
WG2171079-1 DUP		**L1672015-2**						
pH		7.96	7.95	J	pH units	0.01	0.3	16-SEP-15
WG2171755-2 LCS								
pH			7.05		pH units		6.7-7.3	16-SEP-15
Batch R3269545								
WG2171253-1 DUP		**L1672015-10**						
pH		7.67	7.70	J	pH units	0.03	0.3	18-SEP-15
WG2173681-1 LCS								
pH			6.97		pH units		6.7-7.3	18-SEP-15
SAR-R511-WT	**Soil**							

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SAR-R511-WT	**Soil**							
Batch R3267169								
WG2171578-4 DUP		**WG2171578-3**						
Calcium (Ca)		20.1	18.4		mg/L	8.6	40	16-SEP-15
Sodium (Na)		<1.0	<1.0	RPD-NA	mg/L	N/A	40	16-SEP-15
Magnesium (Mg)		<1.0	<1.0	RPD-NA	mg/L	N/A	40	16-SEP-15
WG2171578-2 IRM		**WT SAR1**						
Calcium (Ca)			97.0		%		70-130	16-SEP-15
Sodium (Na)			98.5		%		70-130	16-SEP-15
Magnesium (Mg)			95.6		%		70-130	16-SEP-15
WG2171578-1 MB								
Calcium (Ca)			<1.0		mg/L		1	16-SEP-15
Sodium (Na)			<1.0		mg/L		1	16-SEP-15
Magnesium (Mg)			<1.0		mg/L		1	16-SEP-15
VOC-511-HS-WT	**Soil**							
Batch R3266043								
WG2169950-4 DUP		**WG2169950-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	17-SEP-15
Benzene		<0.0068	<0.0068	RPD-NA	ug/g	N/A	40	17-SEP-15
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266043								
WG2169950-4 DUP		**WG2169950-3**						
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	17-SEP-15
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Ethylbenzene		<0.018	<0.018	RPD-NA	ug/g	N/A	40	17-SEP-15
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	17-SEP-15
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	17-SEP-15
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	17-SEP-15
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	17-SEP-15
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Toluene		<0.080	<0.080	RPD-NA	ug/g	N/A	40	17-SEP-15
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	17-SEP-15
Trichloroethylene		0.032	0.033		ug/g	3.5	40	17-SEP-15
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	17-SEP-15
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	17-SEP-15
WG2169950-2 LCS								
1,1,1,2-Tetrachloroethane			96.3		%		60-130	15-SEP-15
1,1,2,2-Tetrachloroethane			99.5		%		60-130	15-SEP-15
1,1,1-Trichloroethane			98.3		%		60-130	15-SEP-15
1,1,2-Trichloroethane			98.8		%		60-130	15-SEP-15
1,1-Dichloroethane			96.9		%		60-130	15-SEP-15
1,1-Dichloroethylene			91.0		%		60-130	15-SEP-15
1,2-Dibromoethane			97.4		%		70-130	15-SEP-15
1,2-Dichlorobenzene			100.6		%		70-130	15-SEP-15
1,2-Dichloroethane			98.3		%		60-130	15-SEP-15
1,2-Dichloropropane			99.5		%		70-130	15-SEP-15
1,3-Dichlorobenzene			98.9		%		70-130	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266043								
WG2169950-2 LCS								
1,4-Dichlorobenzene			101.9		%		70-130	15-SEP-15
Acetone			115.0		%		60-140	15-SEP-15
Benzene			98.7		%		70-130	15-SEP-15
Bromodichloromethane			96.1		%		50-140	15-SEP-15
Bromoform			96.6		%		70-130	15-SEP-15
Bromomethane			85.7		%		50-140	15-SEP-15
Carbon tetrachloride			96.2		%		70-130	15-SEP-15
Chlorobenzene			99.2		%		70-130	15-SEP-15
Chloroform			98.9		%		70-130	15-SEP-15
cis-1,2-Dichloroethylene			98.1		%		70-130	15-SEP-15
cis-1,3-Dichloropropene			97.1		%		70-130	15-SEP-15
Dibromochloromethane			100.9		%		60-130	15-SEP-15
Dichlorodifluoromethane			49.5	MES	%		50-140	15-SEP-15
Ethylbenzene			93.4		%		70-130	15-SEP-15
n-Hexane			100.2		%		70-130	15-SEP-15
Methylene Chloride			98.8		%		70-130	15-SEP-15
MTBE			95.8		%		70-130	15-SEP-15
m+p-Xylenes			95.4		%		70-130	15-SEP-15
Methyl Ethyl Ketone			110.7		%		60-140	15-SEP-15
Methyl Isobutyl Ketone			104.1		%		60-140	15-SEP-15
o-Xylene			93.7		%		70-130	15-SEP-15
Styrene			93.4		%		70-130	15-SEP-15
Tetrachloroethylene			95.6		%		60-130	15-SEP-15
Toluene			96.1		%		70-130	15-SEP-15
trans-1,2-Dichloroethylene			98.3		%		60-130	15-SEP-15
trans-1,3-Dichloropropene			93.2		%		70-130	15-SEP-15
Trichloroethylene			97.0		%		60-130	15-SEP-15
Trichlorofluoromethane			91.5		%		50-140	15-SEP-15
Vinyl chloride			77.3		%		60-140	15-SEP-15
WG2169950-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,1-Trichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,2-Trichloroethane			<0.050		ug/g		0.05	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266043								
WG2169950-1 MB								
1,1-Dichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
1,2-Dibromoethane			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichloropropane			<0.050		ug/g		0.05	15-SEP-15
1,3-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
1,4-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
Acetone			<0.50		ug/g		0.5	15-SEP-15
Benzene			<0.0068		ug/g		0.0068	15-SEP-15
Bromodichloromethane			<0.050		ug/g		0.05	15-SEP-15
Bromoform			<0.050		ug/g		0.05	15-SEP-15
Bromomethane			<0.050		ug/g		0.05	15-SEP-15
Carbon tetrachloride			<0.050		ug/g		0.05	15-SEP-15
Chlorobenzene			<0.050		ug/g		0.05	15-SEP-15
Chloroform			<0.050		ug/g		0.05	15-SEP-15
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	15-SEP-15
Dibromochloromethane			<0.050		ug/g		0.05	15-SEP-15
Dichlorodifluoromethane			<0.050		ug/g		0.05	15-SEP-15
Ethylbenzene			<0.018		ug/g		0.018	15-SEP-15
n-Hexane			<0.050		ug/g		0.05	15-SEP-15
Methylene Chloride			<0.050		ug/g		0.05	15-SEP-15
MTBE			<0.050		ug/g		0.05	15-SEP-15
m+p-Xylenes			<0.030		ug/g		0.03	15-SEP-15
Methyl Ethyl Ketone			<0.50		ug/g		0.5	15-SEP-15
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	15-SEP-15
o-Xylene			<0.020		ug/g		0.02	15-SEP-15
Styrene			<0.050		ug/g		0.05	15-SEP-15
Tetrachloroethylene			<0.050		ug/g		0.05	15-SEP-15
Toluene			<0.080		ug/g		0.08	15-SEP-15
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266043								
WG2169950-1 MB								
Trichloroethylene			<0.010		ug/g		0.01	15-SEP-15
Trichlorofluoromethane			<0.050		ug/g		0.05	15-SEP-15
Vinyl chloride			<0.020		ug/g		0.02	15-SEP-15
Surrogate: 1,4-Difluorobenzene			106.6		%		70-130	15-SEP-15
Surrogate: 4-Bromofluorobenzene			103.3		%		70-130	15-SEP-15
WG2169950-5 MS		**WG2169950-3**						
1,1,1,2-Tetrachloroethane			104.1		%		50-140	17-SEP-15
1,1,2,2-Tetrachloroethane			106.5		%		50-140	17-SEP-15
1,1,1-Trichloroethane			102.9		%		50-140	17-SEP-15
1,1,2-Trichloroethane			109.3		%		50-140	17-SEP-15
1,1-Dichloroethane			102.5		%		50-140	17-SEP-15
1,1-Dichloroethylene			94.4		%		50-140	17-SEP-15
1,2-Dibromoethane			105.1		%		50-140	17-SEP-15
1,2-Dichlorobenzene			98.2		%		50-140	17-SEP-15
1,2-Dichloroethane			101.9		%		50-140	17-SEP-15
1,2-Dichloropropane			102.7		%		50-140	17-SEP-15
1,3-Dichlorobenzene			92.9		%		50-140	17-SEP-15
1,4-Dichlorobenzene			95.5		%		50-140	17-SEP-15
Acetone			126.7		%		50-140	17-SEP-15
Benzene			103.2		%		50-140	17-SEP-15
Bromodichloromethane			104.0		%		50-140	17-SEP-15
Bromoform			101.9		%		50-140	17-SEP-15
Bromomethane			86.9		%		50-140	17-SEP-15
Carbon tetrachloride			99.5		%		50-140	17-SEP-15
Chlorobenzene			101.7		%		50-140	17-SEP-15
Chloroform			103.9		%		50-140	17-SEP-15
cis-1,2-Dichloroethylene			100.4		%		50-140	17-SEP-15
cis-1,3-Dichloropropene			89.1		%		50-140	17-SEP-15
Dibromochloromethane			108.5		%		50-140	17-SEP-15
Dichlorodifluoromethane			44.6	MES	%		50-140	17-SEP-15
Ethylbenzene			92.0		%		50-140	17-SEP-15
n-Hexane			103.2		%		50-140	17-SEP-15
Methylene Chloride			104.8		%		50-140	17-SEP-15
MTBE			97.3		%		50-140	17-SEP-15

Quality Control Report

Workorder: L1672015 Report Date: 22-SEP-15

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266043								
WG2169950-5 MS		**WG2169950-3**						
m+p-Xylenes			94.3		%		50-140	17-SEP-15
Methyl Ethyl Ketone			102.1		%		50-140	17-SEP-15
Methyl Isobutyl Ketone			95.3		%		50-140	17-SEP-15
o-Xylene			91.9		%		50-140	17-SEP-15
Styrene			87.5		%		50-140	17-SEP-15
Tetrachloroethylene			94.7		%		50-140	17-SEP-15
Toluene			95.5		%		50-140	17-SEP-15
trans-1,2-Dichloroethylene			102.6		%		50-140	17-SEP-15
trans-1,3-Dichloropropene			87.4		%		50-140	17-SEP-15
Trichloroethylene			98.2		%		50-140	17-SEP-15
Trichlorofluoromethane			95.4		%		50-140	17-SEP-15
Vinyl chloride			78.9		%		50-140	17-SEP-15
Batch R3266448								
WG2170539-4 DUP		**WG2170539-3**						
1,1,1,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1,2,2-Tetrachloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1,1-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1,2-Trichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,1-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,2-Dibromoethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,2-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,2-Dichloroethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,2-Dichloropropane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,3-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
1,4-Dichlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Acetone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	15-SEP-15
Benzene		<0.020	<0.0068	RPD-NA	ug/g	N/A	40	15-SEP-15
Bromodichloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Bromoform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Bromomethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Carbon tetrachloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Chlorobenzene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266448								
WG2170539-4 DUP		**WG2170539-3**						
Chloroform		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
cis-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
cis-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	15-SEP-15
Dibromochloromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Dichlorodifluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Ethylbenzene		<0.050	<0.018	RPD-NA	ug/g	N/A	40	15-SEP-15
n-Hexane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Methylene Chloride		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
MTBE		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
m+p-Xylenes		<0.030	<0.030	RPD-NA	ug/g	N/A	40	15-SEP-15
Methyl Ethyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	15-SEP-15
Methyl Isobutyl Ketone		<0.50	<0.50	RPD-NA	ug/g	N/A	40	15-SEP-15
o-Xylene		<0.020	<0.020	RPD-NA	ug/g	N/A	40	15-SEP-15
Styrene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Tetrachloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Toluene		<0.20	<0.080	RPD-NA	ug/g	N/A	40	15-SEP-15
trans-1,2-Dichloroethylene		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
trans-1,3-Dichloropropene		<0.030	<0.030	RPD-NA	ug/g	N/A	40	15-SEP-15
Trichloroethylene		<0.050	<0.010	RPD-NA	ug/g	N/A	40	15-SEP-15
Trichlorofluoromethane		<0.050	<0.050	RPD-NA	ug/g	N/A	40	15-SEP-15
Vinyl chloride		<0.020	<0.020	RPD-NA	ug/g	N/A	40	15-SEP-15
WG2170539-2 LCS								
1,1,1,2-Tetrachloroethane			100.3		%		60-130	15-SEP-15
1,1,2,2-Tetrachloroethane			105.7		%		60-130	15-SEP-15
1,1,1-Trichloroethane			103.5		%		60-130	15-SEP-15
1,1,2-Trichloroethane			104.0		%		60-130	15-SEP-15
1,1-Dichloroethane			101.2		%		60-130	15-SEP-15
1,1-Dichloroethylene			88.9		%		60-130	15-SEP-15
1,2-Dibromoethane			99.7		%		70-130	15-SEP-15
1,2-Dichlorobenzene			97.8		%		70-130	15-SEP-15
1,2-Dichloroethane			120.3		%		60-130	15-SEP-15
1,2-Dichloropropane			103.0		%		70-130	15-SEP-15
1,3-Dichlorobenzene			93.3		%		70-130	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266448								
WG2170539-2 LCS								
1,4-Dichlorobenzene			98.3		%		70-130	15-SEP-15
Acetone			121.9		%		60-140	15-SEP-15
Benzene			97.9		%		70-130	15-SEP-15
Bromodichloromethane			106.5		%		50-140	15-SEP-15
Bromoform			107.1		%		70-130	15-SEP-15
Bromomethane			87.0		%		50-140	15-SEP-15
Carbon tetrachloride			100.0		%		70-130	15-SEP-15
Chlorobenzene			96.7		%		70-130	15-SEP-15
Chloroform			107.5		%		70-130	15-SEP-15
cis-1,2-Dichloroethylene			98.7		%		70-130	15-SEP-15
cis-1,3-Dichloropropene			115.7		%		70-130	15-SEP-15
Dibromochloromethane			106.3		%		60-130	15-SEP-15
Dichlorodifluoromethane			33.8	RRQC	%		50-140	15-SEP-15
Ethylbenzene			79.7		%		70-130	15-SEP-15
n-Hexane			89.0		%		70-130	15-SEP-15
Methylene Chloride			101.2		%		70-130	15-SEP-15
MTBE			89.0		%		70-130	15-SEP-15
m+p-Xylenes			85.4		%		70-130	15-SEP-15
Methyl Ethyl Ketone			108.7		%		60-140	15-SEP-15
Methyl Isobutyl Ketone			89.6		%		60-140	15-SEP-15
o-Xylene			83.4		%		70-130	15-SEP-15
Styrene			89.0		%		70-130	15-SEP-15
Tetrachloroethylene			90.0		%		60-130	15-SEP-15
Toluene			83.6		%		70-130	15-SEP-15
trans-1,2-Dichloroethylene			98.3		%		60-130	15-SEP-15
trans-1,3-Dichloropropene			95.5		%		70-130	15-SEP-15
Trichloroethylene			95.8		%		60-130	15-SEP-15
Trichlorofluoromethane			91.1		%		50-140	15-SEP-15
Vinyl chloride			66.9		%		60-140	15-SEP-15
COMMENTS: RRQC-Although recoveries failed to meet ALS DQO's samples are believed to be unaffected.								
WG2170539-1 MB								
1,1,1,2-Tetrachloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,2,2-Tetrachloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1,1-Trichloroethane			<0.050		ug/g		0.05	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266448								
WG2170539-1 MB								
1,1,2-Trichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1-Dichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,1-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
1,2-Dibromoethane			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichloroethane			<0.050		ug/g		0.05	15-SEP-15
1,2-Dichloropropane			<0.050		ug/g		0.05	15-SEP-15
1,3-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
1,4-Dichlorobenzene			<0.050		ug/g		0.05	15-SEP-15
Acetone			<0.50		ug/g		0.5	15-SEP-15
Benzene			<0.0068		ug/g		0.0068	15-SEP-15
Bromodichloromethane			<0.050		ug/g		0.05	15-SEP-15
Bromoform			<0.050		ug/g		0.05	15-SEP-15
Bromomethane			<0.050		ug/g		0.05	15-SEP-15
Carbon tetrachloride			<0.050		ug/g		0.05	15-SEP-15
Chlorobenzene			<0.050		ug/g		0.05	15-SEP-15
Chloroform			<0.050		ug/g		0.05	15-SEP-15
cis-1,2-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15
cis-1,3-Dichloropropene			<0.030		ug/g		0.03	15-SEP-15
Dibromochloromethane			<0.050		ug/g		0.05	15-SEP-15
Dichlorodifluoromethane			<0.050		ug/g		0.05	15-SEP-15
Ethylbenzene			<0.018		ug/g		0.018	15-SEP-15
n-Hexane			<0.050		ug/g		0.05	15-SEP-15
Methylene Chloride			<0.050		ug/g		0.05	15-SEP-15
MTBE			<0.050		ug/g		0.05	15-SEP-15
m+p-Xylenes			<0.030		ug/g		0.03	15-SEP-15
Methyl Ethyl Ketone			<0.50		ug/g		0.5	15-SEP-15
Methyl Isobutyl Ketone			<0.50		ug/g		0.5	15-SEP-15
o-Xylene			<0.020		ug/g		0.02	15-SEP-15
Styrene			<0.050		ug/g		0.05	15-SEP-15
Tetrachloroethylene			<0.050		ug/g		0.05	15-SEP-15
Toluene			<0.080		ug/g		0.08	15-SEP-15
trans-1,2-Dichloroethylene			<0.050		ug/g		0.05	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch	**R3266448**							
WG2170539-1	**MB**							
trans-1,3-Dichloropropene			<0.030		ug/g		0.03	15-SEP-15
Trichloroethylene			<0.010		ug/g		0.01	15-SEP-15
Trichlorofluoromethane			<0.050		ug/g		0.05	15-SEP-15
Vinyl chloride			<0.020		ug/g		0.02	15-SEP-15
Surrogate: 1,4-Difluorobenzene			110.9		%		70-130	15-SEP-15
Surrogate: 4-Bromofluorobenzene			108.9		%		70-130	15-SEP-15
WG2170539-5	**MS**	**WG2170539-3**						
1,1,1,2-Tetrachloroethane			94.4		%		50-140	15-SEP-15
1,1,2,2-Tetrachloroethane			99.0		%		50-140	15-SEP-15
1,1,1-Trichloroethane			90.2		%		50-140	15-SEP-15
1,1,2-Trichloroethane			100.3		%		50-140	15-SEP-15
1,1-Dichloroethane			89.8		%		50-140	15-SEP-15
1,1-Dichloroethylene			81.6		%		50-140	15-SEP-15
1,2-Dibromoethane			97.9		%		50-140	15-SEP-15
1,2-Dichlorobenzene			92.6		%		50-140	15-SEP-15
1,2-Dichloroethane			100.6		%		50-140	15-SEP-15
1,2-Dichloropropane			93.6		%		50-140	15-SEP-15
1,3-Dichlorobenzene			87.9		%		50-140	15-SEP-15
1,4-Dichlorobenzene			88.2		%		50-140	15-SEP-15
Acetone			117.5		%		50-140	15-SEP-15
Benzene			89.6		%		50-140	15-SEP-15
Bromodichloromethane			91.8		%		50-140	15-SEP-15
Bromoform			96.8		%		50-140	15-SEP-15
Bromomethane			81.5		%		50-140	15-SEP-15
Carbon tetrachloride			86.0		%		50-140	15-SEP-15
Chlorobenzene			92.7		%		50-140	15-SEP-15
Chloroform			92.6		%		50-140	15-SEP-15
cis-1,2-Dichloroethylene			90.4		%		50-140	15-SEP-15
cis-1,3-Dichloropropene			102.2		%		50-140	15-SEP-15
Dibromochloromethane			100.1		%		50-140	15-SEP-15
Dichlorodifluoromethane			28.3	RRQC	%		50-140	15-SEP-15
Ethylbenzene			84.9		%		50-140	15-SEP-15
n-Hexane			84.4		%		50-140	15-SEP-15
Methylene Chloride			91.7		%		50-140	15-SEP-15

Quality Control Report

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
VOC-511-HS-WT	**Soil**							
Batch R3266448								
WG2170539-5 MS		**WG2170539-3**						
MTBE			85.2		%		50-140	15-SEP-15
m+p-Xylenes			84.8		%		50-140	15-SEP-15
Methyl Ethyl Ketone			98.2		%		50-140	15-SEP-15
Methyl Isobutyl Ketone			81.8		%		50-140	15-SEP-15
o-Xylene			88.0		%		50-140	15-SEP-15
Styrene			91.1		%		50-140	15-SEP-15
Tetrachloroethylene			90.5		%		50-140	15-SEP-15
Toluene			86.7		%		50-140	15-SEP-15
trans-1,2-Dichloroethylene			90.4		%		50-140	15-SEP-15
trans-1,3-Dichloropropene			93.5		%		50-140	15-SEP-15
Trichloroethylene			87.6		%		50-140	15-SEP-15
Trichlorofluoromethane			82.1		%		50-140	15-SEP-15
Vinyl chloride			67.1		%		50-140	15-SEP-15

COMMENTS: RRQC-Although recoveries failed to meet ALS DQO's samples are believed to be unaffected.

Quality Control Report

Workorder: L1672015 Report Date: 22-SEP-15

Client: SPL CONSULTANTS LIMITED (Collingwood)
14 Ronell Crescent, Unit 1
Collingwood ON L9Y 4J7
Contact: NICOLE COLLINS

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
DUP-H	Duplicate results outside ALS DQO, due to sample heterogeneity.
J	Duplicate results and limits are expressed in terms of absolute difference.
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.
RRQC	Refer to report remarks for information regarding this QC result.

Hold Time Exceedances:

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

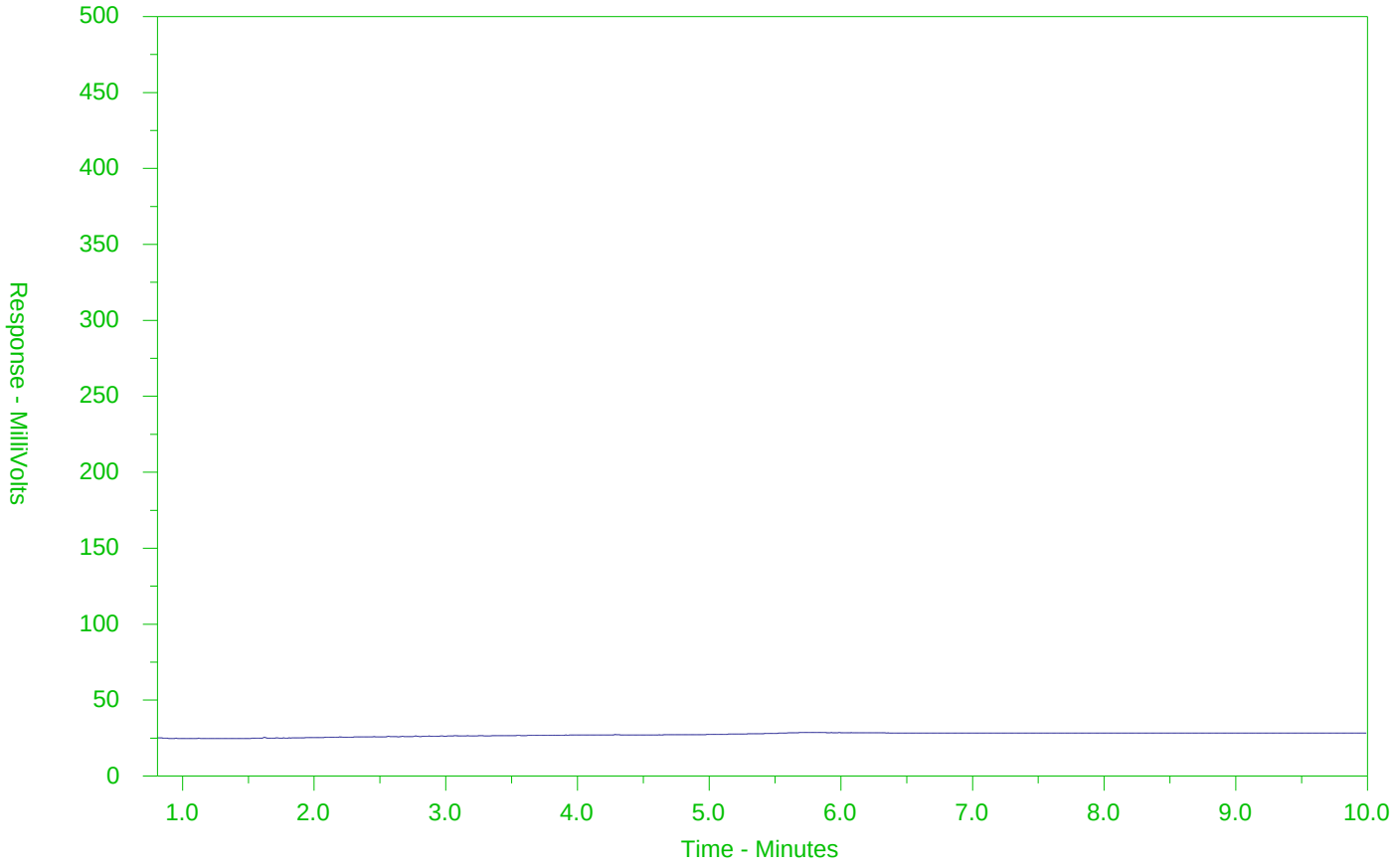
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-3
Client Sample ID: BH15-01 SS5



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

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

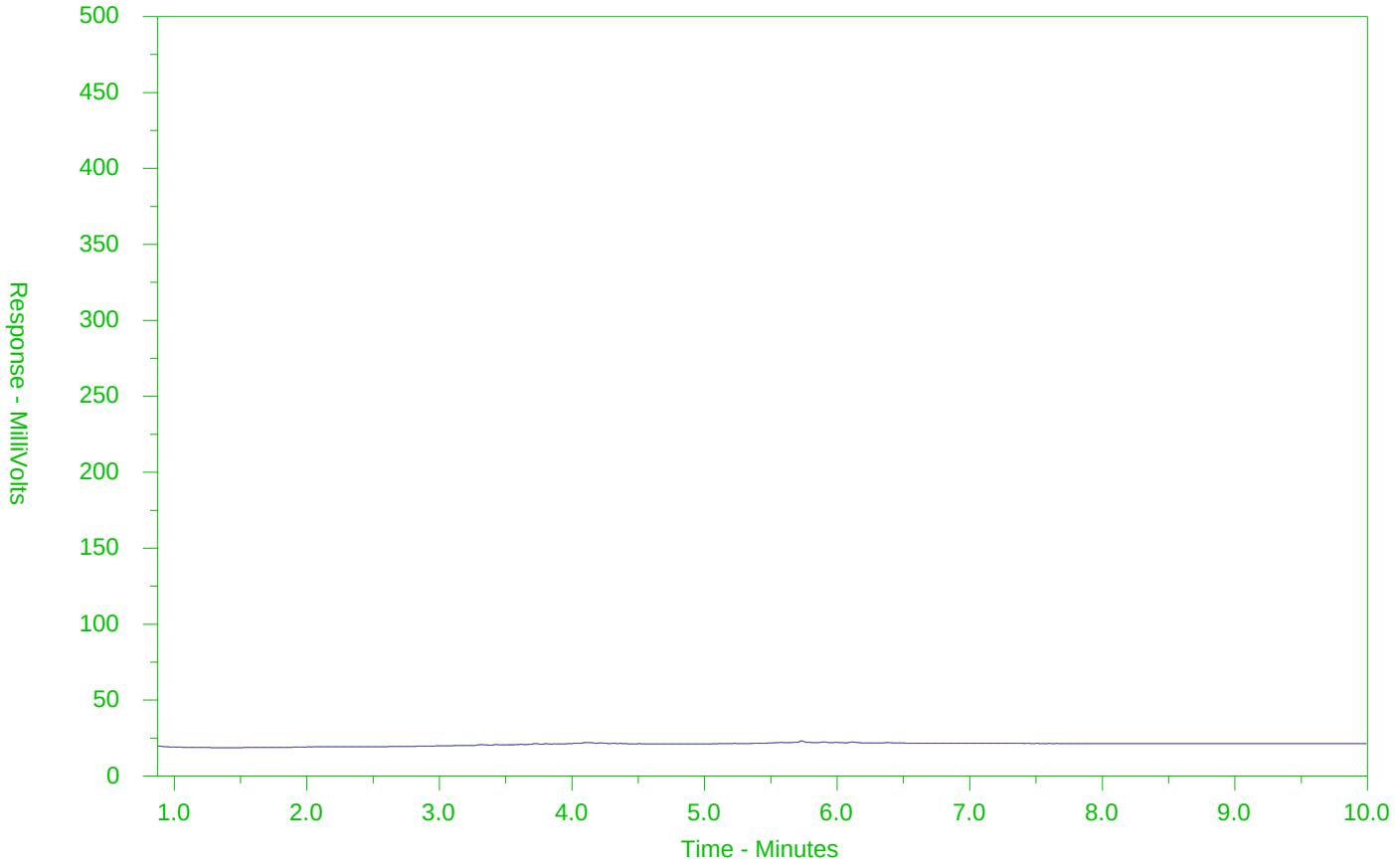
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-8
Client Sample ID: BH15-03 SS8



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

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

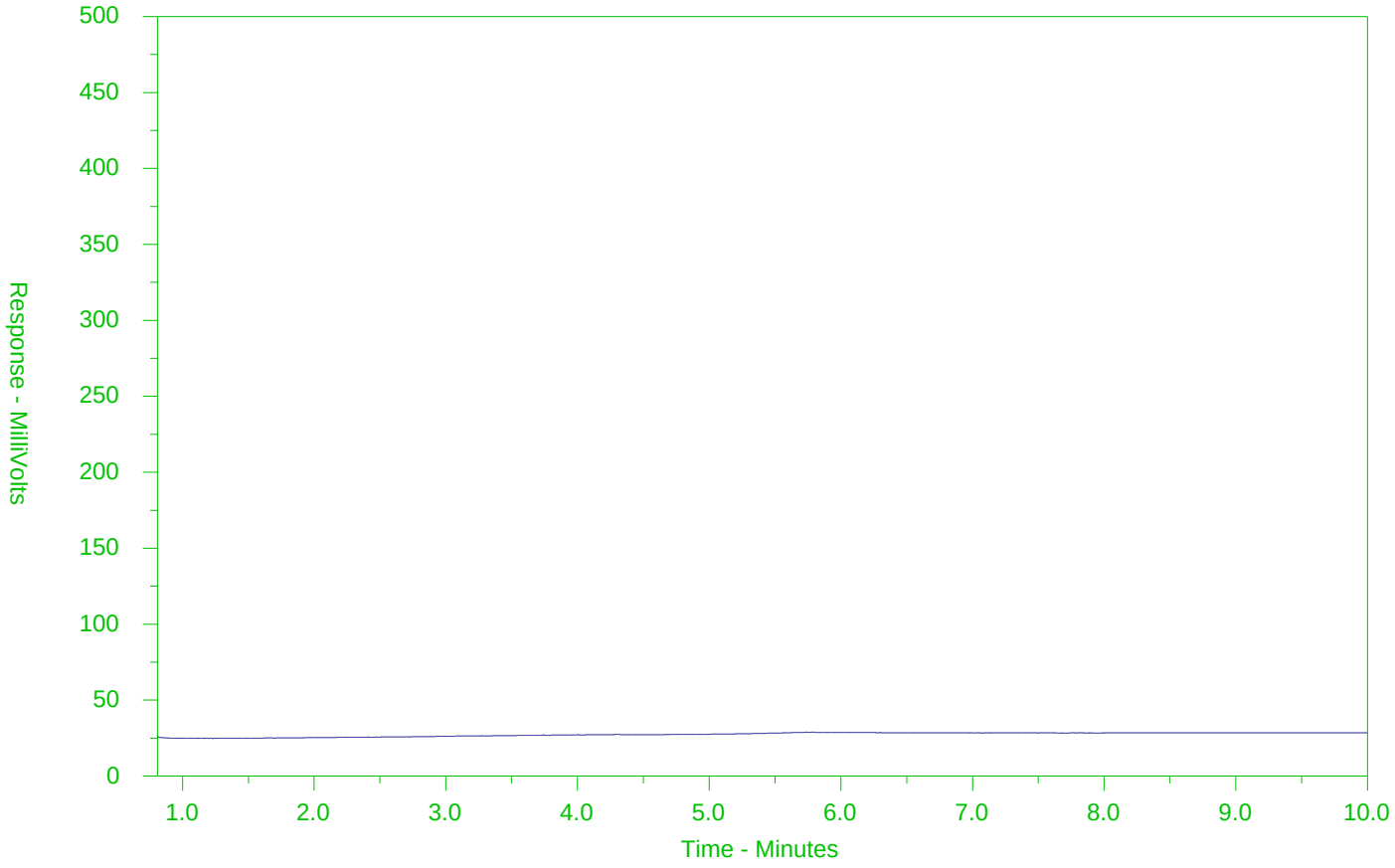
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-17
Client Sample ID: BH15-06 SS4



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

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

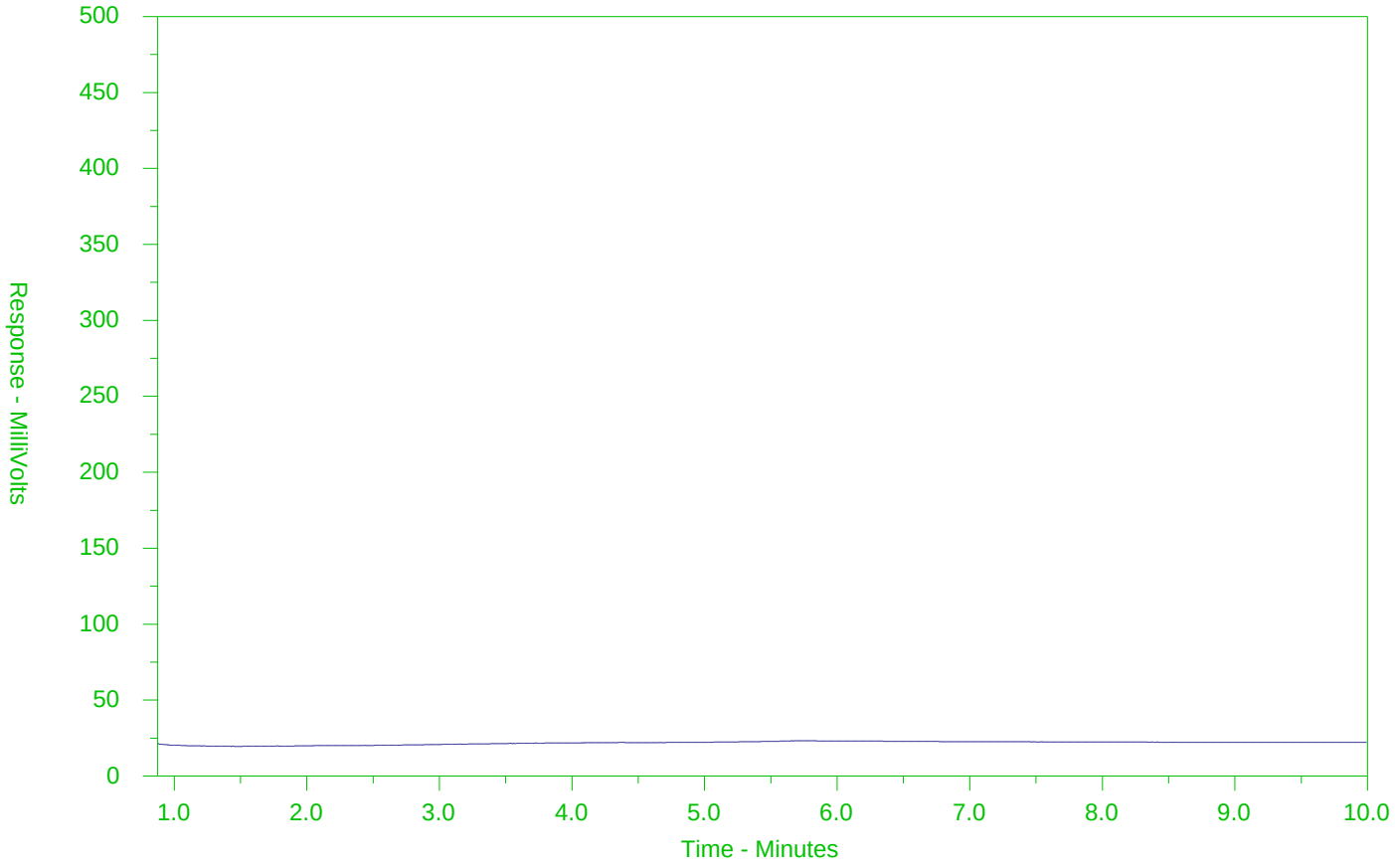
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-20
Client Sample ID: BH15-07 SS5



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

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

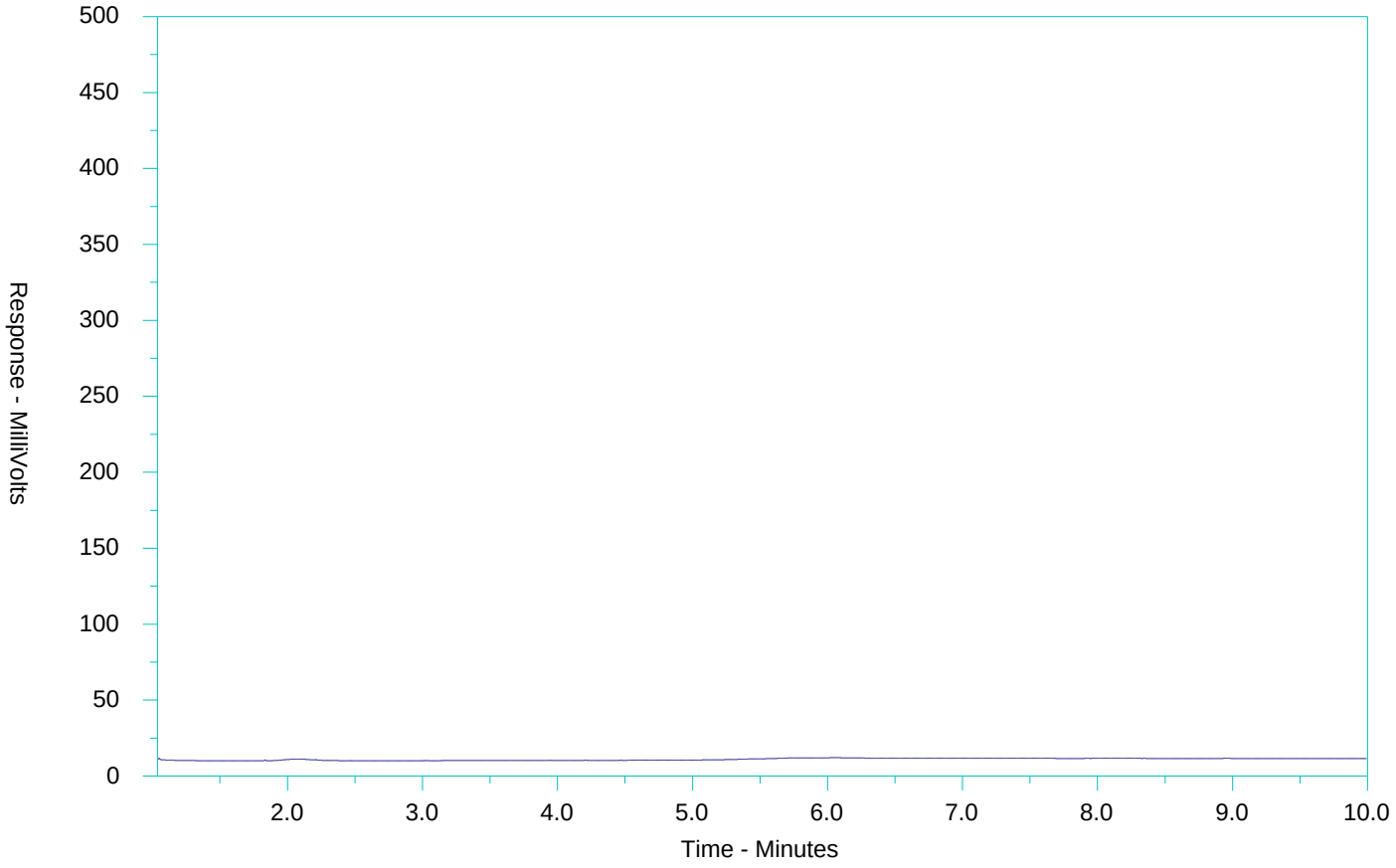
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-27
Client Sample ID: BH15-09 SS6



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

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

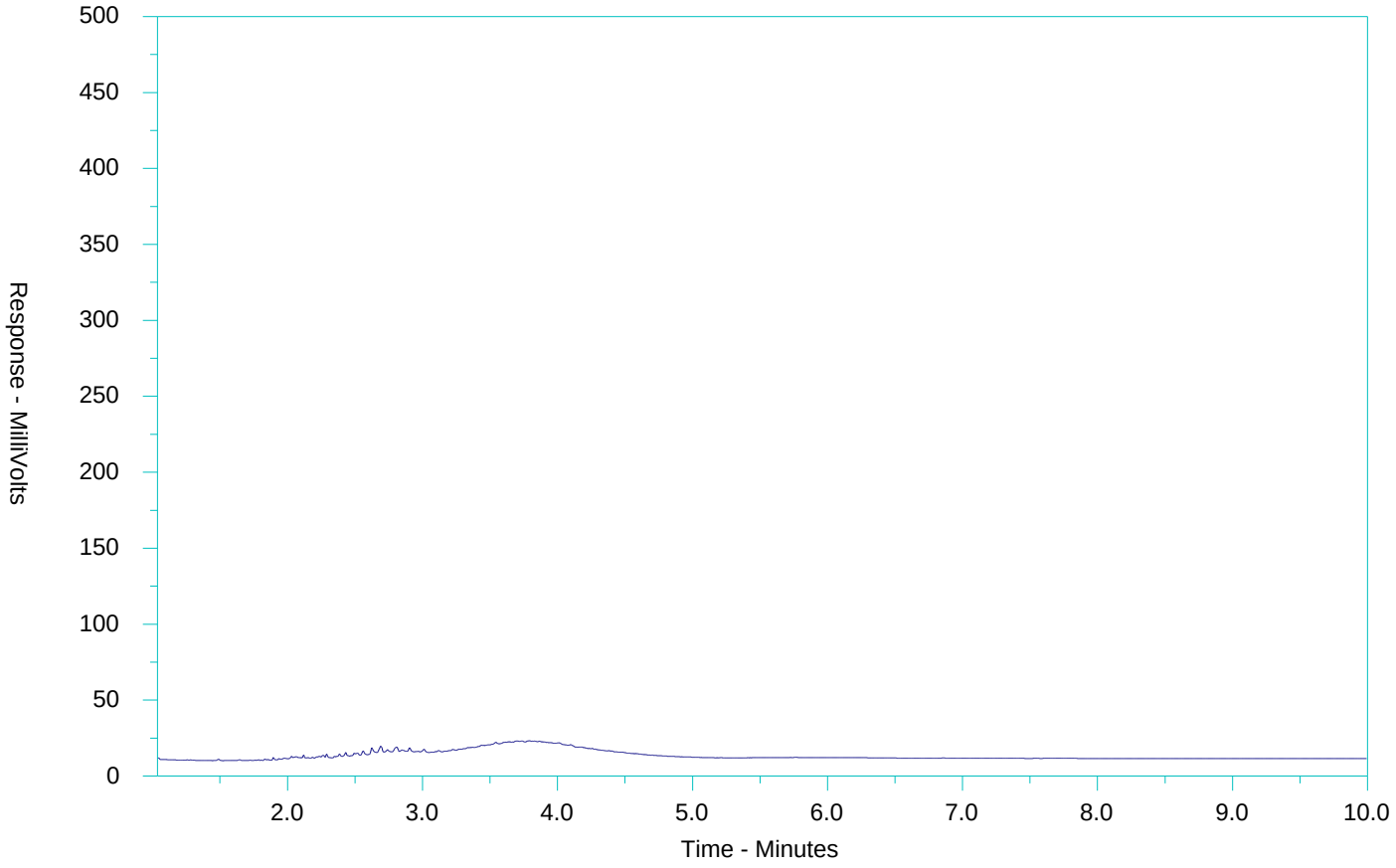
The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

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

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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT

ALS Sample ID: L1672015-33
Client Sample ID: BH15-12 SS5



← F2 →	← F3 →	← F4 →	
nC10	nC16	nC34	nC50
174°C	287°C	481°C	75°C
346°F	549°F	898°F	1067°F
← Gasoline →		← Motor Oils/ Lube Oils/ Grease →	
← Diesel/ Jet Fuels →			

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

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

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

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

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1672015-COFC

COC Number: 14 - 465018

Page 1 of 4

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SPL Consultants Limited	Select Report Format:	☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	R ☒ Regular (Standard TAT if received by 3pm)
Contact:	Nicole Collins	Quality Control (QC) Report with Report	☒ Yes ☐ No	P ☐ Priority (2-4 business days if received by 3pm)
Address:	14 Ronell Cres. Unit 1 Collingwood, ON	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 business days if received by 3pm)
Phone:	(705) 445-0064	Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.
		Email 1 or Fax	ncollins@splconsultants.ca	Specify Date Required for E2,E or P:
		Email 2	gjarvis@splconsultants.ca	

Invoice To		Invoice Distribution	
	Same as Report To ☐ Yes ☒ No	Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☐ Yes ☐ No	Email 1 or Fax	accounts@splconsultants.ca
Company:	SPL Consultants Limited	Email 2	
Contact:	Saran Jensen		

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	10002397	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: Emerson Perez	Sampler: NC

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Mals	OC Pest	PHCs	VOCs	Number of Containers
1	BH15-01 SS1	09/09/15	AM	Soil		X			
2	BH15-01 SS2	↓	↓		X	X			
3	BH15-01 SS5	↓	↓				X	X	
4	BH15-02 SS1	09/08/15	PM			X			
5	BH15-02 SS2	↓	↓		X	X			
6	BH15-03 SS1	09/08/15	PM			X			
7	BH15-03 SS2	↓	↓		X	X			
8	BH15-03 SS8	↓	↓				X	X	
9	BH15-04 SS1	09/08/15	AM			X			
10	BH15-04 SS2	↓	↓		X	X			
11	BH15-05 SS1	09/08/15	AM			X			
12	BH15-05 SS2	↓	↓		X				

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☒ No	Please compare to Table 9 for residential
Are samples for human drinking water use? ☐ Yes ☒ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No ☐	
Ice packs	Yes ☒	No ☐	Custody seal intact	Yes ☒	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
8.1			4.9		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
	09/10/15	1:00pm		11-SEP-15	12:10		11/9/15	18:05

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

PUROLATOR 330531533595

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

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

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1672015-COFC

COC Number: 14 - 465019

Page 2 of 4

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SPL Consultants Limited	Select Report Format:	PDF EXCEL EDD (DIGITAL)	R Regular (Standard TAT if received by 3pm)
Contact:	Nicole Collins	Quality Control (QC) Report with Report	Yes No	P Priority (2-4 business days if received by 3pm)
Address:	14 Ronell Cres. Unit 1 Collingwood, ON	Criteria on Report - provide details below if box checked		E Emergency (1-2 business days if received by 3pm)
Phone:		Select Distribution:	EMAIL MAIL FAX	E2 Same day or weekend emergency if received by 10am – contact ALS for surcharge.
		Email 1 or Fax		Specify Date Required for E2, E or P:
		Email 2		

Invoice To	Same as Report To	Yes No	Invoice Distribution	
	Copy of Invoice with Report	Yes No	Select Invoice Distribution:	EMAIL MAIL FAX
Company:			Email 1 or Fax	
Contact:			Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	10002397	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Metals	OC Pest	PHCs	VOCs	Number of Containers
13	BH15-05 SS3	09/08/15	AM	Soil		X			
14	BH15-06 SS1	09/04/15	AM			X			
15	BH15-06 SS2				X				
16	BH15-06 SS3					X			
17	BH15-06 SS4						X	X	
18	BH15-07 SS1	09/04/15	AM			X			
19	BH15-07 SS2				X	X			
20	BH15-07 SS5						X	X	
21	BH15-08 SS1	09/03/15	AM			X			
22	BH15-08 SS2				X				
23	BH15-08 ~~SS5~~ SS3					X			
24	BH15-09 SS1	09/03/15	AM			X			

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? Yes No	Please compare to Table 9 residential
Are samples for human drinking water use? Yes No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen		SIF Observations	Yes	No
Ice packs	Yes No	Custody seal intact	Yes	No
Cooling Initiated				

INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C	
8.1		4.9	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Nicole Collins	09/10/15	1:00pm		11-SEP-15	12:10		11/9/15	18:05

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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NA-FM-0376e v09 Front04 January 2014

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

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1672015-COFC

COC Number: 14 - 465017

Page 3 of 4

Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SPL Consultants Limited	Select Report Format:	PDF EXCEL EDD (DIGITAL)	R Regular (Standard TAT if received by 3pm)
Contact:	Nicole Collins	Quality Control (QC) Report with Report	Yes No	P Priority (2-4 business days if received by 3pm)
Address:	14 Ronell Cres, Unit 1 Collingwood, ON	Criteria on Report - provide details below if box checked		E Emergency (1-2 business days if received by 3pm)
		Select Distribution:	EMAIL MAIL FAX	E2 Same day or weekend emergency if received by 10am - contact ALS for surcharge.
Phone:	(705)445-0064	Email 1 or Fax	ncollins@splconsultants.ca	Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To	Yes No	Invoice Distribution	
	Copy of Invoice with Report	Yes No	Select Invoice Distribution:	EMAIL MAIL FAX
Company:			Email 1 or Fax	
Contact:			Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MAIS	OC Pest	PHCs	VOCs	Number of Containers
25	BHIS-09 SS2	09/03/15	AM	SOIL	X	X			
26	BHIS-09 SS3	↓	↓		X	X			
27	BHIS-09 SS6	↓	↓				X	X	
28	BHIS-10 SS1	09/03/15	PM			X			
29	BHIS-10 SS2	↓	↓		X	X			
30	BHIS-12 SS1	09/09/15	AM			X			
31	BHIS-12 SS2	↓	↓		X				
32	BHIS-12 SS3	↓	↓			X			
33	BHIS-12 SS5	↓	↓				X	X	
34	DUP 1					X			
35	DUP 2							X	
36	DUP 3			↓		X			

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? Yes No	Please compare to Table 9 residential
Are samples for human drinking water use? Yes No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen		SIF Observations	Yes	No
Ice packs	Yes X	No	Custody seal intact	Yes X No
Cooling Initiated				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
8.1			4.1		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Nicole Collins	09/10/15	1:00PM		11-SEP-15	12:10		11/9/15	18:05

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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NA-FM-0328e v09 Front04 January 2014

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

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

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

L1672015-COFC

COC Number: 14 - 465016

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Report To		Report Format / Distribution		Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	SPL Consultants Limited	Select Report Format:	☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	R ☒ Regular (Standard TAT if received by 3pm)
Contact:	Nicole Collins	Quality Control (QC) Report with Report	☐ Yes ☐ No	P ☐ Priority (2-4 business days if received by 3pm)
Address:	14 Ronell Cres, Unit 7 Collingwood, ON	☐ Criteria on Report - provide details below if box checked		E ☐ Emergency (1-2 business days if received by 3pm)
		Select Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend emergency if received by 10am – contact ALS for surcharge.
Phone:	(705) 445-0064	Email 1 or Fax	ncollins@splconsultants.ca	Specify Date Required for E2,E or P:
		Email 2		

Invoice To	Same as Report To ☐ Yes ☐ No	Invoice Distribution	
	Copy of Invoice with Report ☐ Yes ☐ No	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Company:		Email 1 or Fax	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:		GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact:	Sampler:

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Analysis Request: OC Pest	Number of Containers
37	DUP 4			soil	X	
38	DUP 5			↓	X	

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report (client Use)
Are samples taken from a Regulated DW System? ☐ Yes ☒ No	Please compare to Table 9 residential
Are samples for human drinking water use? ☐ Yes ☒ No	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐		SIF Observations	Yes ☐	No ☐
Ice packs	Yes ☒	No ☐	Custody seal intact	Yes ☐	No ☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
8.1			4.9		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Nicole Collins	09/10/15	1:00pm	[illegible]	11-SEP-15	12:10	[illegible]	11/9/15	15:05

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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Groundwater Monitoring Data
Marlwood Golf and Country Club
Project#10002397

BH#	**BH15-01**		**BH15-05**		**BH15-07**		**BH15-09**		**BH15-12**	
Ground Elevation (masl)	189		187		187		190		188	
Stick-up (mag)	0.9		0.91		-0.2		0.82		0.96	
MP Elevation (masl)	189.9		187.91		186.8		190.82		188.96	
Bottom of Monitoring Well Depth (mbg)	4.27		4.34		5.39		7.25		4.15	
	Groundwater Level Measurements									
Date	**mbg**	**masl**	**mbg**	**masl**	**mbg**	**masl**	**mbg**	**masl**	**mbg**	**masl**
September 3-9, 2015 (Upon Completion)	3.06	185.94	1.44	185.56	3.19	183.81	4.78	185.22	2.13	187.87
14-Oct-15	3.13	185.87	1.48	185.52	3.22	183.78	4.87	185.13	2.20	187.80
31-Dec-15	3.07	185.93	1.35	185.65	3.19	183.81	4.91	185.09	2.12	187.88
28-Jan-16	3.01	185.99	1.34	185.66	3.16	183.84	4.91	185.09	2.06	187.94
29-Feb-16	2.96	186.04	1.28	185.72	3.12	183.88	4.88	185.12	2.02	187.98
31-Mar-16	2.37	186.63	0.99	186.01	2.77	184.23	4.54	185.46	1.44	188.56
30-Apr-16	2.51	186.49	1.15	185.85	3.17	183.83	4.38	185.62	1.56	188.44
31-May-16	2.70	186.30	1.25	185.75	3.27	183.73	4.44	185.56	1.74	188.26
10-Jun-16	2.75	186.25	1.24	185.76	3.09	183.91	4.48	185.52	1.80	188.20
30-Jun-16	2.85	186.15	1.33	185.67	3.11	183.89	4.50	185.50	1.91	188.09
31-Jul-16	2.95	186.05	1.44	185.56	3.14	183.86	4.56	185.44	2.04	187.96
23-Aug-16	3.02	185.98	1.42	185.58	3.13	183.87	4.62	185.38	2.11	187.89