

Geotechnical Report for MBQ Housing



TABLE OF CONTENTS

	Page
General Data	1
Physiography	1
Investigation	1
Recommendations	2
Bedrock Removal	2
Bedrock Foundations	2
Soil Foundations	3
Subgrade Inspection	3
Geotechnical Design Parameters	3
Floor Slabs	4
Concrete Materials	5
Dewatering/Excavation	5
Re-use of Subsoils	5
Chemical Test Results	6
Pipe Installation	6
Pavement Structures	7
Compaction Requirements	8
Statement of Limitations	8

APPENDICES

Site Plans
Test Hole Data
Chemical Testing Reports

terraspec engineering inc.

geotechnical engineers * materials testing

973 Crawford Drive
Peterborough, Ontario
K9J 3X1

Phone: (705) 743-7880
Fax: (705) 743-9592

December 24, 2019

The Greer Galloway Group Inc.
1620 Wallbridge Loyalist Road
Belleville, Ontario
K8N 4Z5

**Re: Geotechnical Report for Four MBQ Properties
Project Number 19-3-6432**

General Data

Four sites on the Tyendinaga Mohawk Territory are under consideration for new development. The project sites are located as follows:

<u>Proposed Name</u>	<u>Location</u>
Senior Garden Suites	Atsia Court Park
Sadies Lane Apartment Complex	West of Wellness Road
Two Future LTC Sites	South of County Road 2, East & West Properties

Physiography

The sites are located within a physiographic region identified as clay plains and limestone plains. The bedrock in this area is identified as limestone of the Trenton Group. The project locations typically contain relatively shallow depths of clay and clay till, overlying the bedrock.

Investigation

A soils investigation was conducted for the properties during the last two weeks of October 2019. Eight test holes were placed on each site using an excavator. Soil laboratory testing consisted of moisture content determination and grain size analysis. Chemical testing of soils was also conducted at three locations on each site. The test hole logs and laboratory testing data have been appended to this report. The test hole locations have been indicated on the appended site plans.

The typical soil layers encountered on site were as follows.

clayey topsoil
silty clay sand

silty clay
sandy silty clay
silty clay sand with gravel/cobble
sandy silty clay with gravel/cobble
limestone bedrock

The topsoil layer was typically 200 to 250mm in thickness.

The sandy silty clay and sandy silty clay with gravel/cobble typically had low to moderate plasticity, and were generally found to be in a moist and very stiff condition. These subsoils typically have a low susceptibility to frost heave.

The silty clay sand with gravel/cobble soils were typically in a moist and dense condition.

Some clay fill material was encountered at the west end of Wellness Road. This area was built up into a berm using various clay fill materials. The fill appeared to be clean.

Bedrock was inferred based on refusal and visual observation. Bedrock was close to surface on site, and was typically encountered at a depth of 2 to 4m below existing ground surface. The bedrock consisted of flat limestone, and was typically found to be in a sound condition. It was noted that bedrock can be found directly on surface at Atsia Court Park. The top 300 to 500mm of bedrock is weathered at this site.

Slight groundwater seepage was encountered within some of the test holes. This water was collected to allow for testing of the sulphate content.

The original ground elevations of the test holes have been appended to this report.

Recommendations

Bedrock Removal

It is anticipated that the top 1.5m of bedrock can be broken with heavy duty hoe ram equipment.

If deeper removals are required, it may be possible to conduct rock coring on a 400mm by 400mm grid throughout the bedrock surface, to weaken the bedrock sufficiently such that it can be broken by hoe ram equipment (with no blasting). This process would be repeated as necessary until the desired bedrock excavation depth is reached.

Bedrock Foundations

Due to the close proximity of the bedrock, it will be acceptable to place new building foundations onto the bedrock. Spread or strip footings may be placed onto the underlying sound bedrock surface. Specify in the contract that any weathered or loose bedrock surfaces must be removed to expose the underlying sound bedrock. Note that weathered bedrock exists on the ground surface

at the Atsia Court property. Up to 500mm of loose rock may require removal to expose the underlying sound bedrock at this location. The following bearing capacities may be used for the sound bedrock:

Factored ULS bearing capacity	882 kPa
SLS allowable bearing capacity	750 kPa

Total and differential settlement is expected to be negligible where footings are placed onto the sound bedrock. For heavy loadings, it may be prudent to key or dowel footings into the bedrock surface.

Soil Foundations

Spread or strip footings may be placed onto the underlying compact subsoils, described in the report as:

- silty clay sand with gravel/cobble
- sandy silty clay with gravel/cobble

The following bearing capacities may be used for these subsoils:

Factored ULS bearing capacity	216 kPa
SLS allowable bearing capacity	144 kPa

Note that for footings placed onto soils, the footings must be placed such that they will have a minimum 1.5m of soil cover for frost protection.

It is good practice to place longitudinal steel reinforcement in the footings.

If required by the building code, place standard perimeter subdrains around the buildings at the footing elevations. (Subdrains are usually required to protect lower floor levels such as basements.)

Subgrade Inspection

Once exposed during construction, it would be advisable to have all intended bearing surfaces examined by a geotechnical firm in order to ensure that the intended bearing surface area is consistent with the conditions encountered at the test hole locations, and that the bearing capacity will be sufficient for the proposed new buildings and structures.

Geotechnical Design Parameters

For new foundations placed onto sound bedrock, the seismic site class selected is indicated below.

Site Class B Average Shear Wave Velocity (m/s) = $760 < V_s < 1500$

For new foundations placed onto the underlying clay, the seismic site class selected is indicated below.

Site Class C Average Shear Wave Velocity (m/s) = $360 < V_s < 760$

The peak ground acceleration value for Tyendinaga, as given by the OBC, is 0.140.

These parameters may be used for the natural clay and imported granular materials:

existing sandy silty clay/ silty clay sand with gravel subsoil

$\phi = 29^\circ$

$K_a = 0.35, K_o = 0.52, K_p = 2.88$

Moist unit weight = 19.60 kN/m³

Coefficient of friction for the concrete/clay interface = 0.40

Coefficient of friction for the concrete/bedrock interface:

<u>Interface</u>	<u>Tan(delta)</u>
------------------	-------------------

concrete / bedrock	0.70
--------------------	------

typical imported sandy Granular B Type 1 backfill

$\phi = 32^\circ$

$K_a = 0.31, K_o = 0.47, K_p = 3.25$

Moist unit weight = 22.3 kN/m³

typical imported gravelly Granular B Type 1 backfill

$\phi = 35^\circ$

$K_a = 0.27, K_o = 0.43, K_p = 3.69$

Moist unit weight = 23.0 kN/m³

Floor Slabs

The following minimum floor structure is suggested:

Concrete Slab	127mm
(poly vapour barrier)	-----
Granular A or Clear Stone base	150mm
Granular B Type 1 subbase	200mm
{over compact subgrade or acceptable fill}	

Remove any organics or saturated subsoils from beneath the new floor areas. The subgrade soil surface to remain should be proof-rolled to ensure that it is acceptable for placement of the new granular base and subbase materials. If a subgrade fill is needed below the granular materials, utilize a sandy material such as OPSS 1010 Select Subgrade Material.

A modulus of subgrade reaction $k = 30$ MPa/m may be used for the granular base.

It is recommended that a concrete compressive strength of 25 MPa be utilized for floor slabs. The floor slab thickness can be adjusted by the structural designer to suit the anticipated traffic and equipment loadings. Use of standard reinforcement such as wire mesh in the concrete slab are recommended.

Concrete Materials

The frost penetration treatment depth for this site is 1.5m. All concrete placed within the frost penetration treatment depth of 1.5m, or exposed to outside temperature extremes, should generally consist of a 32MPa concrete mix, with adequate (typically 7%) air entrainment. Based on the sulphate testing of the groundwater samples, the sulphate content was low, therefore the use of standard (Type 10) concrete cement will be acceptable.

Dewatering/Excavation

Perched water seepage may need to be controlled when excavating the subsoil and bedrock at this site. It is anticipated that the water seepage can be controlled with standard pumping operations.

The OHSA soil types for excavation are typically Type 2 soils. Soil cave-in was typically not a problem during excavation of the test holes. Subsoils that are saturated due to excess rain or high groundwater levels should be treated as Type 4 soils.

It should be stipulated in the contract that all excavations for new footings and roadways must be protected from high moisture levels or erosion damage due to rainfall or accumulating groundwater.

Re-use of Subsoils

The natural subsoils found on site cannot be used as fill beneath structures. Any fill required beneath new structures must consist of an engineered granular fill, such as OPSS 1010 Granular B Type 1 or Type 2.

The natural subsoils which have no organic content can be reused as subgrade fill, typically below parking areas and landscaped areas. These soils are identified in the test hole logs as:

- silty clay sand
- sandy silty clay with gravel/cobble
- silty clay sand with gravel/cobble

It should be noted that the predominantly clayey subsoils can be very difficult to place and compact once disturbed. These soils are identified in the test hole logs as:

- silty clay
- sandy silty clay
- sandy silty clay with gravel/cobble

Great care must be utilized when compacting this material if it is intended to be used on site as backfill beneath roads or parking lots where settlement cannot be tolerated.

If additional subgrade fill is required, specify the use of OPSS 1010 Select Subgrade Material.

Chemical Test Results

Three soil samples from each property were tested for the following:

Sodium Adsorption Ratio (SAR)

Electrical Conductivity (EC)

Metals

Polycyclic Aromatic Hydrocarbons (PAHs)

Poly-chlorinated Biphenyls (PCBs)

Volatile Organic Compounds (VOCs)

Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)

Petroleum Hydrocarbons (PHC F1-F4)

Corrosivity Analysis

As indicated above, four groundwater samples were also tested for Sulphate content.

The results were compared to Ontario Regulation 153 Standards for potable groundwater conditions, Table 2 Residential property use. The sample results were in compliance with the Table 2 residential guidelines, except as follows:

Tri-chloroethylene was detected in soil samples 1, 2, and 3, from Atsia Court Park.

The results were 0.08, 0.11, and 0.32 ug/g respectively, which exceeded the Table 2 Residential guideline of 0.061 ug/g. There was no obvious reason for this result; it is possible that it may be due to an imported soil such as topsoil. Allow for additional VOC testing of the overburden soils at this location just prior to construction to determine disposal options.

The soil samples were also tested for potential corrosivity. There were no significant issues; the potential corrosivity of the soils was low. Also, sodium adsorption ratio (SAR) and Conductivity of the soil samples was relatively low and did not exceed the Table 2 guidelines.

The certificates of chemical analyses have been appended to this report.

Contract Item

Place a standard clause in the contract that no extra will be paid to remove soils with an elevated SAR/Conductivity. OPSS 180 should be used if surplus soil material will be placed on private property.

Pipe Installation

Use OPSD 800 series standard drawings for new underground piping.

For bedrock subgrade:

OPSD 802.013	Flexible Pipe	-	Rock Excavation
OPSD 802.033	Rigid Pipe	-	Rock Excavation, Class B

For soil subgrade:

OPSD 802.010	Flexible Pipe	-	Type 2 Earth Excavation
OPSD 802.031	Rigid Pipe	-	Type 2 Earth Excavation, Class B

Allow for bedrock excavation in the contract, where excavation for new piping is proposed below the refusal depths indicated in the test hole logs.

Utilize the granular bedding and cover depths as specified in the applicable OPSD standards listed above. For normal subgrade conditions, OPSS Granular A may be utilized for pipe embedment and pipe cover material for new piping.

For placement under wet subgrade conditions, it will be acceptable to use Granular B Type 2 bedding material with a maximum particle size of 50mm.

Frost protection for underground piping should be utilized as per the following OPSD standards, with a frost penetration treatment depth of $k = 1.5\text{m}$:

OPSD 803.030	Frost Penetration Line Below Bedding Grade
OPSD 803.031	Frost Penetration Line Above Bedding Grade

Pavement Structures

For the new roadways, remove all organic soil from the subgrade surface. Provide earth grading and cross fall as per OPSD 200.01 to prevent ponding of water on the soil subgrade, and to provide effective drainage of the new pavement structure. Remove boulders (if encountered) from the subgrade surface as per OPSD 204.01.

Apply proof-rolling to the subgrade soil to ensure that it is acceptable for placement of the new granular subbase and base materials.

The following minimum pavement designs as per OPSS 1150 specifications are recommended for placement of new asphalt pavement:

Standard Duty Pavement for Access Roads and Driveways

40mm	HL3 surface course
50mm	HL8 binder course
150mm	OPSS 1010 Granular A base
350mm	OPSS 1010 Granular B Type 1 or Type 2 subbase {over compact existing subgrade soil}

Light Duty Pavement for Parking Areas

50mm	HL3 surface course
150mm	OPSS 1010 Granular A base
350mm	OPSS 1010 Granular B Type 1 subbase {over compact existing subgrade soil}

Asphalt Walkways

50mm	HL3 surface course
150mm	OPSS 1010 Granular A base
150mm	OPSS 1010 Granular B Type 1 subbase {over compact existing subgrade soil}

The hot mix thickness in the parking areas should be increased to match Roadways, if these areas will undergo heavy traffic from retail delivery/maintenance trucks.

Materials for hot mix pavement should be as per OPSS 1150 specifications.

It will be acceptable to substitute high quality hot mix materials for this project, if so desired.

High quality hot mix materials would typically specify:

HL3 HS Surface Course, over MDBC Binder Course,

OR

SuperPave SP12.5, over SP19.0.

The requirements for SuperPave materials are specified in OPSS 1151.

The asphalt cement should have a minimum rating of PGAC 58 -28.

Tack-coat the hot mix substrate, as per OPSS.PROV 308, prior to placing the surface course lift of hot mix. Stipulate in the contract that all hot mix paving operations shall be carried out in strict accordance with OPSS 310 specifications.

Compaction Requirements

All natural soil and all granular fill compaction requirements for the project should conform with OPSS 501, Subsection 501.08.02 - Method A, utilizing soil placement in maximum 300mm lifts and a compaction standard of 100% of Standard Proctor Maximum Dry Density.

Statement of Limitations

This report is intended for the guidance of the project design team. From a construction standpoint, contractors must make their own assessment of the soil, rock, and groundwater conditions and how these will affect their proposed construction techniques and schedules.

The recommendations in this report are based on information determined at the test hole locations. Soils 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 that could not be detected or anticipated at the time of the soils investigation. If this occurs, we recommend that Terraspec be recalled to the site for further consultation, testing, and analysis.

We also recommend that Terraspec be retained to ensure that all subgrade preparation requirements are met, and to confirm that the soil conditions do not deviate materially from those encountered in test holes. In cases where any of our recommendations are not followed, the company's responsibility is limited to interpreting the information from the test hole data.

This report is applicable only to this specific project. Elevations quoted in the document are approximate. Original ground elevations for project design purposes should be obtained from an experienced topographical survey consultant. Where rock excavation is proposed, a contingency cost item should be included in the contract to allow for unforeseen subgrade conditions.

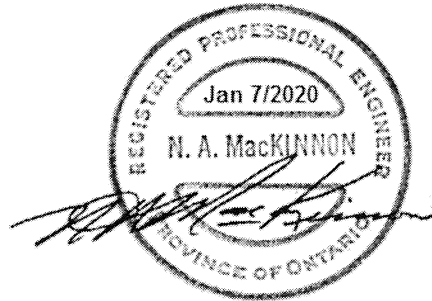
This report is applicable only to this project, constructed substantially in accordance with details of alignment and elevations quoted in the text.

~ ~ ~

**TERRASPEC ENGINEERING INC.
GEOTECHNICAL ENGINEERS**



Shane Galloway, B.A.
Manager



N.A. MacKinnon, P.Eng.
Senior Engineer

Test Hole Data
Tyendinaga Mohawk Territory
October 15-31, 2019

Notes

1. Soil types, strata, and groundwater conditions have been established only at test hole locations.
2. Soils are described according to the MTO Soils Classification System and OPSD 100.06.
3. Dimensions are in millimetres up to 1 metre, then in metres thereafter.

Abbreviations

asph	-	asphalt	&	-	and
blds	-	boulders	w	-	with
blk	-	black	so	-	some
br	-	brown	tr	-	trace
BR	-	bedrock			
cl	-	clay(ey)	S	-	soil sample
cob	-	cobbles	Su	-	vane shear strength
conc	-	concrete	W	-	moisture content
cr	-	crushed			
f	-	fine			
gr	-	gravel(ly)			
gry	-	grey			
med	-	medium			
NFP	-	no further progress			
org	-	organics			
RF	-	rock fill			
sa	-	sand(y)			
si	-	silt(y)			
tps	-	topsoil			

Atsia Court Park

<u>1</u>					
0			BR	on surface	-slightly weathered
<u>2</u>					
0	-	450	br si sa w gr tr org	-moist, compact	S1
450			NFP, BR,	weathered	
<u>3</u>					
0	-	150	cr gr & sa	-dry, compact	
150	-	460	br si sa w gr	-moist, compact	S2
<u>4</u>					
0			BR	on surface	-sound

5

0 - 110 br sa tps
110 - 600 br si sa -dry, compact
600 NFP, BR

6

0 - 200 br sa tps
200 - 300 br si sa so gr -dry, dense
300 NFP, BR, weathered

7

0 - 150 br sa tps
150 - 250 br si sa w gr -dry, compact
250 NFP, BR, weathered
-perched water seepage at 250mm water sample 1

8

0 - 200 br sa tps S3
200 NFP, BR

South of County Road 2, East Side

9

0	-	150	br cl tps	
150	-	650	br si cl -moist, firm	
650	-	4.5	gry/br si cl sa w gr -moist, dense	S4 at 750mm S5 at 1.5m S6 at 3.0m

-no water encountered

-no cave in

10

0	-	200	br cl tps	
200	-	500	br si cl -moist, stiff	
500	-	4.27	gry/br si cl sa w gr so blds -moist, very stiff	S7 at 800mm S8 at 1.6m S9 at 3.5m

at 1.5m Su = 120kPa

4.27 NFP, blds, BR inferred

-no water encountered

-no cave in

11

0	-	200	br cl tps	
200	-	750	br cl w sa -moist, stiff	S10 at 750mm
750	-	2.7	gry/br cl sa w gr/cob till -dry, very dense	S11 at 1.8m
2.7			NFP, dense till	

-no water encountered

-no cave in

12

0	-	240	br cl tps	
240	-	650	br si cl -moist, firm	
650	-	4.0	gry/br si cl sa w gr/cob till -moist, very stiff	S12 at 1.0m
4.0			NFP, BR inferred	S13 at 2.1m

-no water encountered

-no cave in

13

0	-	270	br cl tps	
270	-	1.70	gry sa si cl -moist, stiff	S14 at 800mm
1.70	-	2.40	gry si cl w sa -moist, very stiff	S15 at 1.8m
2.40			NFP, flat limestone BR, sound	

-trace water at 2.4m

-no cave in

14

0 - 200 br cl tps
200 - 600 br si cl -moist, stiff S16 at 400mm
600 - 3.0 gry si cl sa w gr till -moist, very stiff S17 at 2.0m
-so cob after 1.2m
3.0 NFP, dense till, BR inferred

-no water encountered

-no cave in

15

0 - 200 br cl tps
200 - 850 br si cl tr gr -moist, stiff S18 at 750mm
850 - 2.9 gry sa si cl tr gr till -moist, very stiff S19 at 1.8m
2.9 NFP, blds

-no water encountered

-no cave in

16

0 - 180 br cl tps
180 - 1.61 br si cl -moist, stiff
1.61 - 4.3 gry sa si cl w gr/cob till -moist, very stiff S20a at 1.8m
-blds after 2.8m S20b at 2.7m
4.3 NFP, dense bld till

-no water encountered

-no cave in

South of County Road 2, West Side

17

0 - 170 br cl tps
170 - 1.65 br sa si cl tr gr -moist, stiff S21 at 900mm
1.65 - 2.55 gry si cl sa w gr -moist, very stiff S22 at 1.8m
2.55 NFP, flat limestone BR, sound
-trace water seepage at 2.55m
-no cave in

18

0 - 180 br cl tps
180 - 1.21 br si cl -moist, stiff S23a at 1.21m
1.21 - 3.5 gry si cl sa w gr -moist, very stiff S23b at 2.0m
3.5 NFP, flat limestone BR, sound
-no water encountered
-no cave in

19

0 - 220 br cl tps
220 - 610 br si cl w sa -moist, stiff S24a at 750mm
610 - 4.10 gry si cl w gr till -moist, very stiff S24b at 1.5m
-blds after 2.4m
4.1 NFP, blds, BR inferred
-no water encountered
-no cave in

20

0 - 240 br cl tps
240 - 1.00 br si cl -moist, stiff
1.00 - 4.5 gry si cl sa w gr/cob till -moist, very stiff S25a at 1.5m
-with blds up to 450mm diameter after 2.1m S25b at 2.5m
S25c at 3.5m
-no water encountered
-no cave in

21

0 - 190 br cl tps
190 - 700 br si cl -moist, stiff
700 - 4.5 gry si cl sa w gr so cob till -moist, very stiff S26a at 700mm
at 2.0m $S_u = 150\text{kPa}$ S26b at 1.7m
-wet after 3.5m S26c at 3.5m
-no water encountered
-no cave in

22

0	-	200	br cl tps	
200	-	1.45	br si cl -moist, stiff	
1.45	-	4.5	gry si cl sa tr gr/cob so bld till -moist, very stiff	S27a at 1.5m S27b at 2.5m S27c at 3.5m

4.5 NFP, blds up to 450mm diameter
-trace water seepage at 4.5m
-no cave in

23

0	-	220	br cl tps	
220	-	1.20	br si cl -moist, stiff	S28a at 1.0m
1.20	-	4.5	gry si cl sa w gr/cob so bld till -moist, very stiff	S28b at 2.0m
4.5			NFP, blds	S28c at 3.0m

-no water encountered
-no cave in

24

0	-	210	br cl tps	
210	-	800	br sa si cl -moist, stiff	S29a at 300mm
800	-	4.5	gry sa si cl tr gr/cob so bld till -moist, very stiff	S30a at 1.5m
4.5			NFP, bld till	S30b at 3.0m

-no water encountered
-no cave in

Sadies Lane, West of Wellness Road

25

0	-	100	br cl tps	
100	-	1.70	br sa si cl Fill -moist, stiff	S31 at 900mm
1.70	-	4.1	gry sa si cl tr gr/cob so bld -moist, stiff	S32a at 1.8m
4.1			NFP, BR inferred	S32b at 3.0m

-trace water seepage at 4.1m
-no cave in

26

0	-	300	br sa si cl Fill so org -moist, firm	
300	-	610	br cl tps -moist, loose	
610	-	3.1	gry si cl sa tr gr mottled -moist, very stiff	S33a at 800mm
			at 1.8m Su = 100 kPa	S33b at 1.8m
			-so cob after 2.0m	S33c at 2.5m
3.1			NFP, flat limestone BR, sound	

-trace water seepage at 2.8m
-no cave in

27

0	-	200	br cl tps	
200	-	420	br si cl -moist, stiff	
420	-	1.9	gry sa si cl tr gr mottled -moist, stiff	S34 at 600mm
1.9	-	2.5	gry sa si cl w gr so cob -moist, hard	S35a at 1.5m
2.5			NFP, flat limestone BR, sound	S35b at 2.2m

-no water encountered
-no cave in

28

0	-	200	br cl tps	
200	-	760	br si cl -moist, firm	
760	-	4.1	gry si cl sa tr gr -moist, very stiff	S36a at 1.0m
			-w cob after 1.6m	S36b at 1.7m
			-hard at 2.1m	S36c at 2.7m
4.1			NFP, BR inferred	

-trace water seepage at 3.1m
-no cave in

29

0	-	180	br cl tps	
180	-	480	br si cl -moist, firm	
480	-	3.7	gry si cl sa w gr -moist, very stiff	S37a at 800mm
-w cob after 1.5m				S37b at 1.5m
at 1.8m Su = 140 kPa				S37c at 2.4m
-hard at 2.5m				
-dense cob after 3.1m				
3.7			NFP, dense cob till	
-no water encountered				
-no cave in				

30

0	-	240	br cl tps	
240	-	950	br si cl sa -dry, compact	
950	-	1.65	gry si cl sa w gr/cob -dry, very stiff	S38 at 1.0m
1.65			NFP, flat limestone BR, slightly weathered on surface, but sound	
-no water encountered				
-no cave in				

31

0	-	180	br cl tps	
180	-	500	br si cl sa -dry, loose	
500	-	2.2	gry/br si cl sa w gr so cob till -dry, dense	S39a at 900mm
-610mm diameter bld at 1.3m				S39b at 1.7m
2.2			NFP, flat limestone BR, sound	
-no water encountered				
-no cave in				

32

0	-	200	br cl tps	
200	-	420	br si cl sa -moist, loose	
420	-	1.6	gry/br si cl sa w gr/cob till -dry, dense	S40a at 700mm
1.6			NFP, flat limestone BR, sound	S40b at 1.5m
-no water encountered				
-no cave in				

Laboratory Test Data

Soil Sample	1	2	3	
Sieve	% Passing			
26.5mm	100	100	100	grain size
19.0mm	100	100	100	
13.2mm	100	88.3	100	
9.50mm	87.8	88.3	100	
4.75mm	77.8	81.9	99.9	
2.36mm	71.7	74.2	99.5	
1.18mm	65.3	67.9	98.0	
600um	59.7	63.5	88.8	
300um	50.9	59.3	73.1	
150um	33.1	46.7	50.1	
75um	18.7	33.2	28.6	
ASTM	SM	SM	SM	soil classification
frost rating	Low	Low	Low	suscept. to frost heave
W	16.9	7.0	18.1	field moisture content
	NP	NP	NP	NP = not plastic

Soil Sample	4	5	6	7	8	9	10	
Sieve	% Passing							
26.5mm	100	100	100	100	100	100	100	grain size
19.0mm	92.6	94.7	94.5	91.6	92.0	95.1	100	
13.2mm	87.4	94.7	93.9	88.6	88.9	89.9	100	
9.50mm	85.8	92.1	91.8	83.5	84.1	87.5	100	
4.75mm	81.6	87.8	87.9	77.8	78.0	84.0	99.7	
2.00mm	77.0	84.5	85.1	71.8	72.1	79.2	99.5	
850um	75.2	81.4	82.0	67.6	68.3	72.9	96.4	
425um	62.0	72.5	72.8	62.0	62.8	67.1	90.2	
250um	47.2	61.9	62.3	56.0	56.7	61.2	85.4	
106um	23.9	39.1	40.2	43.8	44.2	48.7	76.0	
75um	17.7	29.5	30.1	40.0	42.1	44.6	73.1	
ASTM	SC-SM	SC-SM	SC-SM	SC-SM	SC-SM	SC-SM	CL-ML	soil classification
frost rating	Low	Low	Low	Low	Low	Low	Med	suscept. to frost heave
W	7.5	10.1	10.0	10.2	9.1	9.3	21.2	field moisture content

Soil Sample	11	12	13	14	15	16	17	
Sieve	% Passing							
26.5mm	94.3	100	100	100	100	100	100	grain size
19.0mm	88.9	100	100	100	100	100	97.5	
13.2mm	84.3	93.1	92.9	100	100	100	95.2	
9.50mm	81.2	89.7	90.0	100	100	100	89.7	
4.75mm	76.5	84.8	85.0	100	100	100	82.7	
2.00mm	74.4	78.7	83.2	100	99.0	100	75.5	
850um	71.8	74.6	80.5	90.0	94.3	98.9	70.5	
425um	60.8	69.3	74.8	74.0	88.0	96.9	64.5	
250um	47.4	63.2	68.3	65.1	85.1	95.3	57.5	
106um	22.1	47.5	51.3	54.4	81.5	91.6	43.6	
75um	15.3	42.1	45.4	51.8	80.6	90.5	39.4	
ASTM	SC-SM	SC-SM	SC-SM	CL	CL	CL	SC-SM	soil classification
frost rating	Low	Low	Low	Low	Low	Low	Low	suscept. to frost heave
W	7.0	10.3	10.4	30.5	24.4	41.5	15.5	field moisture content

Soil Sample	18	19	20b	21	22	23b	24a	
Sieve	% Passing							
26.5mm	100	92.8	100	100	100	100	100	grain size
19.0mm	100	92.8	98.3	100	97.7	90.8	100	
13.2mm	100	91.0	90.9	100	91.6	87.1	100	
9.50mm	98.5	89.2	89.4	98.9	88.9	83.9	99.7	
4.75mm	98.4	88.3	84.6	98.1	85.2	79.6	99.2	
2.00mm	98.3	86.6	79.4	98.0	80.3	74.2	97.9	
850um	91.0	82.3	74.9	91.8	75.2	70.4	95.1	
425um	78.5	74.8	70.3	78.2	69.2	65.0	89.9	
250um	70.4	68.6	64.9	68.4	62.3	58.4	85.4	
106um	61.9	56.3	53.8	56.7	47.3	44.5	76.5	
75um	60.1	52.3	50.2	54.5	42.3	39.9	73.7	
ASTM	CL	CL	CL	CL	SC-SM	SC-SM	CL	soil classification
frost rating	Low	Low	Low	Low	Low	Low	Low	suscept. to frost heave
W	30.5	20.4	8.9	31.7	10.2	11.0	30.3	field moisture content

Soil Sample	25b	26b	27b	28b	29a	30a	31		
Sieve	% Passing								
26.5mm	94.4	100	100	87.3	100	100	100	grain size	
19.0mm	93.0	91.3	100	83.6	100	100	100		
13.2mm	91.7	88.4	95.6	82.6	100	98.5	100		
9.50mm	89.2	87.2	93.4	78.8	100	95.9	99.6		
4.75mm	84.7	82.2	88.0	73.5	100	90.5	99.3		
2.00mm	78.7	75.6	81.6	68.0	99.3	87.3	98.5		
850um	74.4	70.9	76.4	64.2	88.8	82.2	90.1		
425um	68.4	64.4	70.5	59.0	80.9	75.9	82.9		
250um	61.6	57.7	64.0	53.4	76.0	69.0	75.6		
106um	47.2	45.2	50.6	42.0	69.3	54.8	65.4		
75um	43.1	41.5	46.5	38.3	67.0	50.2	62.9		
ASTM	SC-SM	SC-SM	SC-SM	SC-SM	CL	CL	CL		soil classification
frost rating	Low	Low	Low	Low	Low	Low	Low		suscept. to frost heave
W	8.2	13.8	9.6	9.7	36.0	10.4	31.5	field moisture content	

Soil Sample	32a	33c	34	35b	36b	37c	38		
Sieve	% Passing								
26.5mm	100	100	100	100	100	86.0	95.9	grain size	
19.0mm	100	100	100	100	100	80.0	95.9		
13.2mm	97.9	97.8	100	96.1	100	77.5	95.9		
9.50mm	97.1	94.8	97.7	88.0	100	75.5	95.6		
4.75mm	93.0	89.6	94.9	80.5	100	71.3	94.8		
2.00mm	91.3	85.6	93.0	75.9	100	68.8	93.2		
850um	86.1	80.3	89.1	73.2	89.1	64.6	86.6		
425um	79.7	73.6	84.0	68.9	73.6	59.7	76.1		
250um	73.4	65.5	77.6	64.5	63.1	55.1	68.3		
106um	58.9	48.4	58.5	55.1	50.5	45.2	55.1		
75um	53.8	43.1	50.9	52.0	48.0	41.8	50.0		
ASTM	CL	SC-SM	CL	CL	SC-SM	SC-SM	SC-SM		soil classification
frost rating	Low	Low	Low	Low	Low	Low	Low		suscept. to frost heave
W	12.6	12.0	12.6	9.4	27.6	10.2	18.1	field moisture content	

Soil Sample	39b	40a	
Sieve	% Passing		
26.5mm	86.8	66.4	grain size
19.0mm	84.3	63.1	
13.2mm	81.5	60.9	
9.50mm	80.1	59.2	
4.75mm	76.7	56.9	
2.00mm	74.5	54.1	
850um	72.7	53.4	
425um	66.1	48.3	
250um	58.2	42.2	
106um	37.7	27.3	
75um	26.6	17.7	
ASTM	SC-SM	SC-SM	soil classification
frost rating	Low	Low	suscept. to frost heave
W	12.3	8.9	field moisture content

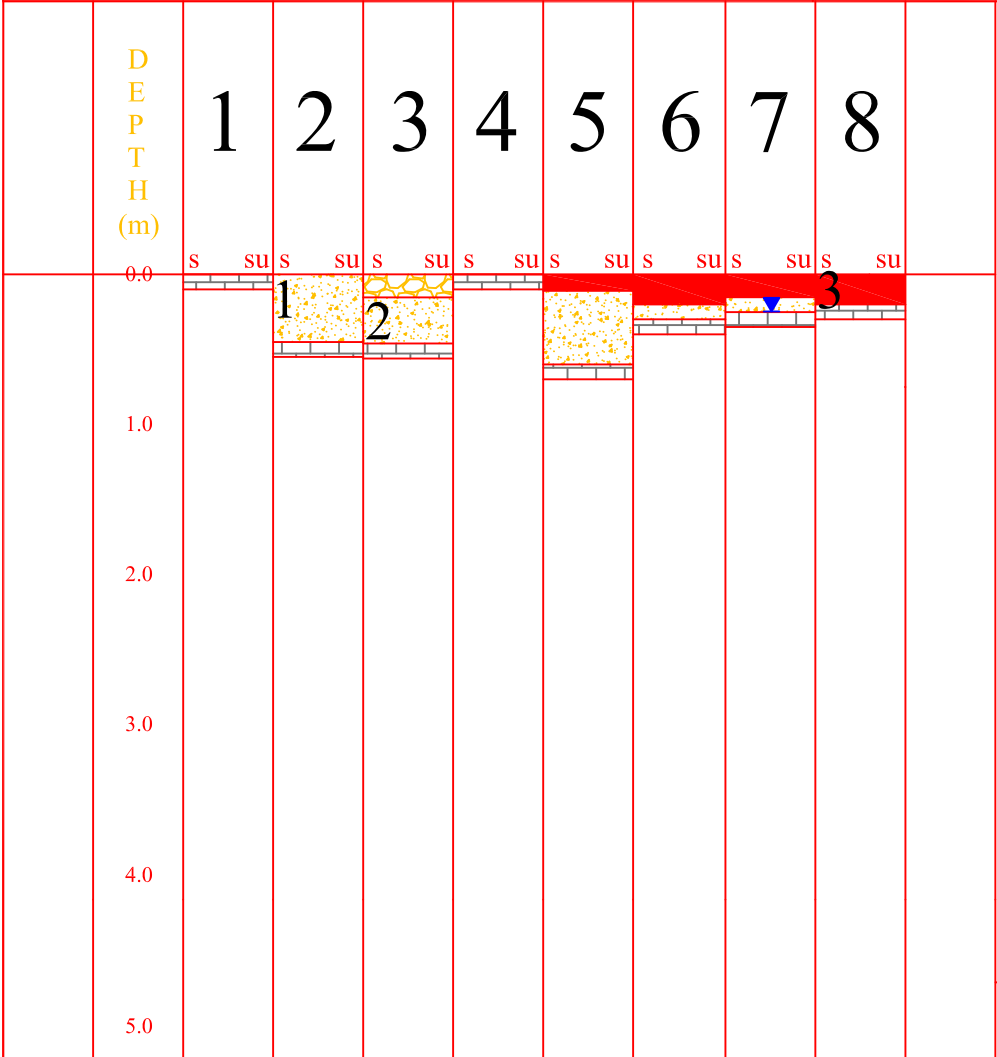
Test Hole Elevations

<u>Test Hole</u>	<u>Ground Elevation</u>	<u>Refusal Depth</u>	<u>Refusal Elevation</u>
1	78.6	0m	78.6
2	79.8	0.45	79.35
3	79.7	0.46	79.24
4	78.6	0	78.6
5	78.8	0.6	78.2
6	80.09	0.3	79.79
7	78.7	0.25	78.45
8	80.1	0.2	79.9
9	91.66	----	----
10	90.84	4.27	86.57
11	87.8	2.7	85.1
12	85.64	4.0	81.64
13	84.01	2.4	81.61
14	85.61	3.0	82.61
15	86.39	2.9	83.49
16	87.85	4.3	83.55
17	83.36	2.55	80.81
18	83.67	3.5	80.17
19	84.38	4.1	80.28
20	87.4	----	----
21	86.53	----	----
22	86.38	4.5	81.88
23	87.91	4.5	83.41
24	89.07	4.5	84.57
25	88.8	4.1	84.7
26	88.76	3.1	85.66
27	88.76	2.5	86.26
28	90.23	4.1	86.13
29	90.58	3.7	86.88
30	87.98	1.65	86.33
31	88.54	2.2	86.34
32	88.3	1.6	86.7

TEST HOLE LOG DATA

PROJECT No.: 19-3-6432
 CLIENT: MBQ
 PROJECT: Atsia Court Park
 DATE: October 15, 2019

SOIL DATA
 METHOD: Excavation
 s = soil sample
 su = field shear strength (kPa)
 ▼ encountered water elevation



LEGEND

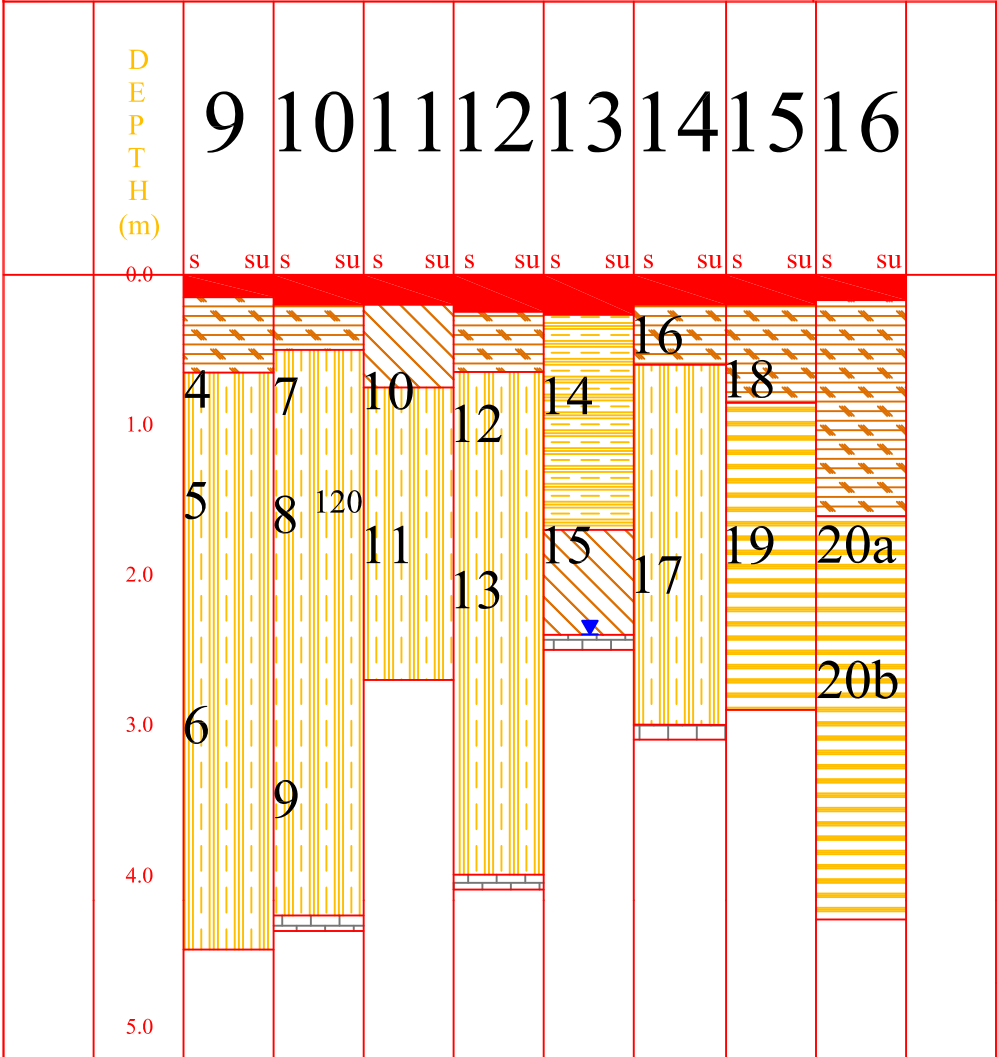
- topsoil
- crushed gravel & sand
- silty sand with gravel
- silty clay sand
- silty clay with sand
- silty clay
- sandy silty clay Fill
- sandy silty clay
- silty clay sand with gravel
- sandy silty clay with gravel
- bedrock

Terraspec

TEST HOLE LOG DATA

PROJECT No.: 19-3-6432
 CLIENT: MBQ
 PROJECT: County Road 2, East Side
 DATE: October 15, 2019

SOIL DATA
 METHOD: Excavation
 s = soil sample
 su = field shear strength (kPa)
 ▼ encountered water elevation



LEGEND

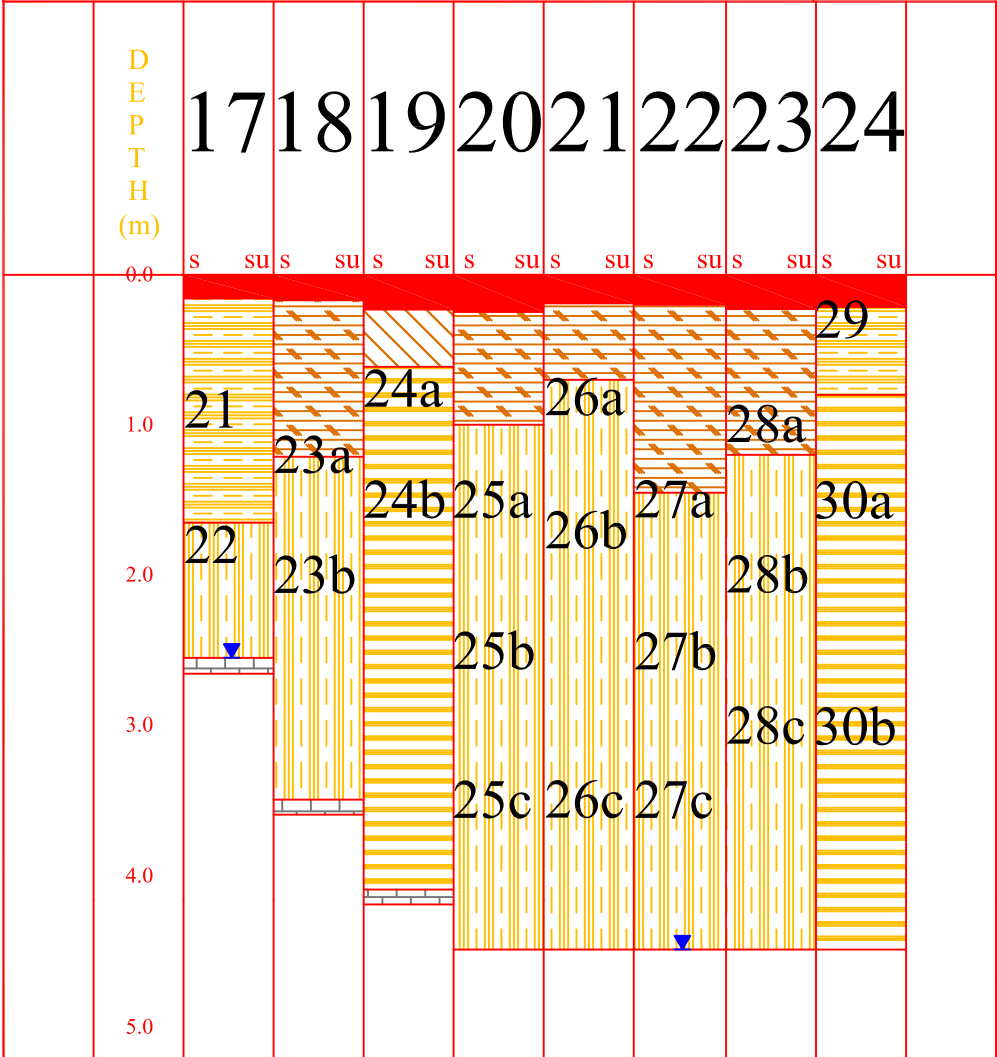
- topsoil
- crushed gravel & sand
- silty sand with gravel
- silty clay sand
- silty clay with sand
- silty clay
- sandy silty clay Fill
- sandy silty clay
- silty clay sand with gravel
- sandy silty clay with gravel
- bedrock

Terraspec

TEST HOLE LOG DATA

PROJECT No.: 19-3-6432
 CLIENT: MBQ
 PROJECT: County Road 2, West Side
 DATE: October 24, 2019

SOIL DATA
 METHOD: Excavation
 s = soil sample
 su = field shear strength (kPa)
 ▼ encountered water elevation



LEGEND

- topsoil
- crushed gravel & sand
- silty sand with gravel
- silty clay sand
- silty clay with sand
- silty clay
- sandy silty clay Fill
- sandy silty clay
- silty clay sand with gravel
- sandy silty clay with gravel
- bedrock

Terraspec





23
BH

9
BH

22
BH

10
BH

24
BH

16
BH BH

21
BH

11
BH

15
BH

20
BH

14
BH

19
BH

12
BH

13
BH

17
BH

18
BH



32
BH

30
BH

31
BH

25

26
BH

27
BH

28
BH

29
BH



FINAL REPORT

CA12016-NOV19 R

MBQ

Prepared for

Terraspec

First Page

CLIENT DETAILS

Client **Terraspec**

Address **973 Crawford Drive
Peterborough, ON
K9J 3X1, Canada**

Contact **Shane Galloway**

Telephone **705-743-7880**

Facsimile **705-743-9592**

Email **terraspec@cogeco.net**

Project **MBQ**

Order Number

Samples **Water (4)**

LABORATORY DETAILS

Project Specialist **Brad Moore Hon. B.Sc**

Laboratory **SGS Canada Inc.**

Address **185 Concession St., Lakefield ON, K0L 2H0**

Telephone **705-652-2143**

Facsimile **705-652-6365**

Email **brad.moore@sgs.com**

SGS Reference **CA12016-NOV19**

Received **11/01/2019**

Approved **11/08/2019**

Report Number **CA12016-NOV19 R**

Date Reported **11/08/2019**

COMMENTS

Temperature of Sample upon Receipt: 18 degrees C

Cooling Agent Present:No

Custody Seal Present:No

Chain of Custody Number:NA

SIGNATORIES

Brad Moore Hon. B.Sc



TABLE OF CONTENTS

First Page.....	1
Index.....	2
Results.....	3
QC Summary.....	4
Legend.....	5
Annexes.....	6



FINAL REPORT

CA12016-NOV19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S Galloway

PACKAGE: REG153 - Metals and Inorganics (WATER)

Sample Number	7	8	9	10
Sample Name	1	2	3	4
Sample Matrix	Water	Water	Water	Water
Sample Date	28/10/2019	24/10/2019	24/10/2019	28/10/2019

Parameter	Units	RL	Result	Result	Result	Result
Metals and Inorganics						
Sulphate	mg/L	2	20	19	20	9

QC SUMMARY

Anions by discrete analyzer

Method: US EPA 375.4 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-026

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphate	DIO0092-NOV19	mg/L	2	<2	2	20	105	80	120	97	75	125

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS Insufficient sample for analysis.
RL Reporting Limit.
 ↑ Reporting limit raised.
 ↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated. This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This report must not be reproduced, except in full. This report supersedes all previous versions.

-- End of Analytical Report --



FINAL REPORT

CA12969-OCT19 R1

MBQ

Prepared for

Terraspec

First Page

CLIENT DETAILS

Client **Terraspec**

Address **973 Crawford Drive
Peterborough, ON
K9J 3X1, Canada**

Contact **Shane Galloway**

Telephone **705-743-7880**

Facsimile **705-743-9592**

Email **terraspec@cogeco.net**

Project **MBQ**

Order Number

Samples **Soil (12)**

LABORATORY DETAILS

Project Specialist **Brad Moore Hon. B.Sc**

Laboratory **SGS Canada Inc.**

Address **185 Concession St., Lakefield ON, K0L 2H0**

Telephone **705-652-2143**

Facsimile **705-652-6365**

Email **brad.moore@sgs.com**

SGS Reference **CA12969-OCT19**

Received **10/30/2019**

Approved **11/07/2019**

Report Number **CA12969-OCT19 R1**

Date Reported **11/07/2019**

COMMENTS

Temperature of Sample upon Receipt: 6 degrees C
Cooling Agent Present: yes
Custody Seal Present: yes

Chain of Custody Number: N/A

Corrosivity Index is based on the American Water Works Corrosivity Scale according to AWWA C-105. An index greater than 10 indicates the soil matrix may be corrosive to cast iron alloys.

SIGNATORIES

Brad Moore Hon. B.Sc



TABLE OF CONTENTS

First Page.....	1
Index.....	2
Results.....	3-5
QC Summary.....	6-8
Legend.....	9
Annexes.....	10-11



FINAL REPORT

CA12969-OCT19 R1

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: - Corrosivity Index (SOIL)

Sample Number	5	6	7	8	9	10	11	12
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

Parameter	Units	RL	Result	Result	Result	Result	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------	--------	--------	--------	--------

Corrosivity Index

Corrosivity Index	none	1	3	4.5	4.5	7.5	4	4	4	4
Soil Redox Potential	mV	-	289	286	310	289	261	265	248	285
Sulphide	%	0.02	< 0.02	0.02	0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02
pH	pH Units	0.05	7.97	8.30	7.43	8.61	8.78	8.77	8.98	8.70
Resistivity (calculated)	ohms.cm	-9999	2190	11300	13500	11400	15800	12300	12100	11900

PACKAGE: - Corrosivity Index (SOIL)

Sample Number	13	14	15	16
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

Parameter	Units	RL	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------

Corrosivity Index

Corrosivity Index	none	1	1	1	1	1
Soil Redox Potential	mV	-	235	403	334	279
Sulphide	%	0.02	< 0.02	< 0.02	< 0.02	< 0.02
pH	pH Units	0.05	8.50	7.87	8.43	8.46
Resistivity (calculated)	ohms.cm	-9999	11700	4570	10700	10200



FINAL REPORT

CA12969-OCT19 R1

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: - General Chemistry (SOIL)

Sample Number	5	6	7	8	9	10	11	12
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

Parameter	Units	RL	Result	Result	Result	Result	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------	--------	--------	--------	--------

General Chemistry

Conductivity	uS/cm	2	457	88	74	88	63	81	83	84
--------------	-------	---	-----	----	----	----	----	----	----	----

PACKAGE: - General Chemistry (SOIL)

Sample Number	13	14	15	16
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

Parameter	Units	RL	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------

General Chemistry

Conductivity	uS/cm	2	86	219	93	98
--------------	-------	---	----	-----	----	----

PACKAGE: - Metals and Inorganics (SOIL)

Sample Number	5	6	7	8	9	10	11	12
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

Parameter	Units	RL	Result	Result	Result	Result	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------	--------	--------	--------	--------

Metals and Inorganics

Moisture Content	%	0.1	15.2	4.2	15.4	7.2	9.2	8.2	8.2	9.6
Sulphate	µg/g	0.4	120	15	8.0	3.9	2.0	8.9	3.0	6.0

PACKAGE: - Metals and Inorganics (SOIL)

Sample Number	13	14	15	16
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

Parameter	Units	RL	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------



FINAL REPORT

CA12969-OCT19 R1

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: - Metals and Inorganics (SOIL)

Sample Number	13	14	15	16
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

Parameter	Units	RL	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------

Metals and Inorganics

Moisture Content	%	0.1	7.8	25.4	20.3	14.0
Sulphate	µg/g	0.4	14	16	0.9	6.1

PACKAGE: - Other (ORP) (SOIL)

Sample Number	5	6	7	8	9	10	11	12
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

Parameter	Units	RL	Result	Result	Result	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------	--------	--------	--------

Other (ORP)

Chloride	µg/g	0.4	150	5.2	12	1.6	0.4	0.7	1.3	1.1
----------	------	-----	-----	-----	----	-----	-----	-----	-----	-----

PACKAGE: - Other (ORP) (SOIL)

Sample Number	13	14	15	16
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

Parameter	Units	RL	Result	Result	Result	Result
-----------	-------	----	--------	--------	--------	--------

Other (ORP)

Chloride	µg/g	0.4	4.8	2.1	0.4	0.6
----------	------	-----	-----	-----	-----	-----

QC SUMMARY

Anions by IC

Method: EPA300/MA300-Ions1.3 | Internal ref.: ME-CA-IENVIIC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Chloride	DIO0005-NOV19	µg/g	0.4	<0.4	19	20	97	80	120	119	75	125
Sulphate	DIO0005-NOV19	µg/g	0.4	<0.4	11	20	93	80	120	88	75	125

Carbon/Sulphur

Method: ASTM E1915-07A | Internal ref.: ME-CA-IENVIARD-LAK-AN-020

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Sulphide	ECS0006-NOV19	%	0.02	<0.02	9	20	114	80	120			

QC SUMMARY

Conductivity

Method: SM 2510 | Internal ref.: ME-CA-ENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0553-OCT19	uS/cm	2	< 0.002	0	10	100	90	110	NA		
Conductivity	EWL0557-OCT19	uS/cm	2	0.002	1	10	99	90	110	NA		

pH

Method: SM 4500 | Internal ref.: ME-CA-ENVIEWL-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
pH	EWL0553-OCT19	pH Units	0.05	NA	0		100			NA		
pH	EWL0557-OCT19	pH Units	0.05	NA	0		100			NA		

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND**FOOTNOTES**

NSS Insufficient sample for analysis.
RL Reporting Limit.
 ↑ Reporting limit raised.
 ↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated. This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This report must not be reproduced, except in full. This report supersedes all previous versions.

-- End of Analytical Report --



Request for Laboratory Services and CHAIN OF CUSTODY

SGS Environmental Services - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365
 - London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com

No: _____
 Page 1 of 1

Laboratory Information Section - Lab use only

Received By: Named
 Received Date (mm/dd/yyyy): 10/30/19
 Received Time: 12:15
 Cooling Agent Present: ICE
 Temperature Upon Receipt (°C): 6x3
 LAB LIMS #: CA-15717-0ct19
 CJA 12969-ect19

REPORT INFORMATION	INVOICE INFORMATION	PROJECT INFORMATION
Company: Terraspec	<input type="checkbox"/> (same as Report Information)	Quotation #: Quotation 2019 767
Contact: shane galloway	Company: _____	Project #: MBQ
Address: 973 Crawford Drive, Peterborough, K9J 3X1	Contact: _____	Site Location/ID: _____
Phone: 705-743-7880	Address: _____	
Fax: 705-743-9592	Phone: _____	
Email: terraspec@cogeco.net	Email: _____	

REGULATIONS
Regulation 153 (2011): <input type="checkbox"/> Table 1 <input checked="" type="checkbox"/> Res/Park <input type="checkbox"/> Soil Texture: <input checked="" type="checkbox"/> Coarse <input type="checkbox"/> Medium <input type="checkbox"/> Fine <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Com <input type="checkbox"/> Agri/Other <input type="checkbox"/> Table 3 <input type="checkbox"/> Other: <input type="checkbox"/> Table _____ <input type="checkbox"/> MISA Other Regulations: <input type="checkbox"/> Reg 347/558 (3 Day min TAT) <input type="checkbox"/> PWQO <input type="checkbox"/> MMR <input type="checkbox"/> CCME <input type="checkbox"/> Other: <input type="checkbox"/> MISA Sewer By-Law: <input type="checkbox"/> Sanitary <input type="checkbox"/> Storm Municipality: _____

RECORD OF SITE CONDITION (RSC)		DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX
1	see attached list, as per Quote 2019 767				
2					
3					
4					
5					
6					
7					
8					
9					
10					

Observations/Comments/Special Instructions

Signature: _____ Date: 10/28/2019 (mm/dd/yy)

Signature: _____ Date: 10/30/2019 (mm/dd/yy)

Sampled By (NAME): S. Galloway

Relinquished by (NAME): S. Galloway

Comments: Field Filtered (F) Preserved (P)

Quotation 2019 767

Soil Samples:

1	oct 24	pm	soil	2 methanol vials, 2 jars
2	oct 24	pm	soil	2 methanol vials, 2 jars
3	oct 24	pm	soil	2 methanol vials, 2 jars
4	oct 24	pm	soil	2 methanol vials, 2 jars
12	oct 24	pm	soil	2 methanol vials, 2 jars
20	oct 24	pm	soil	2 methanol vials, 2 jars
23	oct 24	pm	soil	2 methanol vials, 2 jars
26	oct 24	pm	soil	2 methanol vials, 2 jars
28	oct 24	pm	soil	2 methanol vials, 2 jars
31	oct 28	pm	soil	2 methanol vials, 2 jars
36	oct 28	pm	soil	2 methanol vials, 2 jars
38	oct 28	pm	soil	2 methanol vials, 2 jars

Chemical Testing:

Sodium Adsorption Ratio (SAR) 50 50

Electrical Conductivity (EC)

Metals 0.5 d

PAHs 20

PCBs 10

Volatile Organic Compounds (VOCs) 15

Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)

Petroleum Hydrocarbons (PHC F1-F4) 12

Corrosivity testing 130 / 50

Note: all samples appeared to be clean.



FINAL REPORT

CA15717-OCT19 R

MBQ

Prepared for

Terraspec

First Page

CLIENT DETAILS		LABORATORY DETAILS	
Client	Terraspec	Project Specialist	Brad Moore Hon. B.Sc
Address	973 Crawford Drive Peterborough, ON K9J 3X1, Canada	Laboratory	SGS Canada Inc.
Contact	Shane Galloway	Address	185 Concession St., Lakefield ON, K0L 2H0
Telephone	705-743-7880	Telephone	705-652-2143
Facsimile	705-743-9592	Facsimile	705-652-6365
Email	terraspec@cogeco.net	Email	brad.moore@sgs.com
Project	MBQ	SGS Reference	CA15717-OCT19
Order Number		Received	10/30/2019
Samples	Soil (12)	Approved	11/06/2019
		Report Number	CA15717-OCT19 R
		Date Reported	11/06/2019

COMMENTS

CCME Method Compliance: Analyses were conducted using analytical procedures that comply with the Reference Method for the CWS for Petroleum Hydrocarbons in Soil and have been validated for use at the SGS laboratory, Lakefield, ON site.

Quality Compliance: Instrument performance / calibration quality criteria were met and extraction and analysis limits for holding times were met.

nC6 and nC10 response factors within 30% of response factor for toluene: YES

nC10, nC16 and nC34 response factors within 10% of the average response for the three compounds: YES

C50 response factors within 70% of nC10 + nC16 + nC34 average: YES

Linearity is within 15%: YES

F4G - gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.

The results for F4 and F4G are both reported and the greater of the two values is to be used in application to the CWS PHC.

Hydrocarbon results are expressed on a dry weight basis.

Temperature of Sample upon Receipt: 6 degrees C

Cooling Agent Present: Yes

Custody Seal Present: Yes

Chain of Custody Number: NA

PHC F3 (C16-C34) and F4 (C34-C50) Duplicate: RPD for this parameter is outside control limits due to sample heterogeneity.

SIGNATORIES

Brad Moore Hon. B.Sc



TABLE OF CONTENTS

First Page.....	1
Index.....	2
Results.....	3-17
Exceedance Summary.....	18
QC Summary.....	19-26
Legend.....	27
Annexes.....	28-29



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: **REG153 - BTEX (SOIL)**

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
BTEX												
Benzene	µg/g	0.02	0.21	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	
Ethylbenzene	µg/g	0.05	1.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Toluene	µg/g	0.05	2.3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Xylene (total)	µg/g	0.05	3.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
m/p-xylene	µg/g	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
o-xylene	µg/g	0.05		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	

PACKAGE: **REG153 - BTEX (SOIL)**

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
BTEX							
Benzene	µg/g	0.02	0.21	< 0.02	< 0.02	< 0.02	< 0.02
Ethylbenzene	µg/g	0.05	1.1	< 0.05	< 0.05	< 0.05	< 0.05
Toluene	µg/g	0.05	2.3	< 0.05	< 0.05	< 0.05	< 0.05
Xylene (total)	µg/g	0.05	3.1	< 0.05	< 0.05	< 0.05	< 0.05
m/p-xylene	µg/g	0.05		< 0.05	< 0.05	< 0.05	< 0.05
o-xylene	µg/g	0.05		< 0.05	< 0.05	< 0.05	< 0.05



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: **REG153 - Hydrides (SOIL)**

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
Hydrides												
Antimony	µg/g	0.8	7.5	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	< 0.8	
Arsenic	µg/g	0.5	18	2.7	1.8	1.8	1.2	1.0	1.2	1.1	1.2	
Selenium	µg/g	0.7	2.4	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	

PACKAGE: **REG153 - Hydrides (SOIL)**

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
Hydrides							
Antimony	µg/g	0.8	7.5	< 0.8	< 0.8	< 0.8	< 0.8
Arsenic	µg/g	0.5	18	1.1	2.5	1.9	1.4
Selenium	µg/g	0.7	2.4	< 0.7	< 0.7	< 0.7	< 0.7

PACKAGE: **REG153 - Metals and Inorganics (SOIL)**

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
Metals and Inorganics												
Moisture Content	%	-		15.2	4.2	15.4	7.2	9.2	8.2	8.2	9.6	
Barium	µg/g	0.1	390	69	71	95	68	68	84	77	96	
Beryllium	µg/g	0.02	4	0.34	0.30	0.40	0.22	0.17	0.21	0.18	0.24	
Boron	µg/g	1	120	7	5	5	6	6	6	6	7	



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: REG153 - Metals and Inorganics (SOIL)

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
Metals and Inorganics (continued)												
Cadmium	µg/g	0.02	1.2	0.13	0.14	0.20	0.05	0.02	0.03	0.03	0.03	
Chromium	µg/g	0.5	160	16	14	19	13	9.9	13	11	15	
Cobalt	µg/g	0.01	22	5.9	5.0	6.8	5.4	4.2	5.6	4.9	6.2	
Copper	µg/g	0.1	140	16	14	14	11	8.2	11	9.5	12	
Lead	µg/g	0.1	120	20	34	25	2.5	2.0	2.6	2.3	2.7	
Molybdenum	µg/g	0.1	6.9	0.3	0.3	0.3	0.1	0.1	0.1	0.2	0.2	
Nickel	µg/g	0.5	100	11	8.5	11	9.8	7.2	9.6	8.5	11	
Silver	µg/g	0.05	20	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Thallium	µg/g	0.02	1	0.15	0.10	0.12	0.09	0.06	0.09	0.07	0.09	
Uranium	µg/g	0.002	23	0.35	0.47	0.37	0.35	0.31	0.37	0.35	0.33	
Vanadium	µg/g	3	86	26	23	27	24	17	21	19	23	
Zinc	µg/g	0.7	340	200	51	73	16	12	17	14	19	



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: REG153 - Metals and Inorganics (SOIL)

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
Metals and Inorganics							
Moisture Content	%	-		7.8	25.4	20.3	14.0
Barium	µg/g	0.1	390	84	340	290	130
Beryllium	µg/g	0.02	4	0.18	1.1	0.73	0.37
Boron	µg/g	1	120	6	8	9	7
Cadmium	µg/g	0.02	1.2	0.03	0.33	0.11	0.06
Chromium	µg/g	0.5	160	11	49	44	26
Cobalt	µg/g	0.01	22	5.1	17	16	8.9
Copper	µg/g	0.1	140	10	30	29	16
Lead	µg/g	0.1	120	2.4	12	7.0	3.9
Molybdenum	µg/g	0.1	6.9	0.2	0.5	0.2	0.3
Nickel	µg/g	0.5	100	9.1	33	31	18
Silver	µg/g	0.05	20	< 0.05	0.10	0.05	< 0.05
Thallium	µg/g	0.02	1	0.08	0.30	0.29	0.15
Uranium	µg/g	0.002	23	0.30	1.1	0.48	0.38
Vanadium	µg/g	3	86	19	64	57	34
Zinc	µg/g	0.7	340	16	100	72	35



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: **REG153 - Other (ORP)** (SOIL)

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
Other (ORP)												
Sodium Adsorption Ratio	---	0.2	5	2.8	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
SAR Calcium	mg/L	0.09		39.2	29.8	33.0	18.6	15.9	16.3	10.1	15.3	
SAR Magnesium	mg/L	0.02		2.9	0.88	2.9	2.3	2.8	4.4	6.3	3.8	
SAR Sodium	mg/L	0.15		61.9	0.54	1.3	1.5	0.31	0.33	2.1	0.57	
Conductivity	mS/cm	0.002	0.7	0.54	0.15	0.19	0.12	0.10	0.12	0.11	0.12	

PACKAGE: **REG153 - Other (ORP)** (SOIL)

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
Other (ORP)							
Sodium Adsorption Ratio	---	0.2	5	< 0.2	0.4	< 0.2	< 0.2
SAR Calcium	mg/L	0.09		14.9	39.5	21.6	18.3
SAR Magnesium	mg/L	0.02		3.5	5.4	2.2	4.7
SAR Sodium	mg/L	0.15		2.2	9.0	0.47	1.7
Conductivity	mS/cm	0.002	0.7	0.12	0.27	0.13	0.14



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: REG153 - PAHs (SOIL)

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
PAHs												
Acenaphthene	µg/g	0.05	7.9	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthylene	µg/g	0.05	0.15	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Anthracene	µg/g	0.05	0.67	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)anthracene	µg/g	0.05	0.5	< 0.05	0.05	0.20	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(a)pyrene	µg/g	0.05	0.3	0.05	0.05	0.23	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(b+j)fluoranthene	µg/g	0.05	0.78	0.08	0.08	0.32	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	µg/g	0.1	6.6	< 0.1	< 0.1	0.16	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	µg/g	0.05	0.78	< 0.05	< 0.05	0.11	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Chrysene	µg/g	0.05	7	< 0.05	< 0.05	0.21	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Dibenzo(a,h)anthracene	µg/g	0.06	0.1	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	< 0.06	
Fluoranthene	µg/g	0.05	0.69	0.07	0.07	0.52	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	µg/g	0.05	62	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Indeno(1,2,3-cd)pyrene	µg/g	0.1	0.38	< 0.1	< 0.1	0.15	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
1-Methylnaphthalene	µg/g	0.05		< 0.05	< 0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
2-Methylnaphthalene	µg/g	0.05		< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Methylnaphthalene, 2-(1-)	µg/g	0.05	0.99	< 0.05	< 0.05	0.11	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Naphthalene	µg/g	0.05	0.6	< 0.05	< 0.05	0.06	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	µg/g	0.05	6.2	< 0.05	< 0.05	0.26	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Pyrene	µg/g	0.05	78	0.06	0.07	0.36	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: REG153 - PAHs (SOIL)

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

Parameter	Units	RL	L1	Result	Result	Result	Result
PAHs							
Acenaphthene	µg/g	0.05	7.9	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	µg/g	0.05	0.15	< 0.05	< 0.05	< 0.05	< 0.05
Anthracene	µg/g	0.05	0.67	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	µg/g	0.05	0.5	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	µg/g	0.05	0.3	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(b+j)fluoranthene	µg/g	0.05	0.78	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	µg/g	0.1	6.6	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(k)fluoranthene	µg/g	0.05	0.78	< 0.05	< 0.05	< 0.05	< 0.05
Chrysene	µg/g	0.05	7	< 0.05	< 0.05	< 0.05	< 0.05
Dibenzo(a,h)anthracene	µg/g	0.06	0.1	< 0.06	< 0.06	< 0.06	< 0.06
Fluoranthene	µg/g	0.05	0.69	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	µg/g	0.05	62	< 0.05	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.1	0.38	< 0.1	< 0.1	< 0.1	< 0.1
1-Methylnaphthalene	µg/g	0.05		< 0.05	< 0.05	< 0.05	< 0.05
2-Methylnaphthalene	µg/g	0.05		< 0.05	< 0.05	< 0.05	< 0.05
Methylnaphthalene, 2-(1-)	µg/g	0.05	0.99	< 0.05	< 0.05	< 0.05	< 0.05
Naphthalene	µg/g	0.05	0.6	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	µg/g	0.05	6.2	< 0.05	< 0.05	< 0.05	< 0.05
Pyrene	µg/g	0.05	78	< 0.05	< 0.05	< 0.05	< 0.05



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: **REG153 - PCBs (SOIL)**

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
PCBs												
Polychlorinated Biphenyls (PCBs) - Total	µg/g	0.3	0.35	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3	

PACKAGE: **REG153 - PCBs (SOIL)**

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
PCBs							
Polychlorinated Biphenyls (PCBs) - Total	µg/g	0.3	0.35	< 0.3	< 0.3	< 0.3	< 0.3

PACKAGE: **REG153 - PHCs (SOIL)**

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
PHCs												
F1 (C6-C10)	µg/g	10	55	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
F1-BTEX (C6-C10)	µg/g	10		< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
F2 (C10-C16)	µg/g	10	98	< 10	< 10	< 10	< 10	< 10	< 10	< 10	< 10	
F3 (C16-C34)	µg/g	50	300	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
F4 (C34-C50)	µg/g	50	2800	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
Chromatogram returned to baseline at nC50	Yes / No	-		YES	YES	YES	YES	YES	YES	YES	YES	



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: **REG153 - PHCs (SOIL)**

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
PHCs							
F1 (C6-C10)	µg/g	10	55	< 10	< 10	< 10	< 10
F1-BTEX (C6-C10)	µg/g	10		< 10	< 10	< 10	< 10
F2 (C10-C16)	µg/g	10	98	< 10	< 10	< 10	< 10
F3 (C16-C34)	µg/g	50	300	< 50	< 50	< 50	< 50
F4 (C34-C50)	µg/g	50	2800	< 50	< 50	< 50	< 50
Chromatogram returned to baseline at nC50	Yes / No	-		YES	YES	YES	YES

PACKAGE: **REG153 - SVOC Surrogates (SOIL)**

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	
SVOC Surrogates											
Surr Nitrobenzene-d5	Surr Rec %	-		93	95	96	99	80	92	84	86
Surr 2-Fluorobiphenyl	Surr Rec %	-		91	97	97	94	71	88	83	85
Surr 4-Terphenyl-d14	Surr Rec %	-		96	104	96	94	75	96	92	94
Surr 2-Fluorophenol	Surr Rec %	-		89	73	83	75	90	89	87	89
Surr Phenol-d6	Surr Rec %	-		96	89	93	89	94	97	95	96
Surr 2,4,6-Tribromophenol	Surr Rec %	-		92	79	93	71	71	95	91	92



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: **REG153 - SVOC Surrogates (SOIL)**

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
SVOC Surrogates							
Surr Nitrobenzene-d5	Surr Rec %	-		93	86	79	92
Surr 2-Fluorobiphenyl	Surr Rec %	-		91	80	75	91
Surr 4-Terphenyl-d14	Surr Rec %	-		101	94	91	98
Surr 2-Fluorophenol	Surr Rec %	-		95	85	89	88
Surr Phenol-d6	Surr Rec %	-		101	95	98	95
Surr 2,4,6-Tribromophenol	Surr Rec %	-		100	95	94	92

PACKAGE: **REG153 - THMs (VOC) (SOIL)**

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result
THMs (VOC)											
Bromodichloromethane	µg/g	0.05	1.5	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Bromoform	µg/g	0.05	0.27	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dibromochloromethane	µg/g	0.05	2.3	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: **REG153 - THMs (VOC)** (SOIL)

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
THMs (VOC)							
Bromodichloromethane	µg/g	0.05	1.5	< 0.05	< 0.05	< 0.05	< 0.05
Bromoform	µg/g	0.05	0.27	< 0.05	< 0.05	< 0.05	< 0.05
Dibromochloromethane	µg/g	0.05	2.3	< 0.05	< 0.05	< 0.05	< 0.05

PACKAGE: **REG153 - VOC Surrogates** (SOIL)

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result
VOC Surrogates										
Surr 1,2-Dichloroethane-d4	Surr Rec %	-		96	94	97	97	94	96	96
Surr 4-Bromofluorobenzene	Surr Rec %	-		94	93	94	94	92	93	93
Surr 2-Bromo-1-Chloropropane	Surr Rec %	-		87	86	87	87	85	86	86

PACKAGE: **REG153 - VOC Surrogates** (SOIL)

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
VOC Surrogates							
Surr 1,2-Dichloroethane-d4	Surr Rec %	-		93	96	95	98
Surr 4-Bromofluorobenzene	Surr Rec %	-		92	92	93	93
Surr 2-Bromo-1-Chloropropane	Surr Rec %	-		84	86	86	93



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: REG153 - VOCs (SOIL)

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
VOCs												
Acetone	µg/g	0.5	16	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Bromomethane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Carbon tetrachloride	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Chlorobenzene	µg/g	0.05	2.4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Chloroform	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,2-Dichlorobenzene	µg/g	0.05	1.2	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,3-Dichlorobenzene	µg/g	0.05	4.8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,4-Dichlorobenzene	µg/g	0.05	0.083	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Dichlorodifluoromethane	µg/g	0.05	16	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,1-Dichloroethane	µg/g	0.05	0.47	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,2-Dichloroethane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,1-Dichloroethylene	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
trans-1,2-Dichloroethylene	µg/g	0.05	0.084	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
cis-1,2-Dichloroethylene	µg/g	0.05	1.9	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,2-Dichloropropane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
cis-1,3-dichloropropene	µg/g	0.03		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	
trans-1,3-dichloropropene	µg/g	0.03		< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	
1,3-dichloropropene (total)	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Ethylenedibromide	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
n-Hexane	µg/g	0.05	2.8	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Methyl ethyl ketone	µg/g	0.5	16	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Methyl isobutyl ketone	µg/g	0.5	1.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Methyl-t-butyl Ether	µg/g	0.05	0.75	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: REG153 - VOCs (SOIL)

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Sample Number	9	10	11	12	13	14	15	16
Sample Name	1	2	3	4	12	20	23	26
Sample Matrix	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019	24/10/2019

Parameter	Units	RL	L1	Result	Result	Result	Result	Result	Result	Result	Result	
VOCs (continued)												
Methylene Chloride	µg/g	0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Styrene	µg/g	0.05	0.7	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Tetrachloroethylene	µg/g	0.05	0.28	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,1,1,2-Tetrachloroethane	µg/g	0.05	0.058	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,1,2,2-Tetrachloroethane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,1,1-Trichloroethane	µg/g	0.05	0.38	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
1,1,2-Trichloroethane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Trichloroethylene	µg/g	0.05	0.061	0.08	0.11	0.32	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Trichlorofluoromethane	µg/g	0.05	4	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Vinyl Chloride	µg/g	0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	< 0.02	



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: REG153 - VOCs (SOIL)

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

Parameter	Units	RL	L1	Result	Result	Result	Result
VOCs							
Acetone	µg/g	0.5	16	< 0.5	< 0.5	< 0.5	< 0.5
Bromomethane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Carbon tetrachloride	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chlorobenzene	µg/g	0.05	2.4	< 0.05	< 0.05	< 0.05	< 0.05
Chloroform	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichlorobenzene	µg/g	0.05	1.2	< 0.05	< 0.05	< 0.05	< 0.05
1,3-Dichlorobenzene	µg/g	0.05	4.8	< 0.05	< 0.05	< 0.05	< 0.05
1,4-Dichlorobenzene	µg/g	0.05	0.083	< 0.05	< 0.05	< 0.05	< 0.05
Dichlorodifluoromethane	µg/g	0.05	16	< 0.05	< 0.05	< 0.05	< 0.05
1,1-Dichloroethane	µg/g	0.05	0.47	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichloroethane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,1-Dichloroethylene	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
trans-1,2-Dichloroethylene	µg/g	0.05	0.084	< 0.05	< 0.05	< 0.05	< 0.05
cis-1,2-Dichloroethylene	µg/g	0.05	1.9	< 0.05	< 0.05	< 0.05	< 0.05
1,2-Dichloropropane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
cis-1,3-dichloropropene	µg/g	0.03		< 0.03	< 0.03	< 0.03	< 0.03
trans-1,3-dichloropropene	µg/g	0.03		< 0.03	< 0.03	< 0.03	< 0.03
1,3-dichloropropene (total)	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Ethylenedibromide	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
n-Hexane	µg/g	0.05	2.8	< 0.05	< 0.05	< 0.05	< 0.05
Methyl ethyl ketone	µg/g	0.5	16	< 0.5	< 0.5	< 0.5	< 0.5
Methyl isobutyl ketone	µg/g	0.5	1.7	< 0.5	< 0.5	< 0.5	< 0.5
Methyl-t-butyl Ether	µg/g	0.05	0.75	< 0.05	< 0.05	< 0.05	< 0.05



FINAL REPORT

CA15717-OCT19 R

Client: Terraspec

Project: MBQ

Project Manager: Shane Galloway

Samplers: S. Galloway

PACKAGE: **REG153 - VOCs (SOIL)**

Sample Number	17	18	19	20
Sample Name	28	31	36	38
Sample Matrix	Soil	Soil	Soil	Soil
Sample Date	24/10/2019	28/10/2019	28/10/2019	28/10/2019

L1 = REG153 / SOIL / COARSE - TABLE 2 - Residential/Parkland - UNDEFINED

Parameter	Units	RL	L1	Result	Result	Result	Result
VOCs (continued)							
Methylene Chloride	µg/g	0.05	0.1	< 0.05	< 0.05	< 0.05	< 0.05
Styrene	µg/g	0.05	0.7	< 0.05	< 0.05	< 0.05	< 0.05
Tetrachloroethylene	µg/g	0.05	0.28	< 0.05	< 0.05	< 0.05	< 0.05
1,1,1,2-Tetrachloroethane	µg/g	0.05	0.058	< 0.05	< 0.05	< 0.05	< 0.05
1,1,2,2-Tetrachloroethane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
1,1,1-Trichloroethane	µg/g	0.05	0.38	< 0.05	< 0.05	< 0.05	< 0.05
1,1,2-Trichloroethane	µg/g	0.05	0.05	< 0.05	< 0.05	< 0.05	< 0.05
Trichloroethylene	µg/g	0.05	0.061	< 0.05	< 0.05	< 0.05	< 0.05
Trichlorofluoromethane	µg/g	0.05	4	< 0.05	< 0.05	< 0.05	< 0.05
Vinyl Chloride	µg/g	0.02	0.02	< 0.02	< 0.02	< 0.02	< 0.02

EXCEEDANCE SUMMARY

Parameter	Method	Units	Result	REG153 / SOIL / COARSE - TABLE 2 - Residential/Parklan d - UNDEFINED L1
-----------	--------	-------	--------	--

1

Trichloroethylene	EPA 5035A/5030B/8260C	µg/g	0.08	0.061
-------------------	-----------------------	------	------	-------

2

Trichloroethylene	EPA 5035A/5030B/8260C	µg/g	0.11	0.061
-------------------	-----------------------	------	------	-------

3

Trichloroethylene	EPA 5035A/5030B/8260C	µg/g	0.32	0.061
-------------------	-----------------------	------	------	-------

QC SUMMARY

Conductivity

Method: EPA 6010/SM 2510 | Internal ref.: ME-CA-IENVIEWL-LAK-AN-006

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Conductivity	EWL0012-NOV19	mS/cm	0.002	<0.002	0	10	99	90	110	NA		

Metals in aqueous samples - ICP-OES

Method: MOE 4696e01/EPA 6010 | Internal ref.: ME-CA-IENVISPE-LAK-AN-003

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
SAR Calcium	ESG0002-NOV19	mg/L	0.09	<0.09	2	20	100	80	120	98	70	130
SAR Magnesium	ESG0002-NOV19	mg/L	0.02	<0.02	3	20	99	80	120	102	70	130
SAR Sodium	ESG0002-NOV19	mg/L	0.15	<0.15	6	20	99	80	120	102	70	130



FINAL REPORT

CA15717-OCT19 R

QC SUMMARY

Metals in Soil - Aqua-regia/ICP-MS

Method: EPA 3050/EPA 200.8 | Internal ref.: ME-CA-IENVISPE-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Silver	EMS0226-OCT19	ug/g	0.05	<0.05	ND	20	96	70	130	91	70	130
Arsenic	EMS0226-OCT19	µg/g	0.5	<0.5	1	20	102	70	130	102	70	130
Barium	EMS0226-OCT19	ug/g	0.1	<0.1	6	20	102	70	130	97	70	130
Beryllium	EMS0226-OCT19	µg/g	0.02	<0.02	2	20	101	70	130	100	70	130
Boron	EMS0226-OCT19	µg/g	1	<1	20	20	100	70	130	96	70	130
Cadmium	EMS0226-OCT19	µg/g	0.02	<0.02	6	20	100	70	130	103	70	130
Cobalt	EMS0226-OCT19	µg/g	0.01	<0.01	2	20	104	70	130	113	70	130
Chromium	EMS0226-OCT19	µg/g	0.5	<0.5	0	20	104	70	130	112	70	130
Copper	EMS0226-OCT19	µg/g	0.1	<0.1	0	20	105	70	130	105	70	130
Molybdenum	EMS0226-OCT19	µg/g	0.1	<0.1	11	20	101	70	130	115	70	130
Nickel	EMS0226-OCT19	ug/g	0.5	<0.5	1	20	103	70	130	111	70	130
Lead	EMS0226-OCT19	ug/g	0.1	<0.1	2	20	101	70	130	98	70	130
Antimony	EMS0226-OCT19	µg/g	0.8	<0.8	ND	20	108	70	130	106	70	130
Selenium	EMS0226-OCT19	µg/g	0.7	<0.7	ND	20	102	70	130	103	70	130
Thallium	EMS0226-OCT19	µg/g	0.02	<0.02	2	20	103	70	130	105	70	130
Uranium	EMS0226-OCT19	µg/g	0.002	<0.002	4	20	98	70	130	93	70	130
Vanadium	EMS0226-OCT19	µg/g	3	<3	1	20	104	70	130	111	70	130
Zinc	EMS0226-OCT19	µg/g	0.7	<0.7	1	20	101	70	130	100	70	130

QC SUMMARY

Petroleum Hydrocarbons (F1)

Method: CCME Tier 1 | Internal ref.: ME-CA-IENVIGC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F1 (C6-C10)	GCM0006-NOV19	µg/g	10	<10	ND	30	92	80	120	103	60	140

Petroleum Hydrocarbons (F2-F4)

Method: CCME Tier 1 | Internal ref.: ME-CA-IENVIGC-LAK-AN-010

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
F2 (C10-C16)	GCM0532-OCT19	µg/g	10	<10	ND	30	115	80	120	93	60	140
F3 (C16-C34)	GCM0532-OCT19	µg/g	50	<50	58	30	115	80	120	93	60	140
F4 (C34-C50)	GCM0532-OCT19	µg/g	50	<50	63	30	115	80	120	93	60	140



FINAL REPORT

CA15717-OCT19 R

QC SUMMARY

Polychlorinated Biphenyls

Method: EPA 3570/8082A/8270C | Internal ref.: ME-CA-IENVIGC-LAK-AN-001

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
Polychlorinated Biphenyls (PCBs) - Total	GCM0542-OCT19	µg/g	0.3	< 0.3	ND	40	106	60	140	105	60	140

QC SUMMARY

Semi-Volatile Organics

Method: EPA 3541/8270D | Internal ref.: ME-CA-IENVIGC-LAK-AN-005

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1-Methylnaphthalene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	94	50	140	95	50	140
2-Methylnaphthalene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	90	50	140	92	50	140
Acenaphthene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	96	50	140	96	50	140
Acenaphthylene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	91	50	140	92	50	140
Anthracene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	96	50	140	96	50	140
Benzo(a)anthracene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	99	50	140	101	50	140
Benzo(a)pyrene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	90	50	140	97	50	140
Benzo(b+j)fluoranthene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	89	50	140	104	50	140
Benzo(ghi)perylene	GCM0002-NOV19	µg/g	0.1	< 0.1	ND	40	95	50	140	100	50	140
Benzo(k)fluoranthene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	100	50	140	109	50	140
Chrysene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	94	50	140	98	50	140
Dibenzo(a,h)anthracene	GCM0002-NOV19	µg/g	0.06	< 0.06	ND	40	96	50	140	100	50	140
Fluoranthene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	99	50	140	101	50	140
Fluorene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	91	50	140	92	50	140
Indeno(1,2,3-cd)pyrene	GCM0002-NOV19	µg/g	0.1	< 0.1	ND	40	96	50	140	102	50	140
Naphthalene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	97	50	140	98	50	140
Phenanthrene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	98	50	140	98	50	140
Pyrene	GCM0002-NOV19	µg/g	0.05	< 0.05	ND	40	101	50	140	103	50	140

QC SUMMARY

Volatiles Organics

Method: EPA 5035A/5030B/8260C | Internal ref.: ME-CA-IENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
1,1,1,2-Tetrachloroethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	95	60	130	94	50	140
1,1,1-Trichloroethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	89	60	130	92	50	140
1,1,2,2-Tetrachloroethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	95	60	130	92	50	140
1,1,2-Trichloroethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	95	60	130	96	50	140
1,1-Dichloroethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	84	60	130	93	50	140
1,1-Dichloroethylene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	86	60	130	100	50	140
1,2-Dichlorobenzene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	94	60	130	97	50	140
1,2-Dichloroethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	91	60	130	93	50	140
1,2-Dichloropropane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	93	60	130	93	50	140
1,3-Dichlorobenzene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	94	60	130	96	50	140
1,4-Dichlorobenzene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	94	60	130	96	50	140
Acetone	GCM0005-NOV19	µg/g	0.5	< 0.5	ND	50	97	50	140	112	50	140
Benzene	GCM0005-NOV19	µg/g	0.02	< 0.02	ND	50	92	60	130	92	50	140
Bromodichloromethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	94	60	130	94	50	140
Bromoform	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	93	60	130	91	50	140
Bromomethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	86	50	140	96	50	140
Carbon tetrachloride	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	92	60	130	96	50	140
Chlorobenzene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	94	60	130	94	50	140
Chloroform	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	93	60	130	97	50	140
cis-1,2-Dichloroethylene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	92	60	130	96	50	140

QC SUMMARY

Volatile Organics (continued)

Method: EPA 5035A/5030B/8260C | Internal ref.: ME-CA-IENVIGC-LAK-AN-004

Parameter	QC batch Reference	Units	RL	Method Blank	Duplicate		LCS/Spike Blank			Matrix Spike / Ref.		
					RPD	AC (%)	Spike Recovery (%)	Recovery Limits (%)		Spike Recovery (%)	Recovery Limits (%)	
								Low	High		Low	High
cis-1,3-dichloropropene	GCM0005-NOV19	µg/g	0.03	< 0.03	ND	50	94	60	130	90	50	140
Dibromochloromethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	94	60	130	94	50	140
Dichlorodifluoromethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	82	50	140	79	50	140
Ethylbenzene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	93	60	130	94	50	140
Ethylenedibromide	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	95	60	130	100	50	140
n-Hexane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	98	60	130	82	50	140
m/p-xylene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	93	60	130	93	50	140
Methyl ethyl ketone	GCM0005-NOV19	µg/g	0.5	< 0.5	ND	50	96	50	140	89	50	140
Methyl isobutyl ketone	GCM0005-NOV19	µg/g	0.5	< 0.5	ND	50	97	50	140	93	50	140
Methyl-t-butyl Ether	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	105	60	130	106	50	140
Methylene Chloride	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	89	60	130	104	50	140
o-xylene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	94	60	130	94	50	140
Styrene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	95	60	130	96	50	140
Tetrachloroethylene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	93	60	130	93	50	140
Toluene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	94	60	130	94	50	140
trans-1,2-Dichloroethylene	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	85	60	130	88	50	140
trans-1,3-dichloropropene	GCM0005-NOV19	µg/g	0.03	< 0.03	ND	50	93	60	130	93	50	140
Trichloroethylene	GCM0005-NOV19	µg/g	0.05	< 0.05	6	50	93	60	130	97	50	140
Trichlorofluoromethane	GCM0005-NOV19	µg/g	0.05	< 0.05	ND	50	85	50	140	98	50	140
Vinyl Chloride	GCM0005-NOV19	µg/g	0.02	< 0.02	ND	50	88	50	140	87	50	140

QC SUMMARY

Method Blank: a blank matrix that is carried through the entire analytical procedure. Used to assess laboratory contamination.

Duplicate: Paired analysis of a separate portion of the same sample that is carried through the entire analytical procedure. Used to evaluate measurement precision.

LCS/Spike Blank: Laboratory control sample or spike blank refer to a blank matrix to which a known amount of analyte has been added. Used to evaluate analyte recovery and laboratory accuracy without sample matrix effects.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate laboratory accuracy with sample matrix effects.

Reference Material: a material or substance matrix matched to the samples that contains a known amount of the analyte of interest. A reference material may be used in place of a matrix spike.

RL: Reporting limit

RPD: Relative percent difference

AC: Acceptance criteria

Multielement Scan Qualifier: as the number of analytes in a scan increases, so does the chance of a limit exceedance by random chance as opposed to a real method problem. Thus, in multielement scans, for the LCS and matrix spike, up to 10% of the analytes may exceed the quoted limits by up to 10% absolute and the spike is considered acceptable.

Duplicate Qualifier: for duplicates as the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Matrix Spike Qualifier: for matrix spikes, as the concentration of the native analyte increases, the uncertainty of the matrix spike recovery increases. Thus, the matrix spike acceptance limits apply only when the concentration of the matrix spike is greater than or equal to the concentration of the native analyte.

LEGEND

FOOTNOTES

NSS Insufficient sample for analysis.
RL Reporting Limit.
 ↑ Reporting limit raised.
 ↓ Reporting limit lowered.
NA The sample was not analysed for this analyte
ND Non Detect

Samples analysed as received. Solid samples expressed on a dry weight basis. "Temperature Upon Receipt" is representative of the whole shipment and may not reflect the temperature of individual samples.

Analysis conducted on samples submitted pursuant to or as part of Reg. 153/04, are in accordance to the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act" published by the Ministry and dated March 9, 2004 as amended.

SGS provides criteria information (such as regulatory or guideline limits and summary of limit exceedances) as a service. Every attempt is made to ensure the criteria information in this report is accurate and current, however, it is not guaranteed. Comparison to the most current criteria is the responsibility of the client and SGS assumes no responsibility for the accuracy of the criteria levels indicated. This document is issued, on the Client's behalf, by the Company under its General Conditions of Service available on request and accessible at http://www.sgs.com/terms_and_conditions.htm. The Client's attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any other holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents.

This report must not be reproduced, except in full. This report supersedes all previous versions.

-- End of Analytical Report --



Request for Laboratory Services and CHAIN OF CUSTODY

No: _____

Page 1 of 1

SGS Environmental Services - Lakefield: 185 Concession St., Lakefield, ON K0L 2H0 Phone: 705-652-2000 Toll Free: 877-747-7658 Fax: 705-652-6365
- London: 657 Consortium Court, London, ON, N6E 2S8 Phone: 519-672-4500 Toll Free: 877-848-8060 Fax: 519-672-0361 Web: www.ca.sgs.com

Laboratory Information Section - Lab use only

Received By: Named

Received Date (mm/dd/yyyy): 10/30/19

Received Time: 12:15

Received By (signature): [Signature]

Custody Seal Present:

Custody Seal Intact:

REPORT INFORMATION

Company: Terraspec

Contact: shane galloway

Address: 973 Crawford Drive,
Peterborough, K9J 3X1

Phone: 705-743-7880

Fax: 705-743-9592

Email: terraspec@cogeco.net

INVOICE INFORMATION

(same as Report Information)

Company: _____

Contact: _____

Address: _____

Phone: _____

Email: _____

PROJECT INFORMATION

Quotation #: Quotation 2019 767

P.O. #: _____

Project #: MBQ

Site Location/ID: _____

TURNAROUND TIME (TAT) REQUIRED

TAT's are quoted in business days (exclude statutory holidays & weekends).
Samples received after 3pm or on weekends : TAT begins the next business day

Regular TAT (5-7days) 1 Day 2 Days 3-4 Days

RUSH TAT (Additional Charges May Apply)

RUSH TAT (Additional Charges May Apply) WITH SGS REPRESENTATIVE PRIOR TO SUBMISSION

Please Confirm Rush Feasibility with SGS Representative Prior to Submission
Specify Due Date: _____ Rush Confirmation ID: _____

REGULATIONS

Regulation 153 (2011):

- Table 1 Res/Park Soil Texture:
- Table 2 Ind/Com Coarse
- Table 3 Agri/Other Medium
- Table Fine

Other Regulations:

- Reg 347/558 (3 Day min TAT)
- PWQO MMER
- CCME Other:
- MISA

Sewer By-Law:

- Sanitary
- Storm

Municipality: _____

RECORD OF SITE CONDITION (RSC) YES NO

SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	# OF BOTTLES	MATRIX	
					ANALYSIS REQUESTED
1 see attached list, as per Quote 2019 767					
2					
3					
4					
5					
6					
7					
8					
9					
10					

COMMENTS:
Field Filtered (F)
Preserved (P)

DRINKING WATER SAMPLES (POTABLE WATER FOR HUMAN CONSUMPTION) MUST BE SUBMITTED WITH SGS DRINKING WATER CHAIN OF CUSTODY

Observations/Comments/Special Instructions

Sampled By (NAME): S. Galloway

Relinquished by (NAME): S. Galloway

Signature: [Signature]

Signature: [Signature]

Date: 10/28/2019

Date: 10/30/2019

(mm/dd/yy)

(mm/dd/yy)

Pink Copy - Client

Yellow & White Copy - SGS

LAB LIMS #: CA-15717-00719
CA 2969-0019

Quotation 2019 767

Soil Samples:

1	oct 24	pm	soil	2 methanol vials, 2 jars
2	oct 24	pm	soil	2 methanol vials, 2 jars
3	oct 24	pm	soil	2 methanol vials, 2 jars
4	oct 24	pm	soil	2 methanol vials, 2 jars
12	oct 24	pm	soil	2 methanol vials, 2 jars
20	oct 24	pm	soil	2 methanol vials, 2 jars
23	oct 24	pm	soil	2 methanol vials, 2 jars
26	oct 24	pm	soil	2 methanol vials, 2 jars
28	oct 24	pm	soil	2 methanol vials, 2 jars
31	oct 28	pm	soil	2 methanol vials, 2 jars
36	oct 28	pm	soil	2 methanol vials, 2 jars
38	oct 28	pm	soil	2 methanol vials, 2 jars

Chemical Testing:

Sodium Adsorption Ratio (SAR) 50 50

Electrical Conductivity (EC)

Metals 2.5 2

PAHs 20

PCBs 10

Volatile Organic Compounds (VOCs) 15

Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)

Petroleum Hydrocarbons (PHC F1-F4) 12

Corrosivity testing 130 50

Note: all samples appeared to be clean.