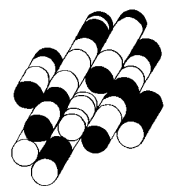


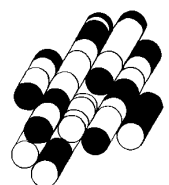
APPENDICES

TERRAPROBE INC.



APPENDIX A

TERRAPROBE INC.





SAMPLING METHODS		PENETRATION RESISTANCE
AS	auger sample	<p>Standard Penetration Test (SPT) resistance ('N' values) is defined as the number of blows by a hammer weighing 63.6 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.) required to advance a standard 50 mm (2 in.) diameter split spoon sampler for a distance of 0.3 m (12 in.).</p> <p>Dynamic Cone Test (DCT) resistance is defined as the number of blows by a hammer weighing 63.6 kg (140 lb.) falling freely for a distance of 0.76 m (30 in.) required to advance a conical steel point of 50 mm (2 in.) diameter and with 60° sides on 'A' size drill rods for a distance of 0.3 m (12 in.)."</p>
CORE	cored sample	
DP	direct push	
FV	field vane	
GS	grab sample	
SS	split spoon	
ST	shelby tube	
WS	wash sample	

COHESIONLESS SOILS		COHESIVE SOILS			COMPOSITION	
Compactness	‘N’ value	Consistency	‘N’ value	Undrained Shear Strength (kPa)	Term (e.g)	% by weight
very loose	< 4	very soft	< 2	< 12	<i>trace</i> silt	< 10
loose	4 – 10	soft	2 – 4	12 – 25	<i>some</i> silt	10 – 20
compact	10 – 30	firm	4 – 8	25 – 50	<i>silty</i>	20 – 35
dense	30 – 50	stiff	8 – 15	50 – 100	sand <i>and</i> silt	> 35
very dense	> 50	very stiff	15 – 30	100 – 200		
		hard	> 30	> 200		

TESTS AND SYMBOLS

MH	mechanical sieve and hydrometer analysis		Unstabilized water level
w, w _c	water content		1 st water level measurement
w _L , LL	liquid limit		2 nd water level measurement
w _P , PL	plastic limit		Most recent water level measurement
I _P , PI	plasticity index		Undrained shear strength from field vane (with sensitivity)
k	coefficient of permeability	C _c	compression index
γ	soil unit weight, bulk	c _v	coefficient of consolidation
G _s	specific gravity	m _v	coefficient of compressibility
φ'	internal friction angle	e	void ratio
c'	effective cohesion		
c _u	undrained shear strength		

FIELD MOISTURE DESCRIPTIONS

Damp	refers to a soil sample that does not exhibit any observable pore water from field/hand inspection.
Moist	refers to a soil sample that exhibits evidence of existing pore water (e.g. sample feels cool, cohesive soil is at plastic limit) but does not have visible pore water
Wet	refers to a soil sample that has visible pore water



RECOVERY

- TCR** **Total Core Recovery** is the total length of core pieces, irrespective of their individual lengths obtained in a core run, and expressed as a percentage of the length of that core run.
- SCR** **Solid Core Recovery** is the total length of sound full-diameter core pieces obtained in a core run, expressed as a percentage of the length of that core run.
- RQD** **Rock Quality Designation** pertains to the sum of those pieces of sound core which are 10 cm or greater in length obtained in a core run, expressed as a percentage of the length of that core run.

RQD (%)	0 - 25	25 - 50	50 - 75	75 - 90	90 - 100
QUALITY	very poor	poor	fair	good	excellent

JOINT CHARACTERISTICS

Joint Spacing (adapted from Bieniawski 1989, ISRM 1981)

Classification	Spacing
very close	< 60 mm
close	60 – 200 mm
moderately close	0.2 to 0.6 m
wide	0.6 to 2 m
very wide	> 2 m

Natural Fracture Frequency (per 0.3 m)

Refers to the number of natural fractures (joints, faults, etc.) which are present per 0.3m. Ignores mechanical or drill-induced breaks, and closed discontinuities (e.g. bedding planes).

Orientation

Orientation	Angle from horiz.
horizontal/flat	0 - 20°
dipping	20 - 50°
vertical	50 - 90°

Joint Filling

Description	Approx. ϕ
tight, hard, non-softening	25 - 35
oxidation, surface staining only	25 - 30
slightly altered, clay-free	25 - 30
sandy particles, clay-free	2 - 25
sandy and silty, minor clay	1 - 24
non-softening clays	6 - 12
swelling clay fillings	n/a

Joint Aperture

Classification	Aperture
closed / tight	< 0.5 mm
gapped	0.5 to 10 mm
open	> 10 mm

Planarity

- Planar
- Undulating
- Stepped
- Irregular
- Discontinuous

Roughness

- Very rough
- Rough
- Smooth
- Slickensided
- Polished

Coating	Description
clean	no filling
veneer	< 1 mm filling
coating / infill	> 1 mm filling

GENERAL

Degree of Weathering (after MTO, RR229 Evaluation of Shales for Construction Projects)

Zone	Degree	Description
Z1	unweathered	shale, regular jointing
Z2	partially weathered	angular blocks of unweathered shale, no matrix, with chemically weathered but intact shale
Z3		soil-like matrix with frequent angular shale fragments < 25mm diameter
Z4a		soil-like matrix with occasional shale fragments < 3mm diameter
Z4b	fully weathered	soil-like matrix only

Strength classification (after Marinos and Hoek, 2001)

Grade	Term	UCS (MPa)	Field Estimate (Description)
R6	extremely strong	> 250	can only be chipped by geological hammer
R5	very strong	100 - 250	requires many blows from geological hammer
R4	strong	50 - 100	requires more than one blow from geological hammer
R3	medium strong	25 - 50	can't be scraped, breaks under one blow from geological hammer
R2	weak	5 - 25	can be peeled / scraped with knife with difficulty
R1	very weak	1 - 5	easily scraped / peeled, crumbles under firm blow of geo. hammer
R0	extremely weak	< 1	indented by thumbnail

Bedding Thickness (Quarterly Journal of Engineering Geology, Vol 3, 1970)

Very thickly bedded	> 2 m	Medium bedded	200 – 600mm	Very thinly bedded	20 – 60mm	Thinly Laminated < 6mm
Thickly bedded	0.6 – 2m	Thinly bedded	60 – 200mm	Laminated	6 – 20mm	



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 28, 2012

Location : Burlington/Oakville, Ontario

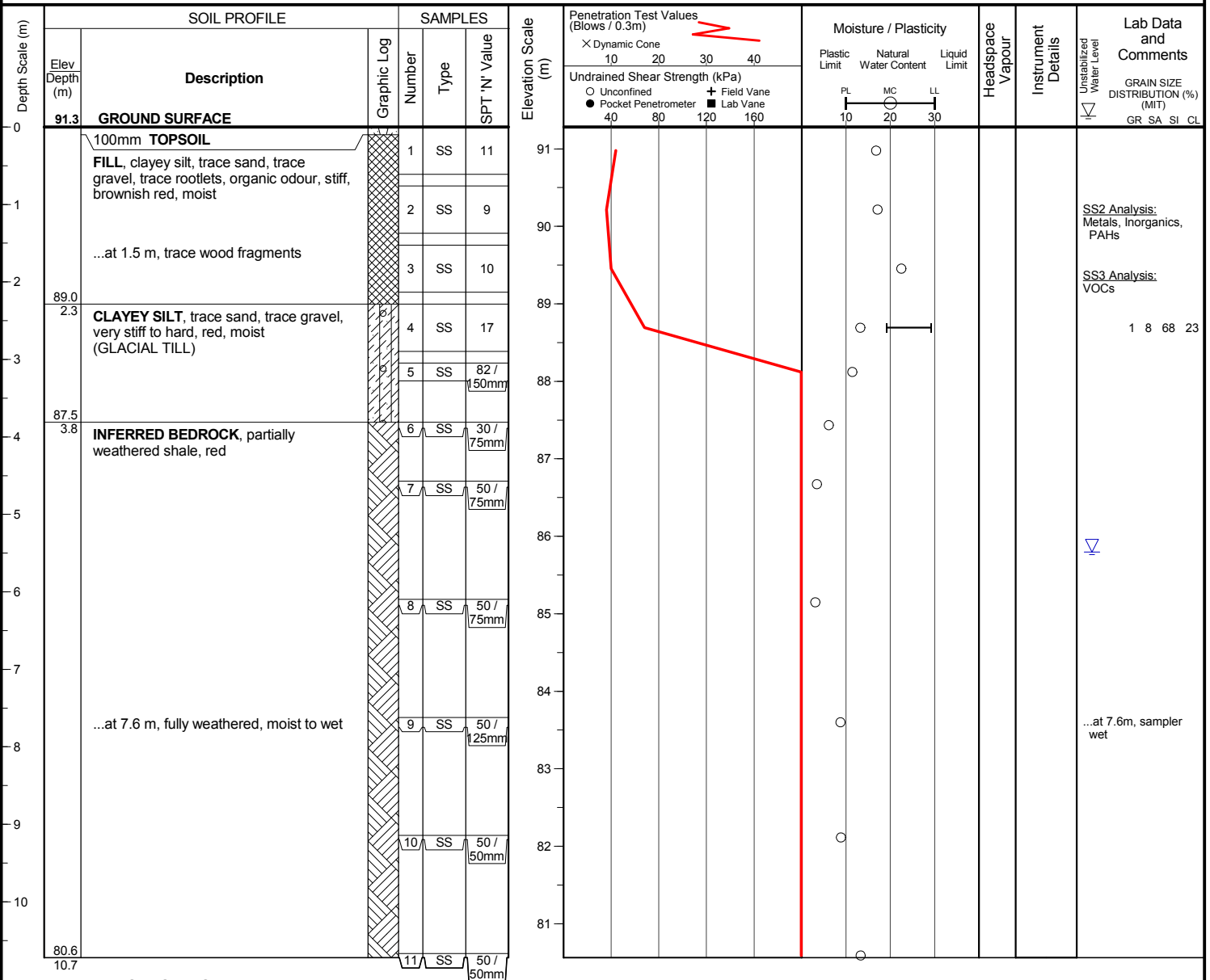
Sheet No. : 1 of 1

Position : E: 602677, N: 4804511 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 45, truck-mounted

Drilling Method : Hollow stem augers





Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 13, 2012

Location : Burlington/Oakville, Ontario

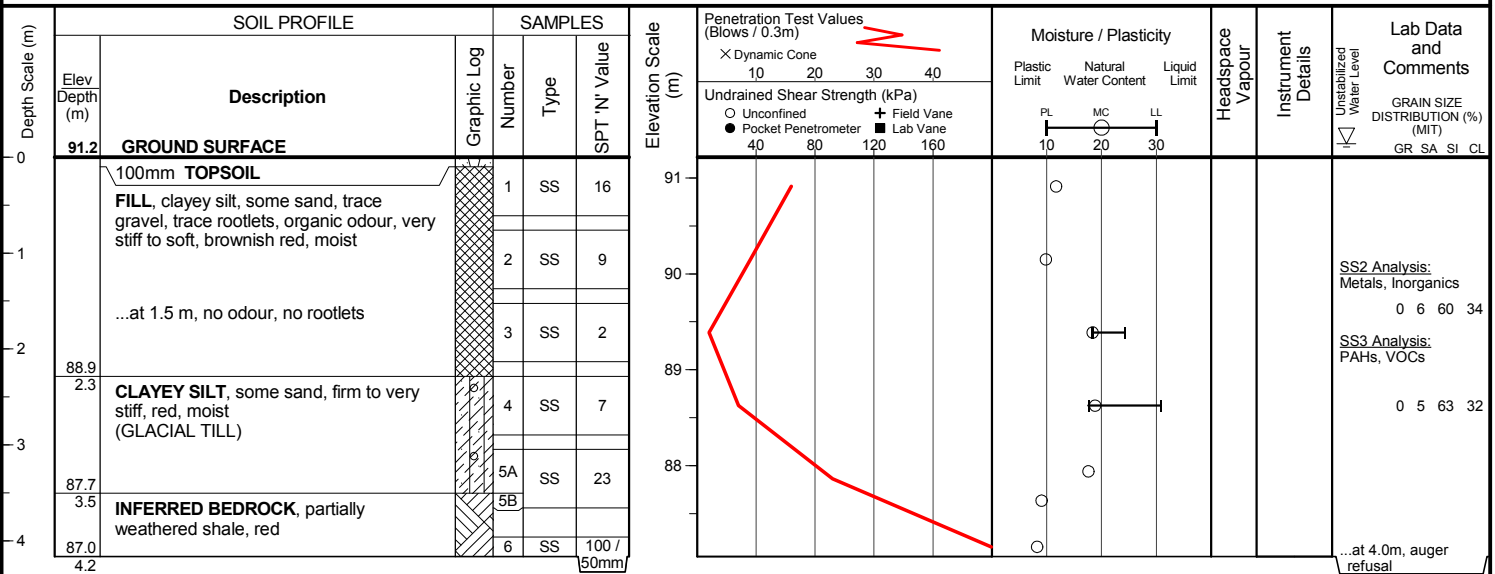
Sheet No. : 1 of 1

Position : E: 602598, N: 4804401 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers



END OF BOREHOLE

Borehole was dry and caved to 3.5m below grade upon completion of drilling.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 12, 2012

Location : Burlington/Oakville, Ontario

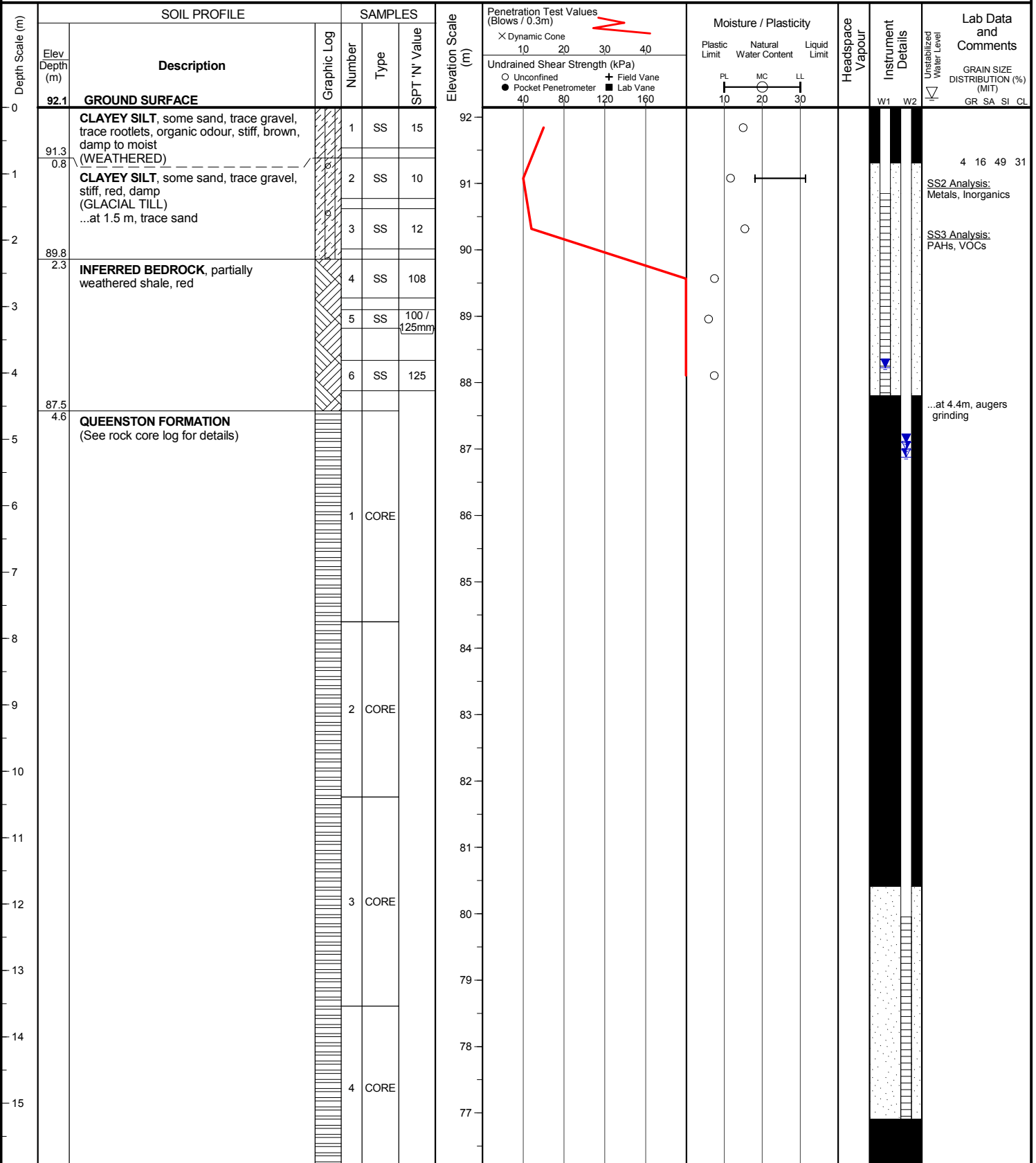
Sheet No. : 1 of 2

Position : E: 602488, N: 4804377 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring



(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 12, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 2

Position : E: 602488, N: 4804377 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)												
17		QUEENSTON FORMATION (See rock core log for details) (continued)		4	CORE	76								
18						75								
19				5	CORE	74								
20						73								
21				6	CORE	72								
70.5						71								
21.6														

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.

W1 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Sep 20, 2012	dry	n/a
Oct 3, 2012	dry	n/a
Oct 10, 2012	dry	n/a
Nov 2, 2012	3.5	88.6
Jan 7, 2013	3.6	88.5
Feb 12, 2013	3.9	88.2

W2 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Sep 20, 2012	5.3	86.9
Oct 3, 2012	5.2	87.0
Oct 10, 2012	5.2	87.0
Oct 19, 2012	5.1	87.0
Nov 2, 2012	4.8	87.3
Jan 7, 2013	5.9	86.2
Feb 12, 2013	5.1	87.1



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 12, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 2

Position : E: 602488, N: 4804377 (UTM 17T)

Elevation Datum : Geodetic

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● Estimated Strength 5 25 50 100 250	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 4.6m below grade	87.5								
5		QUEENSTON FORMATION Shale, red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	4.6					5	5.0m : UCS = 11.2 MPa γ = 25.2 kN/m ³		87
6		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	R1	TCR = 86% SCR = 79% RQD = 73%				4 2 3 1 0 2 1 1			86
7		shale : 85% limestone : 15%							6.9m : UCS = 15.8 MPa γ = 26.1 kN/m ³	6.4m: joint, dipping, gapped, undulating, clay infill	85
8			84.4 7.7					0 0 1 4 3 0 1 3 3 4 1 1 2 4 3 5 1			84
9				R2	TCR = 100% SCR = 90% RQD = 79%					8.5m: joint, horizontal, planar, gapped, clay veneer 8.5m: joint, horizontal, planar, gapped, clay veneer and oxidation 8.6-8.7m: highly weathered seam 8.8m: joint, horizontal, planar, gapped, clay veneer 9.5m: joint, horizontal, undulating, gapped, clay infill 10.0m: joint, horizontal, undulating, gapped, clay/sand infill 10.0m: joint, horizontal, undulating, gapped, clay/sand infill 10.0m: joint, horizontal, undulating, gapped, clay/sand infill 10.1m: joint, horizontal, undulating, gapped, clay/sand infill 10.2m: joint, horizontal, undulating, gapped, clay/sand infill 10.3-10.3m: highly weathered seam 10.4-10.4m: partially weathered seam 11.6-11.7m: joint x4, partially weathered, sand/clay infill	83
10			81.7 10.4						11.2m : UCS = 16 MPa γ = 25.7 kN/m ³		82
11				R3	TCR = 100% SCR = 94% RQD = 80%						81
12											80
13			78.6 13.5						13.3m : UCS = 10.4 MPa γ = 26.0 kN/m ³	12.6-12.6m: partially weathered seam 12.7m: joint, dipping, planar, closed, clean	79
14											78
15				R4	TCR = 100% SCR = 98% RQD = 85%					14.4m: joint, horizontal, planar, gypsum veneer	77
16			75.5 16.6						16.5m : UCS = 12.4 MPa γ = 25.8 kN/m ³		76
17										17.1m: joint, horizontal, planar, gapped, gypsum infill	75
18				R5	TCR = 100% SCR = 93% RQD = 76%					17.6m: joint, horizontal, planar, gapped, gypsum infill	74
19			72.6 19.5							18.2m: joint, horizontal, planar, gapped, gypsum infill 18.4m: joint, subvertical, closed, clean, planar 18.9m: joint, horizontal, undulating, gapped, gypsum infill 18.9m: joint, horizontal, undulating, gapped, clay infill 19.1m: joint, horizontal, undulating, gapped, clay infill	73
20				R6	TCR = 100% SCR = 95% RQD = 95%				19.9m : UCS = 19.1 MPa γ = 25.7 kN/m ³	19.4m: joint, horizontal, planar, gapped, clay infill 19.5m: joint, subvertical, closed, clean, planar	72

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 12, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 2

Position : E: 602488, N: 4804377 (UTM 17T)

Elevation Datum : Geodetic

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
21			R6	TCR = 100% SCR = 95% RQD = 95%	71									0		21.0m : UCS = 8.1 MPa γ = 25.8 kN/m ³	19.5m: joint, horizontal, planar, gapped, gypsum infill 20.0m: joint, dipping, undulating, gapped, clean	71
			70.5											1				
														0				

END OF BOREHOLE

21.6m

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : November 21, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 2

Position : E: 602089, N: 4804487 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone X	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	96.6	GROUND SURFACE		1	SS	13	96								
1		FILL, clayey silt, some sand, trace gravel, trace cinders, stiff to very stiff, red, damp		2	SS	17	95								
2				3	SS	12	94								
2.3	94.3	CLAYEY SILT, trace sand, trace gravel, very stiff, red, damp (GLACIAL TILL)		4	SS	26	93								
3.1	93.6	INFERRED BEDROCK, weathered shale, red		5	SS	50 / 75mm	92								
4.4	92.2	QUEENSTON FORMATION (See rock core log for details)		1	CORE		91								
				2	CORE		90								
				3	CORE		89								
				4	CORE		88								
				5	CORE		87								
							86								
							85								
							84								
							83								
							82								
							81								

(continued next page)

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : November 21, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 2

Position : E: 602089, N: 4804487 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)															
17		QUEENSTON FORMATION (See rock core log for details) (continued)		5	CORE		80										
18							79										
19				6	CORE		78										
20							77										
21							76										
22				7	CORE		75										
23							74										
24							73										
25				8	CORE		72										
26							71										
70.2	26.4																

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started November 21, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 2

Position : E: 602089, N: 4804487 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)
							●		Frequency	Spacing			
							5	25					
Rock coring started at 4.4m below grade			92.2			Z1 Z2 Z3 Z4	R1 R2 R3 R4 R5 R6	Estimated Strength					
5		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered; interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong <i>shale : 89% limestone : 11%</i>	4.4 R1	TCR = 100% SCR = 90% RQD = 63%	92					4	5.0m : UCS = 16.9 MPa γ = 24.9 kN/m³	— 4.6-4.7m: crush zone	92
			5.2										
6				TCR = 100% SCR = 100% RQD = 89%	91					3	6.6m : UCS = 31.5 MPa γ = 25.9 kN/m³	5.2m: joints, horizontal, gapped, planar, clay infill 5.3-5.6m: joint, horizontal, undulating, gapped, clay veneer 5.8m: joint, subvertical, gapped, planar, oxidized with clay veneer 5.9m: clay seam 6.1m: joint, horizontal, undulating, gapped, clay veneer, oxidation 6.1m: joints, horizontal, planar, gapped, clay veneer	91
7				TCR = 100% SCR = 98% RQD = 94%	90					1	8.4m : UCS = 31.9 MPa γ = 25.8 kN/m³	— 9.2m: joint, subvertical, undulating, gapped, clean — 9.7m: joint, subvertical, undulating, gapped, clean	90
8					89					1	10.1m : UCS = 14.5 MPa γ = 25.9 kN/m³		89
9			88.4 8.2		88					1	11.1m : UCS = 17.9 MPa γ = 25.9 kN/m³		88
10				TCR = 100% SCR = 98% RQD = 98%	87					4	12.0m : UCS = 29.9 MPa γ = 25.9 kN/m³		87
11					86					0	13.1m : UCS = 18.5 MPa γ = 25.9 kN/m³	— 13.7m: joint, horizontal, undulating, gapped, weathered coating — 14.1m: joints, horizontal, undulating, gapped, clay veneer and weathered coating — 14.4m: clay seam	86
12			85.3 11.3	TCR = 100% SCR = 86% RQD = 73%	85					2	15.2m : UCS = 23.3 MPa γ = 25.9 kN/m³	— 15.1m: joints, horizontal, undulating, gapped, clay veneer, weathered veneer — 15.4m: joint, horizontal, undulating, open, weathered coating — 15.5m: no water return — 15.8m: clay seam	85
13					84					1	18.3m : UCS = 25 MPa γ = 25.7 kN/m³	— 16.2m: joint, subvertical, planar, gapped, clean — 16.8m: joints, horizontal, gapped, planar, weathered coating — 17.9m: joint, subvertical, planar, gapped, clean — 18.2m: joint, horizontal, planar, gapped, clay infill	84
14			82.3 14.3		83					1	20.5m : γ = 25.7 kN/m³	— 19.3m: joint, dipping, planar, gapped, clean — 20.1m: joints, horizontal, planar, gapped, clay veneer	83
15					82					3			82
16					81					> 10			81
17					80					4			80
18			79.2 17.4	TCR = 100% SCR = 96% RQD = 76%	79					> 10			79
19					78					3			78
20					77					4			77



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started November 21, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 2

Position : E: 602089, N: 4804487 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa)	Natural Fractures		Laboratory Testing	Comments	Elevation (m)
								Frequency	Spacing			
21		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered; interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong <i>shale : 89% limestone : 11% (continued)</i>	20.8	R7 TCR = 100% SCR = 100% RQD = 96%	76			1		UCS = 28 MPa $\gamma = 25.9 \text{ kN/m}^3$ 22.0m : UCS = 35.6 MPa $\gamma = 26.1 \text{ kN/m}^3$	20.2m: joint, dipping, planar, gapped, clay veneer	76
								0			20.9m: joint, horizontal, undulating, gapped, gypsum coating	
								2			21.0m: gypsum nodules	
								0				
								3			21.7m: joints, horizontal, undulating, gapped, weathered veneer	75
								0			21.7m: joints, horizontal, undulating, gapped, clay veneer	
								0			22.0m: joint, horizontal, planar, gapped, gypsum coating	74
								0				
								1			22.9m: joint, horizontal, planar, gapped, gypsum coating	
								0				
			73.2	R8 TCR = 100% SCR = 91% RQD = 83%	73			1			23.5m: joint, horizontal, planar, gapped, clay coating	73
			23.4					2				
								3				
								0			24.3m: joint, dipping, planar, gapped to open, clay infill	72
								2				
								> 10			25.1m: drill, bit clogged, clay inferred	
								> 10				
								3				
								1				
								0				
26			70.2		71							71

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 13, 2012

Location : Burlington/Oakville, Ontario

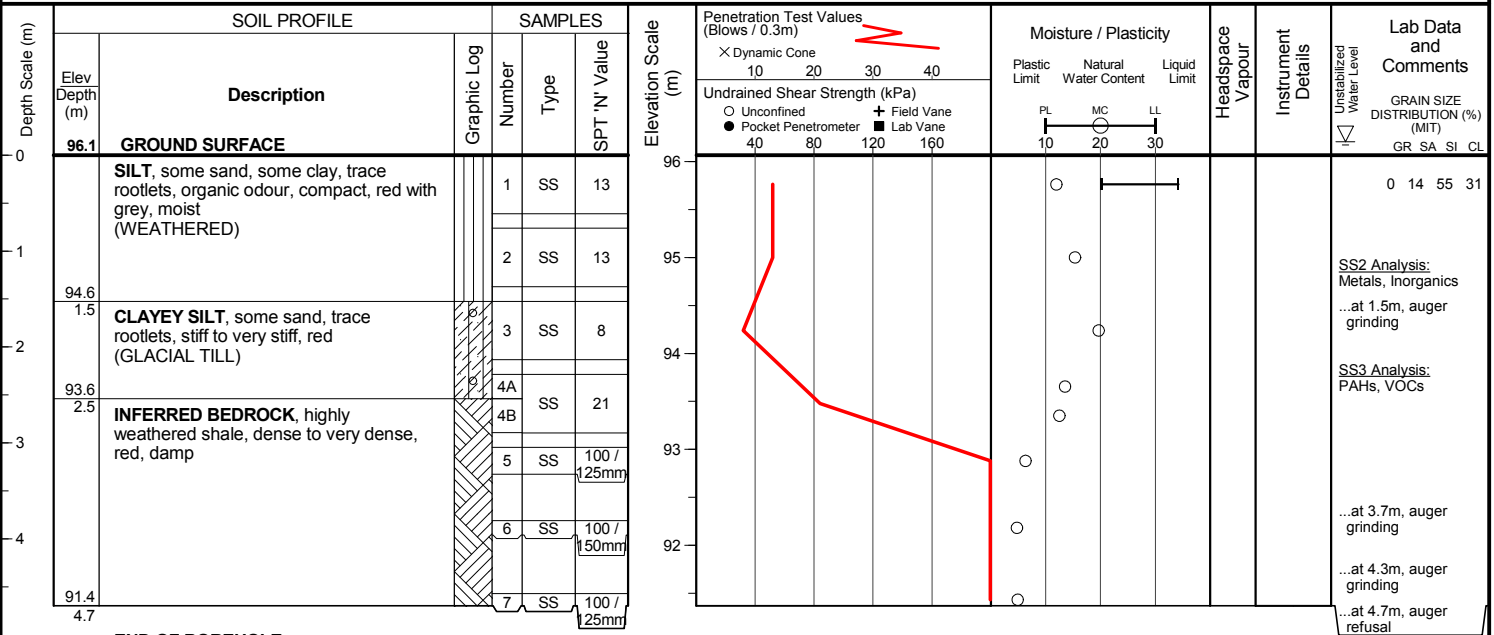
Sheet No. : 1 of 1

Position : E: 601989, N: 4804497 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers



Borehole was dry and open upon completion of drilling.

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 13, 2012

Location : Burlington/Oakville, Ontario

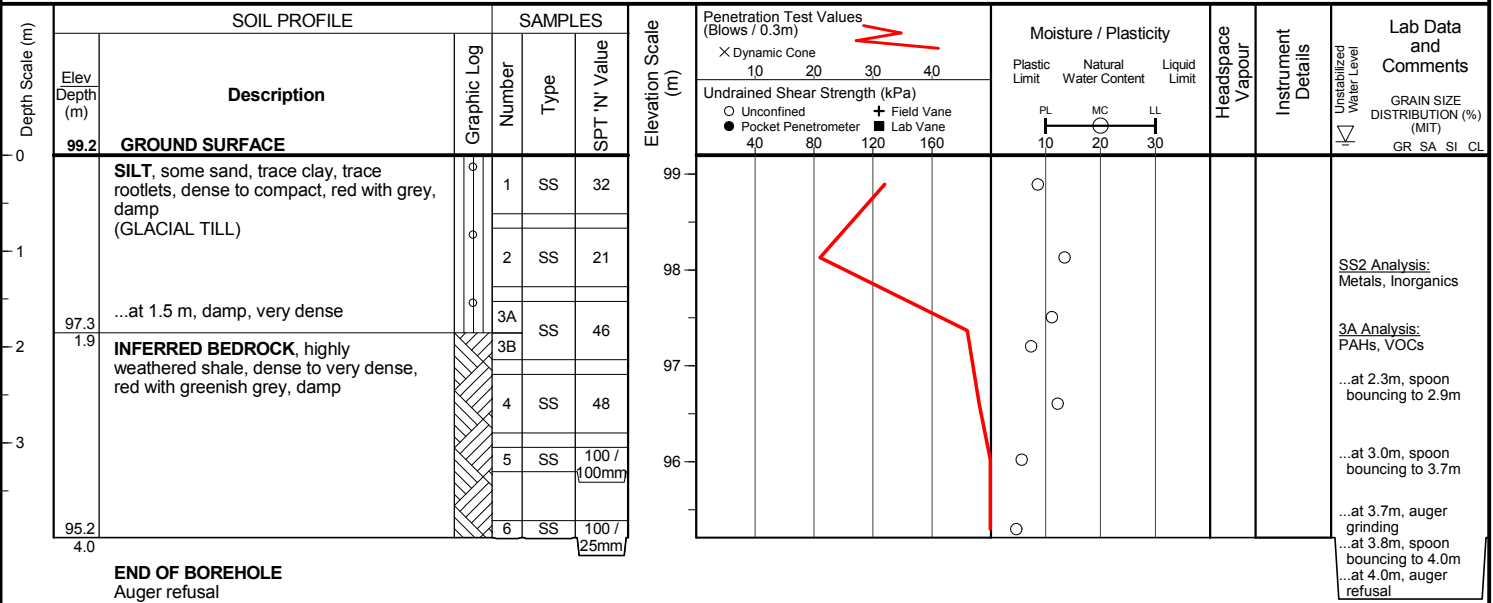
Sheet No. : 1 of 1

Position : E: 601700, N: 4804543 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers





Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : November 20, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 2

Position : E: 601670, N: 4804553 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
0	99.9	GROUND SURFACE													
1	99.1 0.8	CLAYEY SILT , some sand, trace gravel, very stiff, red, damp		1	SS	29									
2		INFERRED BEDROCK , weathered shale, red		2	SS	39									
3				3	SS	45									
4				4	SS	50 / 50mm									
5	95.3 4.6	QUEENSTON FORMATION (See rock core log for details)		1	CORE										
6															
7				2	CORE										
8															
9															
10				3	CORE										
11															
12															
13				4	CORE										
14															
15				5	CORE										

(continued next page)

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : November 20, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 2

Position : E: 601670, N: 4804553 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
		(continued)						10 20 30 40	40 80 120 160	PL MC LL	10 20 30				GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
16		QUEENSTON FORMATION (See rock core log for details) (continued)		5	CORE		84								
17							83								
18				6	CORE		82								
19							81								
20							80								
21				7	CORE		79								
22							78								
23				8	CORE		77								
24							76								
25							75								
26							74								
27							73								
28				9	CORE		72								
29							71								
70.3 29.6															

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started November 20, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 2

Position : E: 601670, N: 4804553 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa) ● Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 4.6m below grade	95.3								
5		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	4.6 R1	TCR = 92% SCR = 92% RQD = 79%	95			2	4.8m : UCS = 17 MPa γ = 25.8 kN/m ³	5.3m: joint, horizontal, undulating, gapped, clay coating	95
6		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	5.2		94			2		5.9m: joint, dipping, planar, open, undulating, clay coating	94
7		shale : 92% limestone : 8%	R2	TCR = 100% SCR = 97% RQD = 85%	93			3		6.0m: joint, dipping, planar, gapped, clean	93
8					92			1	7.4m : UCS = 22.7 MPa γ = 25.7 kN/m ³	6.2m: joint, horizontal, gapped, planar, clay veneer	93
9			91.7 8.2		91			1		6.7m: joint, horizontal, gapped, planar, clay infill	92
10					90			0		7.0m: joint, horizontal, gapped, planar, clay infill	92
11					89			3			91
12					88			1	9.1m : UCS = 15.6 MPa γ = 25.8 kN/m ³	9.2m: joint, horizontal, undulating, open, weathered infill	91
13					87			0			90
14					86			2	10.0m : UCS = 22.7 MPa γ = 25.8 kN/m ³	9.8m: joint, horizontal, gapped, planar, clay coating	90
15					85			3		10.3m: joint, horizontal, closed, planar, gypsum coating	89
16					84			0	10.8m : UCS = 27.3 MPa γ = 26.0 kN/m ³	11.1m: joint, horizontal, closed, planar, gypsum infill	89
17					83			0			88
18					82			0			87
19					81			0	13.1m : UCS = 27.5 MPa γ = 25.8 kN/m ³		86
20					80			1	14.3m : UCS = 20.7 MPa γ = 26.1 kN/m ³		85
					79.6 20.3			1			84
								0	16.6m : UCS = 16.2 MPa γ = 25.8 kN/m ³		83
								0	16.8m : UCS = 12.1 MPa γ = 26.1 kN/m ³		82
								0			81
								0			80
								1	19.2m : UCS = 24.3 MPa γ = 26.1 kN/m ³	19.8m: joint, horizontal, planar, gapped, gypsum veneer	80
								0	19.3m : UCS = 57.1 MPa γ = 25.2 kN/m ³		
								0	19.7m : UCS = 13.5 MPa γ = 26.1 kN/m ³		
								0	20.2m : UCS = 13.5 MPa γ = 26.1 kN/m ³		

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started November 20, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 2

Position : E: 601670, N: 4804553 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)						
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing				
																					Estimated Strength			
21		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered; interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong <i>shale : 92% limestone : 8% (continued)</i>	R7	TCR = 100% SCR = 98% RQD = 95%	79										0	UCS = 21.8 MPa γ = 25.1 kN/m ³	20.5m: joint, horizontal, planar, gapped, clay infill 20.6-20.6m: clay seam (50mm) 21.0m: joint, horizontal, undulating, gapped, clay coating 21.3m: joint, horizontal, gapped, planar, gypsum infill 21.7m: joint, horizontal, gapped, planar, clay coating 21.9m: joint, horizontal, open, planar, weathered, clay infill 22.1m: thin gypsum seam	79						
																		1		78				
22																			1			78		
																			1					
																			2					
23				76.4	R8	TCR = 100% SCR = 99% RQD = 93%	77									1	22.0m : UCS = 35.9 MPa γ = 24.9 kN/m ³		77					
				23.5														1						
																		2						
24									76									2		23.6m : UCS = 21.2 MPa γ = 25.3 kN/m ³	23.8-23.8m: clay seam	76		
																		1						
																			2					
25									75										1	24.5m : UCS = 30.3 MPa γ = 25.3 kN/m ³	24.9m: joints, horizontal, planar, gapped, gypsum coating 25.5m: thin gypsum seam 25.9m: joint, horizontal, planar, gapped, clay veneer	75		
																			1					
																			1					
26									74										1					74
															0									
			73.4	R9	TCR = 100% SCR = 100% RQD = 99%	73									0	26.5m : UCS = 26.6 MPa γ = 25.2 kN/m ³	27.4m: joint, horizontal, planar, gapped, gypsum coating	73						
27			26.5																1					
																			0					
28								72											1			72		
																			0					
29						71									1			71						
			70.3												0									
															1									

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 13, 2012

Location : Burlington/Oakville, Ontario

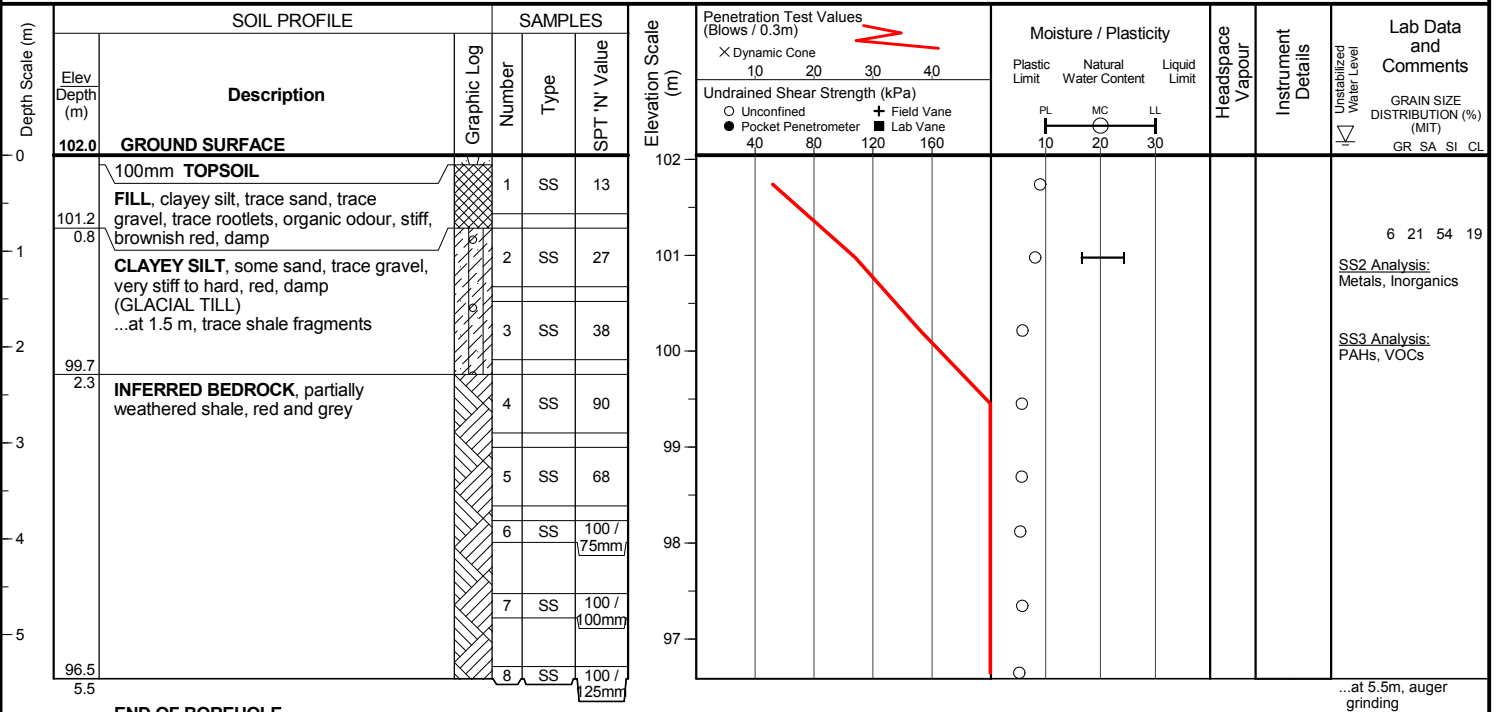
Sheet No. : 1 of 1

Position : E: 601543, N: 4804688 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers



Borehole was dry and caved to 4.3m below grade upon completion of drilling.

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 17, 2012

Location : Burlington/Oakville, Ontario

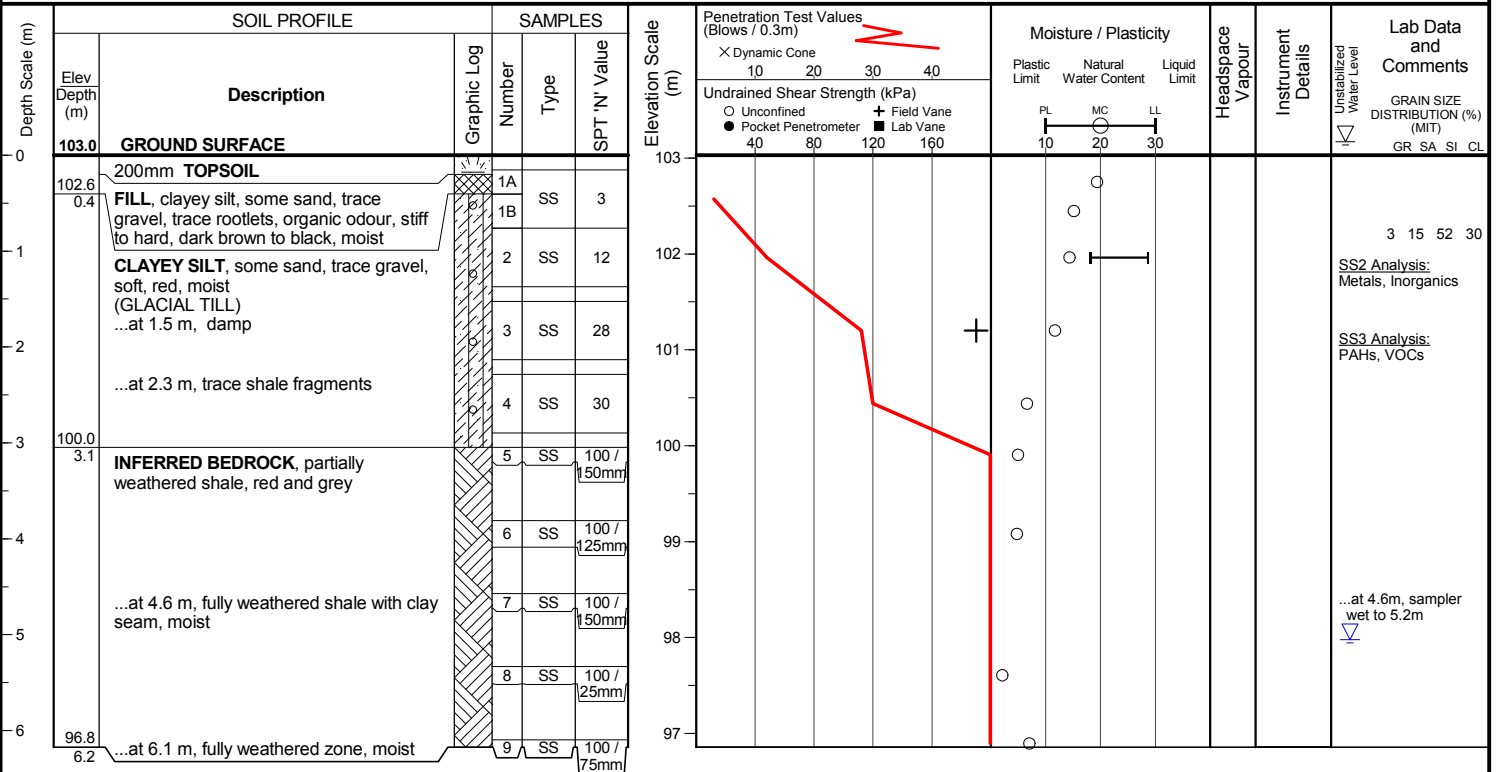
Sheet No. : 1 of 1

Position : E: 601474, N: 4804752 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers



END OF BOREHOLE

Unstabilized water level measured at 5.1m below grade; borehole caved to 5.2m below grade upon completion of drilling.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 9, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 3

Position : E: 601408, N: 4804815 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone X	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	103.7	GROUND SURFACE													
		30mm TOPSOIL		1	SS	6									
1		CLAYEY SILT , trace sand, trace rootlets, trace organics, organic odour, firm, blackish red, moist (WEATHERED) ...at 0.8 m, red and grey		2	SS	8									
2	102.2 1.5	INFERRED BEDROCK , highly weathered shale, dense to very dense, red, damp		3	SS	66									
				4	SS	100 / 100mm									
3	100.5 3.3	QUEENSTON FORMATION (See rock core log for details)		5	SS	100 / 50mm									
4				1	CORE										
5															
6				2	CORE										
7															
8				3	CORE										
9															
10															
11				4	CORE										
12															
13															
14				5	CORE										
15															
				6	CORE										

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 9, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 3

Position : E: 601408, N: 4804815 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
16		(continued)													
17		QUEENSTON FORMATION (See rock core log for details) (continued)		6	CORE										CORE6 Analysis: Metals, Inorganics, PAHs, VOCs
18															
19				7	CORE										
20															
21															CORE10 Analysis: Metals, Inorganics, PAHs, VOCs
22				8	CORE										
23															
24															
25				9	CORE										CORE10 Analysis: Metals, Inorganics, PAHs, VOCs
26															
27															
28															
29				10	CORE										CORE10 Analysis: Metals, Inorganics, PAHs, VOCs
30															
31															
				11	CORE										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 9, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 3

Position : E: 601408, N: 4804815 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)						10 20 30 40	40 80 120 160	PL MC LL	10 20 30			W1 W2	GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
33		QUEENSTON FORMATION (See rock core log for details) (continued)		11	CORE		71								
34				12	CORE		70								
35	68.6 35.1						69								

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.

W1 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Sep 20, 2012	3.3	100.4
Oct 3, 2012	3.5	100.3
Oct 10, 2012	3.5	100.2
Nov 2, 2012	2.8	100.9
Jan 7, 2013	4.1	99.6
Feb 12, 2013	3.2	100.6

W2 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Oct 3, 2012	9.9	93.8
Oct 10, 2012	6.5	97.2
Oct 19, 2012	5.6	98.1
Nov 2, 2012	6.0	97.7
Jan 7, 2013	6.3	97.5
Feb 12, 2013	5.3	98.4



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 9, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 2

Position : E: 601408, N: 4804815 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 3.2m below grade	100.5								
		QUEENSTON FORMATION	3.2								
		Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;									
		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong									
		shale : 81% limestone : 19%									
4			R1	TCR = 95% SCR = 88% RQD = 84%	100				4.0m : UCS = 8.5 MPa γ = 25.9 kN/m ³	3.4-3.4m: clay seam 3.6m: joint, horizontal, undulating, gapped, weathered coating 3.9m: joint, horizontal, undulating, gapped, clay, veneer	100
5					99					4.3m: joint, horizontal, undulating, gapped to open, weathered infill 4.3-4.4m: clay seam	99
6			R2	TCR = 100% SCR = 95% RQD = 90%	98					4.5m: joint, dipping, planar, gapped, weathered coating 5.1m: clay seam 5.3m: dipping joint, planar, closed, clean	98
7					97				7.2m : UCS = 20.8 MPa γ = 25.8 kN/m ³	5.9m: clay seam 6.0m: dipping joint, planar, closed, clean	97
8			R3	TCR = 100% SCR = 97% RQD = 97%	96					6.5m: clay seam	96
9					95						95
10					94				10.1m : UCS = 27.8 MPa γ = 26.0 kN/m ³		94
11			R4	TCR = 100% SCR = 98% RQD = 96%	93						93
12					92					11.3m: clay seam 11.7m: joint, horizontal, gapped, planar, clay veneer	92
13					91				13.2m : UCS = 15.4 MPa γ = 25.8 kN/m ³		91
14			R5	TCR = 100% SCR = 97% RQD = 92%	90					13.1m: clay seam	90
15					89						89
16					88				16.0m : UCS = 18.8 MPa γ = 26.1 kN/m ³		88
17			R6	TCR = 100% SCR = 98% RQD = 98%	87						87
18					86						86
19					85				19.6m : UCS = 24.5 MPa		85
			R7	TCR = 99% SCR = 97% RQD = 94%	84						84

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 9, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 2

Position : E: 601408, N: 4804815 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
20		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;												1		$\gamma = 26.1 \text{ kN/m}^3$		
														0			— 20.1m: joint, dipping, planar, clean, closed	
21			R7	TCR = 99% SCR = 97% RQD = 94%	83									1			— 20.5m: joint, dipping, planar, clean, closed	83
														2				
		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong	82.0		82									1			— 21.4m: clay seam	82
			21.7											2				
22		shale : 81% limestone : 19% (continued)												0				
														1				
23					81									0		23.0m : UCS = 25.4 MPa $\gamma = 26.0 \text{ kN/m}^3$		81
			R8	TCR = 100% SCR = 100% RQD = 100%										0				
					80									0				80
24														0				
														0				
25			78.9		79									0				79
			24.8											0				
26					78									0		25.7m : $\gamma = 25.8 \text{ kN/m}^3$ 25.8m : UCS = 27.9 MPa $\gamma = 25.9 \text{ kN/m}^3$		78
														0				
27				R9	TCR = 100% SCR = 99% RQD = 100%									1				77
					77									0				
														0				
28			75.9		76									0			— 27.8-27.9m: clay seam	76
			27.8											2		28.2m : UCS = 19 MPa $\gamma = 25.8 \text{ kN/m}^3$	— 28.0m: joint, dipping, planar, clay infill, gapped	
29					75									1			— 28.4-28.5m: clay seam	75
														0				
30				R10	TCR = 100% SCR = 94% RQD = 94%									1				
					74									0				74
														0				
31			72.9		73									0		30.3m : UCS = 18.4 MPa $\gamma = 26.0 \text{ kN/m}^3$		73
			30.8											0		31.0m : UCS = 19.4 MPa $\gamma = 26.0 \text{ kN/m}^3$		
32					72									0				72
														0				
33				R11	TCR = 100% SCR = 100% RQD = 100%									0				71
					71									0				
														0				
34			69.8		70									0				70
			33.9											1				
35				R12	TCR = 100% SCR = 100% RQD = 100%									0				69
					69									0				
			68.6											0			— 34.9m: joint, horizontal, planar, closed, gypsum veneer	

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 14, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 3

Position : E: 601294, N: 4804928 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content	Liquid Limit			
0	105.7	GROUND SURFACE													
1		FILL, sandy silt, some clay, trace gravel, black to reddish brown, damp		1	SS	11	105								
2	104.2 1.5	INFERRED BEDROCK, highly weathered shale, very dense, reddish brown to grey, damp		2	SS	12	104								
3	102.8 2.9	QUEENSTON FORMATION (See rock core log for details)		3	SS	30	103								
4				4	SS	135 / 275mm	102								
5				1	CORE		101								
6				2	CORE		100								
7							99								
8							98								
9				3	CORE		97								
10							96								
11				4	CORE		95								
12							94								
13				5	CORE		93								
14							92								
15				6	CORE		91								
							90								

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 14, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 3

Position : E: 601294, N: 4804928 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) Unconfined: 40 80 120 160 Field Vane: + Pocket Penetrometer: ● Lab Vane: ■	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
16		(continued)													
		QUEENSTON FORMATION (See rock core log for details) (continued)		6	CORE		89								
17															
18				7	CORE		88								
19							87								
20							86								
21				8	CORE		85								
22							84								
23							83								
24							82								
25				9	CORE		81								
26							80								
27							79								
28				10	CORE		78								
29							77								
30							76								
31				11	CORE		75								
							74								

(continued next page)

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 14, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 3

Position : E: 601294, N: 4804928 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
32		(continued)												
32		QUEENSTON FORMATION (See rock core log for details) (continued)		11	CORE									
33														
34				12	CORE									
35														
36														
37				13	CORE									
38	67.6 38.1													

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 14, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 3

Position : E: 601294, N: 4804928 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 2.9m below grade	102.8								
3		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	2.9					1		3.0m: joint, dipping, planar, gapped, clay veneer	
4		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	R1	TCR = 96% SCR = 89% RQD = 85%	102			3			102
5		shale : 82% limestone : 18%	100.8		101			1			101
6			4.9		100			0		5.6m: clay seam	100
7			R2	TCR = 100% SCR = 88% RQD = 88%	99			3		5.8m: joint, dipping, planar, clay veneer, closed to gapped	
8					98			2		5.9m: joint, dipping, subvertical, clay veneer, gapped	
9					97			1		6.4m: highly weathered shale seam	99
10					96			0			
11			97.8		98			0		7.5m: highly weathered shale seam	98
12			7.9		97			2			
13					96			1		8.6m: -2x joint, horizontal, gapped to open, clay veneer,	97
14					95			1			
15					94			2		9.5m: joint, gypsum infill, horizontal, closed planar	96
16					93			3			
17			94.7		95			3		10.4m: highly weathered seam, rubble and clay infill	95
18			11.0		94			0		10.6m: joint, open, clay veneer, horizontal, planar	94
19					93			0			
20			93.3		92			1		12.5m: joint, horizontal, planar, closed, gypsum veneer	93
21			12.4		91			0			
22					90			0			
23			91.7		89			0			
24			14.0		88			1		14.0m : UCS = 10.9 MPa γ = 25.8 kN/m³	92
25					87			0			
26					86			0		16.0m : UCS = 14.8 MPa	87
27					85			0			
28					84			0			
29					83			0			
30					82			0			
31					81			0			
32					80			0			
33					79			0			
34					78			0			
35					77			0			
36					76			0			
37					75			0			
38					74			0			
39					73			0			
40					72			0			
41					71			0			
42					70			0			
43					69			0			
44					68			0			
45					67			0			
46					66			0			
47					65			0			
48					64			0			
49					63			0			
50					62			0			
51					61			0			
52					60			0			
53					59			0			
54					58			0			
55					57			0			
56					56			0			
57					55			0			
58					54			0			
59					53			0			
60					52			0			
61					51			0			
62					50			0			
63					49			0			
64					48			0			
65					47			0			
66					46			0			
67					45			0			
68					44			0			
69					43			0			
70					42			0			
71					41			0			
72					40			0			
73					39			0			
74					38			0			
75					37			0			
76					36			0			
77					35			0			
78					34			0			
79					33			0			
80					32			0			
81					31			0			
82					30			0			
83					29			0			
84					28			0			
85					27			0			
86					26			0			
87					25			0			
88					24			0			
89					23			0			
90					22			0			
91					21			0			
92					20			0			
93					19			0			
94					18			0			
95					17			0			
96					16			0			
97					15			0			
98					14			0			
99					13			0			
100					12			0			
101					11			0			
102					10			0			
103					9			0			
104					8			0			
105					7			0			
106					6			0			
107					5			0			
108					4			0			
109					3			0			
110					2			0			
111					1			0			
112					0			0			

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 14, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 3

Position : E: 601294, N: 4804928 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
19		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	R7	TCR = 100% SCR = 100% RQD = 100%	86									0		$\gamma = 26.0 \text{ kN/m}^3$		86
20		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	85.6		85									0		20.2m : UCS = 13 MPa $\gamma = 25.9 \text{ kN/m}^3$		85
21		shale : 82% limestone : 18% (continued)	20.1		84									2		20.8m : UCS = 18.3 MPa $\gamma = 26.1 \text{ kN/m}^3$	— 21.4m: joint, dipping, gapped, undulating, clean	84
22			R8	TCR = 99% SCR = 96% RQD = 93%	83									3			— 21.9m: joint, horizontal, planar, gapped, gypsum — 21.9m: joint, horizontal, planar, closed, gypsum infill	83
23			82.5		82									0		23.0m : UCS = 6.4 MPa $\gamma = 26.0 \text{ kN/m}^3$		82
24			23.2		81									0				81
25			R9	TCR = 100% SCR = 100% RQD = 98%	80									1		24.6m : UCS = 19.9 MPa $\gamma = 26.0 \text{ kN/m}^3$	— 24.8m: clay seam (25mm), horizontal — 24.8m: joint, gapped, planar, clay infill	80
26			79.5		79									3		25.3m : UCS = 22.7 MPa $\gamma = 26.1 \text{ kN/m}^3$	— 25.2m: joint, horizontal, planar, gapped, clay coating — 25.7m: joint, gypsum infill, horizontal, planar, closed	79
27			26.2		78									0		26.7m : UCS = 26.7 MPa $\gamma = 25.8 \text{ kN/m}^3$		78
28			R10	TCR = 100% SCR = 98% RQD = 91%	77									1			— 27.9-27.9m: -3x joints, horizontal, gapped, undulating, clay veneer	77
29			76.4		76									2		29.1m : UCS = 35 MPa $\gamma = 26.0 \text{ kN/m}^3$	— 28.3m: joint, gypsum veneer, horizontal, closed, planar	76
30			29.3		75									1		29.8m : UCS = 14.8 MPa $\gamma = 26.2 \text{ kN/m}^3$	— 29.6m: joint, horizontal, planar, closed, clay veneer	75
31			R11	TCR = 100% SCR = 99% RQD = 96%	74									2		31.2m : UCS = 21.8 MPa $\gamma = 26.5 \text{ kN/m}^3$	— 30.9m: joint, horizontal, planar, clay veneer, gapped	74
32			73.4		73									1		32.4m : UCS = 17.3 MPa $\gamma = 26.0 \text{ kN/m}^3$	— 31.4m: joint, open, undulating, clay infill, horizontal — 31.5m: joint, closed, undulating, gypsum veneer, horizontal — 31.8m: joint, horizontal, gapped, clay veneer, planar — 32.0m: clay seam, grey (75mm) — 32.2m: joint, dipping, planar, closed, clean	73
33			32.3		72									0			— 32.9m: joint, gapped, horizontal, clay veneer	72
34			R12	TCR = 100% SCR = 99% RQD = 99%	71									1				71

(continued next page)

Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 14, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 3

Position : E: 601294, N: 4804928 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing	
35		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	R12 70.3 35.4		70											1 0 1 0 0 0 0 0		70
36		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong			69													69
37		<i>shale : 82% limestone : 18% (continued)</i>	R13	TCR = 99% SCR = 99% RQD = 99%	68													68
38			67.6		68													

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 15, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 3

Position : E: 601250, N: 4804961 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
0	105.6	GROUND SURFACE													
		40mm TOPSOIL		1	SS	13									
1	104.8 0.8	SANDY SILT, trace clay, trace gravel, trace rootlets, organic odour, compact, reddish brown, damp (WEATHERED)		2	SS	20									
	104.1 1.5	SILT, some sand, trace clay, layered, compact, red, damp to moist		3	SS	124									
2		INFERRED BEDROCK, partially weathered shale, red and grey		4	SS	100 / 100mm									
3	102.7 2.9	QUEENSTON FORMATION (See rock core log for details)													
4				1	CORE										
5															
6															
7				2	CORE										
8															
9															
10				3	CORE										
11															
12															
13				4	CORE										
14															
15				5	CORE										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 15, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 3

Position : E: 601250, N: 4804961 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
		QUEENSTON FORMATION (See rock core log for details) (continued)		5	CORE		89										
17							88										
18				6	CORE		87										
19							86										
20				7	CORE		85										
21							84										
22							83										
23				8	CORE		82										
24							81										
25							80										
26				9	CORE		79										
27							78										
28							77										
29				10	CORE		76										
30							75										
31				11	CORE		74										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 15, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 3

Position : E: 601250, N: 4804961 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane	Plastic Limit 10 20 30	Natural Water Content 10 20 30	Liquid Limit			
32		(continued)												
33		QUEENSTON FORMATION (See rock core log for details) (continued)		11	CORE	73								
34						72								
35				12	CORE	71								
36						70								
37						69								
38	67.4 38.2			13	CORE	68								

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Sep 20, 2012	4.4	101.2
Oct 3, 2012	18.4	87.3
Oct 10, 2012	17.5	88.1
Nov 2, 2012	15.2	90.4
Jan 7, 2013	11.7	94.0
Feb 12, 2013	8.8	96.8



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 15, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 3

Position : E: 601250, N: 4804961 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 2.9m below grade	102.7								
3		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	2.9							— 3.1m: joint, dipping, gapped, planar, clean	
4		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	R1	TCR = 96% SCR = 92% RQD = 75%	102					— 3.9m: joint, weathered, subvertical, closed, tight, planar — 4.0m: joint, weathered, horizontal, closed, clay veneer — 4.1m: joint, weathered, dipping, horizontal, tight, closed — 4.3m: joint, weathered, horizontal, gapped, gypsum veneer	102
5		shale : 84% limestone : 16%	100.6 5.0		101						
6					100					— 5.7m: clay seam — 5.9m: subvertical, closed, clay veneer — 6.0-6.1m: joints, horizontal, clay veneer, gapped, undulating	100
7			R2	TCR = 100% SCR = 93% RQD = 69%	99					— 6.5-6.6m: joints, horizontal, clay infill, open — 6.9-7.1m: joints, horizontal, gapped, clay veneer — 7.2m: joint, horizontal, gapped, clay veneer — 7.3m: joint, horizontal, gapped, clay veneer	99
8			97.5 8.1		98						
9					97						
10			R3	TCR = 96% SCR = 91% RQD = 79%	96						
11			94.5 11.1		95						
12					94						
13			R4	TCR = 100% SCR = 99% RQD = 94%	93						
14			91.5 14.1		92					— 13.8m: joint, horizontal, closed, gypsum veneer	92
15					91						
16			R5	TCR = 100% SCR = 97% RQD = 92%	90					— 15.8m: joint, dipping, gapped, closed	90
17			88.5 17.1		89						
18			R6	TCR = 99% SCR = 99% RQD = 94%	88					— 17.2m: clay seam — 17.5m: joint, horizontal, closed, gypsum veneer	88
					87					18.5m to 18.8m: UCS = 16.5 MPa γ = 26.0 kN/m ³	87

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 15, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 3

Position : E: 601250, N: 4804961 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
19		QUEENSTON FORMATION	86.4											0				
		Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	19.2											0				
20		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong												0				
		shale : 84% limestone : 16% (continued)												0				
21														0				
														0				
22			83.9											0				
			21.7											0				
23														1				
														0				
24														0				
														0				
25			80.8											0				
			24.8											0				
26														0				
														0				
27														1				
														3				
28														1				
														3				
29														4				
														1				
30														1				
														0				
31			77.8											0				
			27.8											0				
32														3				
														1				
33														2				
														0				
34			74.7											1				
			30.9											0				
35														2				
														1				
36														1				
														1				
37														0				
														0				
38			71.7											1				
			33.9											0				
39														1				
														2				

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 15, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 3

Position : E: 601250, N: 4804961 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures		Laboratory Testing	Comments	Elevation (m)
								Frequency	Spacing			
35		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	R12	TCR = 100% SCR = 99% RQD = 98%	70	Z1	R1	0			— 35.1m: joint, horizontal, gapped, gypsum veneer	70
36		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong						0				
37		shale : 84% limestone : 16% (continued)						0				
38								0				
36.7			68.7	R13	68	Z2	R2	1			— 37.0m: clay seam — 37.1m: joint, horizontal, closed, clay coating — 37.2m: joint, horizontal, gapped, clay fill	68
36.9			36.9					4				
37								2				
38			67.4					0				

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Project No.: 11-12-2073

Date started : August 7, 2012

Sheet No. : 1 of 3

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

SOIL PROFILE				SAMPLES		
Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value	
0	GROUND SURFACE					
112.6	25mm TOPSOIL	[Pattern]	1	SS	10	
111.8	SILTY SAND, trace rootlets, trace organics, loose to compact, brown, damp	[Pattern]	2	SS	46	
0.8	INFERRED BEDROCK, highly weathered shale, dense to very dense, red and grey, damp	[Pattern]	3	SS	184 / 275mm	
	...at 2.3 m, grey	[Pattern]	4	SS	100 / 125mm	
109.8	QUEENSTON FORMATION (See rock core log for details)	[Pattern]	1	CORE		
2.8		[Pattern]	2	CORE		
		[Pattern]	3	CORE		
		[Pattern]	4	CORE		
		[Pattern]	5	CORE		
		[Pattern]	6	CORE		

Penetration Test Values (Blows / 0.3m)

- X Dynamic Cone
- O Unconfined
- Pocket Penetrometer

Moisture / Plasticity

- Plastic Limit
- Natural Water Content
- Liquid Limit

Headspace Vapour

Instrument Details

Lab Data and Comments

GRAIN SIZE DISTRIBUTION (%) (MIT)

GR SA SI CL

Unstabilized Water Level

W1 W2

SS2 Analysis:
Metals, Inorganics

SS3 Analysis:
PAHs, VOCs

...at 2.7m, auger refusal

CORE3 Analysis:
Metals, Inorganics,
PAHs, VOCs

CORE6 Analysis:
Metals, Inorganics,
PAHs, VOCs

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 7, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 3

Position : E: 600915, N: 4805190 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Unstabilized Water Level	Lab Data and Comments				
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone				Plastic Limit	Natural Water Content	Liquid Limit				GRAIN SIZE DISTRIBUTION (%) (MIT)				
								10	20	30	40							GR	SA	SI	CL	
16		(continued)						<div>○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane</div> <div>40 80 120 160</div>				<div>PL MC LL</div> <div>10 20 30</div>										
17		QUEENSTON FORMATION (See rock core log for details) (continued)		6	CORE		96															
18							95															
19				7	CORE		94															
20							93															
21							92															
22				8	CORE		91															
23							90															
24							89															
25				9	CORE		88															
26							87															
27						86																
28						85																
29						84																
30						83																
31				11	CORE		82															
						81																

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 7, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 3

Position : E: 600915, N: 4805190 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)			Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Field Vane	Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)		11	CORE											
33		QUEENSTON FORMATION (See rock core log for details) (continued)					80									
34				12	CORE		79									
35							78									
36							77									
37				13	CORE		76									
38							75									
39							74									
40				14	CORE		73									
41							72									
41.2	71.4															

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.

W2: 50mm monitoring well installed.

W1 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Sep 20, 2012	2.6	110.0
Oct 3, 2012	2.6	110.0
Oct 10, 2012	2.6	110.0
Nov 2, 2012	2.4	110.2
Jan 7, 2013	3.4	109.2
Feb 12, 2013	2.2	110.4

W2 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Oct 3, 2012	13.7	98.9
Oct 10, 2012	11.5	101.0
Oct 19, 2012	9.8	102.8
Nov 2, 2012	9.7	102.9
Jan 7, 2013	9.1	103.5
Feb 12, 2013	6.8	105.8

CORE14 Analysis:
Metals, Inorganics,
PAHs, VOCs



Project No. 11-12-2073

Date started August 7, 2012

Sheet No. 1 of 3

Hole Diameter : **HQ**, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

library: library - terraprobe gint - copy.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh&rc logs - rev4 - updated chainage.gpj

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 7, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 3

Position : E: 600915, N: 4805190 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing	
19		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	R7	TCR = 100% SCR = 100% RQD = 100%	93											0		93
20		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong	92.4 20.2		92											0		92
21		<i>shale : 79% limestone : 21% (continued)</i>														0		
22			R8	TCR = 100% SCR = 100% RQD = 100%	91											0		91
23			89.9 22.7		90											1		90
24					89											0		89
25			R9	TCR = 83% SCR = 83% RQD = 82%	88											1		88
26			86.3 26.3		87											2		87
27					86											0		86
28			R10	TCR = 100% SCR = 100% RQD = 100%	85											1		85
29			83.2 29.4		84											0		84
30					83											1		83
31			R11	TCR = 100% SCR = 100% RQD = 100%	82											1		82
32			80.2 32.4		81											1		81
33					80											1		80
34			R12	TCR = 100% SCR = 100% RQD = 100%	79											1		79
					78											2		78

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 7, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 3

Position : E: 600915, N: 4805190 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)						
						Z1	Z2	Z3	Z4	R1	R2				R3	R4	R5	R6	Frequency	Spacing
35		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	R12 77.1 35.5		77							0		gypsum infill	77					
												0								
36		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong											1							
													0							
													0							
37													0							
													0							
													0							
													0							
													0							
38		shale : 79% limestone : 21% (continued)	R13	TCR = 100% SCR = 100% RQD = 100%	75							0		37.7m : UCS = 13.1 MPa γ = 26.0 kN/m ³	75					
												0								
												0								
												0								
												0								
												0								
												0								
												0								
												0								
												0								
39			74.1 38.5		74							0		— 38.9m: joint, horizontal, undulating, gaped, clay veneer	74					
												1								
												0								
												0								
												0								
												0								
												0								
												0								
												0								
												0								
40			R14	TCR = 100% SCR = 97% RQD = 97%	73							0		— 40.1m: joint, subvertical, gapped, undulating, clean — 40.3m: clay seam — 40.7m: joint, horizontal; gapped, planar, gypsum infill — 40.7m: joint, horizontal; closed, planar, gypsum veneer	73					
												0								
												0								
												0								
												0								
												0								
												0								
												0								
												0								
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41			71.4		72							1								
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END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.



Project No.: 11-12-2073

Date started : September 24, 2012

Sheet No. : 1 of 4

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 24, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 600643, N: 4805475 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
16		QUEENSTON FORMATION (See rock core log for details) (continued)															
17				5	CORE		103										
18							102										
19				6	CORE		101										
20							100										
21							99										
22							98										
23				7	CORE		97										
24							96										
25							95										
26				8	CORE		94										
27							93										
28							92										
29				9	CORE		91										
30							90										
31				10	CORE		89										
							88										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 24, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 600643, N: 4805475 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
32		QUEENSTON FORMATION (See rock core log for details) (continued)		10	CORE		87										
33							86										
34							85										
35				11	CORE		84										
36							83										
37							82										
38				12	CORE		81										
39							80										
40							79										
41				13	CORE		78										
42							77										
43							76										
44				14	CORE		75										
45							74										
46							73										
47				15	CORE		72										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 24, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 600643, N: 4805475 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
48		(continued)		15	CORE		71								
49		QUEENSTON FORMATION (See rock core log for details) (continued)					70								
50				16	CORE		69								
51							68								
67.7				17	CORE										
52.0															

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Project No. 11-12-2073

Date started September 24, 2012

Sheet No. 1 of 3

Hole Diameter : **HQ**, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

library: library - terraprobe gint - copy.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh&rc logs - rev4 - updated chainage.gpj

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 24, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 3

Position : E: 600643, N: 4805475 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
22		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, slightly altered to oxidized; interbedded with limestone , greenish grey, thinly bedded, weak to medium strong shale : 86% limestone : 14% (continued)	R7 21.1	TCR = 100% SCR = 98% RQD = 92%	98			0		— 21.5m: joint, horizontal, undulating, gapped, clay veneer — 21.6m: joint, horizontal, undulating, gapped, gypsum seam — 21.6m: gypsum seam — 21.8m: weathered zone	98
23					97			0			97
24			95.5 24.2		96			1		— 23.5m: joint, horizontal, closed, planar, gypsum veneer	96
25					95			0			95
26			R8	TCR = 100% SCR = 99% RQD = 96%	94			1		— 24.8m: joint, horizontal, closed, planar, gypsum veneer	94
27					93			2		— 25.7m: joint, horizontal, closed, planar, gypsum veneer — 26.0m: joint, horizontal, undulating, gapped, gypsum veneer — 26.0m: joint, subvertical, closed, planar, clean	93
28			92.5 27.2		92			2		— 27.4m: joint, horizontal, gapped, planar, gypsum coating	92
29					91			1			91
30			89.4 30.3		90			1			90
31					89			0			89
32			R10	TCR = 100% SCR = 96% RQD = 95%	88			0	31.9m : UCS = 22.1 MPa γ = 25.9 kN/m ³		88
33					87			1			87
34			86.3 33.4		86			3	34.1m : UCS = 26.1 MPa γ = 25.8 kN/m ³	— 33.2m: no water return — 33.8-33.9m: joints, horizontal, gapped, clay veneer	86
35					85			2	34.9m : UCS = 27.7 MPa γ = 25.8 kN/m ³	— 34.3m: joint, horizontal, gapped, planar, gypsum coating	85
36			R11	TCR = 93% SCR = 89% RQD = 82%	84			1		— 35.0m: joint, horizontal, gapped, planar, gypsum coating	84
37			83.3 36.4		83			1	37.1m : UCS = 23.5 MPa γ = 25.7 kN/m ³	— 36.5m: joint, horizontal, undulating, gapped, clay veneer — 37.2m: joint, horizontal, gapped, planar, clay veneer	83

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 24, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 3

Position : E: 600643, N: 4805475 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
38		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, slightly altered to oxidized;	R12	TCR = 100% SCR = 100% RQD = 96%	81									1		38.5m : UCS = 29.7 MPa γ = 26.1 kN/m ³	37.9m: joint, horizontal, gapped, planar, clay veneer 38.1m: thin gypsum bed	81
39		interbedded with limestone, greenish grey, thinly bedded, weak to medium strong	80.3 39.4		80									0		40.0m : UCS = 34.3 MPa γ = 25.8 kN/m ³		80
40		shale : 86% limestone : 14% (continued)			79									0		40.9m : UCS = 38.6 MPa γ = 25.9 kN/m ³		79
41			R13	TCR = 100% SCR = 100% RQD = 100%	78									0			41.2m: thin gypsum bed	78
42					77									1			41.9m: joint, horizontal, gapped, planar, gypsum coating	77
43			77.2 42.5		76									0		42.9m : UCS = 29 MPa γ = 26.1 kN/m ³	42.6m: thin/laminated gypsum bed 42.9m: thin/laminated gypsum bed	76
44			R14	TCR = 100% SCR = 99% RQD = 97%	75									1		43.7m : UCS = 11.9 MPa γ = 25.7 kN/m ³	43.3m: joint, horizontal, undulating, gapped, gypsum infill 43.5m: joint, horizontal, gapped, planar, gypsum coating	75
45					74									0			45.1-45.1m: clay seam	74
46			74.2 45.5		73									2		45.6m : UCS = 23.7 MPa γ = 25.8 kN/m ³		73
47			R15	TCR = 100% SCR = 100% RQD = 100%	72									1			46.8m: joint, horizontal, gapped, planar, gypsum veneer	72
48					71									2		47.6m : UCS = 26 MPa γ = 26.2 kN/m ³ 48.1m : UCS = 50.5 MPa γ = 26.1 kN/m ³	47.5m: joint, horizontal, gapped, planar, gypsum coating	71
49			71.2 48.5		70									0				70
50			R16	TCR = 100% SCR = 100% RQD = 99%	69									0				69
51					68									0			51.4m: joint, horizontal, gapped, planar, clay veneer 51.7m: joint, horizontal, gapped, planar, clay coating 51.7m: joint, horizontal, undulating, gapped, clay veneer	68
			68.0 51.7 52.0m	TCR = 100% SCR = 100% RQD = 100%										2 1				

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 20, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 600335, N: 4805842 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
0	127.6	GROUND SURFACE						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
0		Daylighting, no samples taken.					127										
1							126										
2							125										
3							124										
4	124.3	QUEENSTON FORMATION (See rock core log for details)					123										
5	3.3			1	CORE		122										
6							121										
7							120										
8				2	CORE		119										
9							118										
10							117										
11				3	CORE		116										
12							115										
13							114										
14				4	CORE		113										
15							112										
				5	CORE												

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 20, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 600335, N: 4805842 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
		QUEENSTON FORMATION (See rock core log for details) (continued)															
17				5	CORE		111										
18							110										
19							109										
20				6	CORE		108										
21							107										
22							106										
23				7	CORE		105										
24							104										
25							103										
26				8	CORE		102										
27							101										
28							100										
29				9	CORE		99										
30							98										
31				10	CORE		97										
							96										

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 20, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 600335, N: 4805842 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
32		QUEENSTON FORMATION (See rock core log for details) (continued)															
33				10	CORE		95										
34				11	CORE		94										
35							93										
36							92										
37				12	CORE		91										
38							90										
39							89										
40				13	CORE		88										
41							87										
42							86										
43				14	CORE		85										
44							84										
45							83										
46				15	CORE		82										
47							81										
				16	CORE		80										

(continued next page)

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 20, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 600335, N: 4805842 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
48		(continued)															
49		QUEENSTON FORMATION (See rock core log for details) (continued)		16	CORE		79										
50							78										
51							77										
52				17	CORE		76										
53							75										
54							74										
55				18	CORE		73										
56							72										
57							71										
58				19	CORE		70										
59	68.5 59.1						69										

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 20, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 4

Position : E: 600335, N: 4805842 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● Estimated Strength 5 25 50 100 250	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 3.3m below grade	124.3								
		QUEENSTON FORMATION	3.3								
4		Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;			124			2		4.2m: joint, subvertical, clean, planar, gapped	124
		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	R1	TCR = 91% SCR = 66% RQD = 37%	123			7		4.5m: joint, horizontal, open, clay fill, undulating	123
5		shale : 85% limestone : 15%			122			4			
6			121.3		121			4		5.4m: joint, vertical, oxidized, gapped, planar	122
7			6.3		120			5		5.5m: weathered zone	
8					119			5		5.8m: joint, horizontal, planar, gapped, oxidized	121
9					118			2		5.9m: joint, horizontal, planar, gapped, oxidized	
10					117			4		5.9m: joint, horizontal, planar, gapped, oxidized	121
11					116			7		6.5-6.5m: clay seam	
12					115			3		6.5-6.7m: joint, subvertical, gapped, undulating, some oxidation	120
13					114			2		6.8-6.9m: joint, dipping, sand fill, undulating	
14					113			1		6.9-7.0m: joints, gapped, clay veneer, undulating, horizontal	119
15					112			3		7.1m: joint, horizontal, clay coating, planar, gapped	
16					111			0		7.3m: horizontal, planar, altered and some sand, gapped	118
17					110			0		7.4m: joint, clay veneer, horizontal, gapped, undulating	
18					109			0		7.8-7.8m: joint, horizontal, planar, clay and sand fill, open, highly weathered	117
19					108			0			
			118.3		107			0		9.7m: joint, horizontal, planar, gypsum veneer, gapped	116
			9.3		106			1			
					105			0			
					104			0		10.6m: joint, horizontal, planar, gapped, minor weathering	115
					103			2			
					102			2			
					101			1			
					100			1		11.7m: joint, clay veneer, horizontal, planar, gapped	114
					99			4		11.9m: joint, clay veneer, horizontal, undulating, gapped	
			115.2		98			1		11.9-12.0m: joint, subvertical, gapped, planar, clay veneer	113
			12.4		97			0		12.0-12.0m: clay seam	
					96			0		12.0m: joint, gapped, clay coating, horizontal, planar	112
					95			1		12.3m: joint-closed, gypsum veneer, horizontal, undulating	
					94			0		13.1m: joint, horizontal, planar, gypsum veneer, gapped	111
					93			2			
					92			2			
					91			1			
					90			0			
					89			0			
					88			3		15.8m: joint, horizontal, gapped, planar, clay veneer	110
					87			1			
					86			0			
					85			0			
					84			0			
					83			0			
					82			3			
					81			1			
					80			0			
					79			0			
					78			0			
					77			0			
					76			0			
					75			0			
					74			0			
					73			0			
					72			0			
					71			0			
					70			0			
					69			0			
					68			0			
					67			0			
					66			0			
					65			0			
					64			0			
					63			0			
					62			0			
					61			0			
					60			0			
					59			0			
					58			0			
					57			0			
					56			0			
					55			0			
					54			0			
					53			0			
					52			0			
					51			0			
					50			0			
					49			0			
					48			0			
					47			0			
					46			0			
					45			0			
					44			0			
					43			0			
					42			0			
					41			0			
					40			0			
					39			0			
					38			0			
					37			0			
					36			0			
					35			0			
					34			0			
					33			0			
					32			0			
					31			0			
					30			0			
					29			0			
					28			0			
					27			0			
					26			0			
					25			0			
					24			0			
					23			0			
					22			0			
					21			0			
					20			0			
					19			0			
					18			0			
					17			0			
					16			0			
					15			0			
					14			0			
					13			0			
					12			0			
					11			0			
					10			0			
					9			0			
					8			0			
					7			0			
					6			0			
					5			0			
					4			0			
					3			0			
					2			0			
					1			0			
					0			0			

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 20, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 4

Position : E: 600335, N: 4805842 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing	
20		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered; interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong <i>shale : 85% limestone : 15% (continued)</i>	R6	TCR = 100% SCR = 100% RQD = 95%	108											3		108
																0		
																0		
21			106.1 21.5	R7	TCR = 100% SCR = 99% RQD = 99%	107										0		107
																1		
																0		
22			103.0 24.6	R8	TCR = 100% SCR = 99% RQD = 99%	106										0		106
																0		
																1		105
23			100.1 27.5	R9	TCR = 100% SCR = 100% RQD = 100%	105										0		105
																0		
																0		104
24			97.0 30.6	R10	TCR = 100% SCR = 100% RQD = 98%	104										1		104
																0		
																0		103
25			93.9 33.7	R11	TCR = 100% SCR = 98% RQD = 98%	103										0		103
																2		
																0		102
26			92.4			102										0		102
																0		
																0		101
27						101										1		101
																0		
																0		100
28						100										1		100
																0		
																1		
29						99										1		99
																0		
																0		98
30						98										0		98
																0		
																0		97
31						97										1		97
																0		
																0		96
32						96										0		96
																0		
																0		95
33						95										2		95
																0		
																0		32.5-32.5m: horizontal, planar, closed, clay coating
34						94										1		94
																2		32.5m: joint, horizontal, undulating, clay veneer, gapped
																0		33.6m: joint, horizontal, planar, gapped, gypsum veneer
35						93										1		93
																0		
																0		

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 20, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 4

Position : E: 600335, N: 4805842 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa)	Natural Fractures	Laboratory Testing	Comments	Elevation (m)
						Z1 Z2 Z3 Z4	5 25 50 100 250 Estimated Strength	Frequency Spacing			
		QUEENSTON FORMATION									
		Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	R12 35.2		92						92
36											
		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong	R12	TCR = 100% SCR = 98% RQD = 98%	91					36.3m: joint, dipping, gapped, undulating, clay veneer 36.4m: thin gypsum bed 36.4-36.4m: joint, subvertical, open, planar, clay coating 36.4-36.4m: clay seam	91
37											
		shale : 85% limestone : 15% (continued)			90						90
38											
			89.3		89						89
39			38.3							38.8m: joint, horizontal, closed, planar, gypsum veneer	
					88					39.6m: joint, horizontal, closed, planar, gypsum veneer	88
40											
			R13	TCR = 100% SCR = 100% RQD = 100%	87				40.5m : UCS = 15.4 MPa γ = 26.1 kN/m ³		87
41											
			86.3		86						86
42			41.3						42.1m : UCS = 9.8 MPa γ = 26.0 kN/m ³	41.8m: thin gypsum seam	
					85						85
43									43.1m : UCS = 15.6 MPa γ = 25.9 kN/m ³		
					84						84
44											
			83.2		83					44.6m: joint, closed, horizontal, planar, gypsum veneer	83
45			44.4						45.3m : UCS = 25.4 MPa γ = 25.9 kN/m ³	45.4m: joint, closed, horizontal, planar, gypsum veneer	82
					82						
46											
			R15	TCR = 100% SCR = 100% RQD = 100%	81				46.8m : UCS = 16.9 MPa γ = 26.3 kN/m ³		81
47											
			80.2		80				47.5m : UCS = 18 MPa γ = 26.0 kN/m ³		80
48			47.4							48.2m: joint, open, weathered, horizontal, planar 48.3m: joint, closed, horizontal, planar, gypsum veneer	79
					79				48.8m : UCS = 14.2 MPa γ = 26.2 kN/m ³	48.9m: joint, horizontal, planar, gapped, gypsum, veneer	
49											
					78					49.7m: gypsum seam	78
50										50.1m: joint, horizontal, planar, gapped, clay veneer	
			77.1		77					50.4m: joint, closed, horizontal, planar, clay coating 50.5m: joint, closed, horizontal, planar, clay coating 50.5m: clay seam	77
51			50.5								
			R17	TCR = 100% SCR = 99% RQD = 99%					51.2m :		

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 20, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 4 of 4

Position : E: 600335, N: 4805842 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● Estimated Strength 5 25 50 100 250	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
52		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered; interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong <i>shale : 85% limestone : 15% (continued)</i>	R17	TCR = 100% SCR = 99% RQD = 99%	76			0	UCS = 13.1 MPa γ = 26.1 kN/m ³	51.1m: joint, dipping, planar, clean, gapped	76
								0			
								2		52.2m: joint, horizontal, gapped, undulating, clay veneer	
								1		52.4m: joint, dipping, gapped, planar, clay veneer	75
53			R18	TCR = 100% SCR = 100% RQD = 100%	75			0	52.2m : UCS = 11.6 MPa γ = 26.1 kN/m ³		
								0			
								1		53.5m: joint, horizontal, gapped, planar, gypsum infill	74
								0			
54			R19	TCR = 100% SCR = 100% RQD = 100%	74			1	54.3m : UCS = 18.4 MPa γ = 26.0 kN/m ³	54.0m: joint, horizontal, gapped, planar, gypsum veneer	
								1		54.3m: joint, horizontal, planar, closed, gypsum veneer	
								0		54.6m: joint, gapped, horizontal, planar, gypsum veneer	73
								1			
55			R19	TCR = 100% SCR = 100% RQD = 100%	73			0	54.8m : UCS = 42.1 MPa γ = 26.1 kN/m ³		
								0			
								0			
								0			
56			R19	TCR = 100% SCR = 100% RQD = 100%	72			0	59.0m : UCS = 28.5 MPa γ = 26.2 kN/m ³		
								0			
								0			
								0			
57			R19	TCR = 100% SCR = 100% RQD = 100%	71			0		56.5m: joint, closed, horizontal, planar, gypsum veneer	71
								0			
								0			
								0			
58			R19	TCR = 100% SCR = 100% RQD = 100%	70			0		57.9m: joint, horizontal, planar, minor weathering	70
								0			
								1			
								2		58.5m: joint, horizontal, closed, planar, minor weathering	
59			R19	TCR = 100% SCR = 100% RQD = 100%	69			0		58.5m: joint, horizontal, undulating, gapped, minor weathering	69
								0			
								0			
								0			

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 23, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 599921, N: 4806230 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
0	131.4	TOP OF PAVEMENT 170mm ASPHALTIC CONCRETE Daylighted to expose adjacent utilities				131								
1						130								
2						129								
3	129.0 2.4	INFERRED BEDROCK , highly weathered shale			AS	128								
4	127.3 4.1	QUEENSTON FORMATION (See rock core log for details)				127								
5				1	CORE	126								
6						125								
7						124								
8				2	CORE	123								
9						122								
10						121								
11				3	CORE	120								
12						119								
13						118								
14				4	CORE	117								
15						116								
				5	CORE									

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 23, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 599921, N: 4806230 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			
		QUEENSTON FORMATION (See rock core log for details) (continued)					115										
17				5	CORE		114										
18							113										
19							112										
20				6	CORE		111										
21							110										
22							109										
23				7	CORE		108										
24							107										
25							106										
26				8	CORE		105										
27							104										
28							103										
29				9	CORE		102										
30							101										
31				10	CORE		100										

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 23, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 599921, N: 4806230 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			
32		QUEENSTON FORMATION (See rock core log for details) (continued)					99										
33				10	CORE		98										
34							97										
35				11	CORE		96										
36							95										
37							94										
38				12	CORE		93										
39							92										
40							91										
41				13	CORE		90										
42							89										
43							88										
44				14	CORE		87										
45							86										
46							85										
47				15	CORE		84										

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 23, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 599921, N: 4806230 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Unstabilized Water Level	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Field Vane	Lab Vane	Plastic Limit	Natural Water Content	Liquid Limit				
48		(continued)																
49		QUEENSTON FORMATION (See rock core log for details) (continued)		15	CORE		83											
50							82											
51				16	CORE		81											
52							80											
53				17	CORE		79											
54							78											
55				18	CORE		77											
56							76											
57							75											
58				19	CORE		74											
59	72.2 59.2						73											

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.

W1 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Oct 10, 2012	3.2	128.3
Nov 2, 2012	1.6	129.8
Feb 12, 2013	2.0	129.4

W2 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Nov 2, 2012	36.3	95.1
Feb 12, 2013	24.2	107.3



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 23, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 4

Position : E: 599921, N: 4806230 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)
							5	25	50	100	250		
		Rock coring started at 4.1m below grade	127.3										
		QUEENSTON FORMATION											
		Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	4.1		127							4.3m: joint, subvertical, undulating, open, clean	127
5			R1	TCR = 86% SCR = 63% RQD = 39%	126							4.7m: joint, subvertical, undulating, open, planar, oxidation	
		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong										4.7m: joint, subvertical, undulating, open, planar, oxidation	
6		shale : 80% limestone : 20%	125.0		125							4.9m: joint, subvertical, undulating, open, clean	126
			6.4									5.0m: joint, subvertical, undulating, gapped, clean	
7												5.1m: joint, subvertical, undulating, gapped, clean	
												5.2m: joint, horizontal, closed, planar, clay fill	125
8			R2	TCR = 100% SCR = 97% RQD = 93%	124							5.7m: joint, dipping, undulating, gapped, some weathering	
9					123							8.0m: joint, subvertical, open, planar, some weathering	
												8.3m: joint, horizontal, undulating, gapped, some weathering	123
10					122							8.3m: joint, dipping, gapped, planar, clay veneer	
												8.9m: joint, horizontal, gapped, planar, clay veneer	122
11			R3	TCR = 100% SCR = 98% RQD = 94%	121							10.2m: joint, horizontal, undulating, gapped, some weathering, clay veneer	121
12					120							11.5m: joint, horizontal, gapped, planar, gypsum infill	120
13					119							12.2m: joint, horizontal, gapped, planar, gypsum infill	119
14			R4	TCR = 100% SCR = 100% RQD = 96%	118							13.3m: joints, horizontal, undulating, gapped, clean	118
												13.6m: joint, horizontal, gapped, planar, clay veneer	
15					117							14.8m: gypsum vugs	117
16					116							15.2m: joint, horizontal, gapped, planar, gypsum veneer	116
												15.3m: joint, horizontal, gapped, planar, gypsum veneer	
17			R5	TCR = 100% SCR = 90% RQD = 75%	115							16.1m: joint, horizontal, closed, planar, clay coating	115
												16.3m: joint, horizontal, closed, planar, clay coating & weathered	
18					114							16.3m: joint, horizontal, gapped, planar, weathered	114
												16.3m: joint, horizontal, undulating, gapped, clay veneer & weathered	
19					113							16.5-16.5m: weathered zone with joints, horizontal, open, planar, weathered, clay infill	113
												16.8m: joint, horizontal, undulating, gapped, clay veneer	
20			R6	TCR = 100% SCR = 98% RQD = 92%	112							16.9m: joint, horizontal, undulating, open, weathered	112
												17.1m: joint, dipping, undulating, gapped, clean	

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 23, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 4

Position : E: 599921, N: 4806230 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
21		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered; interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong shale : 80% limestone : 20% (continued)	R6 109.7 21.7	TCR = 100% SCR = 98% RQD = 92%	111 110 109			3 0 0 0 5 0 2 4	20.6m : UCS = 12.7 MPa γ = 25.6 kN/m ³	— 20.2-20.2m: crush zone	111 110 109
22								0			
23			R7 106.7 24.7	TCR = 100% SCR = 97% RQD = 90%	108 107 106			0 0 1 0 5 2 1	24.0m : UCS = 9.3 MPa γ = 26.1 kN/m ³	— 24.1m: joint, horizontal, open, planar, clay veneer with some weathering — 24.8m: joint, horizontal, undulating, open, clay coating	108 107 106
24								0			
25								0			
26			R8 103.6 27.8	TCR = 100% SCR = 96% RQD = 76%	105 104 103			0 2 3 5 1 0 0 0	28.5m : UCS = 13.4 MPa γ = 26.0 kN/m ³	— 25.7m: joint, horizontal, gapped, planar, gypsum veneer — 26.7m: joint, horizontal, undulating, gapped, gypsum veneer — 27.0m: joint, horizontal, closed, planar, gypsum veneer — 27.2m: joint, dipping, gapped, planar, clean — 27.3m: joint, dipping, gapped, planar, clean — 27.4m: joint, dipping, undulating, gapped, clean — 27.5m: joint, dipping, undulating, gapped, clean — 28.6m: joint, horizontal, gapped, planar, gypsum veneer	105 104 103
27								0			
28								1			
29			R9 100.6 30.8	TCR = 100% SCR = 98% RQD = 98%	102 101 100			0 2 1 0 1 0 1		— 29.6m: joint, horizontal, closed, planar, gypsum veneer — 30.3m: joint, horizontal, closed, planar, gypsum veneer	102 101 100
30								0			
31								3		— 30.9-31.0m: joints, dipping, gapped, planar, clean — 31.0m: thin gypsum bed	
32			R10 97.6 33.8	TCR = 100% SCR = 99% RQD = 97%	99 98 97			1 0 0 0 1 0 0		— 31.7m: joint, horizontal, gapped, planar, gypsum veneer — 32.5m: joint, horizontal, gapped, planar, gypsum veneer	99 98 97
33								0			
34								0			
35			R11	TCR = 100% SCR = 100% RQD = 100%	96			1 0 0 0	34.1m : UCS = 10.7 MPa γ = 26.1 kN/m ³	— 35.1m: joint, horizontal, gapped, planar, gypsum veneer	96
36								0			

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 23, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 4

Position : E: 599921, N: 4806230 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
37		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	R11 94.6 36.8		95										1		— 36.5m: joint, horizontal, gapped, planar, gypsum veneer	95		
38		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong			94										2			94		
39		shale : 80% limestone : 20% (continued)	R12 TCR = 100% SCR = 85% RQD = 85%		93										1		37.9m: joint, subvertical, planar, closed to gapped, clean 37.9m: joint, horizontal, gapped, planar, slight weathering 38.3m: gypsum, thin lamination	93		
40			91.5 39.9		92										2		39.0m : UCS = 17.1 MPa γ = 26.1 kN/m³	92		
41					91										1		39.1m: joint, subvertical, closed, planar, clean 39.2m: joint, horizontal, gapped, planar, clay infill 39.3m: joint, horizontal, gapped, planar, gypsum infill	91		
42			R13 TCR = 100% SCR = 99% RQD = 99%		90										0		40.2m: joint, horizontal, closed, planar, gypsum infill	90		
43			88.4 43.0		89										2		41.0m : UCS = 15.3 MPa γ = 26.0 kN/m³	89		
44					88										1		42.1m: joint, horizontal, gapped, planar, gypsum veneer	88		
45			R14 TCR = 100% SCR = 98% RQD = 95%		87										0		43.3m: joint, dipping, gapped, planar, clean	87		
46			85.4 46.0		86										2		44.1m: joint, horizontal, undulating, gapped, slightly weathered	86		
47					85										1		45.5m: joint, dipping, gapped, planar, clean	85		
48			R15 TCR = 100% SCR = 90% RQD = 84%		84										4		47.1m: joint, horizontal, gapped, planar, clay veneer 47.5m: joint, horizontal, gapped, planar, clay coating 47.6-47.7m: clay seam	84		
49			82.3 49.1		83										2		47.7m: joint, horizontal, gapped, planar, clay coating 48.0m: joints, dipping, gapped, planar, clean 48.1m: joints, dipping, gapped, planar, clean	83		
50					82										1		48.2m: joint, horizontal, open planar, clay coating & weathering 48.2m: joint, subvertical, gapped, planar, clean 48.9m: joint, dipping, undulating, gapped, clean	82		
51			R16 TCR = 100% SCR = 100% RQD = 100%		81										1		49.0m: joint, dipping, gapped, planar, clean 49.3m: joint, dipping, gapped, planar, clean 49.5m: joint, horizontal, gapped, slight clay veneer	81		
52					80										1		49.5-50.5m: free swell sample 50.0m: joint, horizontal, gapped, planar, gypsum veneer 51.0m: joint, horizontal, closed, planar, clay veneer 51.5-51.8m: free swell sample	80		

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 23, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 4 of 4

Position : E: 599921, N: 4806230 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa)	Natural Fractures		Laboratory Testing	Comments	Elevation (m)
								Frequency	Spacing			
53		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered; interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong <i>shale : 80% limestone : 20% (continued)</i>	52.3	R17 TCR = 100% SCR = 95% RQD = 95%	79			0		52.7m : UCS = 11.5 MPa γ = 25.8 kN/m ³		79
								1				
								2				
								2				
54			77.8	R18 TCR = 100% SCR = 100% RQD = 100%	78			1		56.6m : UCS = 17.2 MPa γ = 26.1 kN/m ³	— 53.3m: joint, horizontal, gapped, planar, gypsum veneer — 53.5-53.5m: joint, subvertical, gapped, planar, clean — 53.9m: joint, horizontal, gapped, planar, clay coating	78
			53.6					0				
								0				
								0				
55								0				
								0				
								1				
56								0			— 56.1m: thin gypsum seam	
								1			— 56.4m: joint, horizontal, gapped, planar, clay veneer	
57			74.7		75			0				75
			56.7					0				
58				R19 TCR = 100% SCR = 100% RQD = 100%	74			0		58.7m : UCS = 17.8 MPa γ = 25.9 kN/m ³		74
								1				
								0				
59			72.2		73			0				73

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 29, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 5

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	137.2	TOP OF PAVEMENT					137								
		15mm ASPHALTIC CONCRETE		1	SS	22									
	136.4	FILL , silty sand, some gravel, trace clay, compact, brown with green, moist													
1	0.8 136.2 1.0	FILL , clayey silt, some sand, trace rootlets, organic odour, very stiff, black, moist		2A	SS	18	136								
				2B	SS										
2		INFERRED BEDROCK , weathered shale		3	SS	48	135								
		...at 2.3 m, residual soil zone, with highly weathered shale to 3.0 m		4	SS	19	134								
3				5	SS	100 / 125mm									
4							133								
5	132.5 4.7	QUEENSTON FORMATION (See rock core log for details)		1	CORE		132								
6							131								
7							130								
8				2	CORE		129								
9							128								
10							127								
11				3	CORE		126								
12							125								
13							124								
14				4	CORE		123								
15							122								
				5	CORE										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 29, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 5

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)					121	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
17		QUEENSTON FORMATION (See rock core log for details) (continued)		5	CORE		120										
18							119										
19							118										
20				6	CORE		117										
21							116										
22							115										
23				7	CORE		114										
24							113										
25							112										
26				8	CORE		111										
27							110										
28							109										
29				9	CORE		108										
30							107										
31				10	CORE		106										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 29, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 5

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)					105	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
33		QUEENSTON FORMATION (See rock core log for details) (continued)		10	CORE		104										
34							103										
35				11	CORE		102										
36							101										
37							100										
38				12	CORE		99										
39							98										
40							97										
41				13	CORE		96										
42							95										
43							94										
44				14	CORE		93										
45							92										
46							91										
47				15	CORE		90										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 29, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 4 of 5

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
48		(continued)					89										
49		QUEENSTON FORMATION (See rock core log for details) (continued)		15	CORE		88										
50							87										
51				16	CORE		86										
52							85										
53							84										
54				17	CORE		83										
55							82										
56							81										
57				18	CORE		80										
58							79										
59							78										
60				19	CORE		77										
61							76										
62							75										
63				20	CORE		74										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : August 29, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 5 of 5

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
64	73.1 64.1	(continued)		20	CORE		73								
65	71.6 65.6	GEORGIAN BAY FORMATION (See rock core log for details)		21	CORE		72								

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 29, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 4

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 4.7m below grade	132.5								
5		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	4.7		132			2		4.8m: joint, subvertical, gapped, planar, some oxidation	132
6		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	130.9	TCR = 100% SCR = 91% RQD = 80%	131			1		5.1m: joint, horizontal, undulating, open, some oxidation	132
7		shale : 79% limestone : 21%	6.3		130			3		5.3-5.4m: highly weathered zone, clay infill	
8					129			4		5.4m: joint, horizontal undulating, gapped, oxidized and clay veneer	
9					128			2		5.6m: joint, horizontal, open planar, weathered and clay coating	131
10					127			4		5.7m: joint, subvertical, closed, planar, oxidized	
11					126			3		5.9m: joint, horizontal, gapped, planar, some oxidation	
12					125			6		6.0m: joint, horizontal, gapped, planar, clean	130
13					124			5		6.4-6.5m: crush zone	
14					123			5		6.8m: joint, horizontal, open, planar, clay coating and weathering	
15					122			7		7.3m: joint, subvertical, gapped, planar, oxidized	129
16					121			0		7.4m: joint, subvertical, gapped, planar, clean	
17					120			1		7.6m: joint, subvertical, undulating, gapped, clean	
18					119			0		7.9m: weathered zone	
19					118			0		8.2m: joints, subvertical, gapped, planar, oxidized	128
20					117			0		8.3m: joint, subvertical, gapped, planar, weathering	
								1		8.4m: joint, subvertical, gapped, planar, oxidized	127
								3		10.4m: joint, subvertical, open, planar, weathered	
								1		11.3m: joint, horizontal, undulating, gapped, clay veneer	126
								2		11.6m: joint, horizontal, gapped, planar, clay veneer	
								0			125
								0			
								2		12.9m: joint, gapped, planar, gypsum veneer	124
								0		13.0m: joint, gapped, planar, gypsum veneer	
								2		13.6m: joint, dipping, gapped, planar, clean	123
								1			
								1			122
								0			
								3			121
								0			
								1			120
								2			
								1		17.8m: joint, horizontal, gapped, planar, gypsum veneer	119
								2		18.1m: joint, dipping, gapped, planar, clean	
								0			
								2		19.0m: joint, horizontal, gapped, planar, clay veneer	118
								1		19.0m: joint, horizontal, gapped, planar, clay veneer	
								3		19.7m: joint, horizontal, gapped, planar, clay veneer	117
								1		19.9m: joint, horizontal, closed, planar, gypsum veneer	
								1		20.5m: joint, horizontal, closed, planar,	

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 29, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 4

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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21		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	R6	TCR = 100% SCR = 99% RQD = 98%	116																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															</

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 29, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 4

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing	
37		QUEENSTON FORMATION Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	100.3 36.9		100											0		100
38		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong	R12	TCR = 100% SCR = 96% RQD = 90%	99											1		99
39		shale : 79% limestone : 21% (continued)			98											4		98
40			97.2 40.0		97											1		97
41			R13	TCR = 100% SCR = 100% RQD = 100%	96											0		96
42					95											0		95
43			94.2 43.0		94											1		94
44			R14	TCR = 100% SCR = 98% RQD = 94%	93											1		93
45					92											3		92
46			91.1 46.1		91											2		91
47			R15	TCR = 100% SCR = 97% RQD = 94%	90											2		90
48					89											2		89
49			88.1 49.1		88											2		88
50			R16	TCR = 100% SCR = 97% RQD = 93%	87											4		87
51					86											1		86
52			85.0 52.2		85											5		85
			R17													4		

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started August 29, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 4 of 4

Position : E: 599564, N: 4806571 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 55, track-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
53		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;			84									4		53.1m : UCS = 11.7 MPa γ = 26.0 kN/m ³	52.6m: joint, dipping, undulating, gapped, clean	84
54		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	R17	TCR = 100% SCR = 91% RQD = 78%	83									0		54.1m : UCS = 16.6 MPa γ = 25.9 kN/m ³	52.7m: joint, horizontal, undulating, open, weathered/crush fill 52.7m: joint, horizontal, undulating, gapped, weathered 53.5m: joint, dipping, gapped, planar, clean	83
55		shale : 79% limestone : 21% (continued)	82.0 55.2		82									0			53.6m: joints, horizontal, gapped, planar, clay veneer 53.6-53.7m: joint, subvertical, open, planar, clay veneer	82
56					81									1		55.6m : UCS = 34.8 MPa γ = 25.8 kN/m ³	54.6m: joint, horizontal, gapped, planar, clay veneer 54.6m: joint, horizontal, undulating, closed, gypsum coating	
57			R18	TCR = 100% SCR = 100% RQD = 93%	80									1		56.9m : UCS = 11.4 MPa γ = 26.1 kN/m ³	55.7m: joint, horizontal, gapped, planar, gypsum veneer	81
58			79.0 58.2		79									0				80
59					78									0		58.6m : UCS = 20.8 MPa γ = 25.8 kN/m ³		79
60			R19	TCR = 100% SCR = 100% RQD = 100%	77									1		60.1m : UCS = 27 MPa γ = 25.9 kN/m ³		78
61			75.9 61.3		76									1			60.4m: joints, horizontal, gapped, planar, gypsum veneer 60.5m: joints, horizontal, gapped, planar, gypsum veneer 60.7m: gypsum infilled vugs	77
62					75									1		62.0m : UCS = 23.7 MPa γ = 25.8 kN/m ³	61.1m: joint, horizontal, gapped, planar, gypsum infill	76
63			R20	TCR = 100% SCR = 100% RQD = 100%	74									0			62.2m: joint, horizontal, gapped, planar, weathered	75
64			72.9 64.3		73									0				74
65		GEORGIAN BAY FORMATION Shale, dark grey, laminated, weak, fissile; joints:horizontal, planar, clean, tight;	R21	TCR = 100% SCR = 100% RQD = 100%	72									1				73
		interbedded with limestone, grey, thinly bedded, medium strong	71.6											0			65.1m: joint, horizontal, gapped, planar, gypsum coating	72
		shale : 60% limestone : 40%	65.6m															

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : July 19, 2013

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 5

Position : E: 599523, N: 4806628 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	138.1	GROUND SURFACE					138								
		100mm TOPSOIL		1	SS	13	138								SS1 Analysis: Metals, Inorganics
0.8	137.3	CLAYEY SILT , some sand, trace gravel, trace rootlets, organic odour, stiff, red, moist (WEATHERED)		2	SS	32	137								SS2 Analysis: PAHs
1.5	136.6	CLAYEY SILT , some sand, trace gravel, hard, red, moist (GLACIAL TILL)		3	SS	87 / 175mm	136								SS3 Analysis: PHCs
		INFERRED BEDROCK , weathered shale, red		4	SS	50 / 125mm	136								
		...at 3.0 m, wet		5	SS	38	135								SS5 Analysis: VOCs ...at 3.4m, sampler wet
				6	SS	50 / 125mm	134								
4.4	133.7	QUEENSTON FORMATION (See rock core log for details)		1	CORE		133								
				2	CORE		132								
				3	CORE		131								
				4	CORE		130								
				5	CORE		129								
				6	CORE		128								
				7	CORE		127								
				8	CORE		126								
							125								
							124								
							123								

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : July 19, 2013

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 5

Position : E: 599523, N: 4806628 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)					122	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
		QUEENSTON FORMATION (See rock core log for details) (continued)		8	CORE		121										
17				9	CORE		120										
18				10	CORE		119										
19				11	CORE		118										
20				12	CORE		117										
21				13	CORE		116										
22				14	CORE		115										
23				15	CORE		114										
24				16	CORE		113										
25				17	CORE		112										
26				18	CORE		111										
27				19	CORE		110										
28							109										
29							108										
30							107										
31																	

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : July 19, 2013

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 5

Position : E: 599523, N: 4806628 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Unstabilized Water Level	Lab Data and Comments	
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Undrained Shear Strength (kPa)				Plastic Limit	Natural Water Content	Liquid Limit					
32		(continued)						<div>Penetration Test Values (Blows / 0.3m)</div> <div>X Dynamic Cone</div> <div>10 20 30 40</div> <div>Undrained Shear Strength (kPa)</div> <div>○ Unconfined + Field Vane</div> <div>● Pocket Penetrometer ■ Lab Vane</div> <div>40 80 120 160</div>											
33		QUEENSTON FORMATION (See rock core log for details) (continued)		19	CORE		106												
34			20	CORE		105													
35			21	CORE		104													
36			22	CORE		103													
37			23	CORE		102													
38			24	CORE		101													
39			25	CORE		100													
40			26	CORE		99													
41			27	CORE		98													
42			28	CORE		97													
43		29	CORE		96														
44							95												
45							94												
46							93												
47							92												
							91												

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : July 19, 2013

Location : Burlington/Oakville, Ontario

Sheet No. : 4 of 5

Position : E: 599523, N: 4806628 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
48		(continued)					90										
		QUEENSTON FORMATION (See rock core log for details) (continued)		29	CORE												
49				30	CORE												
50																	
51				31	CORE												
52				32	CORE												
53																	
54				33	CORE												
55				34	CORE												
56																	
57				35	CORE												
58				36	CORE												
59																	
60				37	CORE												
61				38	CORE												
62																	
63				39	CORE												
				40	CORE												

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : July 19, 2013

Location : Burlington/Oakville, Ontario

Sheet No. : 5 of 5

Position : E: 599523, N: 4806628 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type			Plastic Limit	Natural Water Content	Liquid Limit			
64		(continued)				74							
	73.5	QUEENSTON FORMATION (See rock core log for details) (continued)		40	CORE								
	64.6	GEORGIAN BAY FORMATION (See rock core log for details)											
65						73							
66				41	CORE	72							
	71.2												
	66.9												

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

W1: 50 mm monitoring well installed.
W2: 50 mm monitoring well installed.

W1 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Jul 29, 2013	2.9	135.2
Aug 9, 2013	3.1	135.0

W2 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Jul 29, 2013	47.4	90.7
Aug 9, 2013	48.2	89.9



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started July 19, 2013

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 4

Position : E: 599523, N: 4806628 (UTM 17T)

Elevation Datum : Geodetic

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 4.4m below grade	133.7								
		QUEENSTON FORMATION	4.4								
5		Shale, red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, slightly altered to oxidized, planar;	R1	TCR = 100% SCR = 72% RQD = 35%	133					4.4-4.5m: mechanical break 4.6-4.7m: weathered parting, sandy clay infill 4.8m: joint, horizontal, planar, gapped, clay infill, rough 4.9m: joint, horizontal, closed, planar, clay veneer	133
6		interbedded with limestone, grey, laminated to thinly bedded, weak to medium strong	132.2		132					6.0m: joint, horizontal, planar, gapped, oxidized 6.1m: joint, subvertical, planar, closed, oxidized 6.5m: joint, subvertical, planar, closed, clean 6.6-6.7m: rubblized zone 7.0m: joint, horizontal, undulating, gapped, weathered / oxidized 7.2m: joint, horizontal, undulating, gapped, weathered / oxidized 7.5-7.5m: clay seam 7.6m: joint, horizontal, planar, closed clay infill 7.7m: joint, horizontal, planar, gapped, clay infill 7.9m: joint, horizontal, undulating, gapped, clay infill 8.4m: joint, subvertical, planar, closed, clean 8.5m: joint, subvertical, planar, closed, clean 8.7m: joint, horizontal, undulating, open, weathered shale and clay infill 8.9-9.0m: clay seam 9.1-9.2m: clay seam 10.2m: joint, subvertical, undulating, closed, clean	132
7		shale : 83% limestone : 17%	5.9		131						
8			130.7		130				7.4m : UCS = 21.3 MPa γ = 25.9 kN/m ³		
9			7.4								
10			129.1		129						
11			9.0		128						
12			127.6		127				10.6m : UCS = 11.5 MPa γ = 25.8 kN/m ³		
13			10.5		126						
14			126.1		125						
15			12.0		124						
16			124.6		123						
17			13.5		122						
18			123.1		121				13.7m : UCS = 19.8 MPa γ = 26.0 kN/m ³	13.9m: joint, horizontal, undulating, gapped, gypsum veneer 13.9m: joint, horizontal, undulating, gapped, gypsum coating	124
19			15.0		120						
20			121.5		119						
21			16.6		118				16.8m : UCS = 19.9 MPa γ = 25.9 kN/m ³	16.5m: joint, dipping, undulating, gapped, clean	121
22			120.0		117						
23			18.1		116						
24			118.4		115						
25			19.7		114				19.7m : UCS = 24.3 MPa γ = 26.2 kN/m ³	19.5m: joint, horizontal, undulating, closed, gypsum veneer 19.7-19.8m: clay seam	118
26										20.1m: gypsum nodules	

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started July 19, 2013

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 4

Position : E: 599523, N: 4806628 (UTM 17T)

Elevation Datum : Geodetic

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa)	Natural Fractures	Laboratory Testing	Comments	Elevation (m)
						Z1 Z2 Z3 Z4	5 25 50 100 250 Estimated Strength	Frequency Spacing			
21		QUEENSTON FORMATION Shale, red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, slightly altered to oxidized, planar;	R11 117.0	RQD = 98% TCR = 100% SCR = 100% RQD = 98%	117			1 0		20.3m: joint, horizontal, planar, closed, gypsum coating 20.4m: joint, horizontal, planar, closed, gypsum veneer 20.6m: joint, horizontal, planar, closed, gypsum veneer	117
22		interbedded with limestone, grey, laminated to thinly bedded, weak to medium strong shale : 83% limestone : 17% (continued)	R12 115.4	TCR = 100% SCR = 100% RQD = 82%	116			2 4 2	22.6m : UCS = 12 MPa γ = 26.0 kN/m ³	21.8m: joint, horizontal, undulating, gapped, clay veneer 22.4m: joint, horizontal planar, open, weathered / oxidized	116
23			R13 113.9	TCR = 100% SCR = 100% RQD = 92%	115			0 3 0		23.0m: joint, horizontal, open, planar, weathered / oxidized	115
24			R14 112.4	TCR = 100% SCR = 100% RQD = 100%	114			0 0 0			114
25			R15 110.9	TCR = 100% SCR = 100% RQD = 100%	113			0 0 0	25.1m : UCS = 11.8 MPa γ = 26.0 kN/m ³		113
26			R16 109.3	TCR = 100% SCR = 100% RQD = 92%	112			1 0 0		26.0-26.2m: gypsum nodules 26.1m: joint, horizontal, planar, gapped, gypsum infill	112
27			R17 107.8	TCR = 100% SCR = 100% RQD = 93%	111			0 0 0			111
28			R18 106.3	TCR = 100% SCR = 100% RQD = 98%	110			0 3 0	28.4m : UCS = 18.2 MPa γ = 25.4 kN/m ³		110
29			R19 104.8	TCR = 100% SCR = 100% RQD = 98%	109			0 0 0			109
30			R20 103.3	TCR = 100% SCR = 100% RQD = 93%	108			0 3 2		30.0m: joint, dipping, gapped, undulating, oxidized 30.0m: joint, dipping, gapped, planar, clean 30.4m: joint, horizontal, planar, gapped, gypsum veneer	108
31			R21 102.4	TCR = 100% SCR = 98% RQD = 76%	107			0 0 0	31.0m : UCS = 10.7 MPa γ = 26.0 kN/m ³		107
32			R22 101.3	TCR = 100% SCR = 100% RQD = 100%	106			4 4 2			106
33			R23 100.3	TCR = 100% SCR = 100% RQD = 100%	105			1 0 1			105
34			R24 99.3	TCR = 100% SCR = 100% RQD = 100%	104			1 1 1	33.7m : UCS = 10.1 MPa γ = 25.8 kN/m ³		104
35			R25 98.3	TCR = 100% SCR = 100% RQD = 95%	103			1 0 1		34.9m: gypsum nodules 35.3m: joint, horizontal, planar, gapped, gypsum infill 35.6m: thinly laminated gypsum	103
36			R26 97.3	TCR = 100% SCR = 100% RQD = 95%	102			1 1 3		36.0m: thinly laminated gypsum 36.1m: thinly laminated gypsum	102

(continued next page)



ROCK CORE LOG 5+060

Project No. 11-12-2073

Date started July 19, 2013

Sheet No. 3 of 4

Hole Diameter : **HQ**, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

library: library - terraprobe gint.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh&rc logs - rev4 - updated chainage.gpj

(continued next page)



ROCK CORE LOG 5+060

Project No. 11-12-2073

Date started July 19, 2013

Sheet No. 4 of 4

Hole Diameter : **HQ**, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

library: library - terraprobe gint.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh&rc logs - rev4 - updated chainage.gpj

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : December 27, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599465, N: 4807227 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : HILTI DD350, restricted access equipment

Drilling Method : Hand augers, Hilti rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
0	106.3	GROUND SURFACE					106										
1							105										
2							104										
3							103										
4							102										
4.3	102.0	QUEENSTON FORMATION (See rock core log for details)					102										
5.2	101.1	CORE LOSS		1	CORE		101										
5.7	100.6	QUEENSTON FORMATION (See rock core log for details)		2	CORE		100										
				3	CORE		99										
				4	CORE		98										
				5	CORE		97										
							96										

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started December 27, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599465, N: 4807227 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : Hilti, OD=89mm, ID=76mm

Rig type : HILTI DD350, restricted access equipment

Drilling Method : Hand augers, Hilti rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● Estimated Strength 5 25 50 100 250	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 4.3m below grade	102.0								
5		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	4.3	TCR = 71% SCR = 46% RQD = 34%	102				4.5m : UCS = 18.4 MPa γ = 25.3 kN/m ³	— 4.3m: joint: open, clay infill	102
6		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong	100.6		101						101
7		shale : 93% limestone : 7%	5.7		100						100
8		CORE LOSS	99.2		99				7.0m : UCS = 14.6 MPa γ = 25.5 kN/m ³	— 6.0m: joint: open, clay infill — 6.2m: joint: open, clay infill	99
9		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, unaltered to slightly altered;	7.1	TCR = 99% SCR = 95% RQD = 83%	98						98
10		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong	97.3		97				8.4m : UCS = 12.8 MPa γ = 25.6 kN/m ³	— 7.9m: joint: subvertical, planar, rough, clean	97
		shale : 93% limestone : 7%	9.0		96						96
			10.4	TCR = 100% SCR = 100% RQD = 100%	96				9.7m : UCS = 23.8 MPa γ = 25.8 kN/m ³	— 9.2m: joint: open, sandy silt w clay infilling	96
			10.8m								

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : December 18, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599486, N: 4807248 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : HILTI DD350, restricted access equipment

Drilling Method : Hand augers, Hilti rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone X	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	105.6	GROUND SURFACE													
1		CLAYEY SILT , sand, gravel, and cobble inclusions, inferred firm, brownish red, moist to wet													
2	103.3	QUEENSTON FORMATION (See rock core log for details)		1	CORE										
3	2.3			2	CORE										
4				3	CORE										
5				4	CORE										
6				5	CORE										
7				6	CORE										
8				7	CORE										
9				8	CORE										
10				9	CORE										
	95.9			10	CORE										
	9.7														

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started December 18, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599486, N: 4807248 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : Hilti, OD=89mm, ID=76mm

Rig type : HILTI DD350, restricted access equipment

Drilling Method : Hand augers, Hilti rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa) ● Estimated Strength	Natural Fractures		Laboratory Testing	Comments	Elevation (m)
								Frequency	Spacing			
		Rock coring started at 2.3m below grade	103.3									
		QUEENSTON FORMATION										
		Shale , red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	2.3 R1	TCR = 74% SCR = 42% RQD = 21%	103			>10				103
3			2.8 R2	TCR = 89% SCR = 79% RQD = 60%				4			2.9m: joint: horizontal, undulating, gapped, clay veneer	
			3.0 R3	TCR = 67% SCR = 60% RQD = 52%	102			1		3.7m : UCS = 7 MPa γ = 24.7 kN/m ³	2.9m: joint: horizontal, undulating, gapped, clay veneer	102
4		interbedded with limestone , greenish grey, very thinly bedded to thinly bedded, weak to medium strong	101.5 R4	TCR = 74% SCR = 74% RQD = 65%	101			0		4.3m : UCS = 15.2 MPa γ = 25.7 kN/m ³	3.1m: joint: horizontal, undulating, gapped, clay veneer	101
		shale : 87% limestone : 13%	100.7 R5	TCR = 69% SCR = 61% RQD = 28%	100			2				
5			4.9 R6	TCR = 75% SCR = 72% RQD = 50%	99			5			5.1m: joint: subvertical, undulating, gapped, oxidation	
6			5.8 R7	TCR = 75% SCR = 65% RQD = 50%	98			2			5.3m: joint: subvertical, planar, gapped, clay veneer and oxidation	100
			6.6 R8	TCR = 65% SCR = 65% RQD = 65%	97			2				
7			7.8 R9	TCR = 100% SCR = 100% RQD = 100%	96			4			7.1m: joint: horizontal, planar, gapped, oxidation and clay veneer	
8			8.4 R10	TCR = 100% SCR = 100% RQD = 100%	96			4			7.2m: joint: horizontal, planar, gapped, oxidation and clay veneer	98
			9.4 R10	TCR = 100% SCR = 100% RQD = 100%	96			3			7.2m: joint: subvertical, undulating, open, oxidation	
9			9.7m					1		8.5m : UCS = 18.3 MPa γ = 25.3 kN/m ³	7.3m: joint: horizontal, planar, gapped, oxidation and clay veneer	97
								1		9.1m : UCS = 17.7 MPa γ = 26.1 kN/m ³	7.9m: joint: horizontal, undulating, gapped, clay veneer	
								1			8.2m: joint: horizontal, planar, gapped, oxidation	

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : December 12, 2012

Location : Burlington/Oakville, Ontario

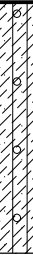
Sheet No. : 1 of 1

Position : E: 599496, N: 4807260 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : HILTI DD350, restricted access equipment

Drilling Method : Hand augers, Hilti rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
0	105.8	GROUND SURFACE															
1		CLAYEY SILT , sand, gravel, and cobble inclusions, inferred firm, brownish red, moist to wet QUEENSTON FORMATION (See rock core log for details)		1	CORE		105										
2				2	CORE		104										
3	103.2			3	CORE		103										
4	2.6			4	CORE		102										
5				5	CORE		101										
6				6	CORE		100										
7				7	CORE		99										
8				8	CORE		98										
9				9	CORE		97										
10				10	CORE		96										
				11	CORE												
				12	CORE												
	95.7																
	10.1																

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started December 12, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599496, N: 4807260 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : Hilti, OD=89mm, ID=76mm

Rig type : HILTI DD350, restricted access equipment

Drilling Method : Hand augers, Hilti rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 2.6m below grade	103.2								
3		QUEENSTON FORMATION Shale, red, medium bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, unaltered to slightly altered;	R1 2.6 2.7 R2	TCR = 100% SCR = 0% RQD = 0%	103			>10			103
4		interbedded with limestone, greenish grey, very thinly bedded to thinly bedded, weak to medium strong	102.3 3.5 R3	TCR = 55% SCR = 0% RQD = 0%	102			4		3.5-3.8m: mechanical break zone	102
		shale : 91% limestone : 9%	3.8 R4	TCR = 18% SCR = 18% RQD = 0%	101			4		4.0m: joint: subvertical, planar, oxidized	101
5			4.1 R5	TCR = 85% SCR = 0% RQD = 0%	100			3		4.4-4.7m: mechanical break zone	100
6			4.7 R6	TCR = 100% SCR = 79% RQD = 79%	99			1	5.4m : UCS = 17.9 MPa γ = 24.9 kN/m³	4.8m: joint: horizontal, undulating, gapped, clay infill	99
7			5.2 R7	TCR = 88% SCR = 70% RQD = 70%	98			0		5.2m: joint: horizontal, undulating, gapped, oxidized	98
8			5.8 R8	TCR = 62% SCR = 62% RQD = 54%	97			2		6.1-6.4m: mechanical break zone	97
9			99.0 6.8 R9	TCR = 93% SCR = 70% RQD = 65%	96			0		6.3m: joint: horizontal, undulating, gapped, clay infill	96
10			98.2 7.6 R10	TCR = 74% SCR = 74% RQD = 74%				1		7.3m: joint: horizontal, planar, gapped, oxidized	
			97.3 8.5 R11	TCR = 78% SCR = 78% RQD = 67%				0		7.6-7.9m: mechanical break zone	
			96.3 9.5 R12	TCR = 80% SCR = 80% RQD = 68%				4		8.5m: joint: horizontal, undulating, gapped, oxidized	
			10.1m	TCR = 65% SCR = 65% RQD = 65%				3	9.8m : UCS = 20.5 MPa γ = 26.0 kN/m³	8.6m: joint: horizontal, undulating, gapped, oxidized	

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : December 10, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599514, N: 4807288 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : HILTI DD350, restricted access equipment

Drilling Method : Hand augers, Hilti rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
0	105.4	GROUND SURFACE													
1	104.1	CLAYEY SILT , sand, gravel, and cobble inclusions, inferred firm, brownish red, moist to wet					105								
2	1.3	QUEENSTON FORMATION (See rock core log for details)		1	CORE		104								
3				2	CORE		103								
4				3	CORE		102								
5				4	CORE		101								
6				5	CORE		100								
7				6	CORE		99								
8				7	CORE		98								
9				8	CORE		97								
9	96.3			9	CORE										
9.1				10	CORE										

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Sheet No. 1 of 1

Drilling Method : Hand augers, Hilti rock coring

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : October 1, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 1 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
0	139.2	GROUND SURFACE					139	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
1		Daylighting					138										
2	137.7 1.5	INFERRED BEDROCK, shale and partially weathered, red and grey		1	SS	100 / 150mm	137										Unstabilized Water Level
3				2	SS	100 / 75mm	136										
4				3	SS	100 / 50mm	135										
5	134.4 4.8	QUEENSTON FORMATION (See rock core log for details)		4	SS	100 / 0mm	134										
6				1	CORE		133										
7				2	CORE		132										
8				3	CORE		131										
9				4	CORE		130										
10				5	CORE		129										
11				6	CORE		128										
12				7	CORE		127										
13				8	CORE		126										
14							125										
15							124										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : October 1, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)					123	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
		QUEENSTON FORMATION (See rock core log for details) (continued)		8	CORE												
17				9	CORE		122										
18							121										
19				10	CORE		120										
20							119										
21				11	CORE		118										
22							117										
23				12	CORE		116										
24							115										
25				13	CORE		114										
26							113										
27				14	CORE		112										
28							111										
29				15	CORE		110										
30							109										
31				16	CORE		108										
				17	CORE												
				18	CORE												
				19	CORE												

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : October 1, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)					107	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
33		QUEENSTON FORMATION (See rock core log for details) (continued)		19	CORE		106										
34				20	CORE		105										
35				21	CORE		104										
36				22	CORE		103										
37				23	CORE		102										
38				24	CORE		101										
39				25	CORE		100										
40				26	CORE		99										
41				27	CORE		98										
42				28	CORE		97										
43				29	CORE		96										
44							95										
45							94										
46							93										
47							92										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : October 1, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 4 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
48		(continued)					91										
		QUEENSTON FORMATION (See rock core log for details) (continued)		29	CORE		90										
49				30	CORE		89										
50							88										
51				31	CORE		87										
52				32	CORE		86										
53							85										
54				33	CORE		84										
55				34	CORE		83										
56							82										
57				35	CORE		81										
58				36	CORE		80										
59							79										
60				37	CORE		78										
61				38	CORE		77										
62							76										
63				39	CORE												
				40	CORE												

(continued next page)

Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : October 1, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 5 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
64		(continued)												
65		QUEENSTON FORMATION (See rock core log for details) (continued)		40	CORE	75								
66	73.7 65.5	GEORGIAN BAY FORMATION (See rock core log for details)		41	CORE	74								
67				42	CORE	73								
68				43	CORE	72								
69				44	CORE	71								
70	69.1 70.1					70								

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started October 1, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6			
		Rock coring started at 4.8m below grade	134.4															
5		QUEENSTON FORMATION Shale, red, weak to medium strong, slight to no fissility; joints: horizontal, gapped; interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong	4.8	TCR = 83% SCR = 8% RQD = 0%	134											>10	5.3m: joint, subvertical, planar, open, oxidized	134
			R1													>10		
6			133.5		133											0		
			5.7	TCR = 100% SCR = 100% RQD = 100%												1		
			R2													0		
7			131.9		132											1		
			7.3	TCR = 100% SCR = 98% RQD = 95%												0		
8			R3		131											1		
			130.4		130											0	8.4m: joint, subvertical, undulating, closed, clean	131
			8.8	TCR = 97% SCR = 91% RQD = 88%												4		
9			R4		129											1		
			128.9		130											2	9.1m: joint, horizontal, undulating, gapped, oxidized	130
			10.3	TCR = 100% SCR = 98% RQD = 78%												3		
10			R5		129											0	9.9-9.9m: joints, horizontal, undulating, gapped, clay veneer	129
			127.4		128											0		
			11.8	TCR = 97% SCR = 97% RQD = 80%												4		
11			R6		128											2	11.0m: joint, horizontal, undulating, gapped, oxidized, clay seam	128
			125.8		127											3	11.6m: joint, subvertical, planar, gapped, clean	127
			13.4	TCR = 100% SCR = 90% RQD = 66%												1		
12			R7		126											0		
			124.3		125											2		
			14.9	TCR = 100% SCR = 98% RQD = 77%												2	13.2m: joint, horizontal, undulating, gapped, clay/weathered coating	126
13			R8		124											5	13.3-13.3m: clay seam	125
			122.8		123											3	13.4m: joint, subvertical, undulating, closed, clean	124
			16.4	TCR = 95% SCR = 93% RQD = 82%												5	14.1-14.1m: clay seam	123
14			R9		122											2	14.5-14.7m: clay seam	122
			121.3		121											2	14.9m: joint, subvertical, planar, gapped, oxidized	121
			17.9	TCR = 100% SCR = 100% RQD = 93%												5	15.0m: joint, subvertical, planar, gapped, oxidized	120
15			R10		120											0	15.6m: joint, horizontal, undulating, open, clay infill	120
			119.7		119											1	15.6m: joint, dipping, planar, open, oxidized and clay infill	119
			19.5	TCR = 100% SCR = 100% RQD = 100%												0		
16			R11													0		
																0	17.4-17.5m: clay seam	
																0		
																0		
																0	18.7m: joint, horizontal, undulating, gapped, clay/weathered infill	
																1	19.2m: gypsum vug	
																0		
																0		
																0		
																0		

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started October 1, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa)	Natural Fractures	Laboratory Testing	Comments	Elevation (m)
						Z1 Z2 Z3 Z4	5 25 50 100 250 Estimated Strength	Frequency Spacing			
21		QUEENSTON FORMATION Shale, red, weak to medium strong, slight to no fissility; joints: horizontal, gapped; interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong (continued)	R112 21.0		118			1		20.8m: joint, horizontal, planar, gapped, gypsum infill	118
			R12	TCR = 100% SCR = 100% RQD = 100%	117			1		21.2m: joints, horizontal, planar, closed, gypsum coating	
22								0		21.5m: joints, horizontal, planar, closed, gypsum coating	
			116.7 22.5		117			1		22.0m: joints, horizontal, planar, closed, gypsum coating	117
								0			
23			R13	TCR = 100% SCR = 100% RQD = 82%	116			1			
								4			
24			115.2 24.0		115			2			
								0			
25			R14	TCR = 100% SCR = 100% RQD = 93%	114			1			
								3			
26			113.7 25.5		113			0			
								4			
27			R15	TCR = 100% SCR = 100% RQD = 92%	113			0			
								0			
28			112.1 27.1		112			0			
								1			
29			R16	TCR = 100% SCR = 100% RQD = 87%	111			3		28.0m: joint, horizontal, undulating, gapped, clay infill	111
								2		28.2m: joint, horizontal, planar, gapped, clay veneer	
30			110.6 28.6		110			3		28.5m: joint, horizontal, planar, gapped, clay veneer	
								2		28.9m: clay seam	
31			R17	TCR = 100% SCR = 96% RQD = 86%	109			0			
								3			
32			109.2 30.0		109			2		29.5m: joint, horizontal, undulating, open, clay/weathered coating	
								1		30.1m: joints, subvertical, planar, closed, clean	109
33			R18	TCR = 100% SCR = 100% RQD = 94%	108			1		30.7m: joints, subvertical, planar, closed, clean	
								1			
34			107.6 31.6		107			0		31.4m: joints, subvertical, planar, closed, clean	
								2		31.4m: joint, horizontal, planar, gapped, clay veneer	
35			R19	TCR = 98% SCR = 98% RQD = 89%	106			4		32.0m: joint, horizontal, planar, gapped, weathered infill	107
								0			
36			106.0 33.2		106			0			
								0			
37			R20	TCR = 100% SCR = 100% RQD = 98%	105			0			
								2			
38			104.5 34.7		104			0			
								0			
39			R21	TCR = 98% SCR = 98% RQD = 79%	103			0		35.7m: joint, horizontal, planar gapped, clay veneer	
								3			
40			103.0 36.2		103			5			
								1			
41			R22					0			
								1			

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started October 1, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
37		QUEENSTON FORMATION Shale, red, weak to medium strong, slight to no fissility; joints: horizontal, gapped; interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong (continued)	R22 101.4 37.8	TCR = 98% SCR = 97% RQD = 87%	102									0			36.7m: joints, horizontal, undulating, gapped, weathered 36.7-36.8m: clay seam, joint, horizontal, undulating, open, weathered 37.1m: joints, horizontal, undulating, gapped, weathered 37.1m: joints, horizontal, undulating, gapped, weathered 37.2m: joints, horizontal, undulating, gapped, weathered 37.3m: joints, horizontal, undulating, gapped, weathered 37.4m: joints, horizontal, undulating, gapped, weathered 38.9-39.0m: crush zone	102
38			R23 99.9 39.3	TCR = 100% SCR = 97% RQD = 85%	101									2				101
39			R24 98.4 40.8	TCR = 100% SCR = 100% RQD = 100%	100									0		39.2m: UCS = 24.6 MPa γ = 25.1 kN/m ³		100
40			R25 96.9 42.3	TCR = 100% SCR = 100% RQD = 100%	99									1			39.8m: joint, horizontal, planar, gapped, gypsum coating	99
41			R26 95.4 43.8	TCR = 100% SCR = 100% RQD = 95%	98									0		41.1m: UCS = 18.9 MPa γ = 25.1 kN/m ³		98
42			R27 93.8 45.4	TCR = 100% SCR = 100% RQD = 100%	97									0			42.2m: joint, horizontal, planar, gapped, gypsum veneer	97
43			R28 92.3 46.9	TCR = 100% SCR = 100% RQD = 98%	96									0		43.5m: UCS = 25.4 MPa γ = 25.1 kN/m ³		96
44			R29 90.8 48.4	TCR = 100% SCR = 100% RQD = 100%	95									0				95
45			R30 89.2 50.0	TCR = 100% SCR = 100% RQD = 78%	94									0		45.1m: UCS = 21.2 MPa γ = 25.2 kN/m ³	45.1m: joint, horizontal, planar, gapped, gypsum coating	94
46			R31 87.7 51.5	TCR = 100% SCR = 100% RQD = 100%	93									1		46.4m: UCS = 36.8 MPa γ = 25.3 kN/m ³	46.0m: joint, horizontal, planar, gapped, clay veneer	93
47			R32 85.2 53.0	TCR = 100% SCR = 97% RQD = 80%	92									2		47.2m: E _{PH} = 6047 MPa 47.4m: UCS = 22.2 MPa γ = 25.1 kN/m ³	47.2m: joint, horizontal, undulating, gapped, weathered veneer 47.4m: joint, horizontal, undulating, gapped, gypsum veneer 47.7m: joint, horizontal, planar, gapped, gypsum coating	92
48			R33 82.7 55.5	TCR = 100% SCR = 95% RQD = 72%	91									0		48.5m: UCS = 31.5 MPa γ = 25.7 kN/m ³		91
49			R34 80.2 58.0		90									1		49.4m: E _{PH} = 5769 MPa	49.5m: joint, horizontal, planar, gapped, clay veneer	90
50			R35 77.7 60.5		89									3			50.2m: joint, horizontal, undulating, gapped, clay infill 50.5m: thin gypsum bed	89
51			R36 75.2 63.0		88									2		50.9m: UCS = 17.5 MPa γ = 26.0 kN/m ³	51.1m: joint, horizontal, undulating, gapped, gypsum veneer 51.2-51.3m: clay seam 51.5m: joint, horizontal, planar, gapped, gypsum coating 51.7-51.7m: clay seam 51.9-52.0m: crush zone	88
52			R37 72.7 65.5		87									4		51.8m: E _{PH} = 1390 MPa 52.2m: UCS = 19.1 MPa γ = 25.7 kN/m ³	52.4-52.4m: crush zone 52.6m: joint, subvertical, planar, gapped,	87

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started October 1, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 4 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures Frequency	Spacing	Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4					
53		QUEENSTON FORMATION Shale, red, weak to medium strong, slight to no fissility; joints:horizontal, gapped; interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong (continued)	88.2 53.0		86									2			clean	86
														2			52.8m: thin gypsum bed	
														10		53.3m : E _{pu} = 2186 MPa	53.3m: joint, horizontal, undulating, gapped, clay veneer	
														3		53.7m : UCS = 25.1 MPa γ = 25.9 kN/m ³	53.4m: joint, horizontal, undulating, open, clay and weathered infill	
														3			53.4-53.4m: clay seam	
														2		54.6m : UCS = 30.6 MPa γ = 25.7 kN/m ³	53.5m: joint, horizontal, planar, gapped, gypsum coating	85
														0		54.9m : E _{pu} = 5672 MPa	53.5m: joint, horizontal, planar, gapped, gypsum coating	
														0			53.5m: joint, horizontal, undulating, gapped, clay infill	
														0			53.9m: joint, horizontal, planar, gapped, clay veneer	84
														2			54.0m: joint, horizontal, undulating, gapped, clay infill	
														1			54.0m: joint, horizontal, undulating, gapped, gypsum coating	
														0			55.7-55.7m: clay seam	83
														0		56.5m : UCS = 22.9 MPa γ = 26.0 kN/m ³		
														2		56.9m : E _{pu} = 5928 MPa	56.7m: joints, horizontal, planar, gapped, clay veneer	
														1			56.7m: joints, horizontal, planar, gapped, clay veneer	82
														0		57.5m : UCS = 58.7 MPa γ = 26.3 kN/m ³	57.2m: joint, horizontal, planar, gapped, gypsum veneer	
														2			57.7-57.7m: clay seam	
														0			57.7m: joint, horizontal, planar, gapped, gypsum veneer	81
														3		58.5m : UCS = 20.2 MPa γ = 26.1 kN/m ³	58.3m: joints, horizontal, undulating, gapped, clay veneer	
														5			58.3m: joints, horizontal, undulating, gapped, clay veneer	
														1			58.3m: joints, horizontal, undulating, gapped, clay veneer	80
														0			58.6-58.6m: joints, horizontal, undulating, gapped, clay veneer	
														0			58.7m: joint, horizontal, planar, closed, gypsum veneer	
														0			59.0m: joint, horizontal, open, planar, clay infill	79
														0				
														0		61.1m : UCS = 16.7 MPa γ = 26.0 kN/m ³		
														1				
														0		62.7m : UCS = 28.6 MPa γ = 26.1 kN/m ³	62.2m: joint, horizontal, planar, gapped, clay veneer	77
														1				
														0				
														0				
														2		63.9m : UCS = 47.2 MPa γ = 25.9 kN/m ³	63.4m: joint, horizontal, undulating, gapped, weathered	76
														0				
														3				
														5			64.3m: joint, horizontal, planar, open, weathered infill	75
														2				
														3		65.2m : UCS = 45.3 MPa γ = 25.9 kN/m ³	64.8m: joints, horizontal, planar, gapped to open, clay infill	
														0			64.9m: joints, horizontal, planar, gapped to open, clay infill	74
														0			65.0m: joints, horizontal, planar, gapped to open, clay infill	
														1				
														0			66.0m: joint, horizontal, planar, gapped, clay veneer	73
														0				
														0				
														1			67.6m: joint, horizontal, undulating, gapped, clay coating	72
														1				
														0			68.1m: gypsum nodules	71
														0				
														0				

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started October 1, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 5 of 5

Position : E: 599829, N: 4807621 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa) Estimated Strength				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing	
69				TCR = 100% SCR = 100% RQD = 100%	70											1		— 69.0m: joint, horizontal, planar, gapped, gypsum coating — 69.4m: joint, horizontal, planar, gapped, gypsum infill 69.6m: joint, horizontal, undulating, gapped, gypsum coating
			R43													1		
			69.4													1		
70			69.8 R44	TCR = 100% SCR = 100% RQD = 100%												0		
			70.1m															

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Project No.: 11-12-2073

Date started : September 14, 2012

Sheet No. : 1 of 2

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 14, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 2

Position : E: 600175, N: 4808149 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit PL MC LL 10 20 30			Headspace Vapour	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value								
16		(continued)												
17		QUEENSTON FORMATION (See rock core log for details) (continued)		4	CORE		118							
18				5	CORE		117							
19							116							
20				6	CORE		115							
21							114							
113.1 21.7														

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Project No. 11-12-2073

Date started September 14, 2012

Sheet No. 1 of 2

library: library - terraprobe gint - copy.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh&rc logs - rev4 - updated chainage.gpb

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Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 14, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 2

Position : E: 600175, N: 4808149 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing	
21			R6	TCR = 98% SCR = 95% RQD = 88%	114											1		114
			113.1													3		
																2		
																2		

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 6, 2012

Location : Burlington/Oakville, Ontario

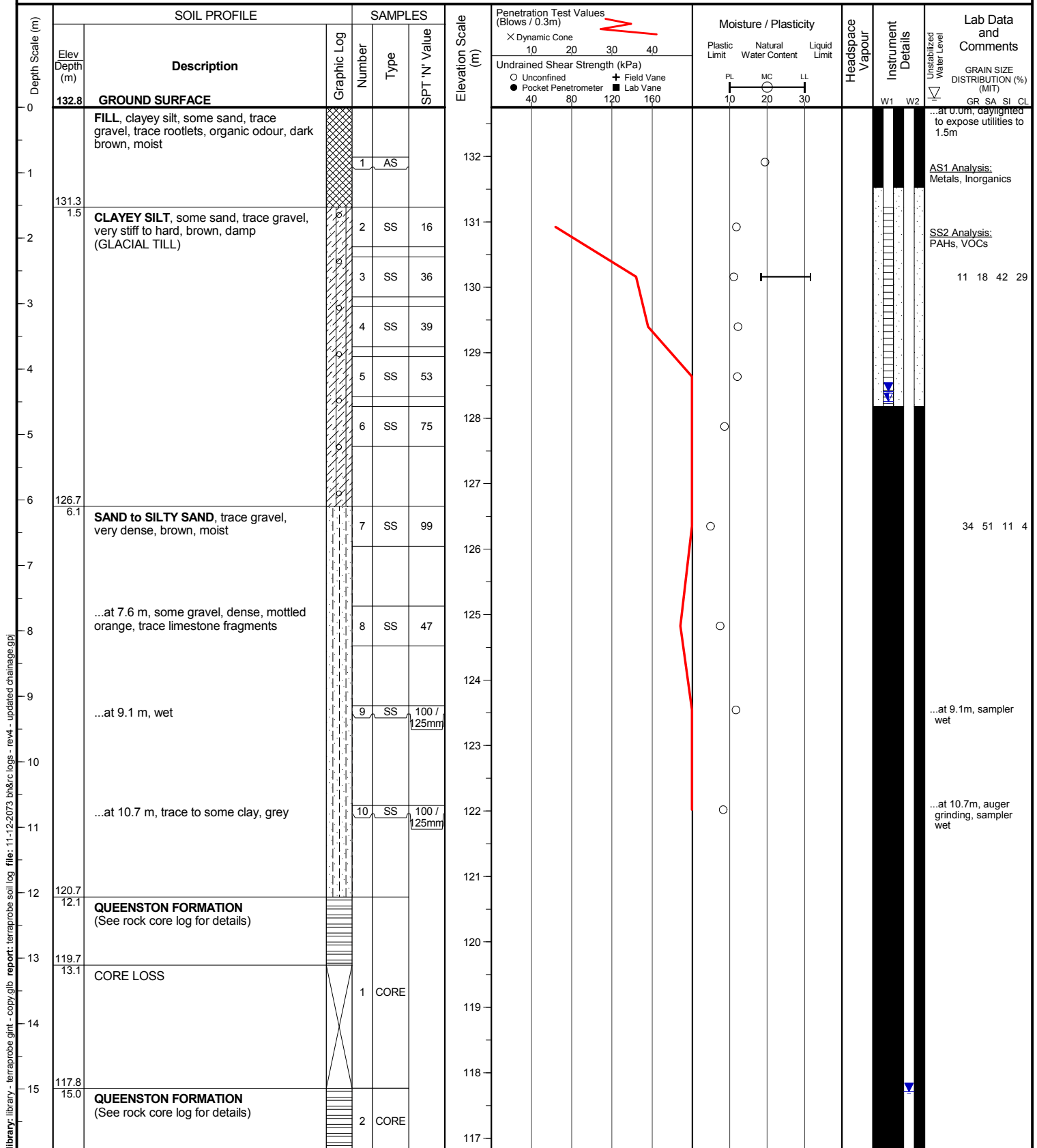
Sheet No. : 1 of 4

Position : E: 600257, N: 4808274 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring



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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 6, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 600257, N: 4808274 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane				PL	MC	LL			
		QUEENSTON FORMATION (See rock core log for details) (continued)						40	80	120	160	10	20	30			
17				2	CORE		116										
18							115										
19				3	CORE		114										
20							113										
21							112										
22				4	CORE		111										
23							110										
24							109										
25				5	CORE		108										
26							107										
27							106										
28				6	CORE		105										
29							104										
30							103										
31				7	CORE		102										
							101										

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Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 6, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 600257, N: 4808274 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			
		QUEENSTON FORMATION (See rock core log for details) (continued)															
33				7	CORE		100										
34							99										
35				8	CORE		98										
36							97										
37							96										
38				9	CORE		95										
39							94										
40							93										
41				10	CORE		92										
42							91										
43							90										
44				11	CORE		89										
45							88										
46							87										
47				12	CORE		86										
							85										

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 6, 2012

Location : Burlington/Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 600257, N: 4808274 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
48		(continued)												
49		QUEENSTON FORMATION (See rock core log for details) (continued)		12	CORE									
50				13	CORE									
51														
52	80.5 52.3	GEORGIAN BAY FORMATION (See rock core log for details)		14	CORE									
53														
54														
55														
56				15	CORE									
57														
58														
59				16	CORE									
60														
61	71.6 61.2			17	CORE									

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.

W1 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Sep 21, 2012	4.5	128.3
Oct 10, 2012	dry	n/a
Nov 2, 2012	4.4	128.3
Jan 7, 2013	4.3	128.4

W2 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Oct 10, 2012	27.9	104.9
Oct 19, 2012	30.7	102.0
Nov 2, 2012	31.9	100.9
Jan 7, 2013	15.0	117.7



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 6, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 1 of 4

Position : E: 600257, N: 4808274 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones	UCS (MPa) ● Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 12.1m below grade	120.7								
13		QUEENSTON FORMATION Shale, red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, gapped to open, oxidized to non-softening clay filling;	12.1								
14		interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong shale : 80% limestone : 20% CORE LOSS	R1	TCR = 36% SCR = 4% RQD = 4%						13.1-15.0m: core loss	
15		QUEENSTON FORMATION Shale, red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, slightly altered to oxidized;	117.8								
16		interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong shale : 80% limestone : 20%	15.0							15.2m: joint, subvertical, gapped, planar, clean 15.3-15.3m: weathered zone	
17			R2	TCR = 97% SCR = 74% RQD = 61%						16.1m: joint, subvertical, gapped, planar, clean 16.5m: joint, dipping, gapped, planar, clean 16.7m: joint, subvertical, gapped, planar, clean 16.8m: joint, subvertical, gapped, planar, clean 17.2-17.4m: highly weathered zone	
18			114.7						17.6m: UCS = 13.2 MPa γ = 25.7 kN/m ³	17.8-17.9m: clay seam 18.1-18.2m: clay seam	
19			18.1							18.8m: joint, horizontal, open, planar, clay infill 18.9m: joint, subvertical, gapped, planar, weathered 19.2m: joint, horizontal, closed, planar, clay veneer 19.4m: joint, subvertical undulating, gapped, clean 19.9m: joint, subvertical, closed, planar 20.0m: joint, subvertical, undulating, gapped, clean 20.1m: joint, subvertical, closed, planar, clean 20.1m: joint, subvertical, undulating, gapped, clean 20.4-20.4m: weathered zone 20.7m: joint, horizontal, gapped, planar, clay and weathered infill 21.0m: joint, subvertical, gapped, planar, clay veneer 21.4m: joint, horizontal, undulating, gapped, clay veneer 21.5m: joint, horizontal, gapped, planar, clay veneer 21.6m: joint, horizontal, undulating, gapped, clay coating 21.8m: joint, horizontal, undulating, open, weathered 21.8-21.9m: clay seams 22.0m: joint, subvertical, closed, planar, clean 22.1m: joint, subvertical, undulating, gapped, clean 22.3m: joint, subvertical, gapped, planar, clean 22.3-22.3m: crush zone 22.3m: joint, horizontal, gapped, planar, clay coating 23.4m: joint, horizontal, undulating, gapped, clay coating 23.9m: joint, subvertical, gapped, planar, clean 24.2m: joint, horizontal, closed, planar, clay coating 24.3m: joint, horizontal, gapped, planar, clay infill 24.3m: joint, horizontal, gapped, planar, clay coating 24.6m: joint, horizontal, gapped, planar, clay veneer 24.7-24.7m: crush zone and clay infill 24.7m: joint, horizontal, gapped, planar, partially weathered with clay veneer 24.9-25.0m: joints, horizontal, undulating, gapped, clay veneer	
20				R3	TCR = 100% SCR = 64% RQD = 58%						
21			111.7								
22			21.1								
23				R4	TCR = 100% SCR = 82% RQD = 68%						
24			108.7								
25			24.1						25.1m: UCS = 17.5 MPa γ = 25.6 kN/m ³		
26				R5	TCR = 100% SCR = 91% RQD = 81%						
27			105.6								
28			27.2	R6	TCR = 100% SCR = 90% RQD = 83%						

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 6, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 4

Position : E: 600257, N: 4808274 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● Estimated Strength 5 25 50 100 250	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
29		QUEENSTON FORMATION Shale , red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, slightly altered to oxidized; interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong <i>shale : 80% limestone : 20% (continued)</i>	R6	TCR = 100% SCR = 90% RQD = 83%	104		●	0	28.4m : UCS = 9.8 MPa γ = 25.7 kN/m ³	clean	104
								1		28.0m: joint, subvertical, undulating, gapped, clean	
								1			
								0			
								2			
								2			
								2	29.9m : UCS = 9.9 MPa γ = 25.8 kN/m ³	29.9m: joint, horizontal, open, planar, clay infill	103
								0		30.2m: joint, subvertical, gapped, planar, clean	
								0			
								1			
								2			
								5		32.1-32.3m: partially weathered zone	
								1		32.4-32.5m: joint, subvertical, closed, planar, clean	
								6			
								4			
								5		32.9m: joint, horizontal, gapped, planar, clean	
								4		32.9m: joint, dipping, closed, planar, clean	
								3			
								3	34.0m : UCS = 35.5 MPa γ = 25.8 kN/m ³		
								0			
								1			
								2		34.7m: joint, horizontal, undulating, gapped, clay veneer	98
								3		34.8m: joint, horizontal, undulating, gapped, clay veneer	
								0		34.9m: joint, horizontal, undulating, gapped, clay veneer	
								1		35.0m: joint, subvertical, undulating, clean	
								5		35.2m: joint, horizontal, gapped, planar, clay veneer	97
								0		35.7-35.9m: R8 - 5" core loss from weathered/clay seam	
								3		35.9m: joint, subvertical, gapped, planar, clean	
								3		36.1m: joint, horizontal, undulating, gapped, clay veneer	
								1		36.9m: joint, dipping, undulating, gapped, clean	
								1	37.4m : UCS = 10.3 MPa γ = 25.8 kN/m ³	37.1-37.2m: crush zone	
								2		37.2m: joint, subvertical, closed, planar, clean	95
								1		38.0m: joints, horizontal, undulating, gapped, clay veneer	
								0		38.1m: joints, horizontal, undulating, gapped, clay veneer	94
								0			
								0			
								1	39.5m : UCS = 13.9 MPa γ = 25.5 kN/m ³		
								7		39.8m: joints, horizontal, undulating, gapped, clay veneer	93
								7		39.8m: joint, dipping, gapped, planar, clay veneer	
								2		39.9m: joints, horizontal, undulating, gapped, clay veneer	
								2		39.9m: joints, horizontal, undulating, gapped, clay veneer	92
								6		40.1m: joint, dipping, gapped, planar, clay veneer	
								4		40.3m: joint, dipping, undulating, gapped, clean	
								2	41.7m : UCS = 13.8 MPa γ = 25.4 kN/m ³	40.7m: joint, horizontal, undulating, gapped, clay veneer	91
								1		40.8m: joint, horizontal, undulating, gapped, clay veneer	
								1		41.2m: joints, horizontal, undulating, gapped, clay veneer	
								1		41.6m: joint, dipping, gapped, planar, clean	90
								0		42.4m: joint, horizontal, gapped, planar, gypsum veneer	
								0		42.7m: joint, horizontal, gapped, planar, gypsum coating	
								1		43.8m: joint, horizontal, gapped, planar, gypsum veneer	89
								1			

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 6, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 4

Position : E: 600257, N: 4808274 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
45		QUEENSTON FORMATION Shale, red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, slightly altered to oxidized; interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong shale : 80% limestone : 20% (continued)	R11 87.2 45.6	TCR = 100% SCR = 98% RQD = 96%	88									1		44.4m : UCS = 10.7 MPa γ = 26.2 kN/m ³	— 45.1m: joint, dipping, closed, planar, clean — 45.2m: joint, horizontal, undulating, gapped, clay veneer	88
46					87									0				87
47			R12	TCR = 100% SCR = 99% RQD = 93%	86									1			— 46.2-46.3m: partially weathered seam — 46.3m: joint, horizontal, gapped, planar, clay veneer	86
48					85									0				85
49					84									2			— 47.9m: joint, horizontal, gapped, planar, gypsum coating	84
50			R13	TCR = 100% SCR = 98% RQD = 95%	83									1		49.2m : UCS = 32.7 MPa γ = 25.9 kN/m ³	— 48.7m: joints, horizontal, undulating, gapped, clay veneer — 49.0m: joint, horizontal, gapped, planar, gypsum coating — 49.2m: joint, horizontal, gapped, planar, gypsum coating	83
51					82									0			— 50.0m: joints, horizontal, gapped, planar, clay veneer	82
52					81									1		51.0m : UCS = 23.7 MPa γ = 25.8 kN/m ³	— 51.7m: joints, horizontal, undulating, gapped, clay coating	81
53		GEORGIAN BAY FORMATION Shale, dark grey, medium bedded, weak, fissile; joints:horizontal, planar, clean, closed; interbedded with limestone , grey, thinly bedded, medium strong shale : 70% limestone : 30%	R14	TCR = 100% SCR = 97% RQD = 93%	80									1			— 52.4m: joint, horizontal, gapped, planar, clay coating — 52.7-52.7m: weathered zone	80
54					79									0			— 53.0m: joint, horizontal, gapped, planar, clay coating — 53.0-53.1m: joints, horizontal, gapped, planar, clay veneer	79
55					78									1		54.2m : UCS = 15.1 MPa γ = 26.1 kN/m ³		78
56			R15	TCR = 100% SCR = 98% RQD = 87%	77									1			— 55.9-56.2m: joints, horizontal, undulating, gapped, clay veneer	77
57					76									1		56.6m : UCS = 19.9 MPa γ = 26.3 kN/m ³	— 56.3m: joint, horizontal, gapped, planar, clay veneer — 56.7m: joint, horizontal, gapped, planar, clay veneer	76
58					75									0				75
59			R16	TCR = 100% SCR = 99% RQD = 89%	74									1		58.4m : UCS = 13.8 MPa γ = 26.0 kN/m ³		74
60					73									0			— 59.6m: joint, horizontal, closed, planar, gypsum coating	73

(continued next page)

Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started September 6, 2012

Location: Burlington/Oakville, Ontario

Sheet No. 4 of 4

Position : E: 600257, N: 4808274 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones								UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing			
61			R16 72.0		72															
			60.8 R17	TCR = 89% SCR = 72% RQD = 61%																
			61.2m																	

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50mm monitoring well installed.
W2: 50mm monitoring well installed.



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 5, 2012

Location : Burlington/Oakville, Ontario

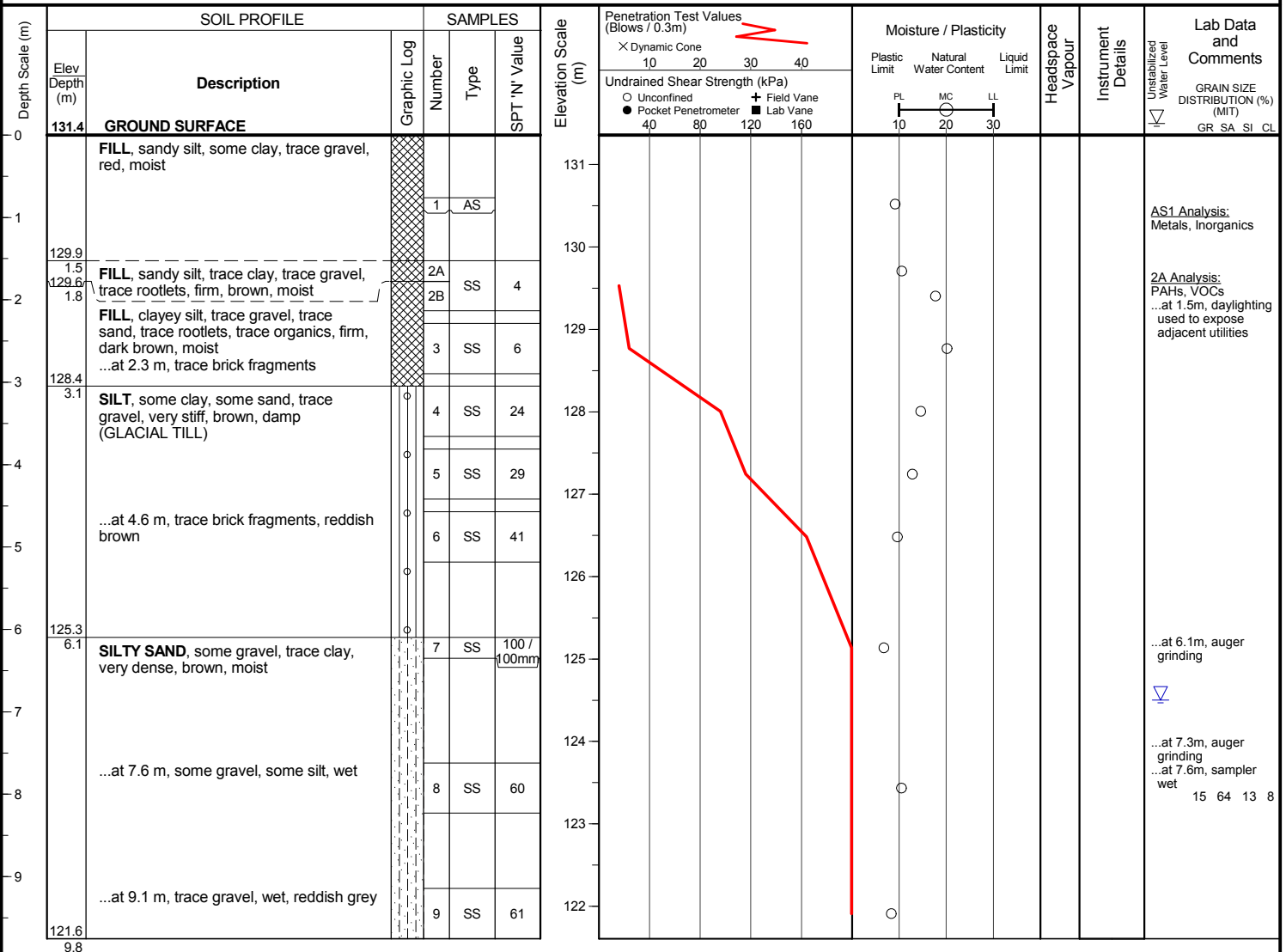
Sheet No. : 1 of 1

Position : E: 600312, N: 4808354 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers





Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : September 5, 2012

Location : Burlington/Oakville, Ontario

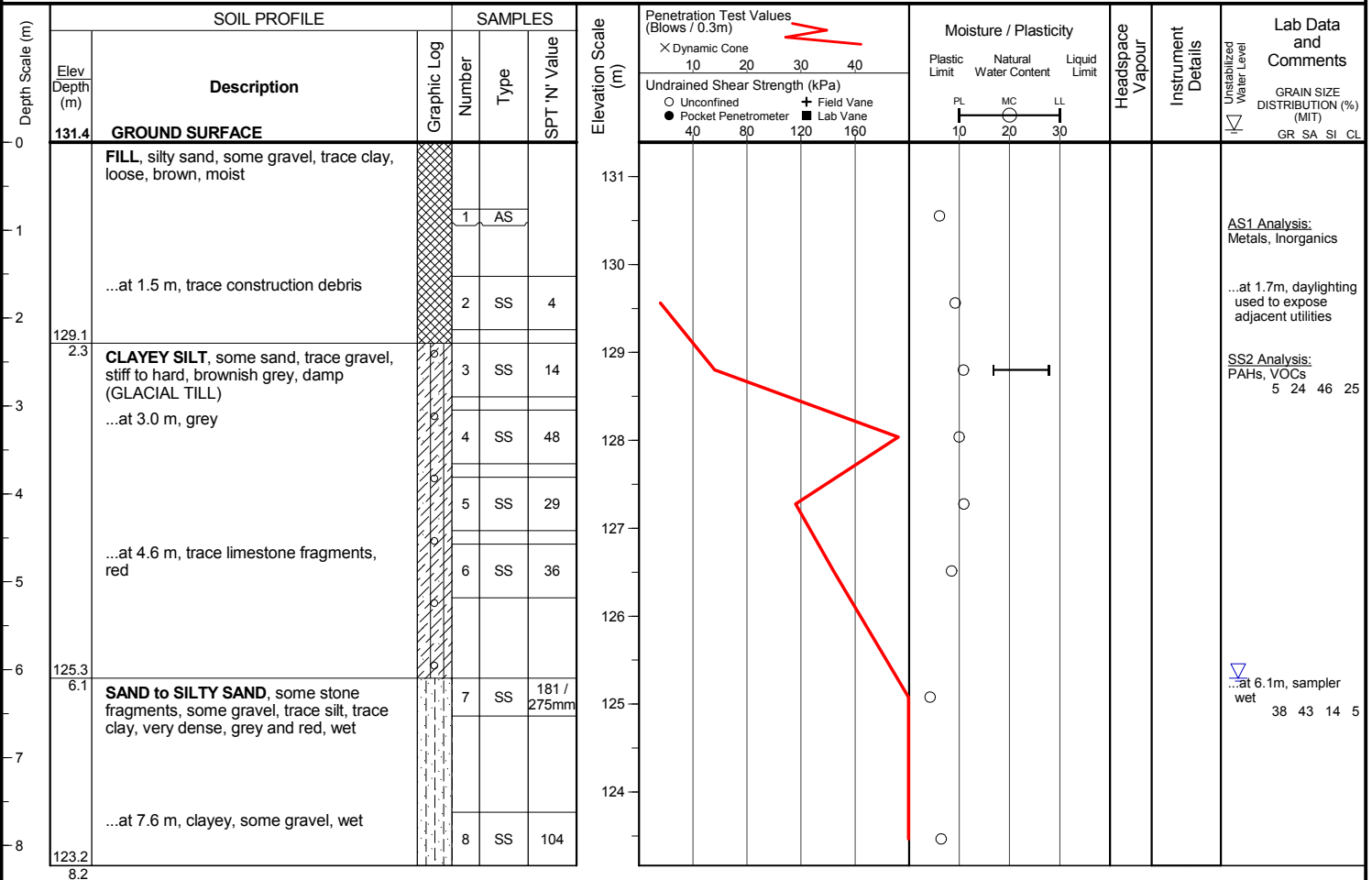
Sheet No. : 1 of 1

Position : E: 600241, N: 4808443 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers





Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : February 5, 2013

Location : Burlington/Oakville, Ontario

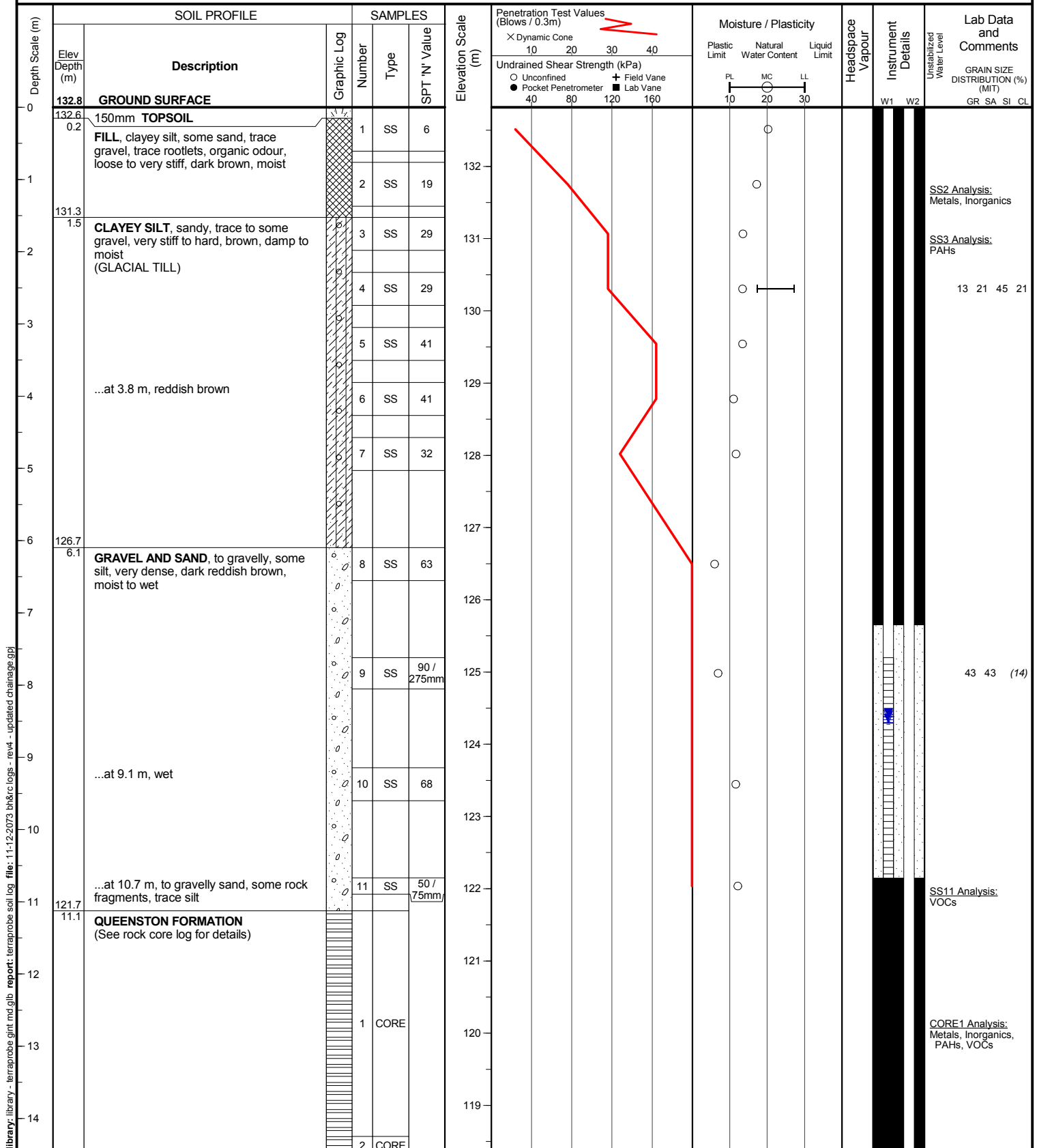
Sheet No. : 1 of 4

Position : E: 600128, N: 4808354 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring



(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : February 5, 2013

Location : Burlington/Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 600128, N: 4808354 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			
15		QUEENSTON FORMATION (See rock core log for details) (continued)					118										
16				2	CORE		117										
17							116										
18							115										
19				3	CORE		114										
20							113										
21							112										
22				4	CORE		111										
23							110										
24							109										
25				5	CORE		108										
26							107										
27				6	CORE		106										
28							105										
				7	CORE		104										

CORE5 Analysis:
Metals, Inorganics,
PAHs, VOCs

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : February 5, 2013

Location : Burlington/Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 600128, N: 4808354 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details		Lab Data and Comments	
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone				Plastic Limit	Natural Water Content	Liquid Limit					
								10	20	30	40								
29		(continued)																	
		QUEENSTON FORMATION (See rock core log for details) (continued)																	
30				7	CORE		103												
31							102												
32				8	CORE		101												
33							100												
34							99												
35				9	CORE		98												
36							97												
37							96												
38				10	CORE		95												
39							94												
40							93												
41							92												
42				11	CORE		91												
43							90												
				12	CORE														

(continued next page)



Client : R.V. Anderson Associates Limited

Project No.: 11-12-2073

Project : Halton Zone 1 Watermain

Date started : February 5, 2013

Location : Burlington/Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 600128, N: 4808354 (UTM 17T)

Elevation Datum : Geodetic

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value			Plastic Limit	Natural Water Content	Liquid Limit			
		(continued)												
44		QUEENSTON FORMATION (See rock core log for details) (continued)		12	CORE		89							
45							88							
46							87							
47				13	CORE		86							
48							85							
84.4														
48.4														

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50 mm monitoring well installed.
W2: 50 mm monitoring well installed.

W1 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Feb 13, 2013	8.5	124.3
Feb 19, 2013	8.5	124.3
Feb 28, 2013	8.5	124.3
Mar 13, 2013	8.4	124.4

W2 WATER LEVELS

Date	Water Depth (m)	Elevation (m)
Feb 28, 2013	37.0	95.8
Mar 13, 2013	37.6	95.2



ROCK CORE LOG 7+270

Project No. 11-12-2073

Date started February 5, 2013

Sheet No. 1 of 3

Hole Diameter : **HQ**, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

library: library - terraprobe gint md.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh&rc logs - rev4 - updated chainage.gpj

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started February 5, 2013

Location: Burlington/Oakville, Ontario

Sheet No. 2 of 3

Position : E: 600128, N: 4808354 (UTM 17T)

Elevation Datum : Geodetic

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	Frequency	Spacing			
28		QUEENSTON FORMATION Shale , red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints: horizontal, closed to gapped, slightly altered to oxidized;	R6 104.8 28.0	TCR = 97% SCR = 97% RQD = 97%	105									0			closed, gypsum infill	105
29		interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong <i>shale : 83% limestone : 17% (continued)</i>			104									0				104
30			R7	TCR = 101% SCR = 99% RQD = 97%	103									2		29.8m : UCS = 28.1 MPa γ = 25.6 kN/m ³	— 29.7-29.8m: joint, horizontal, undulating, gapped, highly weathered	103
31					102									0				102
32					101									0			— 31.4m: joint, horizontal, planar, gapped, gypsum infill	101
33			R8	TCR = 99% SCR = 99% RQD = 99%	100									1		32.5m : UCS = 19.8 MPa γ = 25.8 kN/m ³	— 33.0m: joint, horizontal, undulating, gapped, gypsum veneer	100
34					99									0				99
35					98									0				98
36			R9	TCR = 100% SCR = 100% RQD = 100%	97									0		35.4m : UCS = 21.7 MPa γ = 25.8 kN/m ³	— 35.8m: joint, horizontal, gapped, gypsum infill	97
37					96									0				96
38					95									0				95
39			R10	TCR = 98% SCR = 98% RQD = 98%	94									1		38.1m : UCS = 13.8 MPa γ = 25.8 kN/m ³	— 39.0m: joint, horizontal, gapped, gypsum infill	94
40					93									0				93
41					92									1			— 40.8m: joint, planar, open, undulating, partially weathered	92
42			R11	TCR = 100% SCR = 98% RQD = 95%	91									2		41.5m : UCS = 19.2 MPa γ = 25.6 kN/m ³	— 41.0m: joint, planar, closed, gypsum infill — 41.2m: joint, planar, open, undulating, partially weathered infill	91
43					90									0			— 42.0m: joint, horizontal, closed, planar, gypsum veneer	90
														0		43.0m :		

(continued next page)



Client : R.V. Anderson Associates Limited

Project No. 11-12-2073

Project : Halton Zone 1 Watermain

Date started February 5, 2013

Location: Burlington/Oakville, Ontario

Sheet No. 3 of 3

Position : E: 600128, N: 4808354 (UTM 17T)

Elevation Datum : Geodetic

Hole Diameter : HQ, OD=96mm, ID=64mm

Rig type : CME 75, truck-mounted

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)						
						Z1	Z2	Z3	Z4	R1	R2				R3	R4	R5	R6	Frequency	Spacing
		QUEENSTON FORMATION Shale , red, thinly bedded to medium bedded, weak to medium strong, slight to no fissility; joints:horizontal, closed to gapped, slightly altered to oxidized; interbedded with limestone , grey, laminated to thinly bedded, weak to medium strong <i>shale : 83% limestone : 17% (continued)</i>	89.5 43.3									UCS = 45.7 MPa γ = 25.7 kN/m³	43.1m: gypsum seam							
44					89								43.9m: gypsum seam	89						
45																				
46																				

END OF BOREHOLE

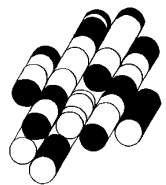
48.4m

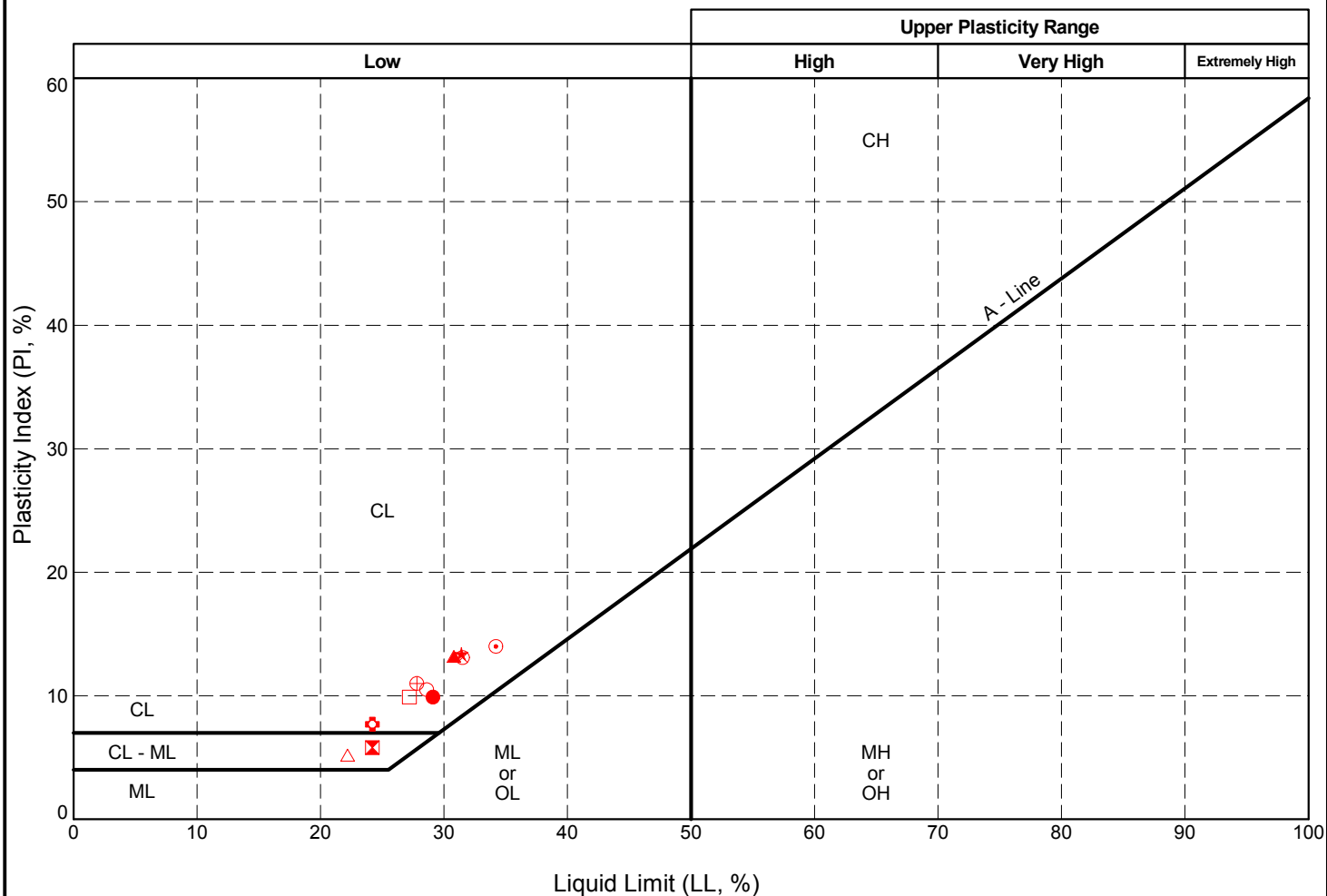
Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

W1: 50 mm monitoring well installed.
W2: 50 mm monitoring well installed.

APPENDIX B

TERRAPROBE INC.





Terraprobe

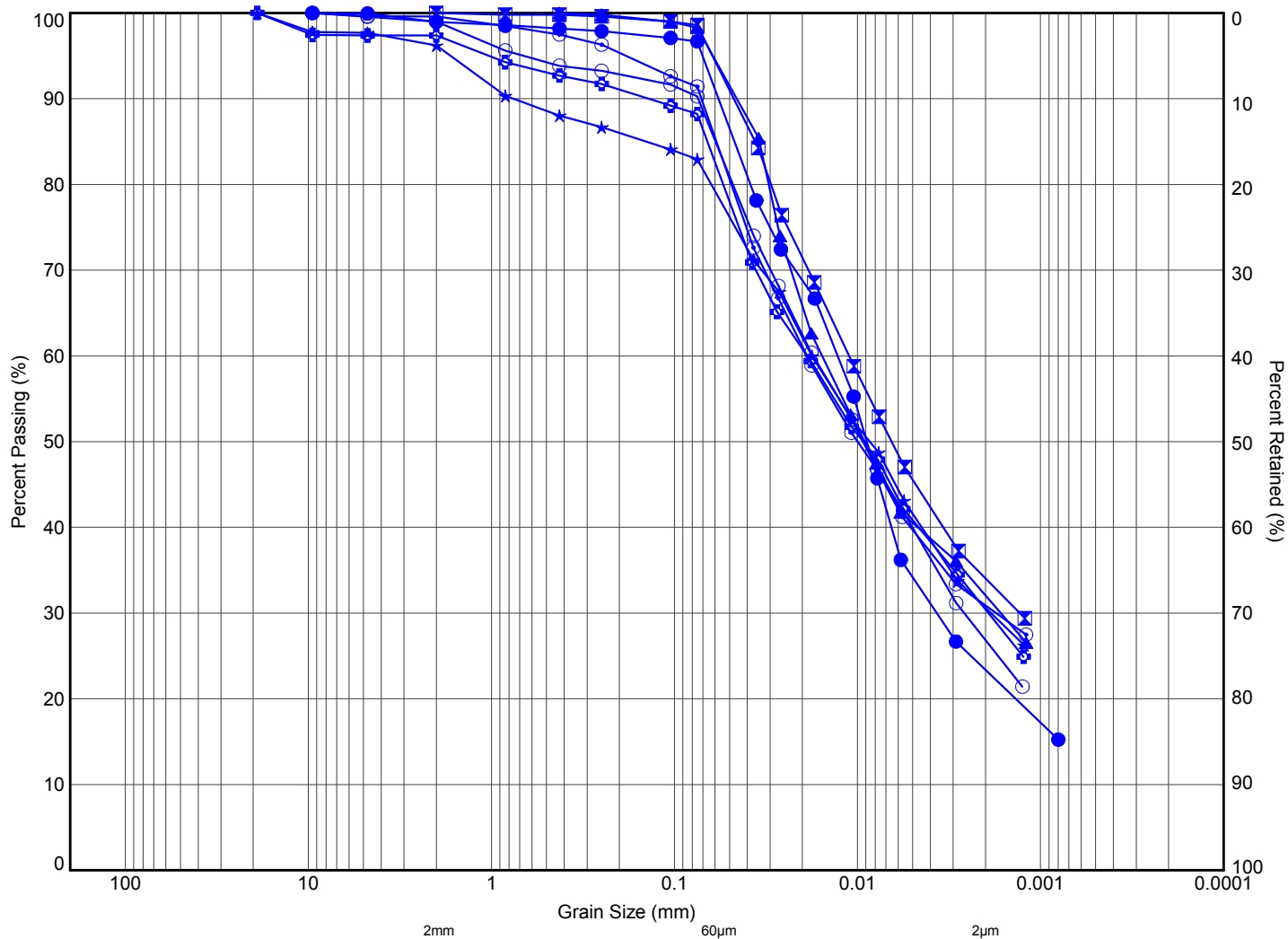
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

ATTERBERG LIMITS CHART

File No.:

11-12-2073



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM									
Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)	
● 0+940	SS4	2.6	88.7	1	8	68	23		
⊠ 1+080	SS3	1.8	89.4	0	6	60	34		
▲ 1+080	SS4	2.6	88.6	0	5	63	32		
★ 1+200	SS2	1.1	91.1	4	16	49	31		
⊙ 1+720	SS1	0.3	95.8	0	14	55	31		
⊕ 2+335	SS2	1.1	102.0	3	15	52	30		
○ 7+020	SS3B	1.9	132.9	1	14	58	27		



Terraprobe

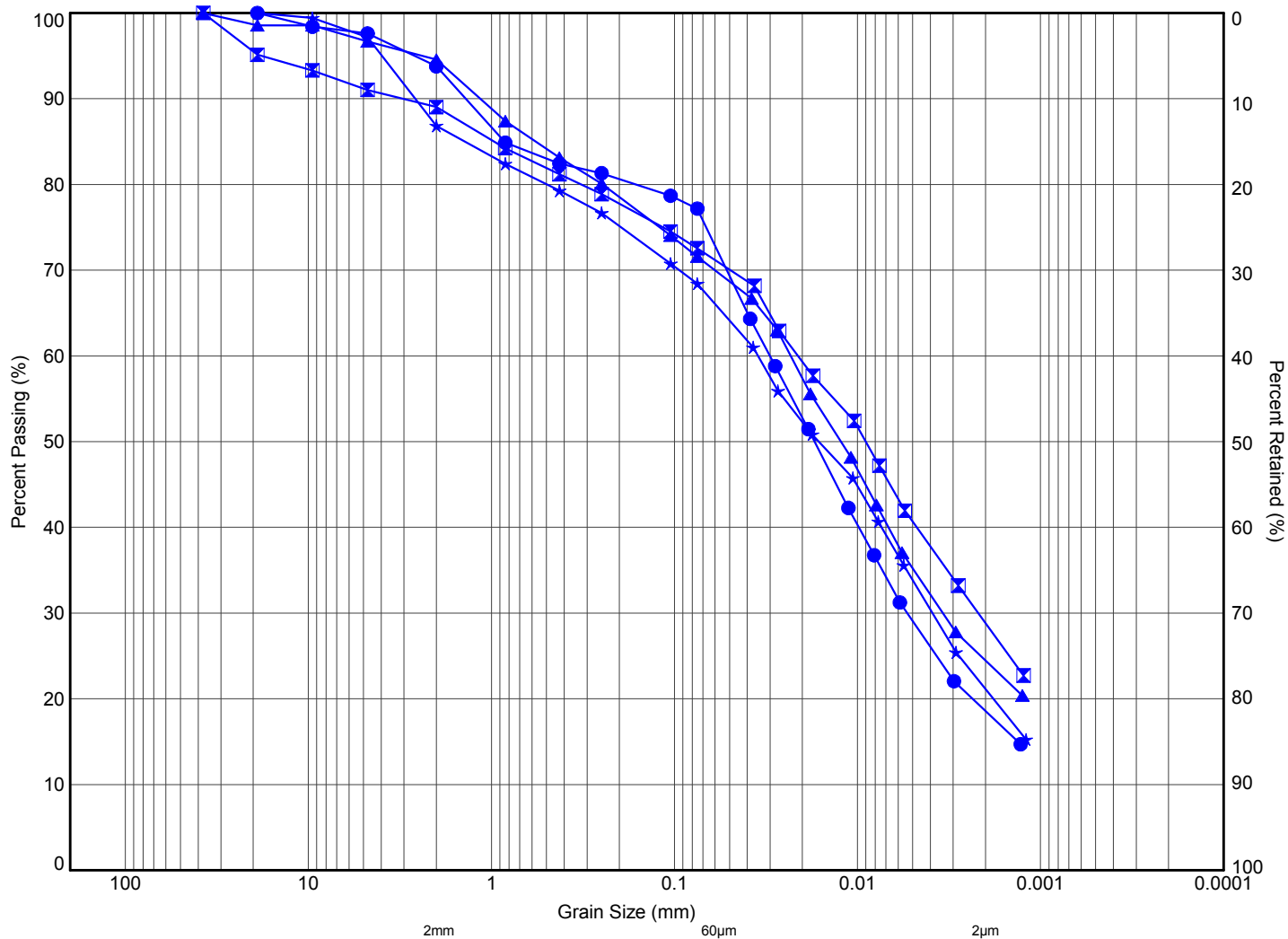
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

**GRAIN SIZE DISTRIBUTION
CLAYEY SILT TILL**

File No.:

11-12-2073



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM

Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)
● 2+240	SS2	1.1	101.0	6	21	54	19	
☒ 7+145	SS3	2.6	130.2	11	18	42	29	
▲ 7+250x	SS3	2.6	128.8	5	24	46	25	
★ 7+270	SS4	2.5	130.3	13	21	45	21	



Terraprobe

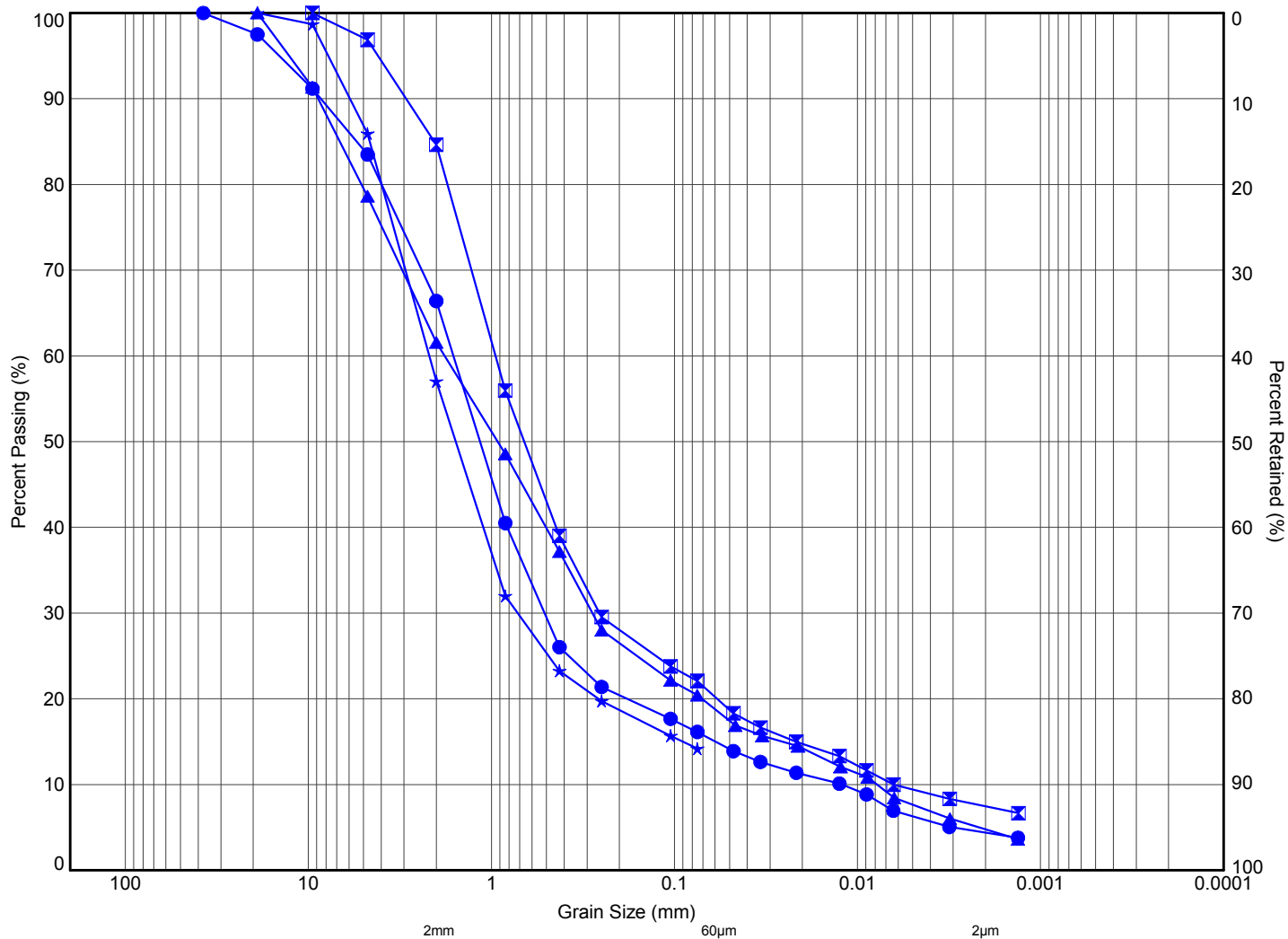
11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

**GRAIN SIZE DISTRIBUTION
CLAYEY SILT TO SILT TILL**

File No.:

11-12-2073



MIT SYSTEM	COBBLES	GRAVEL			SAND			SILT	CLAY
		COARSE	MEDIUM	FINE	COARSE	MEDIUM	FINE		

MIT SYSTEM									
Hole ID	Sample	Depth (m)	Elev. (m)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)	(Fines, %)	
● 7+145	SS7	6.4	126.4	34	51	11	4		
▣ 7+165x	SS8	7.9	123.4	15	64	13	8		
▲ 7+250x	SS7	6.3	125.1	38	43	14	5		
★ 7+270	SS9	7.8	125.0	43	43			(14)	



Terraprobe

11 Indell Lane, Brampton Ontario L6T 3Y3
(905) 796-2650

Title:

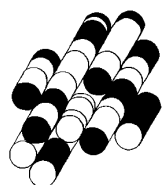
GRAIN SIZE DISTRIBUTION SANDS

File No.:

11-12-2073

APPENDIX C

TERRAPROBE INC.





BH: 1+200

Depth: 4.6m - 9.2m
Runs: 1, 2



BH: 1+200

Depth: 9.2m - 13.5m
Runs: 2, 3, 4



BH: 1+200

Depth: 13.5m - 18.1m
Runs: 4, 5



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 1+200

Depth: 18.1m - 21.6m
Runs: 5, 6



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 1+615

Depth: 4.4m - 8.8m
Runs: 1, 2, 3



BH: 1+615

Depth: 8.8m - 13.1m
Runs: 3, 4



BH: 1+615

Depth: 13.1m - 17.7m
Runs: 4, 5, 6



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 1+615

Depth: 17.7m - 22.0m
Runs: 6, 7



BH: 1+615

Depth: 22.0m - 26.4m
Runs: 7, 8



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 2+055

Depth: 4.6m - 9.2m
Runs: 1, 2, 3



BH: 2+055

Depth: 9.2m - 13.8m
Runs: 3, 4



BH: 2+055

Depth: 13.8m - 18.1m
Runs: 4, 5, 6



Terraprobe

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Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 2+055

Depth: 18.1m - 22.7m
Runs: 6, 7



BH: 2+055

Depth: 22.7m - 27.1m
Runs: 7, 8, 9



BH: 2+055

Depth: 27.1m - 29.6m
Runs: 9



Terraprobe

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Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 2+585

Depth: 3.0m - 7.5m
Runs: 1, 2, 3



BH: 2+585

Depth: 7.5m - 12.1m
Runs: 3, 4



BH: 2+585

Depth: 12.1m - 16.6m
Runs: 4, 5, 6



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 2+585

Depth: 16.6m - 21.0m
Runs: 6, 7



BH: 2+585

Depth: 21.0m - 25.4m
Runs: 7, 8, 9



BH: 2+585

Depth: 25.4m - 29.9m
Runs: 9, 10



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 2+585

Depth: 29.9m - 34.4m
Runs: 10, 11, 12



BH: 2+585

Depth: 34.4m - 35.1m
Runs: 12



Terraprobe

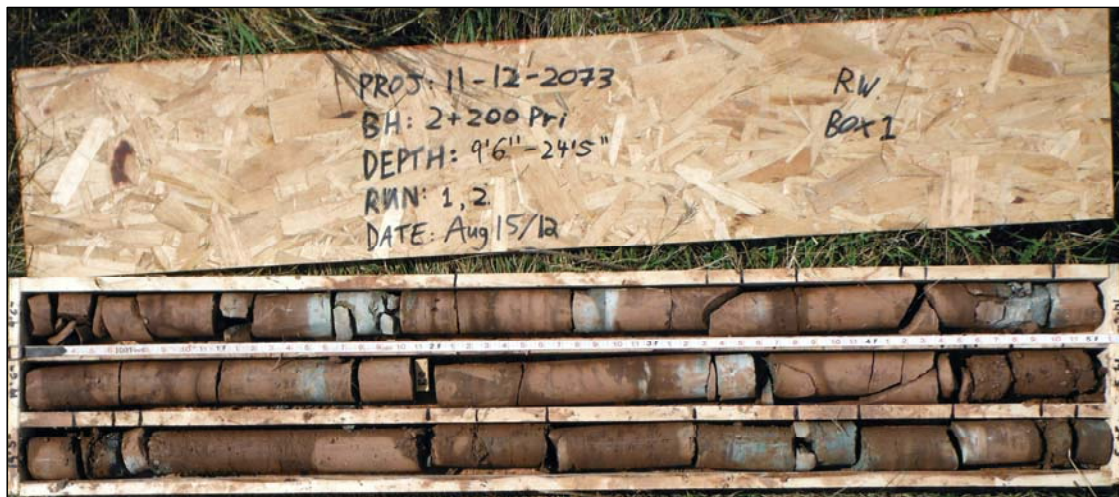
11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 2+640

Depth: 2.9m - 7.4m
Runs: 1, 2



BH: 2+640

Depth: 7.4m - 12.0m
Runs: 2, 3, 4



BH: 2+640

Depth: 12.0m - 16.5m
Runs: 4, 5



Terraprobe

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Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



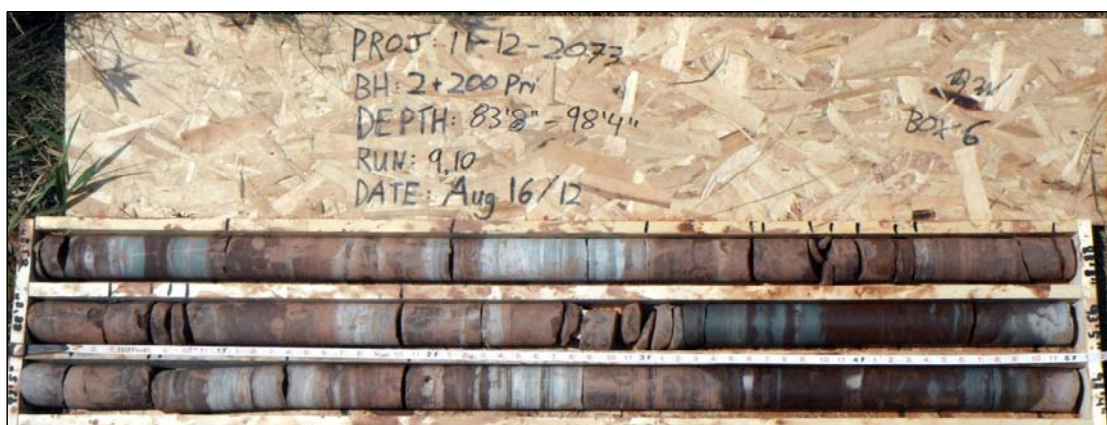
BH: 2+640

Depth: 16.5m - 21.1m
Runs: 5, 6, 7



BH: 2+640

Depth: 21.1m - 25.5m
Runs: 7, 8, 9



BH: 2+640

Depth: 25.5m - 30.0m
Runs: 9, 10



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 2+640

Depth: 30.0m - 34.4m
Runs: 10, 11, 12



BH: 2+640

Depth: 34.4m - 38.2m
Runs: 12, 13



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+065

Depth: 2.8m - 7.2m
Runs: 1, 2, 3



BH: 3+065

Depth: 7.2m - 11.8m
Runs: 3, 4, 5



BH: 3+065

Depth: 11.8m - 16.1m
Runs: 5, 6



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+065

Depth: 16.1m - 20.6m
Runs: 6, 7, 8



BH: 3+065

Depth: 20.6m - 25.1m
Runs: 8, 9



BH: 3+065

Depth: 25.1m - 29.4m
Runs: 9, 10



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+065

Depth: 29.4m - 33.9m
Runs: 11, 12



BH: 3+065

Depth: 33.9m - 38.5m
Runs: 12, 13



BH: 3+065

Depth: 38.5m - 41.2m
Runs: 13, 14



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+450

Depth: 4.6m - 9.1m
Runs: 1, 2



BH: 3+450

Depth: 9.4m - 13.7m
Runs: 3, 4



BH: 3+450

Depth: 13.7m - 18.1m
Runs: 4, 5



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+450

Depth: 18.1m - 22.6m
Runs: 5, 6, 7



BH: 3+450

Depth: 22.6m - 27.1m
Runs: 7, 8



BH: 3+450

Depth: 27.1m - 31.6m
Runs: 8, 9, 10



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073

PROJ: 11-12-2073
 BH: 3+000
 DEPTH: 103'1" - 117'9"
 RUN: 10, 11
 DATE: Sept. 26/12
 RW Box 7



BH: 3+450

Depth: 31.4m - 35.9m
 Runs: 10, 11



BH: 3+450

Depth: 35.9m - 40.6m
 Runs: 11, 12, 13



BH: 3+450

Depth: 40.6m - 45.1m
 Runs: 13, 14



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+450

Depth: 45.1m - 49.4m
Runs: 14, 15, 16



BH: 3+450

Depth: 49.4m - 52.0m
Runs: 16, 17



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+930

Depth: 3.3m - 8.1m
Runs: 1, 2



BH: 3+930

Depth: 8.1m - 12.6m
Runs: 2, 3, 4



BH: 3+930

Depth: 12.6m - 17.2m
Runs: 4, 5



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+930

Depth: 17.2m - 21.6m
Runs: 5, 6, 7



BH: 3+930

Depth: 21.6m - 26.1m
Runs: 7, 8



BH: 3+930

Depth: 26.1m - 30.6m
Runs: 8, 9



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

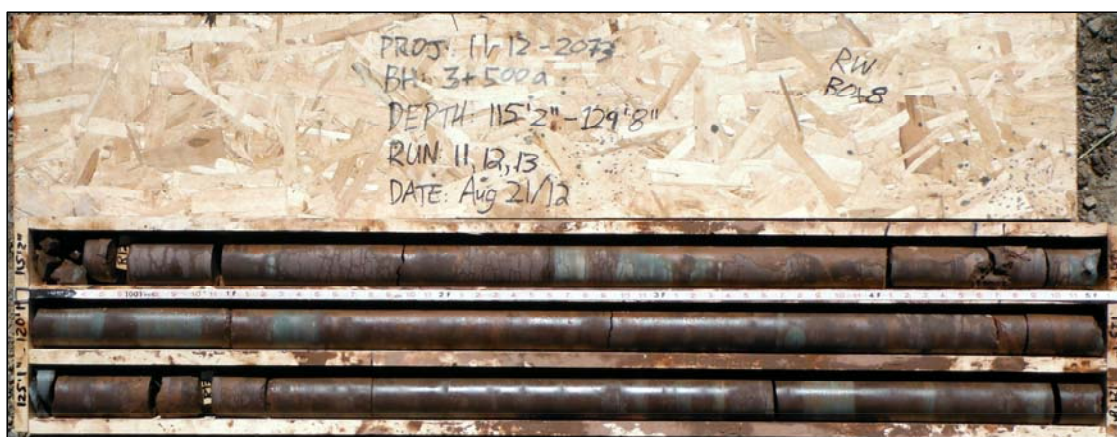
File No.

11-12-2073



BH: 3+930

Depth: 30.6m - 35.1m
Runs: 10, 11



BH: 3+930

Depth: 35.1m - 39.5m
Runs: 11, 12, 13



BH: 3+930

Depth: 39.5m - 44.0m
Runs: 13, 14



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+930

Depth: 44.0m - 48.5m
Runs: 14, 15, 16



BH: 3+930

Depth: 48.5m - 52.9m
Runs: 16, 17



BH: 3+930

Depth: 52.9m - 57.3m
Runs: 17, 18, 19



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 3+930

Depth: 57.3m - 59.0m
Runs: 19



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+495

Depth: 4.1m - 9.0m
Runs: 1, 2



BH: 4+495

Depth: 9.0m - 13.4m
Runs: 2, 3, 4



BH: 4+495

Depth: 13.4m - 17.9m
Runs: 4, 5



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Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+495

Depth: 17.9m - 22.4m
Runs: 5, 6, 7



BH: 4+495

Depth: 22.4m - 26.9m
Runs: 7, 8



BH: 4+495

Depth: 26.9m - 30.8m
Runs: 8, 9, 10



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+495

Depth: 30.8m - 35.3m
Runs: 10, 11



BH: 4+495

Depth: 35.3m - 39.8m
Runs: 11, 12



BH: 4+495

Depth: 39.8m - 44.2m
Runs: 12, 13, 14



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+495

Depth: 44.2m - 48.7m
Runs: 14, 15



BH: 4+495

Depth: 48.7m - 52.9m
Runs: 15, 16, 17



BH: 4+495

Depth: 52.9m - 57.4m
Runs: 17, 18, 19



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+495

Depth: 57.4m - 59.2m
Runs: 19



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+990

Depth: 4.7m - 9.2m
Runs: 1, 2



BH: 4+990

Depth: 9.2m - 13.7m
Runs: 2, 3, 4



BH: 4+990

Depth: 13.7m - 18.2m
Runs: 4, 5



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+990

Depth: 18.2m - 22.6m
Runs: 5, 6, 7



BH: 4+990

Depth: 22.6m - 27.2m
Runs: 7, 8



BH: 4+990

Depth: 27.2m - 31.7m
Runs: 8, 9, 10



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+990

Depth: 31.7m - 36.2m
Runs: 10, 11



BH: 4+990

Depth: 36.2m - 40.1m
Runs: 11, 12, 13



BH: 4+990

Depth: 40.1m - 44.6m
Runs: 13, 14



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+990

Depth: 44.6m - 49.1m
Runs: 14, 15



BH: 4+990

Depth: 49.1m - 53.4m
Runs: 15, 16, 17



BH: 4+990

Depth: 53.4m - 57.7m
Runs: 17, 18



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 4+990

Depth: 57.7m - 62.2m
Runs: 18, 19, 20



BH: 4+990

Depth: 62.2m - 65.6m
Runs: 20, 21



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 5+060

Depth: 4.4m - 8.9m
Runs: 1, 2, 3



BH: 5+060

Depth: 8.9m - 13.2m
Runs: 3, 4, 5, 6



BH: 5+060

Depth: 13.2m - 17.6m
Runs: 6, 7, 8, 9



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 5+060

Depth: 17.6m - 22.0m
Runs: 9,10,11,12



BH: 5+060

Depth: 22.0m - 26.3m
Runs: 12,13,14,15



BH: 5+060

Depth: 26.3m - 30.7m
Runs: 15,16,17,18



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 5+060

Depth: 30.7m - 34.9m
Runs: 18,19, 20



BH: 5+060

Depth: 34.9m - 39.3m
Runs: 21, 22, 23



BH: 5+060

Depth: 39.3m - 43.5m
Runs: 23, 24, 25, 26



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 5+060

Depth: 43.5m - 47.8m
Runs: 26, 27, 28, 29



BH: 5+060

Depth: 47.8m - 52.0m
Runs: 29, 30, 31, 32



BH: 5+060

Depth: 52.0m - 56.2m
Runs: 32, 33, 34



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 5+060

Depth: 56.2m - 60.6m
Runs: 35, 36, 37



BH: 5+060

Depth: 60.6m - 64.9m
Runs: 37, 38, 39, 40



BH: 5+060

Depth: 64.9m - 66.9m
Runs: 40, 41



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 5+855

Depth: 4.3m - 7.0m
Runs: 1, 2



BH: 5+855

Depth: 7.0m - 10.4m
Runs: 3, 4



BH: 5+855

Depth: 10.4m - 10.8m
Runs: 5



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 5+885

Depth: 2.3m - 6.0m
Runs: 1 to 6



BH: 5+885

Depth: 6.0m - 9.6m
Runs: 6 to 9



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 5+900

Depth: 2.6m - 6.2m
Runs: 1 to 8



BH: 5+900

Depth: 6.2m - 9.5m
Runs: 8 to 11



BH: 5+900

Depth: 9.5m - 10.11m
Runs: 12, 13



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

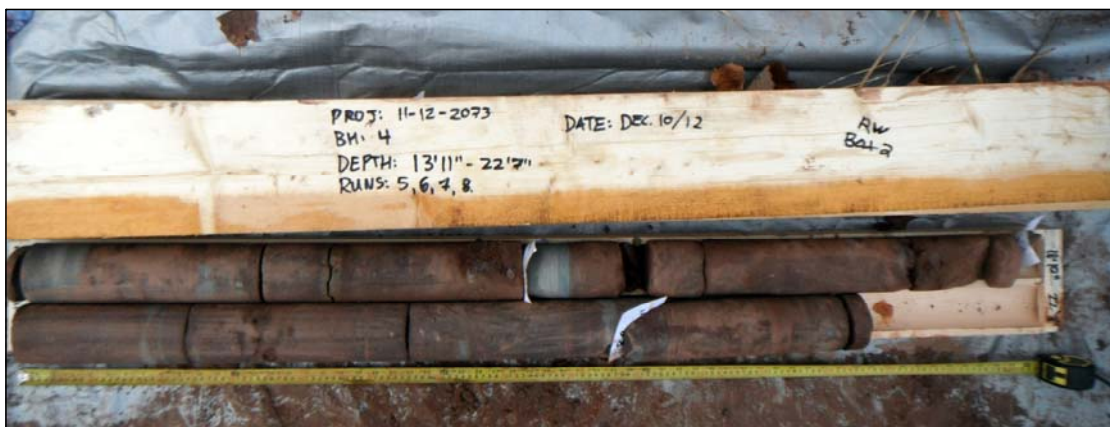
File No.

11-12-2073



BH: 5+935

Depth: 1.3m - 4.2m
Runs: 1 to 5



BH: 5+935

Depth: 4.2m - 6.9m
Runs: 5 to 8



BH: 5+935

Depth: 6.9m - 9.1m
Runs: 8, 10



Terraprobe

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Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 6+390

Depth: 4.80m - 9.35m
Runs: 1, 2, 3, 4



BH: 6+390

Depth: 9.35m - 13.8m
Runs: 4, 5, 6, 7



BH: 6+390

Depth: 13.8m - 18.1m
Runs: 7, 8, 9, 10



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 6+390

Depth: 18.1m - 22.5m
Runs: 10, 11, 12



BH: 6+390

Depth: 22.5m - 26.8m
Runs: 12, 13, 14, 15



BH: 6+390

Depth: 26.8m - 31.2m
Runs: 15, 16, 17, 18



Terraprobe

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Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 6+390

Depth: 30.8m - 35.3m
Runs: 18, 19, 20, 21



BH: 6+390

Depth: 35.5m - 39.3m
Runs: 21, 22, 23



BH: 6+390

Depth: 39.3m - 43.8m
Runs: 24, 25, 26



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 6+390

Depth: 43.8m - 48.3m
Runs: 27, 28, 29



BH: 6+390

Depth: 48.3m - 52.6m
Runs: 29, 30, 31, 32



BH: 6+390

Depth: 52.6m - 57.0m
Runs: 32, 33, 34, 35



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



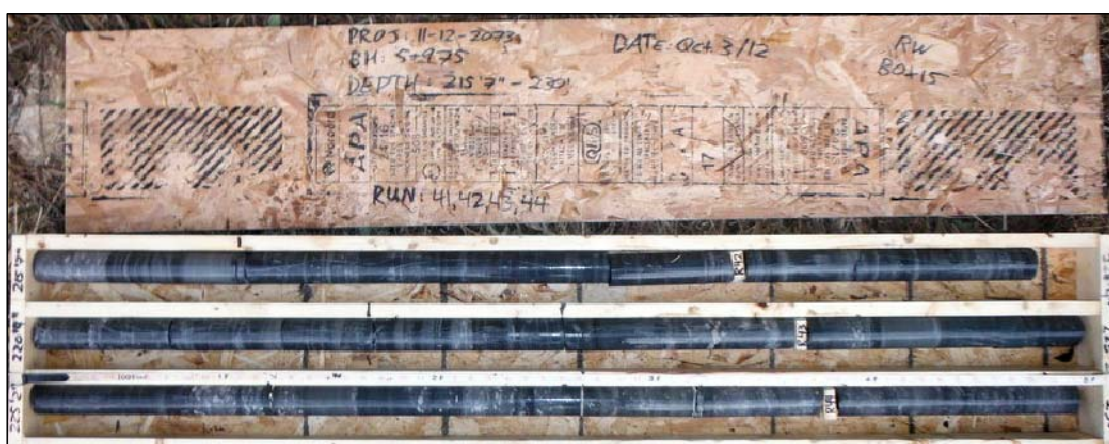
BH: 6+390

Depth: 57.0m - 61.4m
Runs: 35, 36, 37, 38



BH: 6+390

Depth: 61.4m - 65.7m
Runs: 38, 39, 40, 41



BH: 6+390

Depth: 65.7m - 70.1m
Runs: 41, 42, 43, 44



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073

Proj: 11-12-2073
BH: 6+650
Depth: 14'9" - 29'6"
Run: 1, 2
Date: Sept. 14/12
Box 1.
RW



BH: 7+020

Depth: 4.50m - 8.99m
Runs: 1, 2

Proj: 11-12-2073
BH: 6+650
Depth: 29'6" - 43'10"
Run: 2, 3
Date: Sept. 14/12
Box 2
RW



BH: 7+020

Depth: 8.99m - 13.4m
Runs: 2, 3



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073

Proj: 11-12-2023
 BH: 6+650
 Depth: 44'1" to 59'3"
 Run: 4,5.
 Date: Sept. 14/12
 Box 3
 RW.



BH: 7+020

Depth: 13.4m - 18.1
 Runs: 4, 5

Proj: 11-12-2023
 BH: 6+650
 Depth: 59'3" to 71'4"
 Run: 5,6
 Date: Sept. 14/12
 Box 4
 RW.



BH: 7+020

Depth: 18.1m - 21.7m
 Runs: 5, 6



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
 Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 7+145

Depth: 12.1m - 18.3m
Runs: 1, 2, 3



BH: 7+145

Depth: 18.3m - 22.8m
Runs: 3, 4



BH: 7+145

Depth: 22.8m - 27.3m
Runs: 4, 5, 6



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 7+145

Depth: 27.3m - 31.8m
Runs: 6, 7



BH: 7+145

Depth: 31.8m - 36.2m
Runs: 7, 8



BH: 7+145

Depth: 36.4m - 40.9m
Runs: 9, 10



Terraprobe

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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 7+145

Depth: 40.9m - 45.5m
Runs: 10, 11



BH: 7+145

Depth: 45.5m - 49.9m
Runs: 11, 12, 13



BH: 7+145

Depth: 49.9m - 54.4m
Runs: 13, 14



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Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 7+145

Depth: 54.4m - 58.9m
Runs: 14, 15, 16



BH: 7+145

Depth: 58.9m - 61.2m
Runs: 16, 17



Terraprobe

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Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 7+270

Depth: 11.1m - 15.7m
Runs: 1, 2



BH: 7+270

Depth: 15.7m - 20.3m
Runs: 2, 3



BH: 7+270

Depth: 20.3m - 24.7m
Runs: 4, 5



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 7+270

Depth: 24.7m - 29.3m
Runs: 5, 6, 7



BH: 7+270

Depth: 29.3m - 33.6m
Runs: 7, 8



BH: 7+270

Depth: 33.6m - 37.9m
Runs: 8, 9, 10



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

CORE PHOTOGRAPHS

File No.

11-12-2073



BH: 7+270

Depth: 37.9m - 41.0m
Runs: 10, 11



BH: 7+270

Depth: 41.0m - 46.8m
Runs: 11, 12, 13



BH: 7+270

Depth: 46.8m - 48.4m
Runs: 13



Terraprobe

11 Indell Lane, Brampton, Ontario, L6T 3Y3
Tel: (905) 796-2650 Fax: (905) 796-2250

Title:

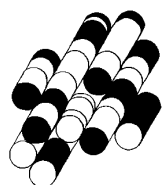
CORE PHOTOGRAPHS

File No.

11-12-2073

APPENDIX D

TERRAPROBE INC.



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 9, 2011

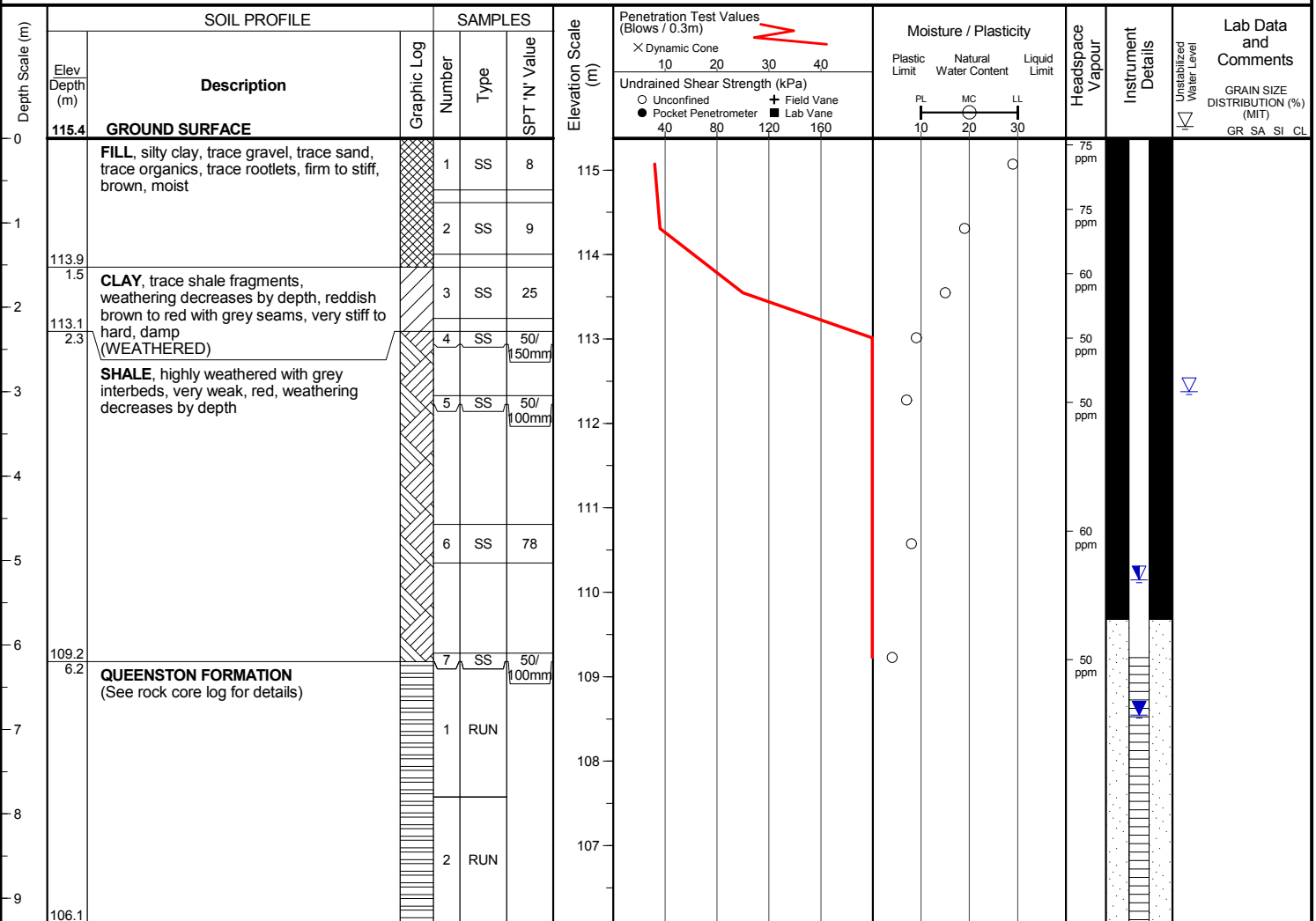
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600883, N: 4805167 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Rock coring, HQ rock coring

**END OF BOREHOLE**

Unstabilized water level measured at 3.0m below grade; borehole caved to 9.2m below grade upon completion of drilling.

50mm monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 16, 2012	5.2	110.1
Feb 13, 2013	6.8	108.5

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 9, 2011

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 600883, N: 4805167 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Rock coring, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)						
						Z1	Z2	Z3	Z4	R1	R2				R3	R4	R5	R6	Frequency	Spacing
		Rock coring started at 6.2m below grade	109.2																	
7		QUEENSTON FORMATION SHALE, red, very weak to weak, fresh wigh slightly to moderately weathered bedding partings, thinly laminated to laminated occasionally interbedded with LIMESTONE, light grey, fresh, strong, very thin to thin bedding	6.2	TCR = 98% SCR = 92% RQD = 82% HL = 17%	109							2	6.3m : PL _A = 55 MPa PL _D = 24 MPa 7.0m : PL _A = 40 MPa PL _D = 27 MPa	— HL 50mm ~ HL 50mm — HL 100mm — HL 50mm	109					
	R1											1								
											1									
										4										
8			107.6	TCR = 80% SCR = 60% RQD = 55% HL = 33%	108							2			108					
											4									
											2									
										1										
9			106.1		107								3	8.3m : PL _A = 83 MPa PL _D = 28 MPa 8.8m : PL _D = 36 MPa 9.0m : PL _A = 33 MPa PL _D = 19 MPa	— HL 150mm — HL 50mm ~ HL 50mm ~ HL 50mm ~ HL 25mm ~ HL 75mm	107				
		R2								0										
			9.3m																	

END OF BOREHOLE

Unstabilized water level measured at 3.0m below grade; borehole caved to 9.2m below grade upon completion of drilling.

50mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 8, 2011

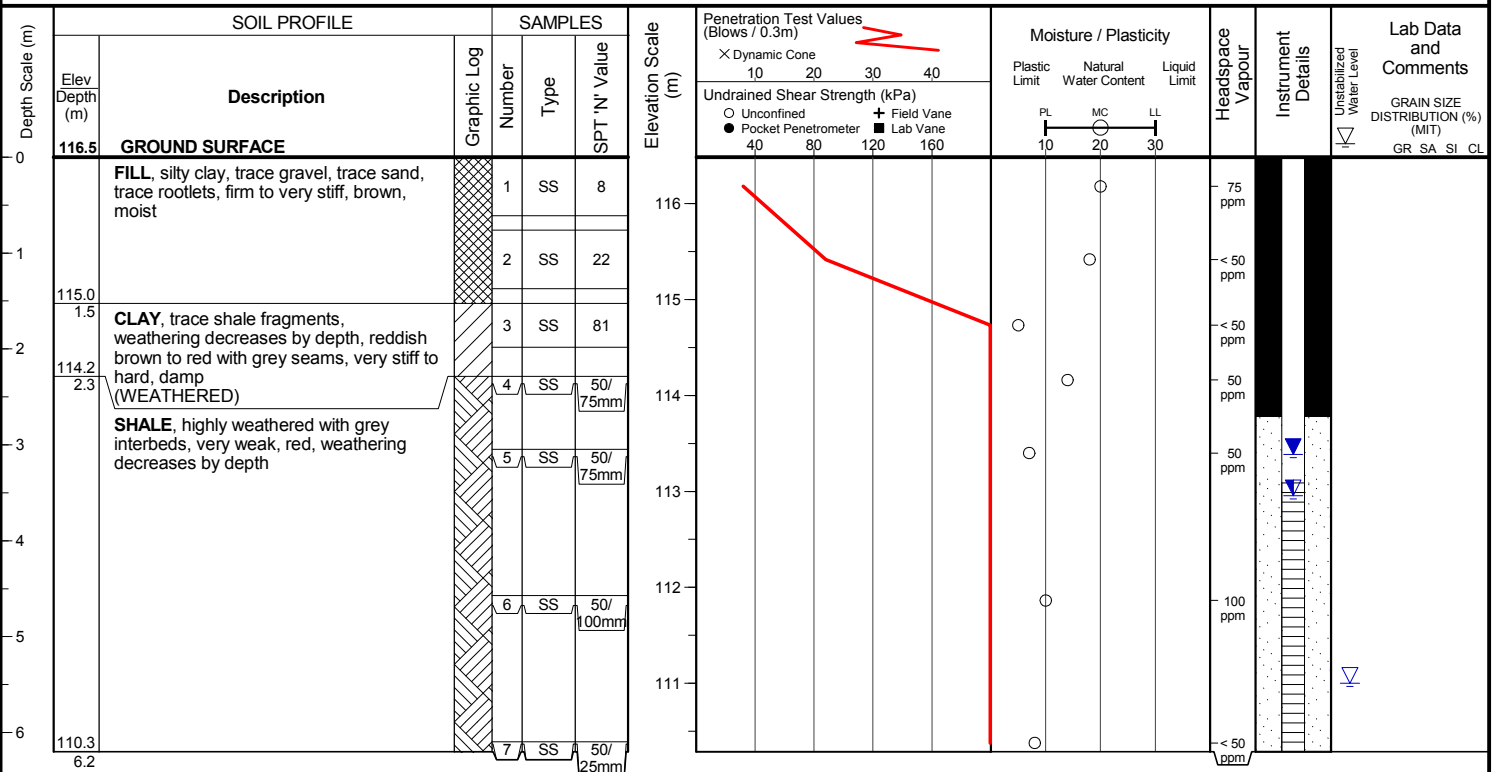
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600872, N: 4805200 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers

**END OF BOREHOLE**

Unstabilized water level measured at 5.5m below grade; borehole caved to 6.2m below grade upon completion of drilling.

50mm monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 16, 2012	3.5	113.0
Feb 13, 2013	3.1	113.4

COFFEY GEOTECHNICS

BOREHOLE LOG COF-3

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

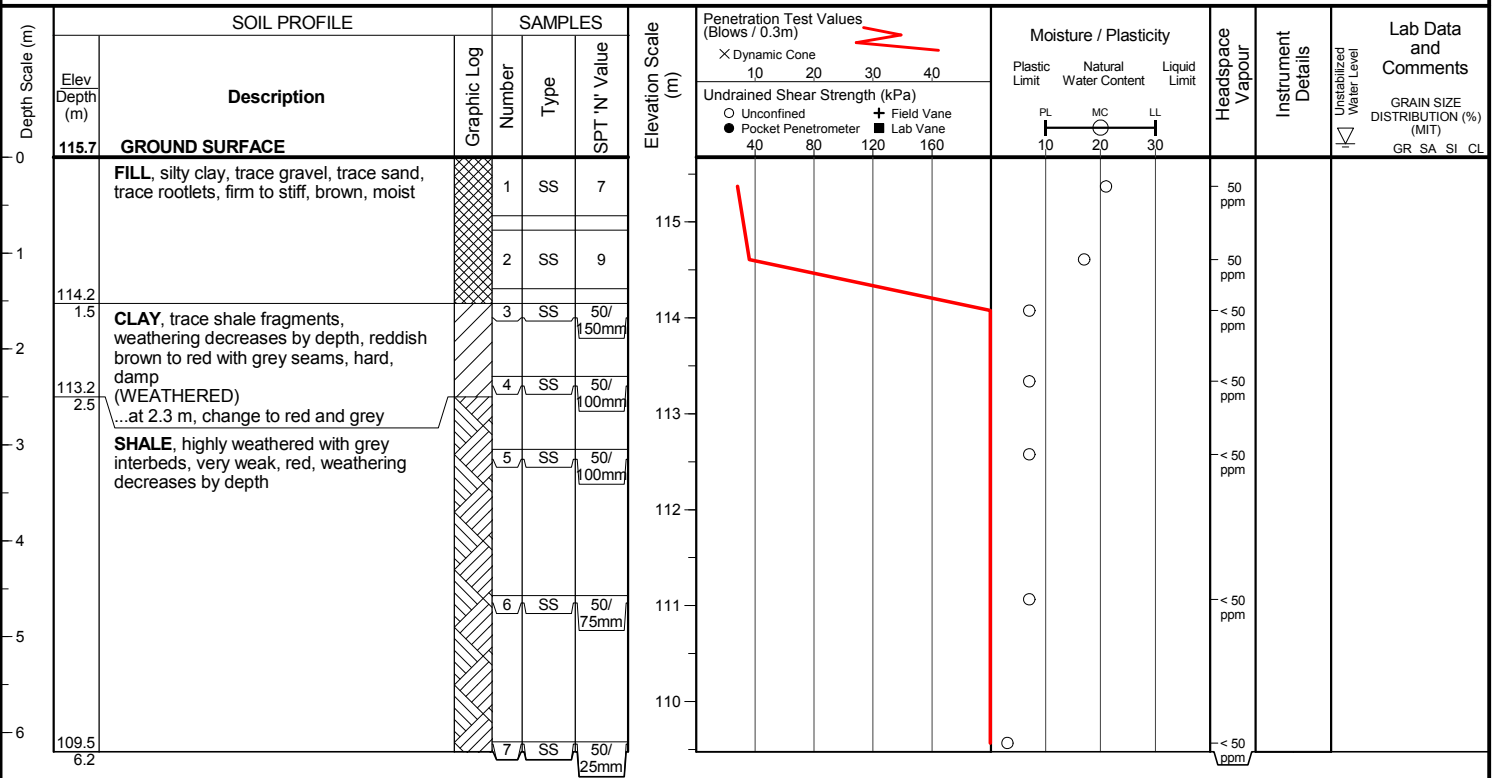
Date started : February 8, 2011

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

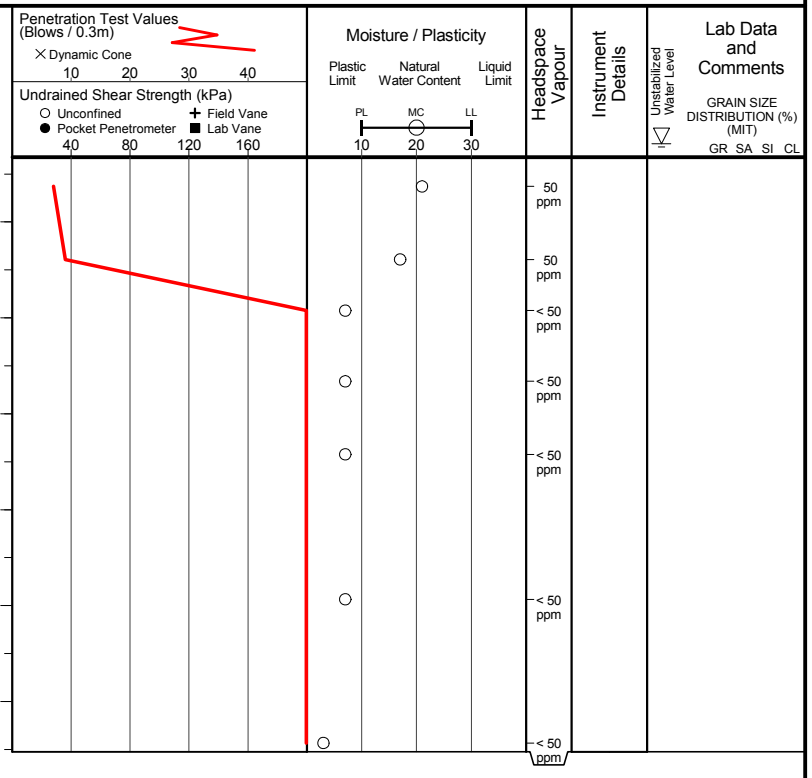
Position : E: 600888, N: 4805190 (UTM 17T)

Elevation Datum : Geodetic (NAD83)



END OF BOREHOLE

Borehole was dry and caved to 6.2m below grade upon completion of drilling.



COFFEY GEOTECHNICS

BOREHOLE LOG COF-4

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 8, 2011

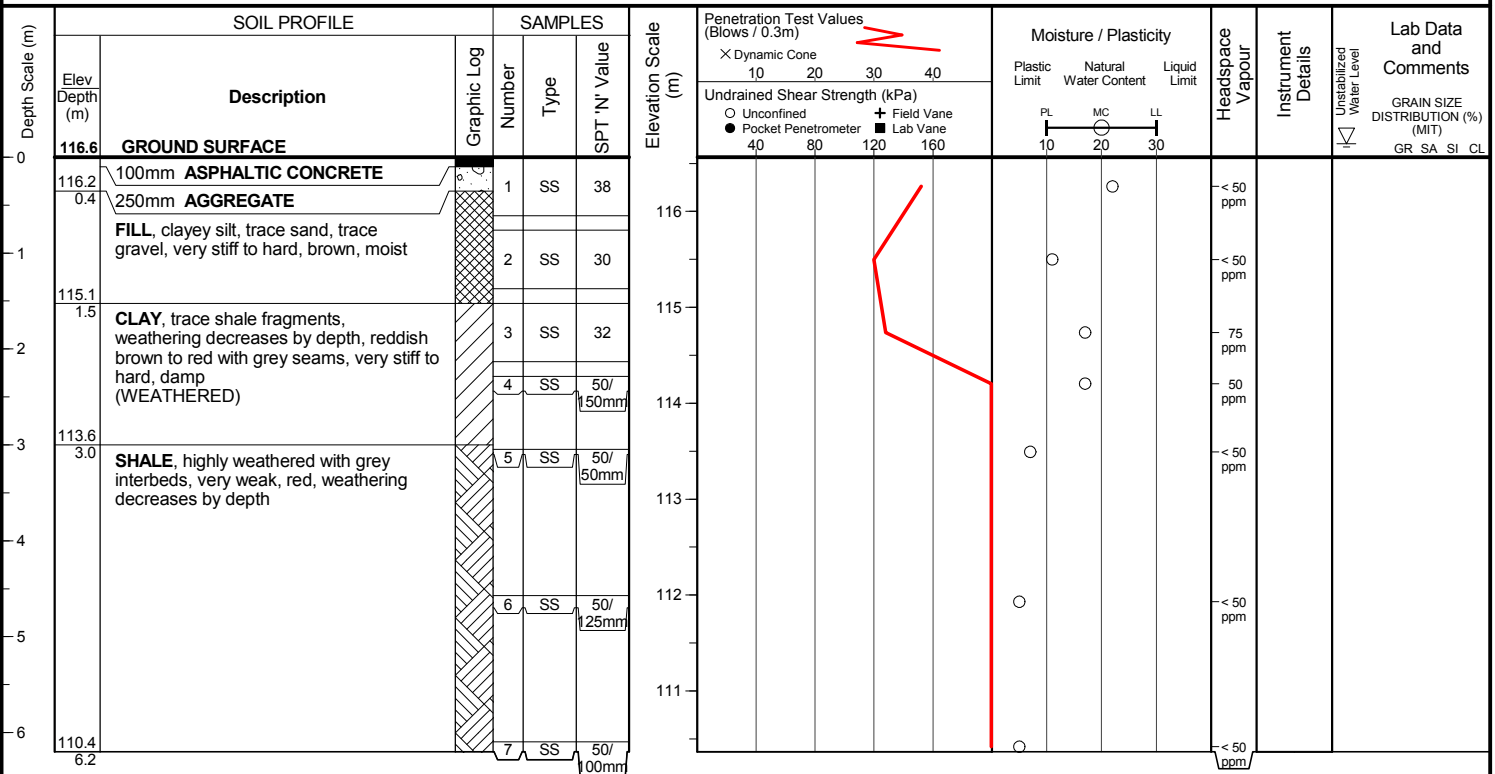
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600859, N: 4805184 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and caved to 6.2m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project : Halton Zone 1 Watermain

Location : Burlington / Oakville, Ontario

Project No.: OTHER CONSULTANTS

Date started : February 9, 2012

Sheet No. : 1 of 1

Position : E: 600912, N: 4805171 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)	Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value			Plastic Limit	Natural Water Content	Liquid Limit			
0	112.6	GROUND SURFACE						10 20 30 40						
		FILL, clayey silt, trace sand, trace gravel, stiff, brown, moist		1	SS	8	112	40 80 120 160				75 ppm		
1	111.8	CLAY, trace shale fragments, weathering decreases by depth, reddish brown to red with grey seams, hard, damp (WEATHERED)		2	SS	42						75 ppm		
	110.6			3	SS	100	111					50 ppm		
2.0														

END OF BOREHOLE

Borehole was dry and caved to 2.0m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

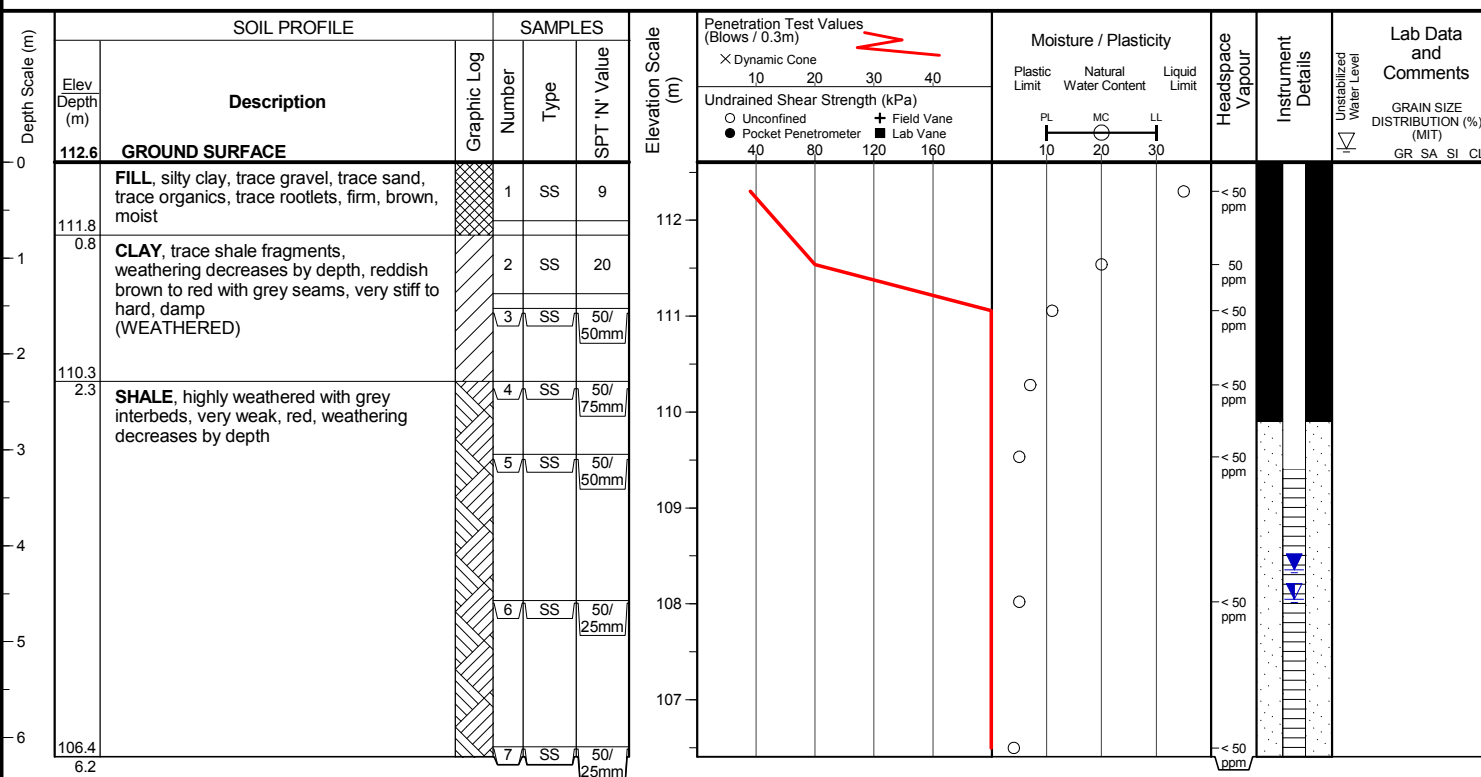
Date started : February 8, 2011

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600935, N: 4805182 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

**END OF BOREHOLE**

Borehole was dry and caved to 6.2m below grade upon completion of drilling.

50mm monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Feb 16, 2012	4.6	108.0
Feb 13, 2013	4.3	108.4

Client : R.V Anderson Associates Limited

Project : Halton Zone 1 Watermain

Location : Burlington / Oakville, Ontario

Project No.: OTHER CONSULTANTS

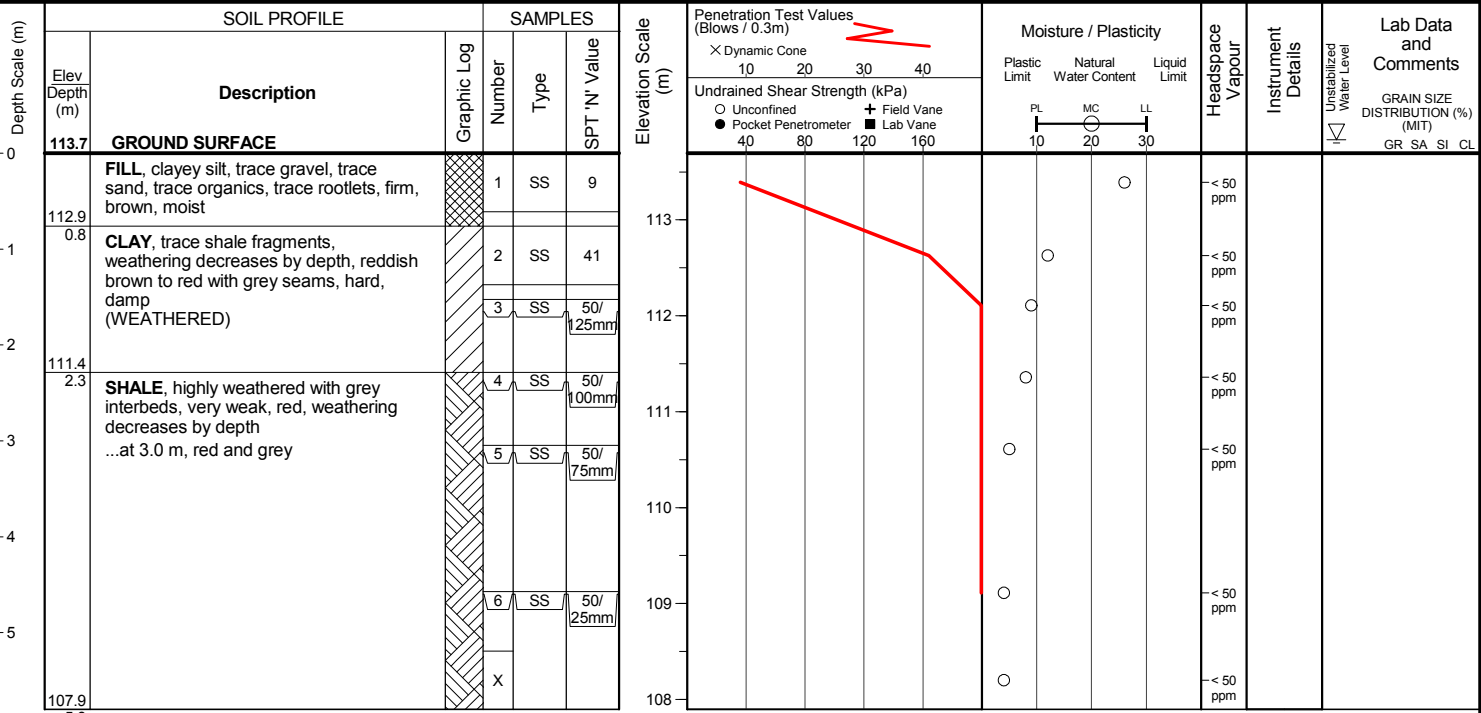
Date started : February 8, 2011

Sheet No. : 1 of 1

Position : E: 600906, N: 4805202 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and caved to 5.7m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : May 11, 2010

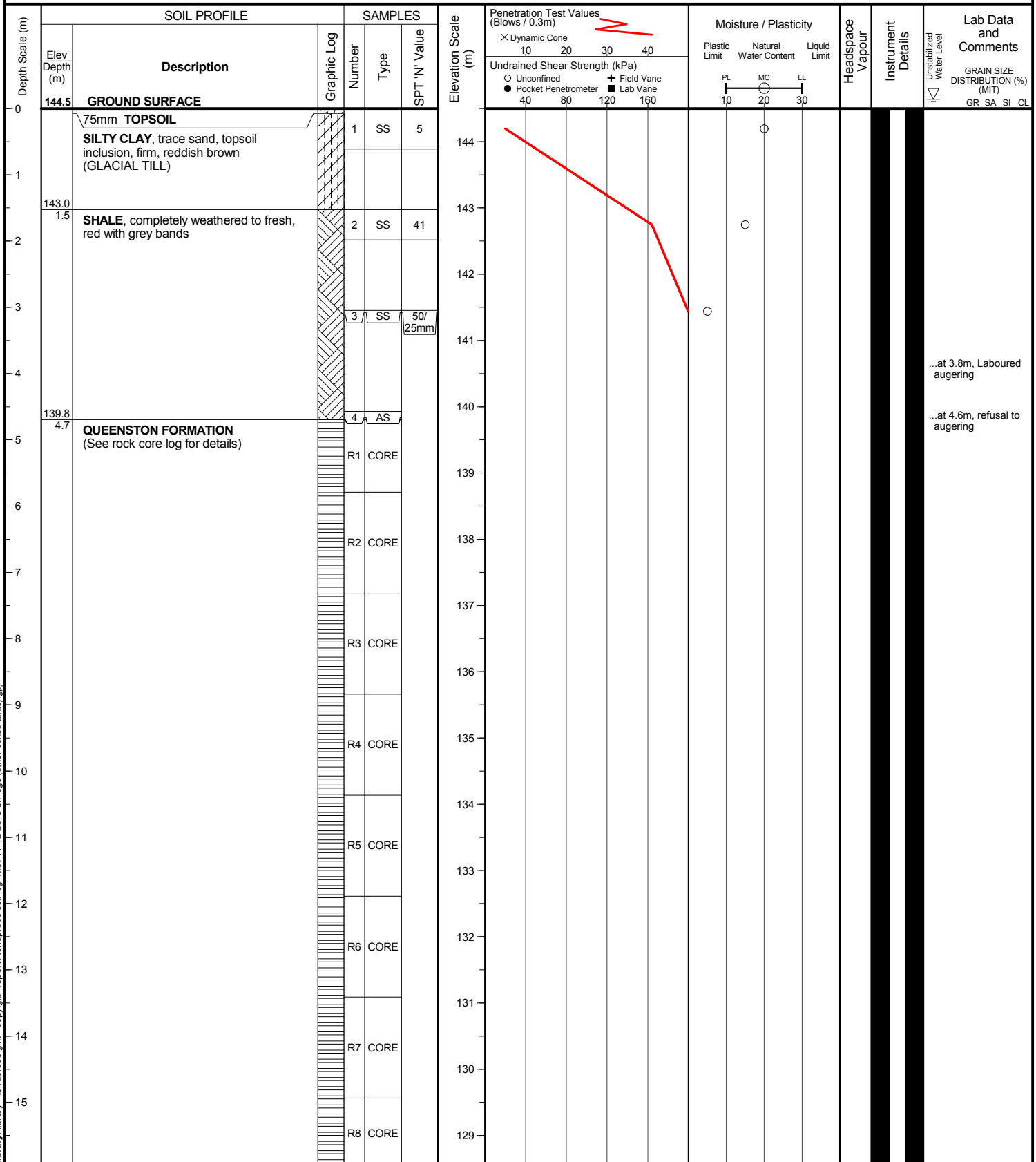
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 599365, N: 4807095 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring



(continued next page)

COFFEY GEOTECHNICS

BOREHOLE LOG COF-BC-1

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : May 11, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 599365, N: 4807095 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)															
		QUEENSTON FORMATION (See rock core log for details) (continued)		R8	CORE		128										
17				R9	CORE		127										
18							126										
19				R10	CORE		125										
20							124										
21				R11	CORE		123										
22							122										
23				R12	CORE		121										
24							120										
25				R13	CORE		119										
26							118										
27				R14	CORE		117										
28							116										
29				R15	CORE		115										
30							114										
31				R16	CORE		113										
				R17	CORE												
				R18	CORE												
				R19	CORE												

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : May 11, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 599365, N: 4807095 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
32		QUEENSTON FORMATION (See rock core log for details) (continued)		R19	CORE		112										
33							111										
34				R20	CORE		110										
35							109										
36				R21	CORE		108										
37							107										
38				R22	CORE		106										
39							105										
40				R23	CORE		104										
41							103										
42				R24	CORE		102										
43							101										
44				R25	CORE		100										
45							99										
46				R26	CORE		98										
47							97										
				R27	CORE												
				R28	CORE												
				R29	CORE												

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : May 11, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 599365, N: 4807095 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
48		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
48		QUEENSTON FORMATION (See rock core log for details) (continued)		R29	CORE		96										
49				R30	CORE		95										
50							94										
51				R31	CORE		93										
52							92										
53				R32	CORE		91										
54							90										
55				R33	CORE		89										
56							88										
57				R34	CORE		87										
58							86										
59				R35	CORE		85										
60							84										
60.7				R36	CORE												
83.8																	
60.7				R37	CORE												

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jun 1, 2010	45.7	98.8
Jun 10, 2010	45.0	99.5
Jun 22, 2010	43.5	101.0
Jun 25, 2010	43.1	101.4
Jun 30, 2010	42.3	102.2
Jul 2, 2010	42.1	102.4
Jul 7, 2010	42.2	102.3
Jul 9, 2010	41.2	103.3
Jul 14, 2010	40.6	103.9
Jul 16, 2010	40.2	104.3
Jul 23, 2010	39.5	105.0
Apr 5, 2011	26.7	117.8

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started May 11, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 4

Position : E: 599365, N: 4807095 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
		Rock coring started at 4.7m below grade	139.8																	
5		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinkly to medium bedded, very weak to weak, red to reddish brown with grey bands	4.7	R1	TCR = 100% SCR = 56% RQD = 22% HL = 5%	139									25	4.7m : PL _A = 36 MPa		139		
6			138.7	R2	TCR = 100% SCR = 93% RQD = 82% HL = 15%	138									5	5.6m : PL _D = 24 MPa 5.9m : PL _D = 24 MPa	5.3m: HL 25mm	139		
7			5.8												25			138		
8			137.2	R3	TCR = 98% SCR = 98% RQD = 92% HL = 19%	137									2	6.6m : PL _A = 15 MPa	6.1-9.4m: Hydraulic conductivity: K=4.93E-7cm/sec P=138kPa K=1.62E-6cm/sec P=172kPa P=276kPa	137		
9			7.3	R4	TCR = 98% SCR = 98% RQD = 92% HL = 19%	136									2	7.6m : PL _D = 19 MPa	7.1m: clay layer 25mm	136		
10			135.7	R5	TCR = 100% SCR = 100% RQD = 93% HL = 25%	135									1	8.7m : PL _A = 83 MPa 8.9m : PL _D = 5 MPa	8.2m: HL 25mm	135		
11			10.4	R6	TCR = 97% SCR = 97% RQD = 97% HL = 29%	134									2	10.1m : PL _A = 26 MPa 10.1m : PL _A = 36 MPa	10.0m: HL 25mm	134		
12			132.6	R7	TCR = 100% SCR = 100% RQD = 100% HL = 8%	133									1	11.3m : PL _D = 12 MPa	10.7m: HL 40mm	133		
13			11.9	R8	TCR = 100% SCR = 100% RQD = 97% HL = 20%	132									0	11.8m : PL _A = 19 MPa	10.8m: HL 15mm	132		
14			131.1	R9	TCR = 100% SCR = 100% RQD = 100% HL = 8%	131									1	13.3m : PL _A = 35 MPa PL _D = 5 MPa	12.3m: HL 150mm	131		
15			129.6	R10	TCR = 98% SCR = 98% RQD = 98% HL = 13%	129									0	15.1m : UCS = 23.8 MPa E = 5482 MPa γ = 25.1 kN/m³ 15.1m : PL _D = 15 MPa 15.6m : PL _A = 49 MPa	12.5-15.5m: Hydraulic conductivity: no flow P=172Pa K=4.38E-7cm/sec P=207kPa P=310kPa	129		
16			128.0	R11	TCR = 100% SCR = 100% RQD = 100% HL = 17%	128									0	16.7m : PL _A = 80 MPa PL _D = 5 MPa	16.4m: HL 50mm	128		
17			126.5	R12	TCR = 98% SCR = 98% RQD = 92% HL = 16%	127									1	18.0m : PL _D = 19 MPa 18.2m : PL _A = 39 MPa	16.7m: HL 15mm	127		
18			18.0	R13	TCR = 98% SCR = 98% RQD = 92% HL = 16%	126									0	19.3m : PL _A = 30 MPa PL _D = 2 MPa	16.8m: HL 15mm	126		
19			125.0	R14	TCR = 100% SCR = 100% RQD = 100% HL = 14%	125									0		17.2m: HL 25mm	125		
20			19.5	R15	TCR = 100% SCR = 100% RQD = 100% HL = 14%	124									0		17.2m: HL 150mm	124		
															0		17.4m: HL 25mm			
															1		17.8m: HL 25mm			
															0		18.0m: vertical joint			
															1		18.0m: HL 15mm			
															0		18.1m: HL 40mm			
															1		18.2m: vertical joint			
															0		18.5m: vertical joint			
															0					
															0		19.3m: HL 15mm			
															0		19.3m: gypsum pocket 75mm			
															0		19.4m: HL 25mm			
															0					
															0		20.0m: HL 25mm			
															1		20.4m: HL 25mm			
															0		20.5m: HL 75mm			

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started May 11, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 2 of 4

Position : E: 599365, N: 4807095 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	R11 Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)						Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing			
21		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinkly to medium bedded, very weak to weak, red to reddish brown with grey bands (continued)	R11 123.5													0			— 20.8m: HL 40mm — 21.0m: HL 50mm	
			21.0														0			
22			R12	TCR = 98% SCR = 98% RQD = 98% HL = 12%	123											0		21.9m : PL _D = 10 MPa	— 21.3-24.4m: Hydraulic conductivity: no flow P=276kPa no flow P=310kPa no flow P=414kPa	123
																0				
			121.9		122											1		21.4m: HL 50mm 21.7m: HL 15mm 21.9m: HL 25mm 22.3m: HL 90mm		122
			22.6													0		22.5m: gypsum laminate 22.6m: gypsum laminate 22.9m: HL 15mm		
23			R13	TCR = 98% SCR = 98% RQD = 98% HL = 9%	121											1		23.2m: gypsum laminate 23.3m: HL 125mm		121
																0				
			120.4		120											0		23.8m : PL _A = 49 MPa 23.8m : PL _D = 10 MPa	— 24.2m: gypsum laminate 24.2m: HL 15mm 24.3m: HL 50mm 24.7m: HL 75mm	120
			24.1													0				
				TCR = 100% SCR = 100% RQD = 100% HL = 13%												0				
25			R14		119											1		25.0m : PL _A = 54 MPa 25.0m : PL _D = 12 MPa	— 25.0m: HL 50mm	119
																0				
			118.9		118											1			— 25.7m: HL 40mm 25.8m: HL 50mm 25.9m: HL 25mm 26.2m: HL 50mm	118
			25.6	TCR = 100% SCR = 100% RQD = 98% HL = 11%												0				
																3				
27			117.4		117											1		27.2m : PL _A = 22 MPa 27.3m : PL _D = 7 MPa 27.6m : PL _A = 39 MPa PL _D = 10 MPa	— 27.4m: HL 15mm — 27.6m: HL 15mm	117
			27.1	TCR = 100% SCR = 98% RQD = 95% HL = 10%												0				
																1			— 28.1m: HL 125mm	116
			115.8		116											1				
			28.7													1		28.7m: HL 25mm		
29			R17	TCR = 100% SCR = 100% RQD = 100% HL = 18%	115											0		29.0m : PL _A = 54 MPa 29.2m : PL _D = 5 MPa	— 29.0m: HL 25mm 29.2m: HL 75mm 29.5m: HL 15mm 29.7m: HL 40mm	115
																1			— 29.9-32.9m: Hydraulic conductivity: K=1.25E-6cm/sec P=345kPa K=8.55E-7cm/sec P=379kPa no flow P=483kPa	
			114.3		114											0		30.1m : PL _A = 39 MPa 30.1m : PL _D = 19 MPa	— 30.0m: HL 50mm 30.1m: HL 25mm 30.1m: HL 25mm 30.2m: HL 40mm 30.3m: gypsum laminate 30.8m: gypsum laminate 30.8m: gypsum laminate 31.0m: HL 165mm 31.2m: HL 75mm 31.5m: HL 25mm 31.5m: HL 15mm 31.7m: HL 30mm 31.8m: HL 65mm 31.8m: HL 85mm 32.8m: HL 50mm	114
			30.2	TCR = 100% SCR = 100% RQD = 97% HL = 21%												0				
																1				
			112.8		113											1				
			31.7													0		31.8m : UCS = 47.3 MPa E = 8610 MPa γ = 25.7 kN/m ³		
32			R19	TCR = 100% SCR = 100% RQD = 88% HL = 18%	112											1				
																1				
																4		33.0m : PL _D = 8 MPa 33.2m : PL _A = 29 MPa	— 33.2m: HL 50mm 33.3m: HL 190mm	111
			111.3		111											0				
			33.2													0				
				TCR = 100% SCR = 100% RQD = 100% HL = 18%												1		34.0m : PL _A = 39 MPa PL _D = 4 MPa	— 34.0m: HL 75mm	110
			109.8		110											0			— 34.5m: HL 15mm 34.8m: HL 25mm	110
			34.7													0				
35				TCR = 100% SCR = 100% RQD = 95% HL = 15%												3			— 35.0m: HL 30mm 35.2m: HL 15mm	
																0				
																0		35.9m : PL _A = 10 MPa 35.9m : PL _D = 5 MPa	— 35.9m: HL 135mm	109
			108.2		108											0				
			36.3													1			— 36.3m: HL 25mm 36.3m: HL 45mm	108
			R22													1				

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started May 11, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 3 of 4

Position : E: 599365, N: 4807095 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)						Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Estimated Strength					Frequency	Spacing
																5	25					
37		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinkly to medium bedded, very weak to weak, red to reddish brown with grey bands (continued)	R22	TCR = 100% SCR = 98% RQD = 95% HL = 11%	107											0	0	36.9m : PL _D = 7 MPa 37.2m : PL _A = 52 MPa	36.8m: gypsum laminate 36.8m: HL 125mm	107		
38			106.7 37.8														1	1				
39			R23	TCR = 100% SCR = 97% RQD = 93% HL = 19%	106											1	1	37.8m : PL _D = 5 MPa 37.9m : PL _A = 10 MPa	no flow P=414kPa k=3.14E-7cm/s P=448kPa no flow P=552kPa 37.8m: HL 180mm 38.4m: HL 115mm	106		
40																5	2					
41																0	0		39.0m: gypsum laminate			
42																0	0	39.4m : PL _A = 13 MPa 39.6m : PL _D = 10 MPa	39.4m: HL 65mm	105		
43			R24	TCR = 100% SCR = 100% RQD = 95% HL = 13%	104											2	0		40.0m: gypsum laminate 40.0m: HL 50mm 40.2m: HL 65mm			
44																0	0		40.5m: HL 25mm	104		
45																0	0	40.8m : PL _A = 29 MPa 41.0m : PL _D = 5 MPa				
46			R25	TCR = 100% SCR = 100% RQD = 93% HL = 8%	103											3	1		41.0m: gypsum laminate			
47																0	0		41.4m: gypsum laminate 41.5m: HL 15mm 41.8m: HL 15mm 42.0m: HL 15mm	103		
48																0	0					
49																1	1		42.3m: gypsum laminate			
50																0	0	42.4m : PL _A = 28 MPa 42.6m : PL _D = 10 MPa	42.7m: HL 75mm 42.9m: HL 15mm	102		
51			R26	TCR = 98% SCR = 98% RQD = 98% HL = 10%	101											0	0					
52																0	0			101		
53																1	0		43.7m: HL 65mm 43.7m: gypsum laminate			
54																0	0		44.2m: HL 25mm			
55																0	0		44.5m: HL 50mm 44.5-47.5m: Hydraulic conductivity: no flow P=483kPa no flow P=517kPa k=9.15E-7cm/s P=621kPa	100		
56			R27	TCR = 100% SCR = 100% RQD = 92% HL = 5%	100											1	1	45.4m : PL _D = 5 MPa 45.4m : PL _A = 8 MPa 45.9m : PL _A = 47 MPa	45.4m: HL 10mm 45.6m: gypsum laminate 45.8m: HL 15mm 45.9m: HL 25mm 45.9m: HL 25mm	99		
57																2	1					
58			R28	TCR = 100% SCR = 100% RQD = 97% HL = 10%	98											0	2		46.5m: gypsum laminate	98		
59																1	1					
60																0	0	46.9m : PL _D = 5 MPa	46.9m: HL 50mm 47.1m: gypsum laminate 47.1m: gypsum laminate 47.2m: gypsum laminate	97		
61			R29	TCR = 100% SCR = 100% RQD = 97% HL = 3%	97											2	0					
62																0	0					
63																0	0	48.2m : PL _D = 5 MPa 48.2m : UCS = 16.2 MPa E = 2339 MPa γ = 25.6 kN/m ³ 48.4m : PL _A = 156 MPa 48.5m : PL _A = 54 MPa 49.7m : PL _D = 7 MPa	48.4m: HL 50mm 48.5m: HL 65mm 48.6m: HL 50mm 49.0m: HL 125mm	96		
64																0	0					
65			R30	TCR = 98% SCR = 98% RQD = 98% HL = 18%	95											0	0			95		
66																0	0	50.0m : PL _A = 17 MPa 50.3m : PL _D = 15 MPa	49.9m: HL 25mm 50.0m: gypsum laminate			
67																0	0		50.3m: HL 15mm 50.4m: HL 25mm 50.5m: HL 40mm 50.6m: HL 15mm 50.8m: HL 15mm 51.0m: HL 15mm	94		
68			R31	TCR = 100% SCR = 100% RQD = 100% HL = 9%	94											0	0		51.3m: gypsum laminate 51.5m: HL 25mm 51.6m: HL 15mm 51.7m: HL 15mm			
69																1	0	51.5m : PL _A = 23 MPa PL _D = 5 MPa	51.8-54.9m: Hydraulic conductivity: k=2.71E-7cm/s P=586kPa k=2.61E-7cm/s P=621kPa no flow at P=689kPa	93		
70																0	0					
71			R32	TCR = 100% SCR = 100% RQD = 100% HL = 6%	92											0	0					

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started May 11, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 4 of 4

Position : E: 599365, N: 4807095 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)								Natural Fractures		Laboratory Testing	Comments	Elevation (m)	
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing				
																					Estimated Strength
53		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands (continued)	R32 91.5		91											0		53.2m : PL _A = 58 MPa	51.8m: HL 40mm 52.5m: HL 25mm 51.8-54.9m: Hydraulic conductivity: k=2.71E-7cm/s P=586kPa k=2.61E-7cm/s P=621kPa no flow at P=689kPa 53.2m: gypsum laminate 53.3m: gypsum laminate 53.4m: HL 75mm 53.6m: HL 75mm 53.8m: HL 40mm 54.1m: HL 50mm 54.2m: HL 15mm 54.7m: HL 25mm 54.8m: HL 25mm 54.8m: HL 25mm 55.1m: gypsum laminate 55.2m: HL 75mm 55.6m: HL 100mm	91	
	53.0															0					
54			R33		TCR = 100% SCR = 100% RQD = 91% HL = 17%												3				
																	0				
																	0				
				89.9		90											0		54.2m : PL _D = 19 MPa		
				54.6														0			
55					TCR = 100% SCR = 100% RQD = 97% HL = 17%												0				
																	1				
				R34		89											1				
56			88.4													0		55.6m : UCS = 6.6 MPa E = 905 MPa γ = 26.5 kN/m ³ 55.7m : PL _A = 54 MPa 55.7m : PL _D = 24 MPa 56.7m : PL _D = 2 MPa			
			56.1													0					
				TCR = 100% SCR = 100% RQD = 98% HL = 14%	88											0			56.2m: HL 15mm 56.3m: HL 50mm 56.4m: HL 40mm 56.7m: HL 15mm 56.7m: gypsum laminate 56.8m: gypsum laminate 56.9m: HL 15mm 57.0m: HL 40mm 57.4m: gypsum laminate 57.5m: HL 25mm 57.6m: HL 25mm 57.7m: HL 25mm 57.7m: HL 40mm 58.0m: gypsum laminate 58.4m: HL 40mm 58.6m: HL 15mm 58.7m: HL 75mm 58.8m: HL 25mm 59.1m: HL 15mm 59.3m: gypsum laminate	88	
																	2				
57																0					
			86.9		87											0		57.6m : PL _A = 33 MPa 57.7m : PL _D = 5 MPa			
			57.6														0				
58				TCR = 100% SCR = 95% RQD = 67% HL = 15%												25					
																3					
																2					
59			85.4		86											0		58.8m : PL _A = 12 MPa 59.1m : PL _D = 5 MPa 59.3m : PL _A = 17 MPa			
			59.1														3				
				TCR = 100% SCR = 97% RQD = 83% HL = 4%												0					
																	0				
60					85												2				
																	3				
			83.8		84																
															</						

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

COFFEY GEOTECHNICS

BOREHOLE LOG COF-BC-2

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : May 17, 2010

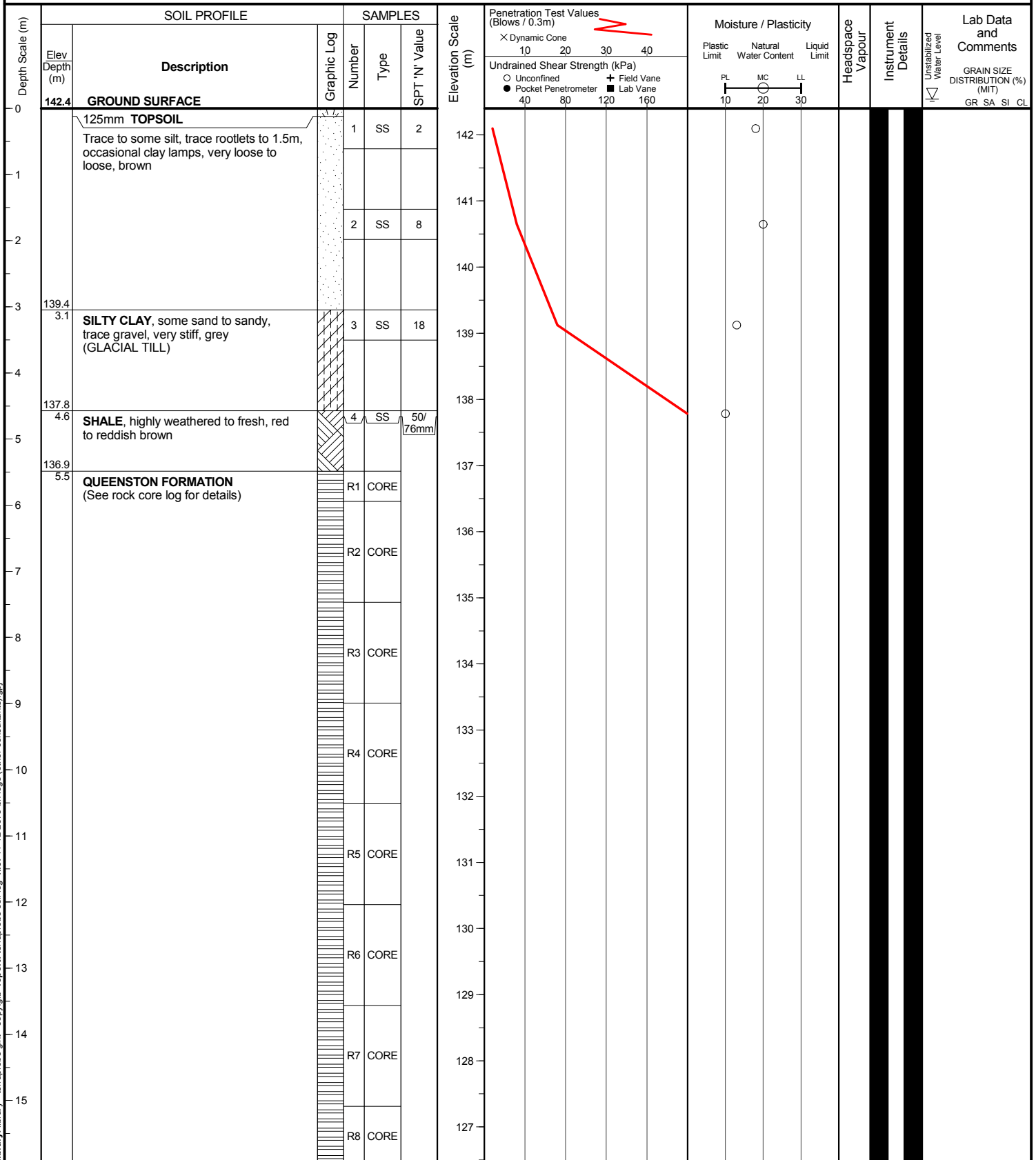
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 599469, N: 4807417 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring



(continued next page)

COFFEY GEOTECHNICS

BOREHOLE LOG COF-BC-2

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : May 17, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 599469, N: 4807417 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)															
		QUEENSTON FORMATION (See rock core log for details) (continued)		R8	CORE		126										
17				R9	CORE		125										
18							124										
19				R10	CORE		123										
20				R11	CORE		122										
21							121										
22				R12	CORE		120										
23							119										
24				R13	CORE		118										
25				R14	CORE		117										
26				R15	CORE		116										
27							115										
28				R16	CORE		114										
29				R17	CORE		113										
30							112										
31				R18	CORE		111										
				R19	CORE												

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : May 17, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 599469, N: 4807417 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
32		QUEENSTON FORMATION (See rock core log for details) (continued)					110										
33				R19	CORE		109										
34				R20	CORE		108										
35				R21	CORE		107										
36				R22	CORE		106										
37				R23	CORE		105										
38				R24	CORE		104										
39				R25	CORE		103										
40				R26	CORE		102										
41				R27	CORE		101										
42				R28	CORE		100										
43				R29	CORE		99										
44							98										
45							97										
46							96										
47							95										

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : May 17, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 599469, N: 4807417 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
48		(continued)												
		QUEENSTON FORMATION (See rock core log for details) (continued)		R29	CORE	94								
49				R30	CORE	93								
50						92								
51				R31	CORE	91								
52						90								
53				R32	CORE	89								
54						88								
55				R33	CORE	87								
56														
	86.2 56.2			R34	CORE									

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jun 1, 2010	39.5	102.9
Jun 10, 2010	33.1	109.3
Jun 22, 2010	25.9	116.5
Jun 25, 2010	25.0	117.4
Jun 30, 2010	23.4	119.0
Jul 2, 2010	22.9	119.5
Jul 7, 2010	21.8	120.6
Jul 9, 2010	21.4	121.0
Jul 14, 2010	20.6	121.8
Jul 16, 2010	20.2	122.2
Jul 23, 2010	19.5	122.9

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started May 17, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 4

Position : E: 599469, N: 4807417 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)						Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
		Rock coring started at 5.5m below grade	136.9																	
6		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands	5.5 R1	TCR = 100% SCR = 75% RQD = 75% HL = 0%	136											0	— 5.5m: core loss	136		
	5.9													10	— 5.9m: HL 150mm					
7			R2	TCR = 95% SCR = 78% RQD = 55% HL = 32%	135											8	— 6.2m: HL 50mm	135		
														2	— 6.4m: HL 180mm					
8					TCR = 100% SCR = 75% RQD = 75% HL = 30%	134											2	— 6.8m: HL 50mm	134	
														2	— 7.2m: HL 50mm					
9				134.9		133												4	— 7.9m: HL 205mm	133
				7.5													3	— 8.1m: HL 75mm		
10					TCR = 100% SCR = 98% RQD = 98% HL = 10%	132												1	— 8.4m: HL 50mm	132
																		1	— 8.5m: HL 25mm	
11				133.4		131												1	— 8.7m: HL 50mm	131
			9.0														1	— 8.9m: HL 50mm		
12				TCR = 100% SCR = 98% RQD = 98% HL = 10%	130												1	— 9.1m: HL 75mm	130	
																	1	— 9.5m: HL 40mm		
13			131.9		129												1	— 9.8m: HL 15mm	129	
			10.5														0	— 10.3m: HL 25mm		
14				TCR = 100% SCR = 100% RQD = 100% HL = 4%	128												0	— 10.6m: HL 25mm	128	
																	1	— 10.9m: HL 15mm		
15				TCR = 100% SCR = 100% RQD = 100% HL = 33%	127												0	— 11.6m: HL 25mm	127	
																	1	— 12.0m: HL 25mm		
16			130.4		126												0	— 12.1m: HL 15mm	126	
			12.0														0	— 12.4m: HL 125mm		
17				TCR = 100% SCR = 100% RQD = 100% HL = 33%	125												0	— 12.7m: HL 75mm	125	
																	1	— 13.0m: HL 50mm		
18			128.8		124												0	— 13.1m: HL 15mm	124	
			13.6														0	— 13.3m: HL 40mm		
19				TCR = 100% SCR = 100% RQD = 100% HL = 26%	123												0	— 13.3m: HL 150mm	123	
																	1	— 13.5m: HL 50mm		
20				TCR = 100% SCR = 100% RQD = 100% HL = 16%	122												1	— 13.7m: HL 50mm	122	
																	0	— 14.0m: HL 100mm		
21			127.3		121												0	— 14.2m: HL 15mm	121	
			15.1														1	— 14.4m: HL 15mm		
22				TCR = 100% SCR = 100% RQD = 100% HL = 16%	120												1	— 14.4m: HL 15mm	120	
																	1	— 14.5m: HL 25mm		
23			125.8		119												1	— 14.6m: HL 25mm	119	
			16.6														1	— 14.7m: HL 25mm		
24				TCR = 90% SCR = 90% RQD = 88% HL = 18%	118												0	— 14.9m: HL 75mm	118	
																	0	— 15.1m: HL 50mm		
25			124.3		117												1	— 15.3m: HL 15mm	117	
			18.1														1	— 15.4m: HL 25mm		
26				TCR = 100% SCR = 100% RQD = 100% HL = 18%	116												0	— 16.1m: HL 115mm	116	
																	0	— 16.5m: HL 40mm		
27			122.7		115												3	— 16.9m: HL 25mm	115	
			19.7														0	— 17.0m: HL 100mm		
28				TCR = 100% SCR = 93% RQD = 93% HL = 13%	114												1	— 17.2m: HL 50mm	114	
																		1		— 17.4m: HL 25mm
29			121.2		113												0	— 17.6m: HL 15mm	113	
			21.2														0	— 17.7m: HL 15mm		
30				TCR = 100% SCR = 93% RQD = 93% HL = 13%	112												0	— 18.0m: HL 50mm	112	
																		0		— 18.2m: HL 25mm
31			121.2		111												1	— 18.3m: HL 50mm	111	
			21.2														1	— 18.4m: HL 65mm		
32				TCR = 100% SCR = 93% RQD = 93% HL = 13%	110												0	— 18.4m: gypsum laminate	110	
																		0		— 18.4m: HL 65mm
33			122.7		109												1	— 18.9m: gypsum laminate	109	
			19.7														1	— 18.9m: gypsum laminate		
34				TCR = 100% SCR = 93% RQD = 93% HL = 13%	108												0	— 19.3m: HL 15mm	108	
																		0		— 19.5m: HL 100mm
35			122.7		107												1	— 19.8m: HL 25mm	107	
			19.7														1	— 20.1m: HL 15mm		
36				TCR = 100% SCR = 93% RQD = 93% HL = 13%	106												1	— 20.4m: HL 90mm	106	
																		1		— 20.6m: HL 15mm
37			121.2		105												0	— 20.7m: HL 15mm	105	
			21.2														0	— 20.8m: HL 40mm		
38				TCR = 100% SCR = 93% RQD = 93% HL = 13%	104												0	— 21.3m: HL 25mm	104	
																		0		

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started May 17, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 2 of 4

Position : E: 599469, N: 4807417 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)						
						Z1	Z2	Z3	Z4	R1	R2				R3	R4	R5	R6	Frequency	Spacing
						Estimated Strength														
22		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands <i>(continued)</i>	R12	TCR = 100% SCR = 100% RQD = 100% HL = 18%	120								0		23.0m : PL _A = 17 MPa	21.3m: HL 25mm 21.5m: HL 75mm 21.6m: HL 15mm 21.7m: HL 25mm 21.9m: HL 25mm 21.9m: HL 75mm 22.3m: HL 15mm	120			
	119.7												1				22.7m: HL 125mm 23.0m: HL 50mm			
23	22.7		R13	TCR = 100% SCR = 98% RQD = 78% HL = 15%	119									4				23.5m: HL 25mm	119	
														2						
24				118.2											4			23.9m: HL 25mm		
				24.2											1		24.2m : PL _D = 18 MPa	24.2m: HL 25mm 24.3m: HL 15mm 24.4m: HL 65mm 24.6m: HL 15mm 24.7m: HL 25mm 24.9m: HL 25mm 24.9m: HL 25mm	118	
25					R14	TCR = 100% SCR = 100% RQD = 100% HL = 19%	117								0		25.4m : PL _A = 39 MPa	25.4m: HL 25mm 25.4m: gypsum laminate 25.5m: HL 50mm 25.6m: HL 25mm 26.0m: HL 15mm 26.3m: HL 25mm 26.4m: HL 25mm 26.5m: HL 15mm 26.5m: HL 25mm 26.6m: HL 25mm 26.9m: gypsum laminate	117	
				116.6											0					
26				25.8											0				116	
					R15	TCR = 100% SCR = 100% RQD = 100% HL = 8%	116								0					
27															0		27.4m : PL _D = 20 MPa	27.4m: HL 35mm 27.4m: HL 65mm 27.6m: gypsum laminate	115	
				115.1											0					
28				27.3											1			28.0m: HL 50mm 28.1m: HL 25mm 28.1m: HL 75mm	114	
					R16	TCR = 98% SCR = 98% RQD = 98% HL = 17%	114								1					
29				113.6											1					
				28.8											0			29.1m: HL 50mm	113	
30					R17	TCR = 100% SCR = 95% RQD = 82% HL = 33%	113								7			29.5m: HL 25mm 29.5m: HL 215mm		
															1			29.9m: HL 65mm 30.1m: HL 15mm 30.2m: HL 125mm	112	
31				112.1											1		30.2m : PL _D = 3 MPa			
				30.3											1				111	
32					R18	TCR = 100% SCR = 100% RQD = 90% HL = 6%	111								0		31.4m : PL _A = 17 MPa	31.5m: HL 25mm 31.6m: HL 65mm		
			110.5											3						
33			31.9											1			32.0m: HL 75mm 32.2m: HL 65mm	110		
				R19	TCR = 100% SCR = 100% RQD = 100% HL = 23%	110								0			32.5m: HL 25mm 32.8m: gypsum laminate 32.8m: HL 15mm 33.1m: HL 165mm			
34			109.0											0				109		
			33.4											1		34.0m : PL _A = 29 MPa	34.3m: HL 100mm 34.4m: HL 15mm			
35				R20	TCR = 100% SCR = 90% RQD = 75% HL = 9%	108								3						
														>25			34.8m: HL 25mm	108		
36			107.5											2		34.8m : PL _D = 14 MPa				
			34.9											2						
37				R21	TCR = 98% SCR = 90% RQD = 90% HL = 17%	107								0			35.2m: HL 165mm 35.6m: HL 40mm 35.8m: gypsum laminate 36.0m: HL 50mm	107		
														0						
38			106.0											1			36.4m: HL 25mm 36.6-39.6m: Hydraulic conductivity: no flow P=414kPa no flow P=448kPa no flow P=552kPa 36.6m: HL 25mm	106		
			36.4											0						
39				R22	TCR = 100% SCR = 100% RQD = 100% HL = 23%	105								0						
														0						
40														0						
														0						
41														0						
														0						

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started May 17, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 3 of 4

Position : E: 599469, N: 4807417 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
38		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands (continued)	R22 104.5		104				37.8m : PL _D = 17 MPa 37.9m : PL _A = 20 MPa	36.7m: HL 25mm 36.8m: gypsum laminate 37.0m: HL 50mm 37.1m: gypsum laminate 37.2m: HL 15mm 37.4m: HL 205mm 36.6-39.6m: Hydraulic conductivity: no flow P=414kPa no flow P=448kPa no flow P=552kPa 37.5m: gypsum laminate 37.8m: gypsum laminate 37.9m: HL 15mm 38.0m: HL 15mm 38.3m: HL 50mm 38.7m: HL 40mm 38.9m: HL 40mm 39.1m: HL 25mm 39.2m: HL 15mm 39.3m: HL 15mm 39.6m: HL 25mm 39.7m: HL 50mm 40.1m: HL 50mm 40.8m: HL 50mm 41.2m: HL 25mm 41.3m: HL 35mm 41.5-44.5m: Hydraulic conductivity: no flow P=448kPa no flow P=483kPa no flow P=586kPa 41.5m: HL 65mm 41.8m: HL 25mm 41.8m: HL 25mm 41.9m: HL 15mm 41.9m: HL 25mm 42.1m: HL 75mm 42.1m: gypsum laminate 42.4m: HL 50mm 43.1m: HL 65mm 43.2m: gypsum laminate 43.7m: HL 75mm 44.0m: HL 40mm	104
39			37.9	TCR = 100% SCR = 100% RQD = 100% HL = 13%	103						103
40			R23		102						102
41			102.9	TCR = 100% SCR = 100% RQD = 100% HL = 12%	101				40.8m : PL _A = 23 MPa		101
42			39.5		100						100
43			R24		99						99
44			101.4	TCR = 100% SCR = 100% RQD = 98% HL = 23%	98				43.1m : UCS = 28.2 MPa E = 5814 MPa _s γ = 25.6 kN/m ³		98
45			41.0		97						97
46			R25		96				44.0m : PL _D = 3 MPa		96
47			99.9	TCR = 100% SCR = 100% RQD = 100% HL = 9%	95						95
48			42.5		94						94
49			R26		93				45.4m : PL _A = 40 MPa 45.8m : PL _D = 6 MPa 46.0m : PL _A = 46 MPa		93
50			98.4	TCR = 100% SCR = 100% RQD = 100% HL = 31%	92				46.8m : UCS = 28.8 MPa E = 5625 MPa _s γ = 26.0 kN/m ³		92
51			44.0		91						91
52			R27		90				47.9m : PL _A = 17 MPa 48.1m : PL _D = 11 MPa		90
53			96.8	TCR = 100% SCR = 100% RQD = 100% HL = 13%	89				48.7m : PL _D = 9 MPa 48.7m : PL _A = 40 MPa		89
54			95.3		88						88
55			47.1	TCR = 98% SCR = 98% RQD = 98% HL = 10%	87				50.6m : UCS = 11.7 MPa E = 2363 MPa γ = 24.5 kN/m ³		87
56			R28		86				51.1m : PL _A = 36 MPa 51.1m : PL _D = 6 MPa		86
57			93.8	TCR = 100% SCR = 100% RQD = 100% HL = 18%	85						85
58			48.6		84						84
59			R29		83						83
60			92.3	TCR = 100% SCR = 100% RQD = 100% HL = 23%	82						82
61			50.1		81						81
62			R30		80						80
63			90.7	TCR = 100% SCR = 100% RQD = 100% HL = 25%	79						79
64			51.7		78						78
65			R31		77						77
66			89.2		76						76
67			53.2		75						75
68			R32		74						74
69			89		73						73

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started May 17, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 4 of 4

Position : E: 599469, N: 4807417 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)				
						Z1	Z2	Z3	Z4	R1	R2	R3	R4				R5	R6	Frequency	Spacing
54		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands (continued)	R33	TCR = 98% SCR = 98% RQD = 98% HL = 15%	88									1		53.0m: HL 125mm gypsum laminate 53.2m: HL 25mm 53.6m: HL 50mm 53.8m: HL 50mm 54.0m: HL 50mm 54.2m: HL 50mm	88			
55			87.7												0					
			54.7												0					
56			R34	TCR = 95% SCR = 95% RQD = 80% HL = 13%	87										0		55.0m: HL 15mm 55.2m: HL 15mm 55.2m: HL 15mm 55.3m: HL 25mm 55.8m: HL 125mm	87		
			86.2											3						
														0						

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

COFFEY GEOTECHNICS

BOREHOLE LOG COF-BC-3

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 2, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 599917, N: 4807813 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Unstabilized Water Level	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone		Natural Water Content						
								10	20	30	40	PL				
	138.6	GROUND SURFACE														
		75mm TOPSOIL		1	SS	4										
		FILL, mixture of sandy silt and topsoil, trace rootlets, dark brown, loose														
1																
	137.1	SHALE, highly weathered to fresh, red to reddish brown		2	SS	50/ 125mm										
2	1.5															
				3	SS	50/ 50mm										
3																
4	134.5	QUEENSTON FORMATION (See rock core log for details)		R1	CORE											
5	4.1															
				R2	CORE											
6																
				R3	CORE											
7																
				R4	CORE											
8																
				R5	CORE											
9																
				R6	CORE											
10																
				R7	CORE											
11																
				R8	CORE											
12																
				R9	CORE											
13																
14																
15																

(continued next page)

COFFEY GEOTECHNICS

BOREHOLE LOG COF-BC-3

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 2, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 599917, N: 4807813 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)						Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
		QUEENSTON FORMATION (See rock core log for details) (continued)		R9	CORE		122										
17							121										
18				R10	CORE		120										
19							119										
20							118										
21				R12	CORE		117										
22							116										
23				R13	CORE		115										
24							114										
25				R15	CORE		113										
26							112										
27				R16	CORE		111										
28							110										
29				R17	CORE		109										
30							108										
31				R18	CORE		107										
				R19	CORE												

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 2, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 599917, N: 4807813 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)		R19	CORE												
		QUEENSTON FORMATION (See rock core log for details) (continued)															
33				R20	CORE		106										
34							105										
35				R21	CORE		104										
36				R22	CORE		103										
37							102										
38				R23	CORE		101										
39				R24	CORE		100										
40							99										
41				R25	CORE		98										
42				R26	CORE		97										
43							96										
44				R27	CORE		95										
45				R28	CORE		94										
46							93										
47				R29	CORE		92										
				R30	CORE		91										

(continued next page)

COFFEY GEOTECHNICS

BOREHOLE LOG COF-BC-3

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 2, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 599917, N: 4807813 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		10	20	30	40	Plastic Limit	Natural Water Content	Liquid Limit	
48		(continued)												
49		QUEENSTON FORMATION (See rock core log for details) (continued)		R30	CORE									
50				R31	CORE									
51				R32	CORE									
52				R33	CORE									
53														
85.1 53.5														

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jun 22, 2010	38.7	99.9
Jun 25, 2010	38.5	100.1
Jun 30, 2010	37.5	101.1
Jul 2, 2010	37.1	101.5
Jul 7, 2010	35.8	102.8
Jul 9, 2010	35.4	103.2
Jul 14, 2010	34.2	104.4
Jul 16, 2010	33.9	104.7
Jul 23, 2010	32.4	106.2
Apr 5, 2011	17.6	121.0

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started June 2, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 4

Position : E: 599917, N: 4807813 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	5	25	50	100	250	Frequency	Spacing		
		Rock coring started at 4.1m below grade	134.5															
5		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands	4.1 R1 133.8 4.8	TCR = 65% SCR = 15% RQD = 15% HL = 0%	134										>25			134
6				TCR = 98% SCR = 80% RQD = 56% HL = 5%	133										2		5.0m: HL 50mm	133
7			132.3 6.3		132										3		5.7m: HL 15mm	
8				TCR = 100% SCR = 92% RQD = 68% HL = 34%	131										2		6.1m: HL 15mm	
9			130.8 7.8		130										7		6.4m: HL 15mm	
10				TCR = 100% SCR = 88% RQD = 88% HL = 24%	129										8		6.6m: HL 65mm	
11			129.3 9.3		129										9		6.8m: HL 25mm	
12				TCR = 100% SCR = 92% RQD = 88% HL = 23%	128										3		6.9m: HL 50mm	
13			127.7 10.9		127										1		7.0m: HL 115mm	
14				TCR = 100% SCR = 98% RQD = 85% HL = 39%	126										4		7.2m: HL 50mm	
15			126.2 12.4		126										10		7.3m: HL 15mm	
16				TCR = 98% SCR = 98% RQD = 98% HL = 28%	125										1		7.4m: HL 25mm	
17			124.7 13.9		124										1		7.4m: HL 15mm	
18				TCR = 100% SCR = 100% RQD = 100% HL = 28%	123										0		7.5m: HL 150mm	
19			123.2 15.4		123										1		7.5m: possible DIF (7.50m to 8.15m)	
20				TCR = 100% SCR = 100% RQD = 100% HL = 24%	122										0		7.9m: HL 50mm	
			121.6 17.0		121										0		8.1m: HL 40mm	
				TCR = 95% SCR = 92% RQD = 65% HL = 13%	120										1		8.2m: HL 25mm	
			120.1 18.5		120										0		8.2m: HL 15mm, vertical joint, rough, clean and closed at 8.25m	
				TCR = 98% SCR = 98% RQD = 98% HL = 38%	119										0		8.3m: HL 15mm	
			118.6 B12		119										0		8.3m: HL 50mm	
															0		8.4m: HL 15mm	
															2		8.5m: HL 65mm	
															1		8.6m: HL 25mm	
															0		8.7m: HL 15mm	
															0		9.0m: HL 15mm	
															0		9.1m: HL 50mm	
															0		9.4m: HL 40mm	
															5		9.6m: HL 65mm	
															0		9.7m: HL 15mm	
															0		9.7m: HL 25mm	
															0		9.8m: HL 25mm	
															0		10.2m: HL 50mm	
															3		10.3m: HL 65mm	
															1		10.5m: HL 25mm	
															0		10.6m: HL 25mm	
															1		10.7m: HL 25mm	
															1		10.9m: HL 190mm	
															1		11.1m: HL 65mm	
															3		11.2m: HL 15mm	
															1		11.3m: HL 15mm	
															0		11.4m: HL 15mm	
															0		11.4m: HL 25mm	
															0		11.6m: HL 75mm	
															0		11.9m: HL 15mm	
															0		12.0m: HL 90mm	
															0		12.3m: HL 100mm, gypsum lens	
															0		12.4m: HL 255mm	
															0		12.6m: gypsum laminate	
															0		12.9m: gypsum laminate	
															0		13.4m: HL 125mm	
															0		13.6m: HL 40mm	
															1		14.0m: HL 15mm	
															0		14.1m: HL 25mm	
															0		14.3m: HL 15mm	
															0		14.3m: HL 65mm	
															0		14.3m: gypsum laminate	
															0		14.4m: HL 25mm	
															0		14.6m: HL 15mm	
															0		14.6m: HL 90mm	
															0		14.8m: HL 25mm	
															0		14.8m: HL 25mm	
															0		14.9m: HL 25mm	
															0		15.2m: HL 15mm	
															0		15.2m: HL 50mm	
															0		15.4m: HL 50mm	
															4		15.4m: HL 25mm	
															0		15.6m: HL 75mm	
															0		15.7m: HL 15mm	
															0		15.9m: HL 40mm	
															0		16.6m: HL 125mm	
															0		16.8m: HL 40mm	
															0		16.9m: HL 50mm	
															2		17.4m: HL 25mm	
															5		18.1m: HL 75mm	
															1		18.3m: HL 90mm	
															0		18.5m: HL 25mm	
															0		18.6m: HL 25mm	
															2		18.7m: HL 40mm	
															0		18.9m: HL 115mm	
															0		19.1m: HL 15mm	
															0		19.1m: HL 90mm	
															0		19.2m: HL 75mm	
															0		19.3m: HL 40mm	
															0		19.4m: HL 90mm	
															0		19.5m: HL 15mm	

(continued next page)

HL = Hard Layers

ROCK CORE LOG COF-BC-3

Sheet No. 2 of 4

Drilling Method : Solid stem augers, HQ rock coring

library: library - terraprobe gint - copy.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh logs (other consultants).gpi

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started June 2, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 3 of 4

Position : E: 599917, N: 4807813 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
37		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands <i>(continued)</i>	R22 101.8 36.8	HL = 23%	102											0		36.0m: HL 15mm 36.1m: HL 40mm 36.1m: gypsum laminate 36.1m: HL 50mm 36.4m: HL 50mm 36.6m: gypsum laminate 37.1m: HL 65mm 37.2m: gypsum laminate	102	
			R23	TCR = 100% SCR = 100% RQD = 100% HL = 4%	101											0			101	
38				100.3 38.3		100											0	38.1m : PL _A = 10 MPa PL _D = 6 MPa		
39				R24	TCR = 100% SCR = 100% RQD = 100% HL = 46%	99											0	38.5m: HL 65mm 38.6m: HL 205mm 38.7-41.8m: Hydraulic conductivity: k=1.77E-7 cm/s P=414kPa k=3.25E-7 cm/s P=483kPa no flow P=586kPa		100
40				98.8 39.8		99											0	38.8m: HL 90mm 38.9m: HL 180mm 39.1m: HL 140mm 39.5m: HL 25mm 40.1m: HL 50mm 40.2m: HL 40mm		99
41				R25	TCR = 100% SCR = 100% RQD = 100% HL = 19%	98											0	40.5m : UCS = 18.8 MPa E = 3242 MPa γ = 26.2 kN/m ³	40.5m: gypsum laminate 40.7m: HL 25mm 40.8m: HL 50mm	98
42				97.2 41.4		97											0	41.1m: HL 50mm 41.1m: gypsum laminate 41.2m: HL 15mm 41.3m: HL 65mm 41.5m: HL 50mm		97
43				R26	TCR = 100% SCR = 100% RQD = 100% HL = 15%	96											0	42.0m : PL _D = 6 MPa	41.6m: HL 25mm 41.8m: HL 15mm 42.0m: HL 25mm 42.1m: HL 75mm	
44				95.7 42.9		95											0	42.5m : PL _A = 17 MPa	42.5m: HL 15mm 42.7m: HL 25mm 42.9m: HL 25mm 43.0m: HL 25mm	96
45				R27	TCR = 100% SCR = 100% RQD = 100% HL = 19%	94											1	43.4m : PL _A = 14 MPa	43.4m: HL 90mm	95
46				94.2 44.4		94											0	43.8m : PL _D = 20 MPa	43.8m: HL 15mm 43.8m: HL 25mm 44.0m: HL 75mm	
47				R28	TCR = 100% SCR = 100% RQD = 100% HL = 21%	93											1	44.3m : PL _A = 20 MPa	44.2m: HL 15mm 44.3m: HL 25mm 44.6m: HL 165mm	94
48				92.7 45.9		93											0	44.8m : PL _D = 6 MPa	44.8m: HL 25mm 44.8m: gypsum laminate	
49				R29	TCR = 98% SCR = 98% RQD = 98% HL = 19%	92											0	45.2m : PL _D = 6 MPa	44.8-47.9m: Hydraulic conductivity: k=3.25E-7 cm/s P=483kPa k=3.00E-7 cm/s P=552kPa no flow P=621kPa	93
50				91.2 47.4		91											0	45.9m : PL _A = 19 MPa	45.2m: HL 25mm 45.2m: HL 15mm 45.6m: HL 75mm 45.7m: HL 15mm 45.9m: HL 50mm 46.5m: HL 75mm 46.7m: HL 15mm	
51				R30	TCR = 100% SCR = 100% RQD = 100% HL = 18%	90											0		46.9m: HL 15mm 47.0m: HL 25mm 47.0m: HL 25mm 47.1m: HL 25mm 47.2m: HL 40mm 47.3m: HL 15mm 47.4m: HL 15mm 47.7m: HL 25mm 47.8m: HL 15mm 47.8m: gypsum laminate	91
52				89.6 49.0		89											4	48.0m: HL 40mm 48.2m: HL 40mm 48.6m: HL 25mm 48.8m: HL 15mm 48.8m: HL 50mm 49.1m: HL 75mm	48.0m: HL 40mm 48.2m: HL 40mm 48.6m: HL 25mm 48.8m: HL 15mm 48.8m: HL 50mm 49.1m: HL 75mm 49.3m: HL 15mm 49.4m: HL 15mm 49.4m: HL 65mm 49.7m: gypsum laminate 49.9m: HL 25mm	90
53				R31	TCR = 100% SCR = 100% RQD = 92% HL = 19%	88											1	50.3m : PL _D = 6 MPa	50.0m: HL 25mm 50.0m: HL 15mm 50.1m: HL 25mm 50.3m: HL 40mm 50.5m: HL 65mm 50.6m: HL 75mm 50.7m: HL 15mm 50.7m: HL 115mm 50.8m: gypsum laminate	88
54				88.1 50.5		87											1	50.5m : PL _A = 58 MPa	51.0m: HL 65mm 51.1m: HL 90mm	87
55				R32	TCR = 100% SCR = 100% RQD = 93% HL = 43%	86											1			
56				86.6 B33		85											0	51.8m : PL _D = 6 MPa		

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started June 2, 2010

Location: Burlington / Oakville, Ontario


Sheet No. 4 of 4

Position : E: 599917, N: 4807813 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)						
						Z1	Z2	Z3	Z4	R1	R2				R3	R4	R5	R6	Frequency	Spacing
53		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands (continued)	52.0 R33 85.1	TCR = 100% SCR = 100% RQD = 95% HL = 59%	86													86		
		END OF BOREHOLE Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.	53.5m									52.6m : PL _A = 116 MPa	51.2m: HL 15mm 51.4m: HL 40mm 51.6m: HL 15mm 51.7m: HL 50mm 51.8m: gypsum laminate 51.9m: HL 75mm 52.0m: HL 75mm 52.2m: HL 25mm 52.2m: HL 25mm 52.3m: HL 75mm 52.5m: HL 65mm 52.6m: HL 15mm 52.6m: HL 50mm 52.7m: HL 180mm 53.0m: HL 15mm 53.0m: gypsum laminate 53.0m: HL 115mm 53.2m: HL 50mm 53.3m: HL 50mm 53.4m: HL 75mm							

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 11, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 600061, N: 480801 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Undrained Shear Strength (kPa)		Plastic Limit	Natural Water Content	Liquid Limit			
0	139.1	GROUND SURFACE					139	X Dynamic Cone		PL MC LL					
1		SILTY CLAY , trace gravel, some sand, topsoil inclusion, firm, brown		1	SS	5	138	O Unconfined							
2	137.6 1.5	SHALE , highly weathered to fresh, red to reddish brown		2	SS	51/ 150mm	137	+ Field Vane							
3	136.1 3.1	QUEENSTON FORMATION (See rock core log for details)		3	SS	50/ 80mm	136	● Pocket Penetrometer							
4				R1	CORE		135	■ Lab Vane							
5				R2	CORE		134								
6							133								
7				R3	CORE		132								
8				R4	CORE		131								
9							130								
10				R5	CORE		129								
11							128								
12				R6	CORE		127								
13							126								
14				R7	CORE		125								
15				R8	CORE		124								
				R9	CORE										

(continued next page)

COFFEY GEOTECHNICS

BOREHOLE LOG COF-BC-4

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 11, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 600061, N: 4808001 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)					123	Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				PL	MC	LL			GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
		QUEENSTON FORMATION (See rock core log for details) (continued)		R9	CORE		122										
17				R10	CORE		121										
18				R11	CORE		120										
19				R12	CORE		119										
20				R13	CORE		118										
21				R14	CORE		117										
22				R15	CORE		116										
23				R16	CORE		115										
24				R17	CORE		114										
25				R18	CORE		113										
26				R19	CORE		112										
27							111										
28							110										
29							109										
30							108										
31																	

(continued next page)

COFFEY GEOTECHNICS

BOREHOLE LOG COF-BC-4

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 11, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 600061, N: 4808001 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)					107										
		QUEENSTON FORMATION (See rock core log for details) (continued)															
33				R20	CORE		106										
34				R21	CORE		105										
35				R22	CORE		104										
36				R23	CORE		103										
37				R24	CORE		102										
38				R25	CORE		101										
39				R26	CORE		100										
40				R27	CORE		99										
41				R28	CORE		98										
42				R29	CORE		97										
43				R30	CORE		96										
44							95										
45							94										
46							93										
47							92										

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 11, 2010

Location : Burlington / Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 600061, N: 4808001 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		10	20	30	40	Plastic Limit	Natural Water Content	Liquid Limit	
48		(continued)												
49		QUEENSTON FORMATION (See rock core log for details) (continued)		R30	CORE	91								
50				R31	CORE	90								
51				R32	CORE	89								
52						88								
53				R33	CORE	87								
85.8 53.3						86								

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Jun 22, 2010	33.5	105.6
Jun 25, 2010	32.2	106.9
Jun 30, 2010	30.4	108.7
Jul 2, 2010	29.9	109.2
Jul 7, 2010	28.7	110.4
Jul 9, 2010	28.1	111.0
Jul 14, 2010	26.7	112.4
Jul 16, 2010	26.3	112.8
Jul 23, 2010	24.7	114.4
Apr 5, 2011	13.9	125.2

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started June 11, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 4

Position : E: 600061, N: 4808001 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)				
						Z1	Z2	Z3	Z4	R1	R2	R3	R4				R5	R6	Frequency	Spacing
		Rock coring started at 3.0m below grade	136.1																	
4		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands	3.0		136										3.0m : PL _D = 17 MPa 3.2m : PL _A = 57 MPa		136			
			R1	TCR = 95% SCR = 18% RQD = 0% HL = 6%	135											4.0m: HL 40mm 4.2m: HL 55mm	135			
			134.5	4.6																
5			R2	TCR = 95% SCR = 27% RQD = 0% HL = 23%	134									5.2m : PL _A = 22 MPa 5.5m : PL _D = 3 MPa	5.1m: HL 50mm 5.5m: HL 300mm	134				
			133.0	6.1																
			R3	TCR = 98% SCR = 80% RQD = 47% HL = 43%	133											6.4m: HL 380mm 6.9m: HL 25mm	133			
7					132									6.6m : PL _A = 95 MPa			132			
			131.5	7.6																
			R4	TCR = 100% SCR = 97% RQD = 62% HL = 18%	131											7.3m: HL 25mm 7.4m: HL 215mm 7.6m: HL 50mm 7.7m: HL 50mm 7.8m: HL 25mm 8.1m: porous area 8.2m: HL 15mm 8.3m: HL 40mm 8.5m: porous area 8.8m: HL 50mm	131			
9					130												9.1m: HL 40mm 9.2m: HL 50mm	130		
			130.0	9.1																
			R5	TCR = 98% SCR = 95% RQD = 43% HL = 26%	129											9.4m : PL _D = 9 MPa 10.1m : PL _A = 25 MPa	10.0m: HL 25mm 10.1m: HL 180mm	129		
11					128													12.8		
			128.4	10.7																
			R6	TCR = 100% SCR = 100% RQD = 87% HL = 30%	127											12.1m : PL _A = 50 MPa 12.3m : PL _A = 20 MPa PL _D = 11 MPa	12.2m: HL 15mm 12.4m: HL 40mm 12.5m: HL 15mm 12.6m: HL 90mm 12.8m: HL 100mm 13.0m: HL 25mm 13.3m: HL 25mm 13.4m: HL 50mm	127		
13					126													126		
			126.9	12.2																
			R7	TCR = 100% SCR = 100% RQD = 95% HL = 23%	125											14.9m : PL _A = 47 MPa	14.9m: HL 50mm	124		
15					124													124		
			123.9	15.2																
			R8	TCR = 98% SCR = 98% RQD = 93% HL = 23%	123											15.4m : PL _D = 6 MPa 15.5m : PL _A = 47 MPa	15.4m: HL 25mm 15.4m: HL 50mm 15.6m: HL 75mm 15.7m: HL 25mm 15.7m: HL 25mm 15.8m: HL 100mm 16.1m: HL 100mm	123		
17					122													122		
			122.3	16.8																
			R9	TCR = 100% SCR = 93% RQD = 50% HL = 29%	121											17.7m : PL _D = 3 MPa 18.1m : PL _A = 79 MPa 18.4m : PL _D = 6 MPa	17.7m: HL 15mm 18.0m: HL 15mm 18.1m: HL 40mm 18.3m: HL 40mm 18.4m: HL 25mm 18.4m: HL 65mm 18.6m: thin gypsum laminate	121		
18					121													121		
			120.8	18.3																
			R10	TCR = 95% SCR = 95% RQD = 92% HL = 25%																

(continued next page)

HL = Hard Layers

Project No. OTHER CONSULTANTS

Date started June 11, 2010

Sheet No. 2 of 4

library: library - terraprobe gint - copy.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh logs (other consultants).gpi

HL = Hard Layers

ROCK CORE LOG COF-BC-4

Project No.	OTHER CONSULTANTS

Date started June 11, 2010

Sheet No. 3 of 4

library: library - terraprobe gint - copy.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh logs (other consultants).gpl

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started June 11, 2010

Location: Burlington / Oakville, Ontario

Sheet No. 4 of 4

Position : E: 600061, N: 4808001 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Solid stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing	
52		SHALE (Queenston Formation) interlayered with siltstone and limestone, fresh, thinly to medium bedded, very weak to weak, red to reddish brown with grey bands (continued)	R32	TCR = 100% SCR = 100% RQD = 97% HL = 48%	88											1		50.4m: gypsum laminate
			87.3													1		50.4m: HL 65mm
			51.8													0		50.6m: HL 115mm
																1		50.9m: HL 15mm
53			R33	TCR = 100% SCR = 100% RQD = 97% HL = 36%	87											0		51.0m: HL 15mm
																0		51.1m: HL 100mm
																2		51.2m: HL 50mm
																0		51.3m: HL 50mm
																0		51.5m: HL 75mm
																0		51.6m: HL 15mm
																0		51.6m: HL 125mm
																0		51.8m: HL 25mm
																0		51.9m: HL 50mm
																0		52.1m: HL 25mm
																0		52.1m: HL 75mm
																0		52.2m: HL 25mm
																0		52.3m: HL 215mm
																0		52.7m: HL 125mm
																0		53.0m: HL 25mm
			85.8		86											0		
			53.3m															

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : October 19, 2004

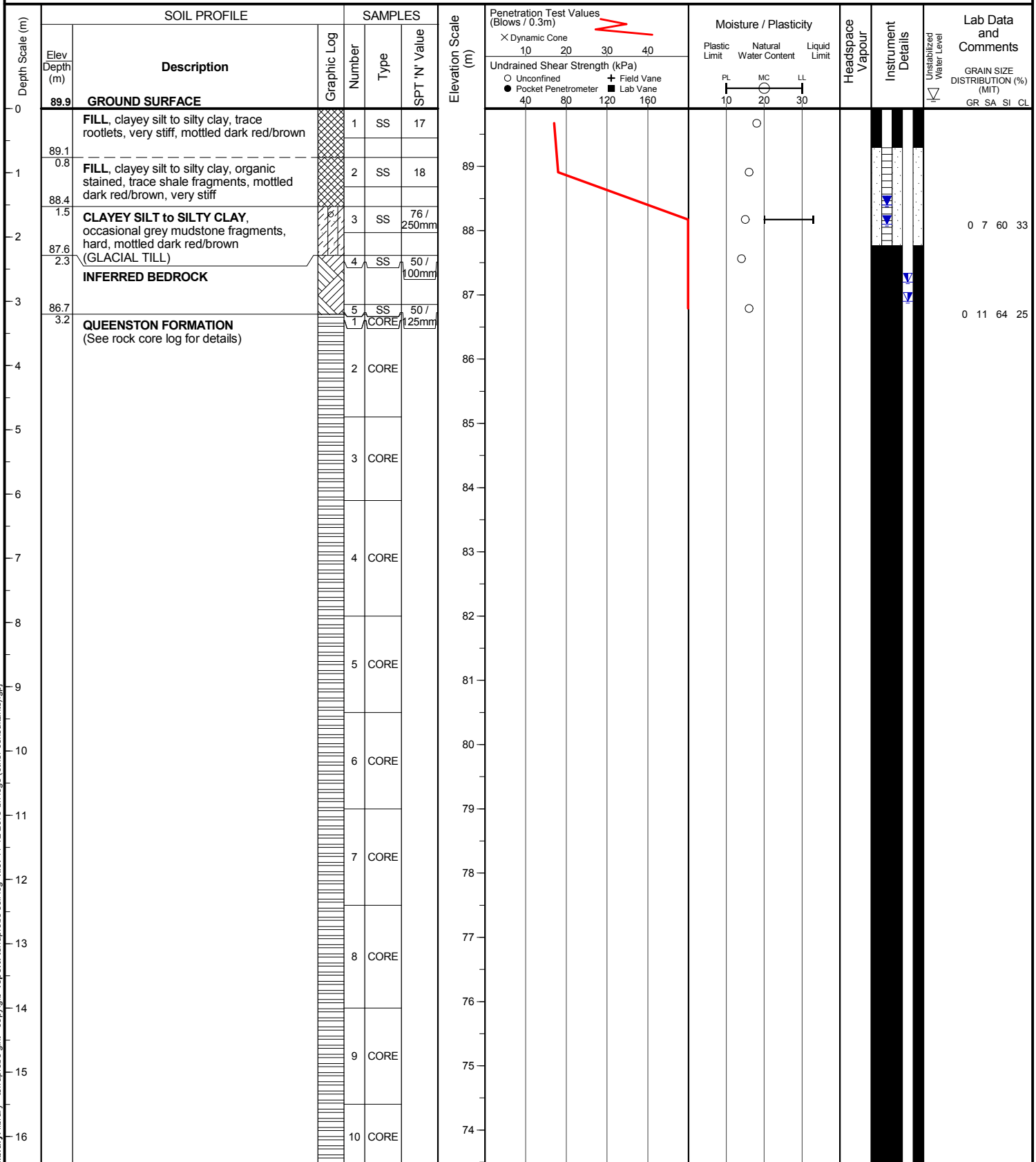
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 602671, N: 4804431 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring



(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : October 19, 2004

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 602671, N: 4804431 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
		(continued)															
17		QUEENSTON FORMATION (See rock core log for details) (continued)		10	CORE		73										
18				11	CORE		72										
19				12	CORE		71										
20				13	CORE		70										
21				14	CORE		69										
22				15	CORE		68										
23				16	CORE		67										
24				17	CORE		66										
25				18	CORE		65										
26				19	CORE		64										
27		GEORGIAN BAY FORMATION (See rock core log for details)		20	CORE		63										
28	62.0 27.9			21	CORE		62										
29							61										
30							60										
31							59										
32							58										
							57										

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : October 19, 2004

Location : Burlington / Oakville, Ontario

Sheet No. : 3 of 4

Position : E: 602671, N: 4804431 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)					Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160					Plastic Limit	Natural Water Content	Liquid Limit			
33		(continued)																
		GEORGIAN BAY FORMATION (See rock core log for details) (continued)		21	CORE													
34																		
				22	CORE													
35																		
				23	CORE													
36																		
				24	CORE													
37																		
				25	CORE													
38																		
				26	CORE													
39																		
				27	CORE													
40																		
				28	CORE													
41																		
				29	CORE													
42																		
				30	CORE													
43																		
				31	CORE													
44																		
				32	CORE													
45																		
46																		
47																		
48																		
49																		

(continued next page)

Sheet No. : 4 of 4

Drilling Method : Hollow stem augers, HQ rock coring

library: library - terraprobe gint - copy.glb **report:** terraprobe soil log **file:** 11-12-2073 bh logs (other consultants).gpi

<u>Date</u>	<u>Water Depth (m)</u>	<u>Elevation (m)</u>
Oct 27, 2004	2.7	87.2
Oct 28, 2004	3.0	86.9
Oct 29, 2004	3.2	86.7
Nov 1, 2004	3.3	86.6
Nov 2, 2004	3.5	86.4
Nov 3, 2004	3.4	86.5
Nov 5, 2004	3.6	86.3
Nov 8, 2004	3.6	86.3
Nov 10, 2004	3.6	86.3
Nov 17, 2004	3.8	86.1
Nov 23, 2004	21.6	68.3
Nov 29, 2004	22.1	67.8

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started October 19, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 4

Position : E: 602671, N: 4804431 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures Frequency Spacing	Laboratory Testing	Comments	Elevation (m)
		Rock coring started at 3.2m below grade	86.7								
		QUEENSTON FM:	R1 3.2	TCR = 90% SCR = 0% RQD = 0% HL = 0%				>25		— Completely weathered. — Highly weathered.	
4		SHALE dark red, laminated to thinly bedded, sub-horizontal bedding planes, very weak to medium strong, slightly fissile, calcareous, occasional layers/seams of grey mudstone	3.3					>25			
			R2	TCR = 100% SCR = 15% RQD = 12% HL = 0%	86			>25		— Hydraulic conductivity $K_f=1.7E-03\text{cm/sec}$ $P_f=105\text{kPa}$ $K_f=1.2E-03\text{cm/sec}$ $P_f=140\text{kPa}$	86
5		occasionally interbedded with laminated to thinly bedded, strong to very strong limestone and calcareous siltstone layers	85.1		85			>25		— Highly weathered.	85
			4.8					>25			
			R3	TCR = 100% SCR = 7% RQD = 0% HL = 0%				>25			
6			83.8		84			>25		— Slightly to moderately weathered.	84
			6.1					>25			
7			R4	TCR = 100% SCR = 72% RQD = 60% HL = 0%	83			2			
								0			
								1			
8			82.0		82			>25		— Moderately weathered.	82
			7.9					>25			
9			R5	TCR = 100% SCR = 55% RQD = 48% HL = 0%	81			2		— Hydraulic conductivity $K_f=1.5E-04\text{cm/sec}$ $P_f=140\text{kPa}$ $K_f=1.1E-04\text{cm/sec}$ $P_f=170\text{kPa}$	81
			80.5					1		— Slightly to moderately weathered.	
			9.4					>25		Hard layers: Depth(m) Approx. thickness(mm)	
10			R6	TCR = 93% SCR = 73% RQD = 51% HL = 3%	80			7		9.5 25	80
								8		10.3 25	
								1			
								10			
11			79.0		79			5		10.9m : $\gamma = 25.5 \text{ kN/m}^3$	79
			10.9					8		Hard layers: Depth(m) Approx. thickness(mm)	
				TCR = 100% SCR = 81% RQD = 61% HL = 3%	78			0		11.3m : UCS = 33 MPa E = 8947 MPa	
12			77.5		78			4		10.9 25	78
			12.4					2		11.3 25	
13			R8	TCR = 97% SCR = 77% RQD = 63% HL = 3%	77			12		— Slightly to moderately weathered.	
								12		Hard layers: Depth(m) Approx. thickness(mm)	
14			75.9		76			7		12.8m : $PL_A = 20 \text{ MPa}$	77
			14.0					2		12.9 25	
								2		13.0 25	
								>25		— Hydraulic conductivity $K_f=5.0E-06\text{cm/sec}$ $P_f=205\text{kPa}$ $K_f=3.7E-06\text{cm/sec}$ $P_f=240\text{kPa}$	
15			R9	TCR = 100% SCR = 90% RQD = 47% HL = 7%	75			5		14.0m : $\gamma = 25.6 \text{ kN/m}^3$	76
			74.4					1		— Slightly weathered to fresh.	
			15.5					2		Hard layers: Depth(m) Approx. thickness(mm)	
16			R10	TCR = 100% SCR = 93% RQD = 64% HL = 10%	74			1		14.3m : UCS = 26.8 MPa E = 5650 MPa $PL_A = 30 \text{ MPa}$	75
								2		14.7 75	
								>25		15.3 25	
								7			
								4			
17			72.9		73			2		— Slightly weathered to fresh.	
			17.0					2		Hard layers: Depth(m) Approx. thickness(mm)	
18			R11	TCR = 100% SCR = 81% RQD = 56% HL = 2%	72			3		16.0m : $PL_A = 10 \text{ MPa}$	74
			71.4					3		16.1 25	
			18.5					3		16.4 75	
								3		16.6 25	
								3		16.9 25	
19			R12		71			8		Occasional thin (2-3mm). Sub-horizontal calcite layers	73
								5		— Moderately to slightly weathered.	
								5		Hard layers: Depth(m) Approx. thickness(mm)	
								>25		18.3 25	
								2		— Hydraulic conductivity $K_f=1.1E-04\text{cm/sec}$ $P_f=240\text{kPa}$ $K_f=9.5E-05\text{cm/sec}$ $P_f=275\text{kPa}$	72
								3		— Slightly weathered to fresh.	
								3		Hard layers: Depth(m) Approx. thickness(mm)	
								3		19.1 50	71

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started October 19, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 2 of 4

Position : E: 602671, N: 4804431 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
20		QUEENSTON FM: SHALE dark red, laminated to thinly bedded, sub-horizontal bedding planes, very weak to medium strong, slightly fissile, calcareous, occasional layers/seams of grey mudstone occasionally interbedded with laminated to thinly bedded, strong to very strong limestone and calcareous siltstone layers <i>(continued)</i>	R12 69.8	TCR = 100% SCR = 100% RQD = 85% HL = 3%	70										0			Hydraulic conductivity K ₁ =1.1E-04cm/sec P ₁ =240kPa K ₂ =9.5E-05cm/sec P ₂ =275kPa	70	
21	20.1															3		Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 20.2 25 20.8 175	69	
22	68.3															2				
23	21.6															5		21.6m : PL _A = 20 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 21.7 100	68
24				R14	TCR = 100% SCR = 98% RQD = 92% HL = 7%	68										0			Hydraulic conductivity K ₁ =4.4E-05cm/sec P ₁ =275kPa K ₂ =3.4E-04cm/sec P ₂ =310kPa	
25	66.8															0		22.6m : UCS = 32.2 MPa E = 4717 MPa 22.6m : γ = 25.9 kN/m ³	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 23.3 25 23.5 25 24.1 50	67
26	23.1															4				
27				R15	TCR = 98% SCR = 88% RQD = 63% HL = 7%	66										7				
28	65.3															0				
29	24.6															3		24.4m : PL _A = 20 MPa 24.7m : PL _A = 20 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 24.8 50 25.0 25 25.1 15 25.2 25 25.3 125 25.6 125 25.8 50	65
30			R16	TCR = 95% SCR = 80% RQD = 58% HL = 28%	65										5					
31	63.8														5					
32	26.1														0			Sub-horizontal calcite layer at 25.1m, approx. 1mm thick. Fracture dipping approx. 30 degree at 25.6m		
33			R17	TCR = 92% SCR = 87% RQD = 72% HL = 31%	63										7		26.8m : PL _A = 35 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 25.3 50 26.3 75 26.5 75	63	
34	62.2														6					
35	27.7														0					
36		GEORGIAN BAY FM: SHALE, dark grey, thinly laminated to thinly bedded, sub-horizontal bedding planes, fissile, weak to medium strong, occasional layers/seams of red shale interbedded with CALCAREOUS SILTSTONE / LIMESTONE thinly laminated to medium bedded, medium strong to very strong, fossiliferous	R18	TCR = 100% SCR = 95% RQD = 50% HL = 40%	62										3		27.7m : PL _A = 25 MPa	26.7 25 27.0 175 27.3 50	62	
37	60.7															3			Sub-horizontal calcite layer at 26.6m, approx. 1mm thick.	
38	29.2															14			Hydraulic conductivity K ₁ =2.8E-06cm/sec P ₁ =310kPa Slightly weathered to fresh.	61
39																0			Hard layers: Depth(m) Approx. thickness(mm) 28.0 100 28.4 50 28.6 25 28.7 300 29.0 50	60
40	59.2															4		29.6m : PL _A = 20 MPa	Hydraulic conductivity K ₁ =2.5E-06cm/sec P ₁ =345kPa Slightly weathered to fresh.	
41	30.7															4			Hard layers: Depth(m) Approx. thickness(mm) 29.2 100 29.5 25 29.7 25 29.9 50 30.0 75 30.3 25 30.4 50 30.6 25	59
42				R20	TCR = 100% SCR = 98% RQD = 75% HL = 17%	59										2		30.8m : PL _A = 10 MPa	Slightly weathered to fresh.	
43	57.6															3				
44	32.3															2			Sub-horizontal calcite layer at 29.4m, approx. 1mm thick.	
45																2			Slightly weathered to fresh.	
46			R21	TCR = 100% SCR = 97% RQD = 68% HL = 19%	57										3		32.6m : γ = 25.6 kN/m ³ 32.9m : UCS = 26.9 MPa E = 5289 MPa	Hard layers: Depth(m) Approx. thickness(mm) 30.8 25 30.9 25 31.2 50 31.6 100 32.0 50	57	
47	56.1														4					
48	33.8														0		33.8m : PL _A = 30 MPa	Hydraulic conductivity No water take P ₁ =345kPa Slightly weathered to fresh.	56	
49			R22	TCR = 98% SCR = 87% RQD = 50% HL = 53%	56										>25			Hard layers: Depth(m) Approx. thickness(mm) 32.3 125 32.7 25		
50					55										5					
51															1					
52															8					
53															4					

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started October 19, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 3 of 4

Position : E: 602671, N: 4804431 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)						Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing			
		GEORGIAN BAY FM:	54.6 35.3																	
		SHALE , dark grey, thinly laminated to thinly bedded, sub-horizontal bedding planes, fissile, weak to medium strong, occasional layers/seams of red shale	R23	TCR = 100% SCR = 98% RQD = 93% HL = 48%	54															
36		interbedded with	53.1 36.8		53															
		CALCAREOUS SILTSTONE / LIMESTONE thinly laminated to medium bedded, medium strong to very strong, fossiliferous (<i>continued</i>)	R24	TCR = 100% SCR = 97% RQD = 85% HL = 15%	52															
37			51.5 38.4		51															
			R25	TCR = 100% SCR = 98% RQD = 91% HL = 10%	50															
38			50.1 39.8		50															
			R26	TCR = 100% SCR = 98% RQD = 95% HL = 32%	49															
39			48.5 41.4		48															
			R27	TCR = 100% SCR = 98% RQD = 83% HL = 17%	47															
40			47.0 42.9		46															
			R28	TCR = 100% SCR = 95% RQD = 75% HL = 32%	45															
41			45.5 44.4		44															
			R29	TCR = 100% SCR = 97% RQD = 78% HL = 17%	43															
42			44.0 45.9		42															
			R30	TCR = 100% SCR = 95% RQD = 63% HL = 53%	41															
43			42.5 47.4		40															
			R31	TCR = 100% SCR = 97% RQD = 77% HL = 32%	39															
44			40.9 49.0		38															
			R32	TCR = 100% SCR = 95% RQD = 81% HL = 41%	37															
45			39.4 50.5		36															
			R33		35															
46					34															
47					33															
48					32															
49					31															
50					30															
51					29															

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started October 19, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 4 of 4

Position : E: 602671, N: 4804431 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
52		GEORGIAN BAY FM: SHALE , dark grey, thinly laminated to thinly bedded, sub-horizontal bedding planes, fissile, weak to medium strong, occasional layers/seams of red shale interbedded with CALCAREOUS SILTSTONE / LIMESTONE thinly laminated to medium bedded, medium strong to very strong, fossiliferous (<i>continued</i>)	R33 37.9	TCR = 100% SCR = 95% RQD = 46% HL = 14%	38										2		52.1m : PL _A = 30 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 50.7 25 51.0 25 51.2 25 51.4 25 51.6 25 51.8 75	38	
53			52.0	TCR = 100% SCR = 94% RQD = 94% HL = 27%	37									1						
54			36.3												2		53.6m : PL _A = 40 MPa	Hydraulic conductivity K _i =1.3E-06cm/sec P _r =550kPa K _i =1.1E-06cm/sec P _r =585kPa Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 52.0 150 52.6 50 52.8 50 52.9 75 53.3 100	37	
55			53.6		36									1						
56			R35	TCR = 100% SCR = 98% RQD = 98% HL = 68%	35									1		56.4m : PL _A = 30 MPa 56.7m : PL _A = 50 MPa	Hydraulic conductivity K _i =1.3E-06cm/sec P _r =585kPa K _i =1.3E-06cm/sec P _r =620kPa Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 53.7 100 53.7 25 54.0-54.3 150 54.3 100 54.4 475 54.9 175	35		
57			34.8		34									0						
58			55.1											1		56.4m : PL _A = 30 MPa 56.7m : PL _A = 50 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 55.2 325 55.6 50 55.8 200 56.2 75	34		
59			R36	TCR = 100% SCR = 98% RQD = 92% HL = 43%	33									7						
60			33.3		32									8		59.1m : PL _A = 30 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 56.7 50 57.6 25 57.5 50	33		
61			56.6		31									0						
			R37	TCR = 100% SCR = 98% RQD = 93% HL = 12%	30									1		61.0m : PL _A = 45 MPa	Hydraulic conductivity K _i =3.5E-06cm/sec P _r =620kPa No water take P _r =655kPa Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 58.2 25 58.8 25 58.8 50 59.3 50 59.6 25	32		
			31.8		31									2						
			58.1											2		59.1m : PL _A = 30 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 58.2 25 58.8 25 58.8 50 59.3 50 59.6 25	31		
			R38	TCR = 100% SCR = 58% RQD = 93% HL = 15%	30									1						
			30.2		29									2		61.0m : PL _A = 45 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 59.8-60.0 40 60.6 50	30		
			59.7											1						
			R39	TCR = 100% SCR = 58% RQD = 92% HL = 6%										1		61.0m : PL _A = 45 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 59.8-60.0 40 60.6 50	29		
			28.7											0						
			61.2m											0						

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 5, 2004

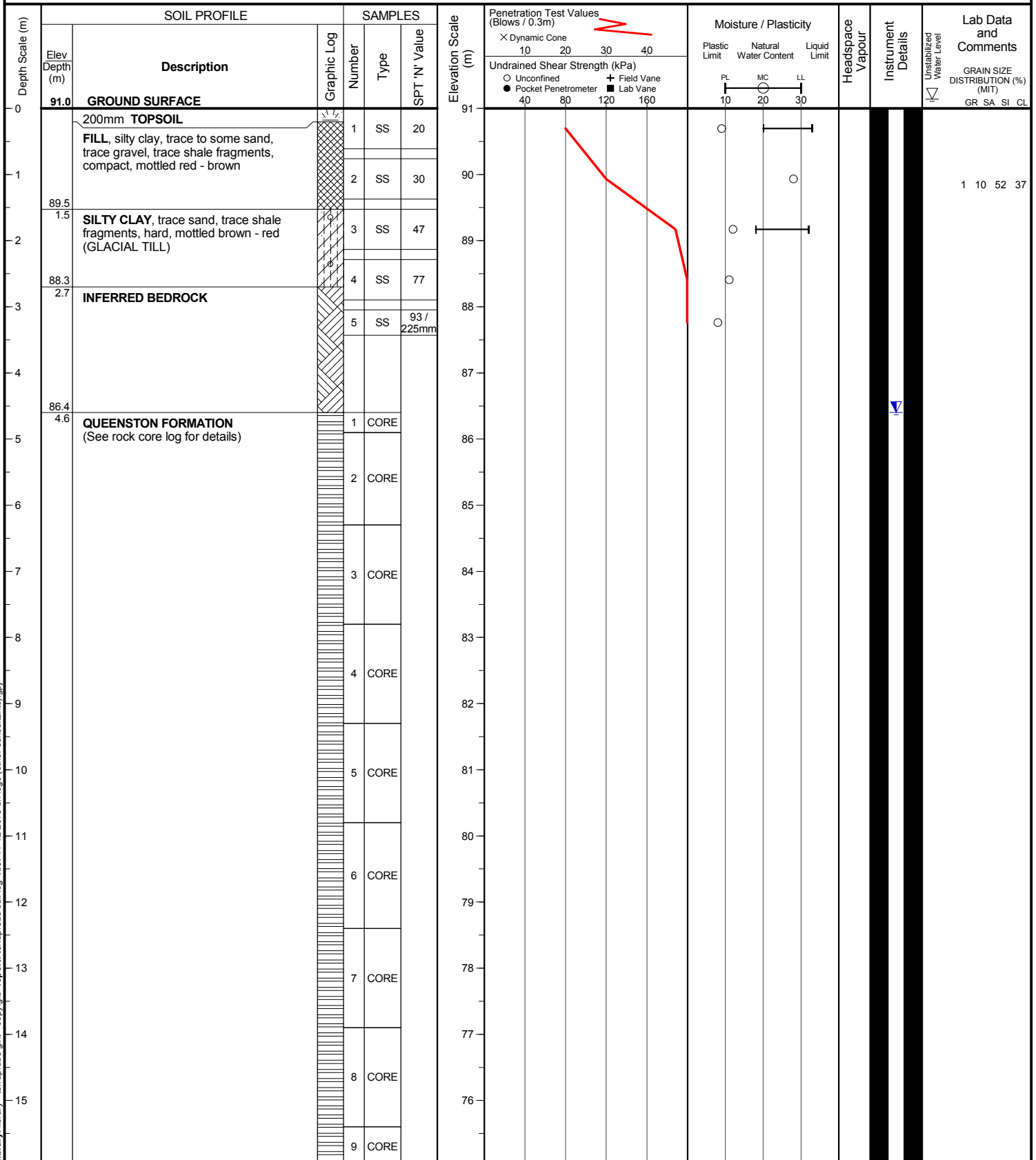
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 602566, N: 4804357 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring



(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 5, 2004

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 602566, N: 4804357 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) O Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)					75										
17		QUEENSTON FORMATION (See rock core log for details) (continued)		9	CORE		74										
18				10	CORE		73										
19				11	CORE		72										
20				12	CORE		71										
21				13	CORE		70										
22				14	CORE		69										
23				15	CORE		68										
24				16	CORE		67										
25				17	CORE		66										
26				18	CORE		65										
27				19	CORE		64										
28							63										
29	62.0 29.0	GEORGIAN BAY FORMATION (See rock core log for details)					62										
30				18	CORE		61										
31				19	CORE		60										

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Client : R.V Anderson Associates Limited

Project : Halton Zone 1 Watermain

Location : Burlington / Oakville, Ontario

Project No.: OTHER CONSULTANTS

Date started : November 5, 2004

Sheet No. : 3 of 4

Position : E: 602566, N: 4804357 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value			Plastic Limit	Natural Water Content	Liquid Limit			
32		(continued)		19	CORE		59							
		GEORGIAN BAY FORMATION (See rock core log for details) (continued)												
33				20	CORE		58							
34							57							
				21	CORE		56							
35							55							
36				22	CORE		54							
37							53							
38				23	CORE		52							
39							51							
40				24	CORE		50							
41							49							
42				25	CORE		48							
43							47							
44				26	CORE		46							
45							45							
46				27	CORE		44							
47														
				28	CORE									
				29	CORE									
				30	CORE									

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library: library - teraprobe gnt - copy.glb report: teraprobe soil log file: 11-12-2073 bh logs (other consultants).gpl

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 5, 2004

Location : Burlington / Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 602566, N: 4804357 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
48		(continued)					43								
		GEORGIAN BAY FORMATION (See rock core log for details) (continued)		30	CORE		42								
49															
				31	CORE		41								
50															
				32	CORE		40								
51															
				33	CORE		39								
52															
				34	CORE		38								
53															
				35	CORE		37								
54															
							36								
55															
							35								
56															
	34.5 56.5														

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50mm monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Nov 17, 2004	4.6	86.4
Nov 23, 2004	23.8	67.2
Nov 26, 2004	23.5	67.5
Nov 29, 2004	23.5	67.5
Dec 2, 2004	23.6	67.4

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 5, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 4

Position : E: 602566, N: 4804357 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
		Rock coring started at 4.6m below grade	86.4																	
5		QUEENSTON FM: SHALE dark red, laminated to thinly bedded, sub-horizontal bedding planes, very weak to medium strong, slightly fissile, calcareous, occasional layers/seams of grey mudstone	4.6 R1	TCR = 100% SCR = 46% RQD = 0% HL = 0%	86												— Slightly weathered.	86		
	4.9																			
6		occasionally interbedded with laminated to thinly bedded, strong to very strong limestone and calcareous siltstone layers	R2	TCR = 100% SCR = 95% RQD = 95% HL = 0%	85												Moderately to slightly weathered. Hydraulic conductivity K ₁ =2.3E-03cm/sec P ₁ =105kPa K ₂ =1.8E-03cm/sec P ₂ =140kPa	85		
	84.7 6.3																			
7			R3	TCR = 100% SCR = 83% RQD = 60% HL = 0%	84											6.7m : PL _A = 40 MPa		84		
8					83												— Slightly weathered to fresh.	83		
	83.2 7.8																			
9			R4	TCR = 95% SCR = 83% RQD = 59% HL = 0%	82												82			
10					81											9.1m : PL _A = 30 MPa	— slightly to moderately weathered. Hard layers at 10.3m, approx. 125mm thick.	81		
	81.7 9.3																			
11			R5	TCR = 95% SCR = 83% RQD = 73% HL = 3%	80											10.1m : PL _A = 20 MPa	Hydraulic conductivity K ₁ =2.3E-04cm/sec P ₁ =140kPa K ₂ =2.2E-04cm/sec P ₂ =175kPa	80		
12					79												12.2m : PL _A = 10 MPa	— Slightly to moderately weathered. Hard layers at 12.3m, approx. 100mm thick.	79	
13			R6	TCR = 98% SCR = 89% RQD = 89% HL = 7%	78												— Slightly to moderately weathered. Hard layers at 13.8m, approx. 75mm thick.	78		
14					77												15.2m : PL _A = 40 MPa	— Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 15.8 100 16.4 50 16.5 50 16.7 100 Sub-horizontal calcite layers at 15.8m, approx. 1mm thick, and 16.6m, approx. 2mm thick. Sub-vertical fracture at 16.3m, approx. 100mm long.	77	
	78.6 12.4																			
15			R7	TCR = 97% SCR = 95% RQD = 95% HL = 5%	76												16.8m : PL _A = 35 MPa	Slightly weathered to fresh.	76	
16					75												17.4m : PL _A = 40 MPa	Hard layers: Depth(m) Approx. thickness(mm) 17.7 25 18.4 50	75	
	77.1 13.9																			
17			R8	TCR = 100% SCR = 80% RQD = 59% HL = 2%	74												19.5m : PL _A = 5 MPa	— Slightly weathered to fresh. Hydraulic conductivity K ₁ =2.6E-05 P ₁ =240kPa K ₂ =1.8E-05 P ₂ =275kPa	74	
18					73												— Slightly weathered to fresh.	73		
	75.6 15.4																			
19			R9	TCR = 94% SCR = 84% RQD = 73% HL = 20%	72												— Slightly weathered to fresh.	72		
20					71												— Slightly weathered to fresh. Hard layer at 21.0, approx. 25mm thick.	71		
	74.0 17.0																			
			R10	TCR = 100% SCR = 93% RQD = 83% HL = 5%	71															
					71															
			R11	TCR = 100% SCR = 88% RQD = 81% HL = 0%	71															
					71															
			R12		71															

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 5, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 2 of 4

Position : E: 602566, N: 4804357 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)			
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Estimated Strength		
21		QUEENSTON FM: SHALE dark red, laminated to thinly bedded, sub-horizontal bedding planes, very weak to medium strong, slightly fissile, calcareous, occasional layers/seams of grey mudstone occasionally interbedded with laminated to thinly bedded, strong to very strong limestone and calcareous siltstone layers (<i>continued</i>)	R12	TCR = 100% SCR = 98% RQD = 92% HL = 2%	70										0		21.0m : PL _A = 35 MPa	— Hydraulic conductivity K _i =2.6E-05 P _i =240kPa K _s =1.8E-05 P _s =275kPa	70		
	69.5 21.5															0					
22			R13	TCR = 100% SCR = 97% RQD = 93% HL = 7%	69											1					69
																2		22.6m : PL _A = 10 MPa	— Slightly weathered to fresh. Hard layer at 22.7m approx. 100m thick. Clay layer at 22.9m, approx. 10mm thick.		
23				68.0 23.0		68										0					68
																3					
24				R14	TCR = 100% SCR = 93% RQD = 74% HL = 17%	67											2		23.8m : PL _A = 45 MPa	— Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 23.1 25 23.2 100 23.3 25 23.8 100 Clay layer at 23.1m, approx. 10mm thick. Hydraulic conductivity K _i =7.4E-06cm/sec P _i =275kPa K _s =6.0E-06cm/sec P _s =310kPa Slightly weathered to fresh.	67
				66.5 24.5												1					
25				R15	TCR = 97% SCR = 95% RQD = 95% HL = 0%	66										0		25.0m : PL _A = 25 MPa			
																1					
26																1					65
																2		— Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 26.1 25 26.4 50 27.0 25 27.2 25 27.3 125 27.4 25 27.6 60			65
27			R16	TCR = 98% SCR = 92% RQD = 70% HL = 22%	64										1		26.8m : PL _A = 20 MPa			64	
															3						
28															3						
															2		Sub-vertical fracture at 27.3m, approx. 100mm long. Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 27.9 25 28.0 50 28.3 25 28.6 25 28.8 50 28.9 25		63		
29		GEORGIAN BAY FM: SHALE , dark grey, thinly laminated to thinly bedded, sub-horizontal bedding planes, fissile, weak to medium strong, occasional layers/seams of red shale interbedded with CALCAREOUS SILTSTONE / LIMESTONE light grey, thinly laminated to thickly bedded, medium strong to very strong, fossiliferous	R17	TCR = 100% SCR = 93% RQD = 91% HL = 13%	63										0			28.7m : PL _A = 20 MPa		63	
				62.0 29.0												2					62
30			R18	TCR = 100% SCR = 94% RQD = 73% HL = 28%	62											4			29.3m : PL _A = 25 MPa		62
																3					
31																1					
																1		Sub-vertical calcite layer at 27.8m, approx. 1mm thick. No water take. P _i =310kPa No water take. P _s =345kPa Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 29.7 50 30.2 375		61	
32				60.3 30.7		61										4					
																1					
33				R19	TCR = 98% SCR = 93% RQD = 83% HL = 17%	60											2		32.0m : PL _A = 25 MPa		60
																3					
34																0					
																0		32.6m : PL _A = 20 MPa		59	
35			58.8 32.2		59										8						
															2						
36			R20	TCR = 98% SCR = 90% RQD = 68% HL = 13%	58											3		34.1m : PL _A = 20 MPa		58	
															1						
37															1						
															3		— Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 32.6 25 32.9 50 33.1 50 33.4 75		57		
38			57.3 33.7		57										3						
															1						
39			R21	TCR = 98% SCR = 95% RQD = 77% HL = 8%	56											1		35.4m : PL _A = 15 MPa		56	
															1						
40			55.7 35.3		56										1						
															1		Sub-horizontal calcite layer at 35.0m, approx. 1mm thick. Sub-vertical fractures at 34.9m, approx. 100mm long and 35.1m, approx. 125mm long. Slightly weathered to fresh.		55		
41			R22	TCR = 100% SCR = 97% RQD = 90% HL = 33%	55										2						
															3						

(continued next page)

HL = Hard Layers

Sheet No. 3 of 4

Drilling Method : Hollow stem augers, HQ rock coring

library: library - terraprobe gint - copy.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh logs (other consultants).gpi

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 5, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 4 of 4

Position : E: 602566, N: 4804357 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)				
						Z1	Z2	Z3	Z4	Estimated Strength							Frequency	Spacing		
										U1	U2	U3	U4						U5	U6
53		GEORGIAN BAY FM: SHALE , dark grey, thinly laminated to thinly bedded, sub-horizontal bedding planes, fissile, weak to medium strong, occasional layers/seams of red shale	R33 37.6 53.4	TCR = 100% SCR = 97% RQD = 77% HL = 7%	38									1 0 0 2 2 0	PL _A = 40 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 52.0 25 52.4 25 52.9 50	38			
54		interbedded with	R34	TCR = 100% SCR = 97% RQD = 82% HL = 12%	37									2 2 0	54.0m : PL _A = 40 MPa	Hydraulic conductivity K _i =9.4E-07cm/sec P _i =550kPa No water take P _p =450kPa	37			
55		CALCAREOUS SILTSTONE / LIMESTONE light grey, thinly laminated to thickly bedded, medium strong to very strong, fossiliferous (continued)	36.0 55.0		36									1 3 0 3 3 1 2	55.2m : PL _A = 25 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 53.7 100 54.5 25 54.7 50	36			
56			R35 34.5	TCR = 100% SCR = 95% RQD = 83% HL = 20%	35											Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 55.0 25 55.5 50 56.0 75 56.2 150	35			

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

50mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : October 27, 2004

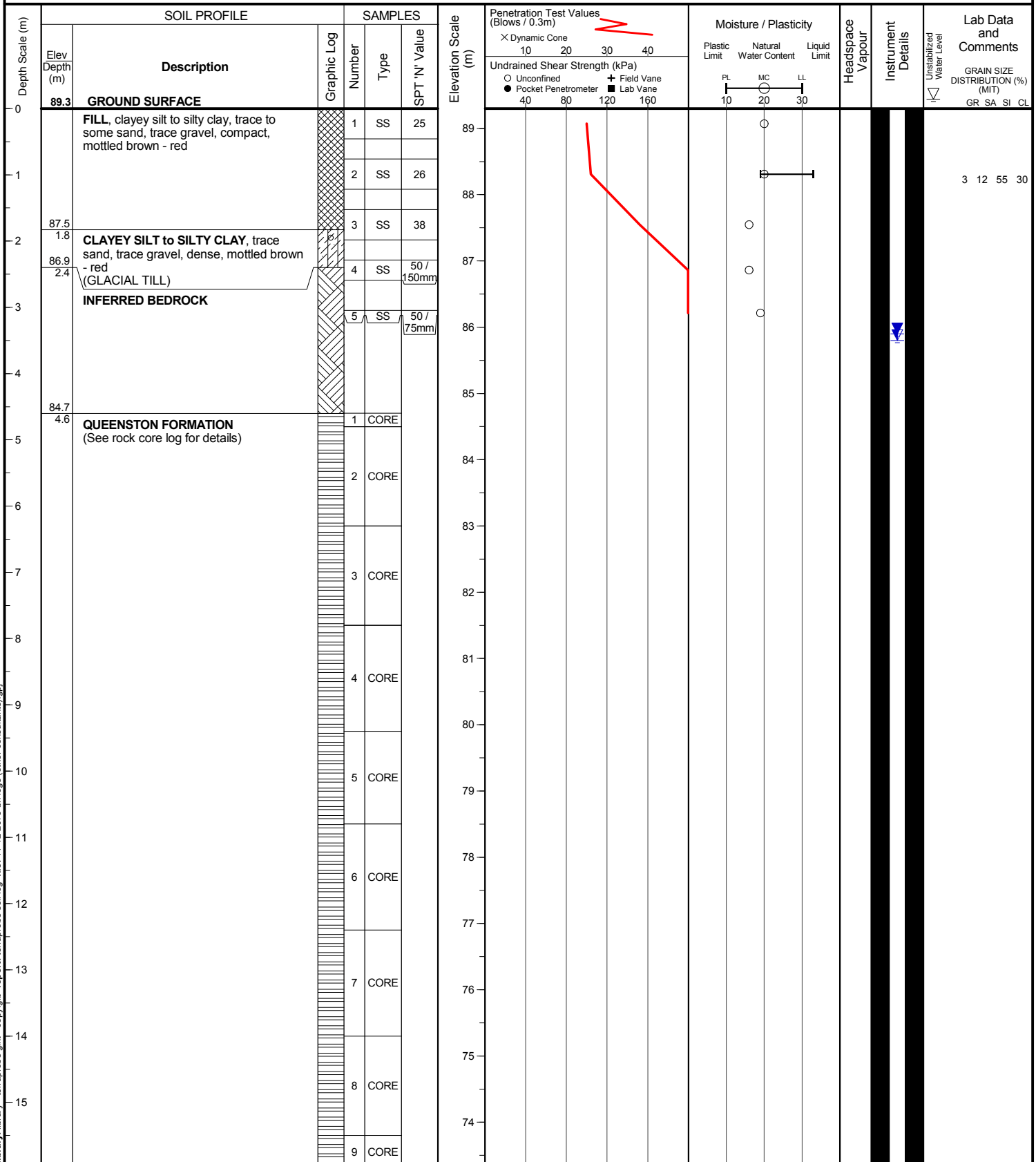
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 4

Position : E: 602683, N: 4804363 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring



(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : October 27, 2004

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 4

Position : E: 602683, N: 4804363 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)					73										
17		QUEENSTON FORMATION (See rock core log for details) (continued)		9	CORE		72										
18				10	CORE		71										
19				11	CORE		70										
20				12	CORE		69										
21				13	CORE		68										
22				14	CORE		67										
23				15	CORE		66										
24				16	CORE		65										
25		GEORGIAN BAY FORMATION (See rock core log for details)		17	CORE		64										
26				18	CORE		63										
27				19	CORE		62										
28							61										
29							60										
30							59										
31							58										

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Client : R.V Anderson Associates Limited

Project : Halton Zone 1 Watermain

Location : Burlington / Oakville, Ontario

Project No.: OTHER CONSULTANTS

Date started : October 27, 2004

Sheet No. : 3 of 4

Position : E: 602683, N: 4804363 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone				Plastic Limit	Natural Water Content	Liquid Limit			
								10 20 30 40									
								Undrained Shear Strength (kPa)									
								○ Unconfined + Field Vane									
								● Pocket Penetrometer ■ Lab Vane									
								40 80 120 160									
												PL	MC	LL			
												10	20	30			
32		GEORGIAN BAY FORMATION (See rock core log for details) (continued)		19	CORE		57										
33				20	CORE		56										
34																	
35				21	CORE		55										
36																	
37																	
38				23	CORE		52										
39																	
40				24	CORE		50										
41																	
42				26	CORE		47										
43																	
44				27	CORE		46										
45																	
46				28	CORE		44										
47																	
				29	CORE		42										
				30	CORE												

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library: library - teraprobe gnt - copy.glb report: teraprobe soil log file: 11-12-2073 bh logs (other consultants).gpl

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : October 27, 2004

Location : Burlington / Oakville, Ontario

Sheet No. : 4 of 4

Position : E: 602683, N: 4804363 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, HQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		10	20	30	40	Plastic Limit	Natural Water Content	Liquid Limit	
48		(continued)												
		GEORGIAN BAY FORMATION (See rock core log for details) (continued)		30	CORE	41								
49						40								
50				31	CORE	39								
51						38								
52				32	CORE	37								
53						36								
54				33	CORE	35								
55	34.2 55.1			34	CORE									

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Nov 2, 2004	3.5	85.8
Nov 3, 2004	3.5	85.8
Nov 5, 2004	3.6	85.7
Nov 8, 2004	3.6	85.7
Nov 10, 2004	3.7	85.6
Nov 17, 2004	3.9	85.4
Nov 23, 2004	4.5	84.8
Nov 26, 2004	3.5	85.8
Nov 29, 2004	3.4	85.9

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started October 27, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 4

Position : E: 602683, N: 4804363 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	Estimated Strength				Frequency	Spacing			
										5	25	50	100					
		Rock coring started at 4.6m below grade	84.7															
5		QUEENSTON FM:	4.6	TCR = 100% SCR = 89% RQD = 78% HL = 0%	84									1	4.9m : PL _A = 10 MPa	— Slightly to moderately weathered.	84	
	4.8											5						
		SHALE dark red, laminated to thinly bedded, sub-horizontal bedding planes, very weak to medium strong, slightly fissile, calcareous, occasional layers/seams of grey mudstone	R2	TCR = 100% SCR = 90% RQD = 45% HL = 0%	83									2		— Hydraulic conductivity K ₁ =1.8E-03cm/sec P ₁ =105kPa K ₂ =1.5E-03cm/sec P ₂ =140kPa		
6											2							
		occasionally interbedded with laminated to thinly bedded, strong to very strong limestone and calcareous siltstone layers	83.0	TCR = 100% SCR = 80% RQD = 0% HL = 0%	82									2		— Completely to highly weathered.	82	
7											1							
			6.3	TCR = 100% SCR = 80% RQD = 0% HL = 0%	81									>25		— Slightly weathered to fresh.	81	
8										3								
			81.5	TCR = 100% SCR = 90% RQD = 62% HL = 0%	80									4	9.1m : PL _A = 15 MPa	— Hydraulic conductivity K ₁ =1.4E-04cm/sec P ₁ =140kPa K ₂ =1.4E-04cm/sec P ₂ =175kPa	80	
9										2								
			79.9	TCR = 100% SCR = 88% RQD = 67% HL = 0%	79									2	9.6m : PL _A = 35 MPa	— Slightly weathered to fresh. Sub-vertical closed fracture at 10.2m.	79	
10			9.4							9								
			78.5	TCR = 100% SCR = 93% RQD = 52% HL = 15%	78									0	11.6m : PL _A = 35 MPa	— Slightly weathered to fresh. Hard layers: Depth(m) approx. thickness(mm) 11.4 200 11.8 25	78	
11			10.8							5								
				TCR = 100% SCR = 90% RQD = 84% HL = 5%	77									1	12.5m : PL _A = 25 MPa	— Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 12.7 25 13.7 50	77	
12			76.9							1								
			12.4	TCR = 100% SCR = 95% RQD = 80% HL = 13%	76									1	14.5m : PL _A = 30 MPa	— Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 14.0 25 14.4 75 15.3 50 15.4 50	76	
13										4								
			75.3	TCR = 100% SCR = 90% RQD = 68% HL = 5%	75									0	16.8m : PL _A = 15 MPa	— Slightly weathered to fresh. Fracture dipping approx. 30 degree at 17.2m.	75	
14			14.0							2								
			73.8	TCR = 100% SCR = 90% RQD = 68% HL = 5%	74									1	18.3m : PL _A = 30 MPa	— Slightly weathered to fresh.	74	
15			15.5							0								
				TCR = 100% SCR = 95% RQD = 88% HL = 0%	73									3	18.6m : PL _A = 45 MPa	— Slightly weathered to fresh.	73	
16										1								
			72.3	TCR = 100% SCR = 90% RQD = 90% HL = 0%	72									5		Hydraulic conductivity K ₁ =4.5E-05cm/sec P ₁ =240kPa K ₂ =3.0E-05cm/sec P ₂ =275kPa	72	
17			17.0							1								
				TCR = 100% SCR = 95% RQD = 88% HL = 0%	71									1	18.3m : PL _A = 30 MPa	— Slightly weathered to fresh.	71	
18			70.8							2								
			18.5	TCR = 100% SCR = 90% RQD = 90% HL = 0%	70									1	18.6m : PL _A = 45 MPa		70	
19										2								
				TCR = 100% SCR = 90% RQD = 90% HL = 0%	69									0		— Slightly weathered to fresh.	69	
20			69.2							2								
			20.1	TCR = 100% SCR = 90% RQD = 90% HL = 0%	69									1		— Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm)		
										1								

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started October 27, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 2 of 4

Position : E: 602683, N: 4804363 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments		Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6					Frequency	Spacing
21		QUEENSTON FM:																			
		SHALE	R12	TCR = 100% SCR = 93% RQD = 68% HL = 22%	68										2	21.0m : PL _A = 40 MPa	20.3 50 20.6 50 20.9 25 21.0 50 21.3 50 21.5 100	68			
		dark red, laminated to thinly bedded, sub-horizontal bedding planes, very weak to medium strong, slightly fissile, calcareous, occasional layers/seams of grey mudstone	67.7 21.6											3							
22														1				Hydraulic conductivity K _i =4.5E-05cm/sec P _i =240kPa K _i =3.0E-05cm/sec P _i =275kPa Slightly weathered to fresh.			
		occasionally interbedded with laminated to thinly bedded, strong to very strong limestone and calcareous siltstone layers <i>(continued)</i>	R13	TCR = 100% SCR = 100% RQD = 100% HL = 3%	67									1				Hard layers: Depth(m) Approx. thickness(mm) 23.0 50	67		
23			66.2 23.1		66									0	22.9m : PL _A = 30 MPa 23.2m : PL _A = 30 MPa	22.9m : PL _A = 30 MPa 23.2m : PL _A = 30 MPa	Hydraulic conductivity K _i =4.2E-05cm/sec P _i =275kPa K _i =3.5E-05cm/sec P _i =310kPa Slightly weathered to fresh.				
														2					Hard layers: Depth(m) Approx. thickness(mm) 24.5 25	66	
24			R14	TCR = 100% SCR = 97% RQD = 95% HL = 2%	65									1							
			64.7 24.6											1							
25					64									3	25.3m : PL _A = 25 MPa	25.3m : PL _A = 25 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 24.9 50 25.2 100 25.4 75 25.6 25	64			
			R15	TCR = 95% SCR = 89% RQD = 89% HL = 15%	64									2							
26			63.1 26.2		63									1							
														3							
27			R16	TCR = 97% SCR = 93% RQD = 87% HL = 12%	62									1	26.5m : PL _A = 25 MPa	26.5m : PL _A = 25 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 26.5 75 26.7 25 26.8 50 27.1 25	63			
			61.6 27.7		61									2					Sub-vertical fracture at 26.5m, approx 100mm long.	62	
28		GEORGIAN BAY FM:												2					Hydraulic conductivity K _i =6.6E-06cm/sec P _i =310kPa K _i =3.3E-06cm/sec P _i =345kPa Slightly weathered to fresh.		
		SHALE , dark grey, thinly laminated to thinly bedded, sub-horizontal bedding planes, fissile, weak to medium strong, occasional clay layers, occasional layers/seams of red shale	R17	TCR = 100% SCR = 92% RQD = 83% HL = 20%	61									2					Hard layers: Depth(m) Approx. thickness(mm) 28.2 50 28.5 25 28.7 50 28.8 150 29.1 25	61	
29		interbedded with	60.1 29.2		60									0	28.7m : PL _A = 15 MPa	28.7m : PL _A = 15 MPa	28.2 50 28.5 25 28.7 50 28.8 150 29.1 25	60			
														2					Calcite layer at 28.6m, approx. 1mm thick.		
30		CALCAREOUS SILTSTONE / LIMESTONE												5			29.6m : PL _A = 25 MPa	29.6m : PL _A = 25 MPa	Hydraulic conductivity K _i =6.4E-06cm/sec P _i =345kPa K _i =3.8E-06cm/sec P _i =380kPa Slightly weathered to fresh.		
		light grey, thinly laminated to medium bedded, medium strong to very strong, fossiliferous	R18	TCR = 100% SCR = 97% RQD = 83% HL = 23%	59									1							Hard layers: Depth(m) Approx. thickness(mm) 29.5 50 29.7 75 30.2 550
			58.6 30.7		58									3					Slightly weathered to fresh.		
31														2					Hard layers: Depth(m) Approx. thickness(mm) 30.8 50 30.9 25 31.3 75 31.4 25 32.0 100	58	
			57.1 32.2		57									2	30.8m : PL _A = 35 MPa	30.8m : PL _A = 35 MPa	Clay layer at 32.2m, approx. 2mm thick. Hydraulic conductivity K _i =8.2E-06cm/sec P _i =345kPa K _i =6.6E-06cm/sec P _i =380kPa Slightly weathered to fresh.				
32														2					Hard layers: Depth(m) Approx. thickness(mm) 32.3 50 33.5 50 33.4 50	57	
			R20	TCR = 100% SCR = 97% RQD = 87% HL = 10%	56									2					Slightly weathered to fresh.		
33			55.5 33.8		55									3					Hard layers: Depth(m) Approx. thickness(mm) 33.8 255 34.3 50 34.4 75 34.7 175 34.9 100 35.2 100	56	
34					55									2	33.2m : PL _A = 30 MPa	33.2m : PL _A = 30 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm) 33.8 255 34.3 50 34.4 75 34.7 175 34.9 100 35.2 100	55			
			R21	TCR = 98% SCR = 95% RQD = 88% HL = 48%	54									0					Calcite layer at 34.8m, approx. 1mm thick. Slightly weathered to fresh.		
35			54.0 35.3		54									3					Hard layers: Depth(m) Approx. thickness(mm) 35.3 475 36.6 75	54	
														1							
36			R22	TCR = 98% SCR = 95% RQD = 78% HL = 37%	53									4							
														1							

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started October 27, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 3 of 4

Position : E: 602683, N: 4804363 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)						Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing			
37		GEORGIAN BAY FM: SHALE , dark grey, thinly laminated to thinly bedded, sub-horizontal bedding planes, fissile, weak to medium strong, occasional clay layers, occasional layers/seams of red shale	R22 36.8		52												36.6m : PL _A = 30 MPa	Hydraulic conductivity K _i =8.7E-06cm/sec P _r =415kPa K _i =4.5E-06cm/sec P _r =450kPa Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm)	52	
			R23	TCR = 100% SCR = 97% RQD = 90% HL = 17%												37.2m : PL _A = 25 MPa				
38		interbedded with	51.0 38.3		51															51
39		CALCAREOUS SILTSTONE / LIMESTONE light grey, thinly laminated to medium bedded, medium strong to very strong, fossiliferous (continued)	R24	TCR = 100% SCR = 95% RQD = 87% HL = 30%	50												38.7m : PL _A = 35 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm)	50	
40			49.4 39.9		49															
41			R25	TCR = 100% SCR = 97% RQD = 97% HL = 30%																
42			R26	TCR = 97% SCR = 95% RQD = 93% HL = 43%	47												42.4m : PL _A = 25 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm)	47	
43			46.4 42.9		46															
44			R27	TCR = 100% SCR = 93% RQD = 92% HL = 20%																
45			44.9 44.4		45												44.5m : PL _A = 30 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm)	45	
46			R28	TCR = 98% SCR = 97% RQD = 93% HL = 27%	44															44
47			43.3 46.0		43															
48			R29	TCR = 100% SCR = 97% RQD = 93% HL = 43%	42												46.3m : PL _A = 35 MPa	Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm)	43	
49			41.8 47.5		41															
50			R30	TCR = 100% SCR = 98% RQD = 97% HL = 40%																
51			40.3 49.0		40													Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm)	40	
52			R31	TCR = 100% SCR = 93% RQD = 80% HL = 41%																
			38.8 50.5		39															
			R32	TCR = 100% SCR = 97% RQD = 97% HL = 15%	38												50.3m : PL _A = 40 MPa	Completely weathered, clay infilled zone at 49.1m, approx. 200mm thick. Hydraulic conductivity K _i =2.3E-06cm/sec P _r =550kPa K _i =7.1E-07cm/sec P _r =585kPa Slightly weathered to fresh. Hard layers: Depth(m) Approx. thickness(mm)	39	
			37.2		37															
			52.1 R33																	

(continued next page)

HL = Hard Layers

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started October 27, 2004

Location: Burlington / Oakville, Ontario

Sheet No. 4 of 4

Position : E: 602683, N: 4804363 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : HQ, OD=96mm, ID=64mm

Drilling Method : Hollow stem augers, HQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)				
						Z1	Z2	Z3	Z4	R1	R2	R3	R4				R5	R6	Frequency	Spacing
53		GEORGIAN BAY FM: SHALE , dark grey, thinly laminated to thinly bedded, sub-horizontal bedding planes, fissile, weak to medium strong, occasional clay layers, occasional layers/seams of red shale	R33	TCR = 100% SCR = 97% RQD = 97% HL = 8%	36									1	53.3m : P _{LA} = 50 MPa	Hard layers: Depth(m) Approx. thickness(mm) 52.6 50 52.8 50 53.1 14 Sub-vertical closed fracture at 52.6m, approx. 50mm long. Hydraulic conductivity K _v =2.3E-06cm/sec P _v =550kPa K _c =7.1E-07cm/sec P _c =585kPa Slightly weathered to fresh.	36			
			35.7										0							
			53.6										0							
54		interbedded with		TCR = 100% SCR = 97% RQD = 93% HL = 45%	35								1							
		CALCAREOUS SILTSTONE / LIMESTONE light grey, thinly laminated to medium bedded, medium strong to very strong, fossiliferous (continued)	R34										1							
55			34.2											0		55.1m	Hard layers: Depth(m) Approx. thickness(mm) 53.6 25 52.8-54.0 55 53.1-55.1 600	35		
													0							
													1							

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 19, 2003

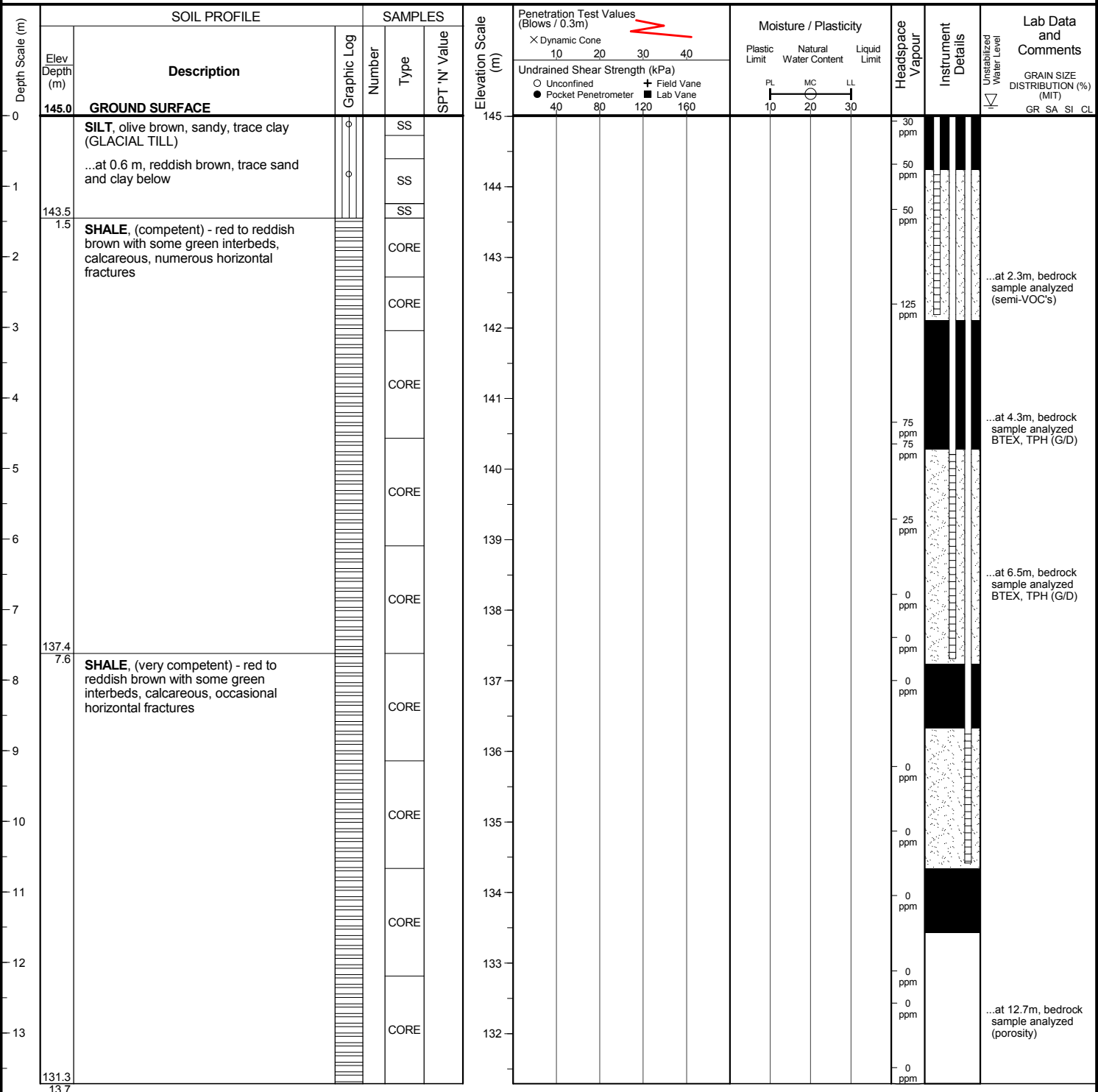
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599229, N: 4806859 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

**END OF BOREHOLE**

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 19, 2003

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599229, N: 4806859 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

Drilling Method :

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
		Rock coring started at 1.5m below grade	143.5																	
2		SHALE, (competent) - red to reddish brown with some green interbeds, calcareous, numerous horizontal fractures	1.5		143												— 2.3-3.0m: highly fractured	143		
			R1																	
142.7			TCR = 50% RQD = 20%															142		
2.3	R2																			
3			142.0		142													142		
			3.0	R3																
4			140.4		141													— 4.1-4.5m: petroleum odour and sheen	141	
			4.6	R4																
5					140													— 4.7m: black discolouration on fracture face	140	
6		138.9		139												139				
		6.1	R5																	
7				138												138				
8		137.4		137												— 8.5m: white gypsum seam (1mm thick)	137			
		7.6	R6																	
9		135.9		136												136				
		9.1																		
10				135												135				
11		134.3		134												— 10.7m: liquid hydrocarbons visible in drilling fluids	134			
		10.7	R7																	
12				133												133				
13		132.8		132												132				
		12.2																		

END OF BOREHOLE

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 20, 2003

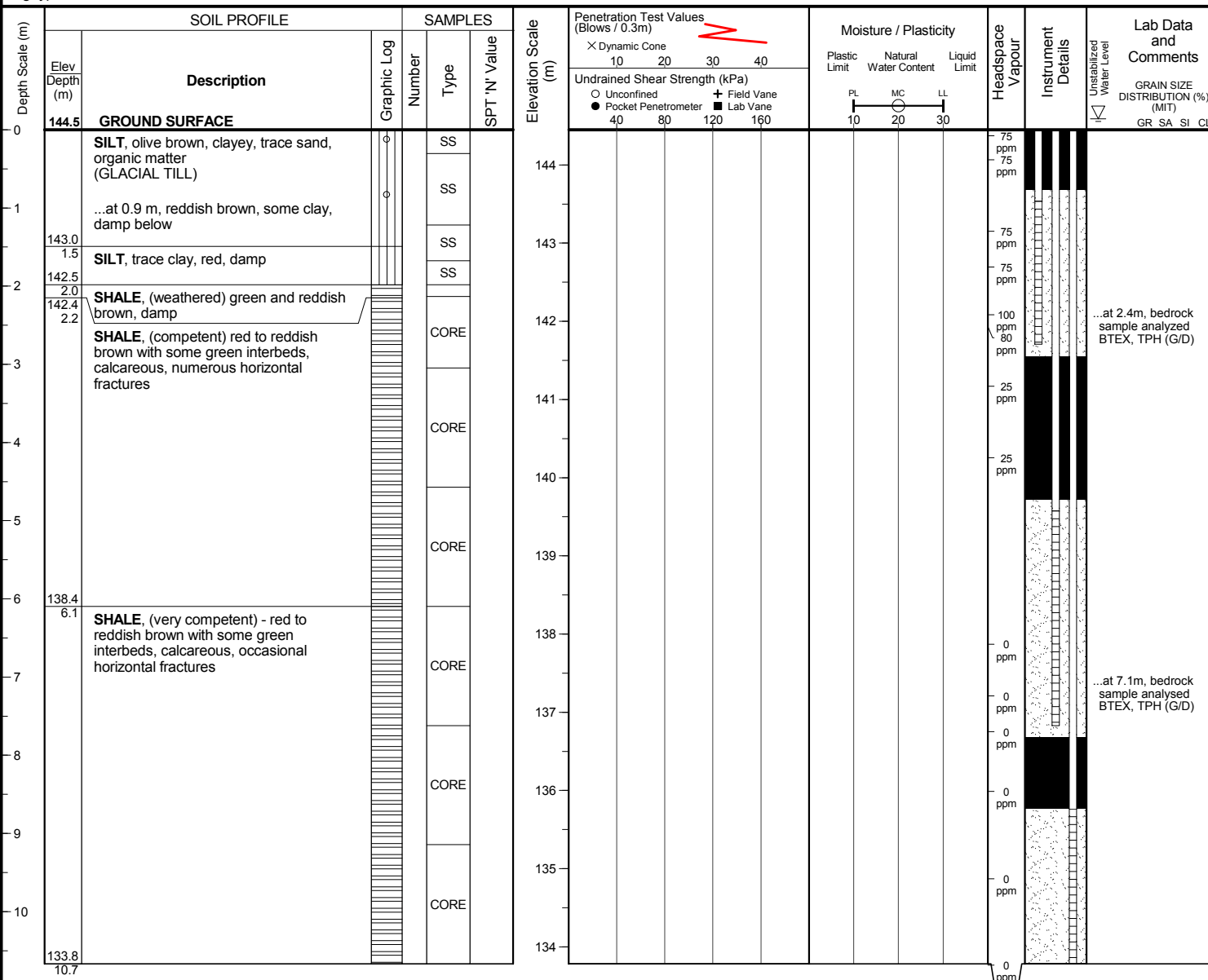
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599202, N: 4806819 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

**END OF BOREHOLE**

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 20, 2003

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599202, N: 4806819 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

Drilling Method :

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)				
						Z1	Z2	Z3	Z4	R1	R2	R3	R4				R5	R6	Frequency	Spacing
		Rock coring started at 2.1m below grade	142.4																	
3		SHALE, (weathered) green and reddish brown, damp (continued) SHALE, (competent) red to reddish brown with some green interbeds, calcareous, numerous horizontal fractures	2.1	TCR = 65% RQD = 37%	142										— 2.3-2.4m: dark brown discolouration on fracture faces — 2.4m: highly fractured for 50 mm	142				
			R1																	
			141.5																	
			3.0	TCR = 100% RQD = 71%	141											141				
			R2																	
4			139.9		140											140				
			4.6	TCR = 98% RQD = 68%		139														
5			R3																	
			138.4		138															
		SHALE, (very competent) - red to reddish brown with some green interbeds, calcareous, occasional horizontal fractures	6.1	TCR = 99% RQD = 93%		137														
7			R4																	
			136.9		136															
8			7.6	TCR = 98% RQD = 93%		135														
			R5																	
9			135.4		134															
			9.1	TCR = 99% RQD = 95%		134														
10			R6																	
			133.8																	

END OF BOREHOLE

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 21, 2003

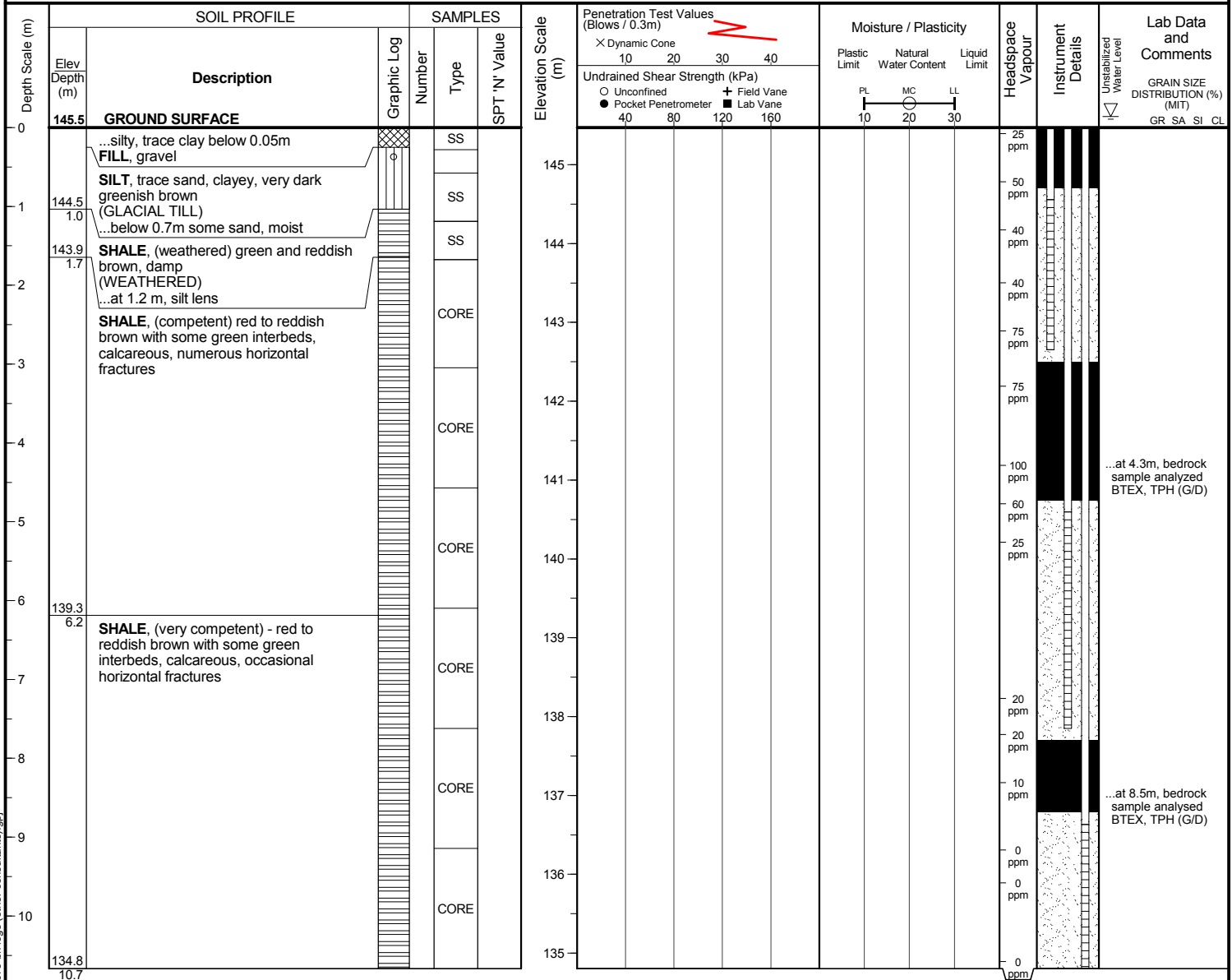
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599239, N: 4806895 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

**END OF BOREHOLE**

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 21, 2003

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599239, N: 4806895 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

Drilling Method :

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)				
						Z1	Z2	Z3	Z4	R1	R2	R3	R4				R5	R6	Frequency	Spacing
		Rock coring started at 1.7m below grade	143.8																	
2		SHALE, (competent) red to reddish brown with some green interbeds, calcareous, numerous horizontal fractures (continued)	1.7												— 1.8m: petroleum odour and sheen ~ 1.9m: vugs					
			R1	TCR = 100% RQD = 20%	143											— 2.3m: vertical fracture — 2.5m: petroleum odour and sheen	143			
3			142.5																	
			3.0													— 3.2-3.3m: vugs	142			
4		SHALE, (very competent) - red to reddish brown with some green interbeds, calcareous, occasional horizontal fractures													— 3.9m: vugs — 4.2m: petroleum odour and sheen — 4.4m: petroleum odour and sheen					
			R2	TCR = 100% RQD = 23%	142											— 4.7m: petroleum odour and sheen ~ 4.8-4.9m: vertical fractures, vugs, yellowish brown discoloration on fracture faces	141			
5			140.9													— 5.1m: vugs	140			
			4.6													— 5.8m: reddish brown, clayey, moist silt lens 20 mm thick ~ 5.9-6.1m: vugs	139			
6			139.4																	
7			6.1																	
		R4	TCR = 100% RQD = 75%	139																
8			137.9																	
			7.6																	
9																				
		R5	TCR = 100% RQD = 85%	137																
10			136.4																	
			9.1																	
															— 9.8m: vugs					
		R6	TCR = 100% RQD = 90%	136																
			134.8												— 10.4-10.7m: vertical fracture	135				

10.7m

END OF BOREHOLE

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 21, 2003

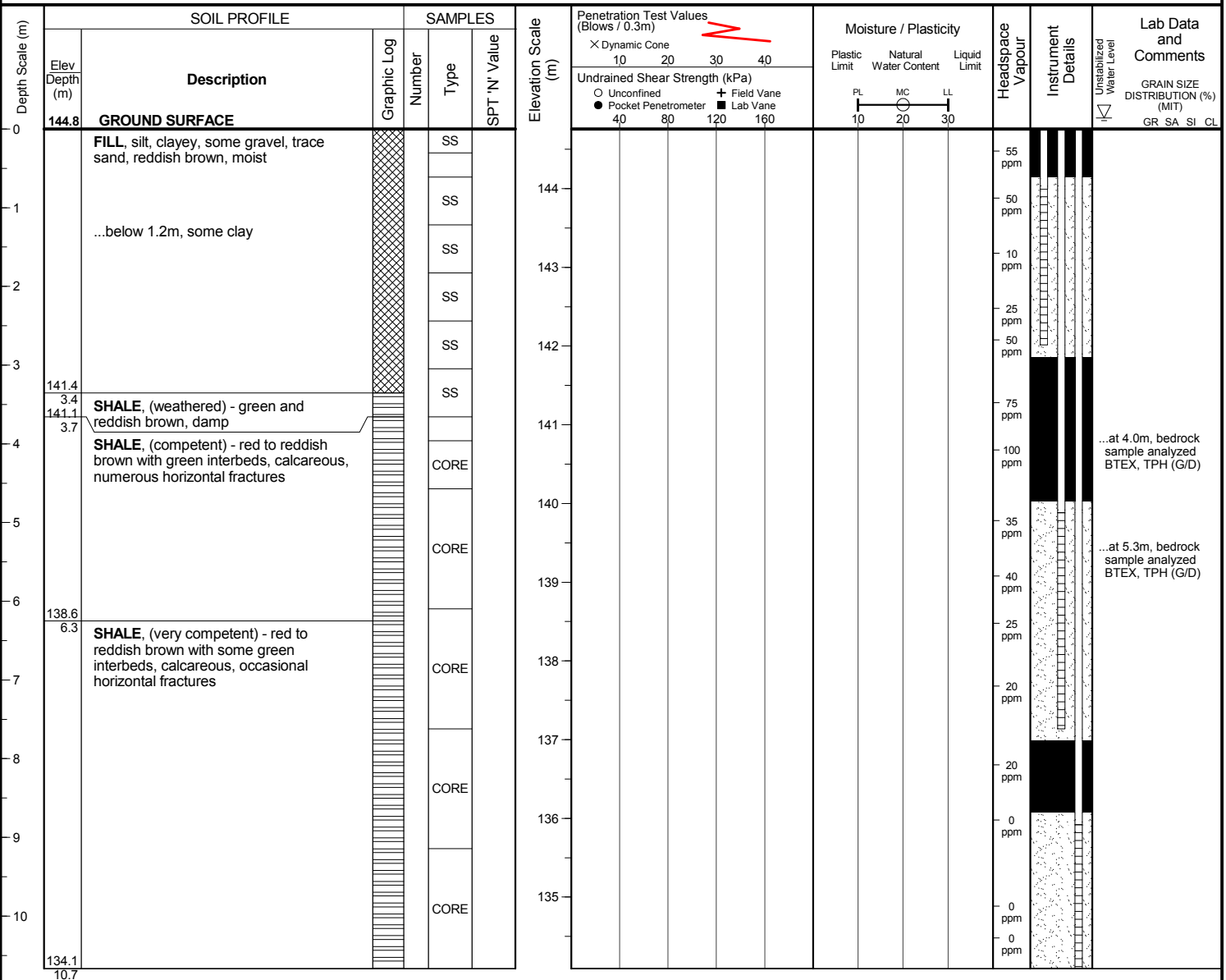
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599275, N: 4806860 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

**END OF BOREHOLE**

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 21, 2003

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599275, N: 4806860 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

Drilling Method :

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
		Rock coring started at 3.7m below grade	141.1																	
4		SHALE, (competent) - red to reddish brown with green interbeds, calcareous, numerous horizontal fractures	4.0	R1	TCR = 100% RQD = 45%													141		
5			4.6															140		
6			138.7	R2	TCR = 100% RQD = 50%													139		
7		SHALE, (very competent) - red to reddish brown with some green interbeds, calcareous, occasional horizontal fractures	6.1															138		
8			137.2	R3	TCR = 100% RQD = 90%													137		
9			7.6															136		
10			135.7	R4	TCR = 100% RQD = 80%													135		
			9.1																	
			134.1	R5	TCR = 100% RQD = 90%															

10.7m

END OF BOREHOLE

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Sheet No. : 1 of 1

Rig type : CME 75



Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 24, 2003

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599287, N: 4806816 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

Drilling Method :

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)	
						Z1	Z2	Z3	Z4	●		Frequency	Spacing				
										5	25						50
						Estimated Strength											
						R1	R2	R3	R4	R5	R6						
		Rock coring started at 1.3m below grade	142.9														
		SHALE, green and reddish brown, damp (WEATHERED) (continued)	1.5														
2		SHALE, (competent) - red to reddish brown with some green interbeds, calcareous, numerous horizontal fractures	R1	TCR = 100% RQD = 30%	142											142	
3			141.2												— 3.0m: vugs	141	
4			3.0												— 4.0m: petroleum odour and sheen in core	140	
5			139.6												— 4.6-5.7m: petroleum odour and sheen in core	139	
6			4.6												— 5.7m: 60mm vertical fracture	138	
7		SHALE, (very competent) - red to reddish brown with some green interbeds, calcareous, occasional horizontal fractures	138.1												— 6.3-6.6m: vugs	137	
8			6.1												— 6.8m: 50mm long vertical fracture	136	
9			136.6												— 7.9-8.0m: vertical fracture	135	
10			7.6												— 9.3m: vugs	134	
			135.1												— 10.0m: vugs	133	
			9.1												— 10.6m: vugs	132	
			133.5													131	

END OF BOREHOLE

Water level and cave not measured upon
completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 25, 2003

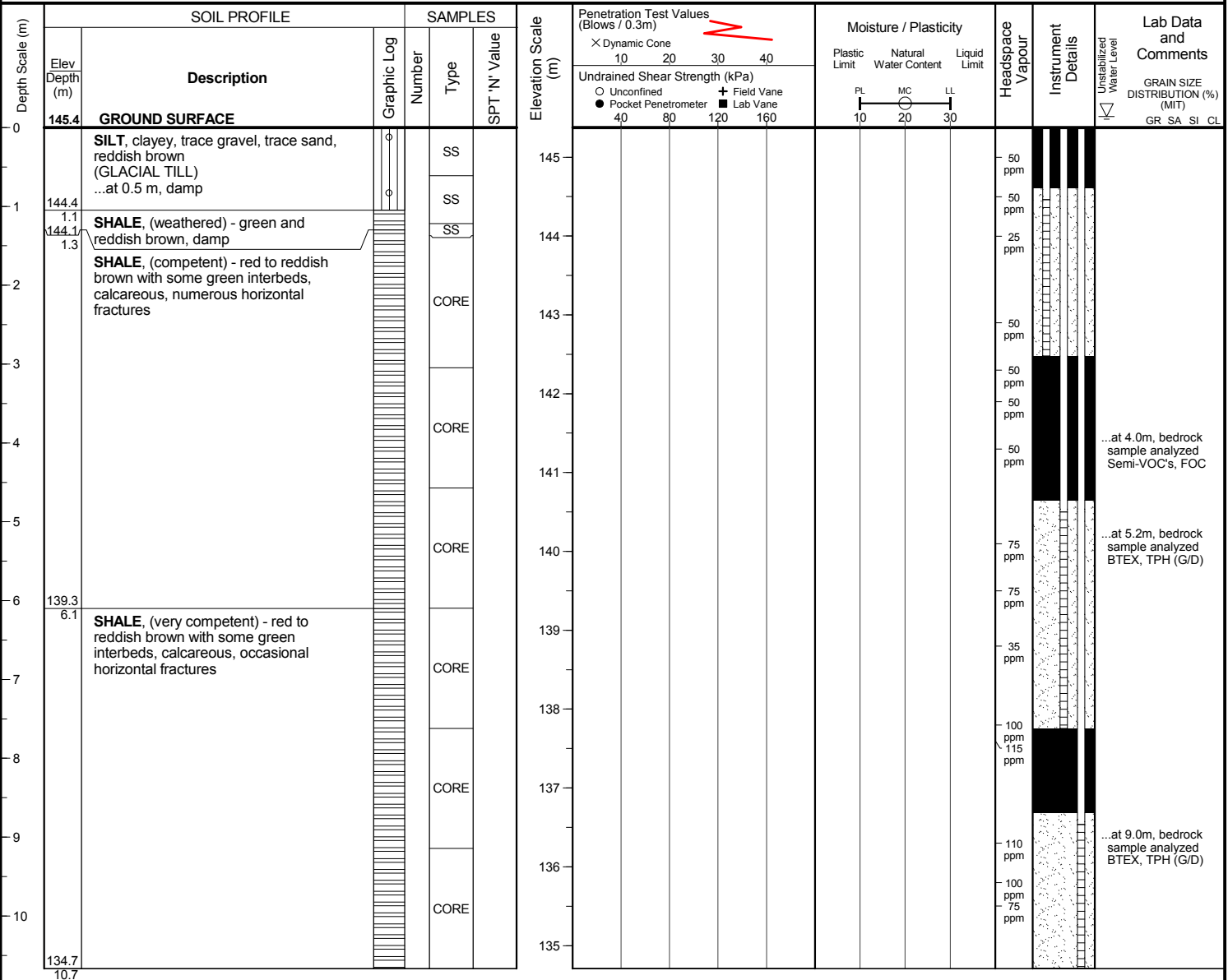
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599201, N: 4806928 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

**END OF BOREHOLE**

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 25, 2003

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599201, N: 4806928 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

Drilling Method :

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
		Rock coring started at 1.4m below grade	144.0		144															
2		SHALE, (competent) - red to reddish brown with some green interbeds, calcareous, numerous horizontal fractures (continued)	1.4	R1 TCR = 48% RQD = 30%	143												— 2.4m: green, clayey, moist silt lens	143		
3																				
4			142.4 3.0	R2 TCR = 100% RQD = 58%	142												— 3.2-3.3m: vertical fractures — 3.4m: vugs — 3.5m: dark gray shale bed (30mm thick) — 3.6m: vugs, vertical fracture	142		
5			140.8 4.6														— 4.0m: vertical fracture			
6		SHALE, (very competent) - red to reddish brown with some green interbeds, calcareous, occasional horizontal fractures		R3 TCR = 100% RQD = 55%	141												— 4.6m: vugs — 4.8m: vertical fractures	141		
7																				
8			139.3 6.1	R4 TCR = 100% RQD = 92%	140												— 5.2m: vugs, 50mm vertical fractures — 5.2-5.4m: vugs	140		
9																				
10				R5 TCR = 100% RQD = 100%	139												— 6.2m: vugs — 6.6m: vertical fracture — 6.8-7.0m: vugs	139		
		137.8 7.6															— 7.5m: vertical fractures — 7.6m: vugs			
				R6 TCR = 100% RQD = 100%	138												— 8.5m: vugs — 8.8-8.9m: vertical fractures — 9.1m: vugs, vertical fractures	138		
		137																		
					137												— 9.6m: white, gypsum seam (3mm) at 9.6m	137		
		136.3 9.1																		
					136													136		
		134.7																		
					135													135		

END OF BOREHOLE

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 26, 2003

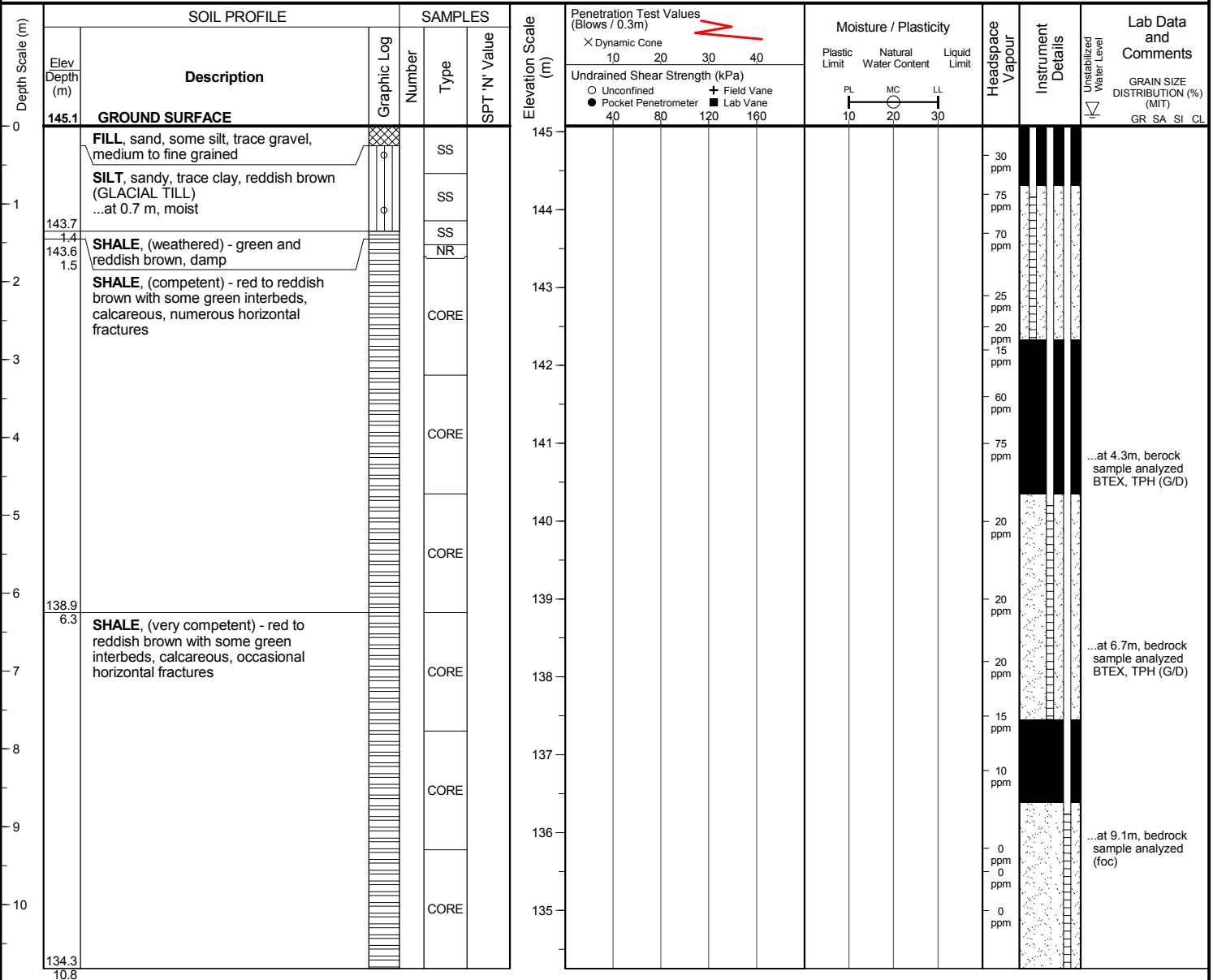
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599188, N: 4806880 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

**END OF BOREHOLE**

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 26, 2003

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599188, N: 4806880 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

Drilling Method :

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6				Frequency	Spacing
		Rock coring started at 1.5m below grade	143.6																	
2		SHALE, (competent) - red to reddish brown with some green interbeds, calcareous, numerous horizontal fractures <i>(continued)</i>	1.7		143												— 1.8m: vugs	143		
			R1	TCR = 100% RQD = 8%													2.4-2.5m: highly fractured 2.4-3.4m: black and yellowish discolouration on fracture faces			
3			141.9		142													142		
			3.2																	
4				R2	141													141		
				TCR = 100% RQD = 18%																
5			140.4		140													140		
			4.7																	
6				R3	139												— 5.8-5.9m: vugs ~ 5.9-6.1m: highly fractured	139		
				TCR = 100% RQD = 56%																
		SHALE, (very competent) - red to reddish brown with some green interbeds, calcareous, occasional horizontal fractures	138.9		138												— 6.6m: vugs, gypsum seam (1mm thick)	138		
7			6.2														— 7.2m: vugs			
			R4	TCR = 100% RQD = 90%													— 7.6m: vugs	137		
8			137.3		137												— 8.1m: vugs ~ 8.2-8.3m: vertical fractures			
			7.8															136		
9				R5	136													136		
				TCR = 93% RQD = 92%																
			135.8		135												— 9.2m: vugs	135		
			9.3																	
10				R6													— 10.4m: gypsum seam (3mm thick) — 10.6m: vugs			
				TCR = 100% RQD = 96%																
			134.3																	

10.8m

END OF BOREHOLE

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project : Halton Zone 1 Watermain

Location : Burlington / Oakville, Ontario

Project No.: OTHER CONSULTANTS

Date started : February 27, 2003

Sheet No. : 1 of 1

Position : E: 599211, N: 4806909 (UTM 17T)				Elevation Datum : Geodetic (NAD83)								
Rig type : CME 75												
Depth Scale (m)	SOIL PROFILE			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log		Number	Type	SPT 'N' Value	Plastic Limit	Natural Water Content			
0	144.7	GROUND SURFACE										
		25mm ASPHALTIC CONCRETE										
	144.0	FILL, gravel, some sand, brownish grey										
1	143.4	SILT, sandy, some clay, trace gravel, greyish brown (GLACIAL TILL)										...at 0.8m, soil sample analyzed BTEX, TPH (G/D)
	143.3	...at 1.2 m, reddish brown, some clay, trace sand, moist										...at 1.2m, soil sample analyzed BTEX, TPH (G/D)
	143.3	SHALE, (weathered) - reddish brown, damp										
	1.4											
END OF BOREHOLE												
Water level and cave not measured upon completion of drilling.												
25mm monitoring well installed.												

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 27, 2003

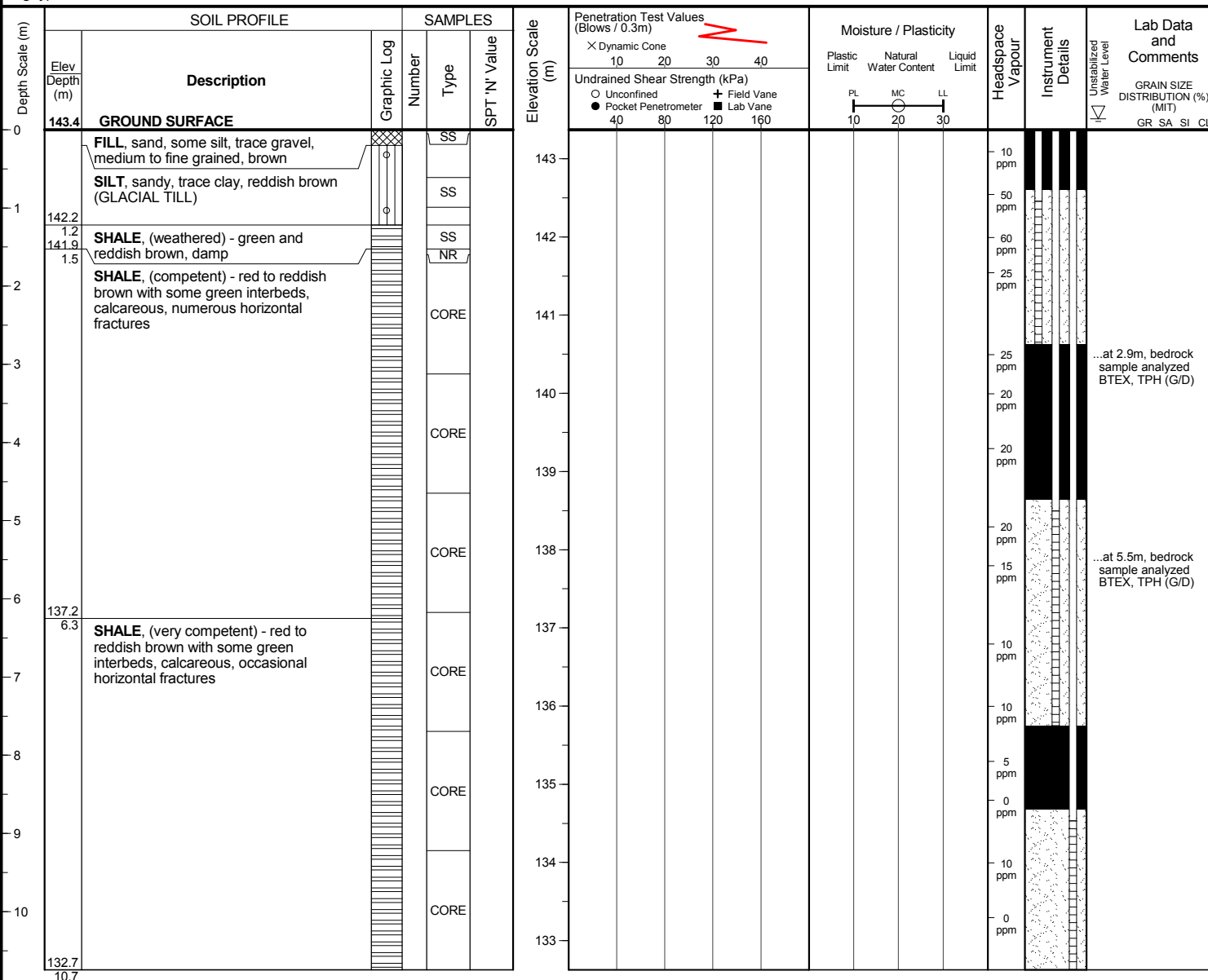
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599326, N: 4806811 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

**END OF BOREHOLE**

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started February 27, 2003

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599326, N: 4806811 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75

Drilling Method :

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	5	25	50	100	250	Estimated Strength	Frequency	Spacing	
		Rock coring started at 1.5m below grade	141.9															
2		SHALE, (competent) - red to reddish brown with some green interbeds, calcareous, numerous horizontal fractures	1.6															
			R1	TCR = 100% RQD = 25%	141													141
3			140.3															
			3.1		140													140
4				TCR = 100% RQD = 8%														
			R2		139													
5			138.8															
			4.6		138													138
6				TCR = 95% RQD = 52%														
			R3		137													
7		SHALE, (very competent) - red to reddish brown with some green interbeds, calcareous, occasional horizontal fractures	137.2		137													
			6.2															
			R4	TCR = 100% RQD = 87%	136													136
8			135.7															
			7.7		135													
9				TCR = 92% RQD = 75%														
			R5		134													
10			134.2															
			9.2		133													
				TCR = 100% RQD = 88%														
			R6		133													
			132.7															
					10.7m													

END OF BOREHOLE

Water level and cave not measured upon completion of drilling.

25mm monitoring well installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : April 29, 2004

Location : Burlington / Oakville, Ontario

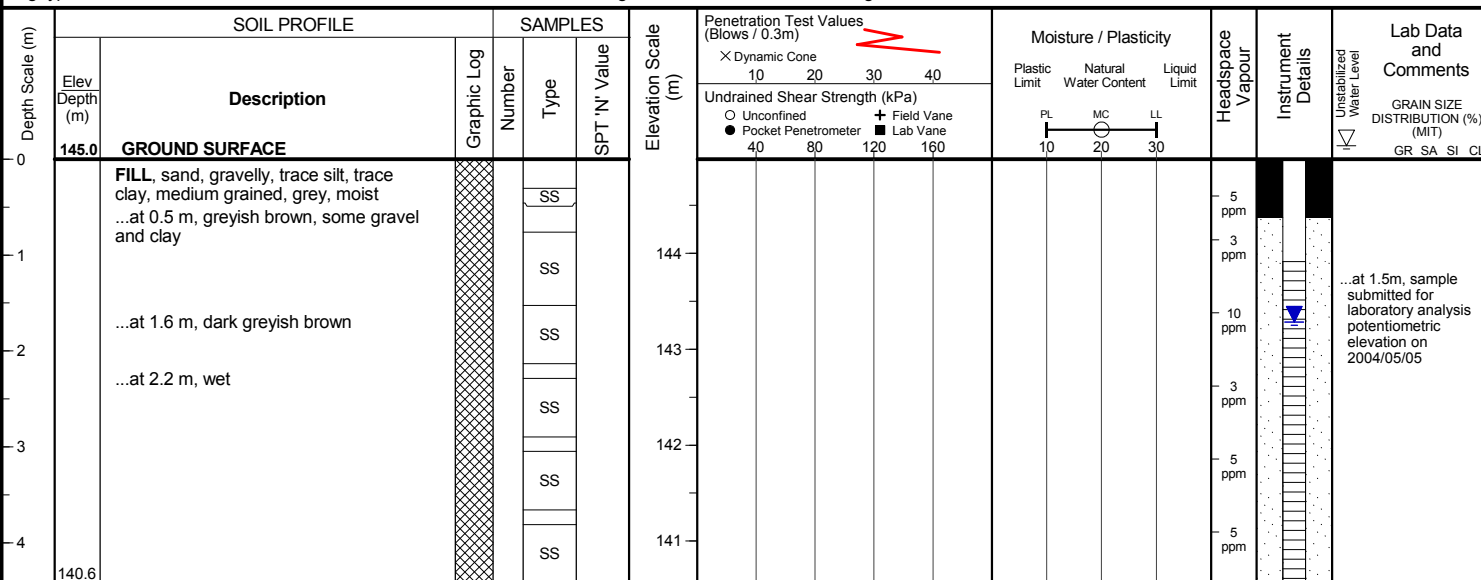
Sheet No. : 1 of 1

Position : E: 599248, N: 4806865 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : D50

Drilling Method : Hollow stem augers

**END OF BOREHOLE**

Water level and cave not measured upon completion of drilling.

50mm monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
May 5, 2004	1.7	143.3

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : April 29, 2004

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599241, N: 4806872 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : D50

Drilling Method : Hollow stem augers

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value			Plastic Limit	Natural Water Content	Liquid Limit			
0	145.0	GROUND SURFACE					145							
1		FILL, sand, gravelly, trace silt, trace clay, medium grained, grey, moist ...at 0.6 m, greyish brown, some gravel and clay			SS		144					5 ppm		
2		...at 2.1 m, wet			SS		143					5 ppm		
3					SS		142					5 ppm		
4					SS		141					5 ppm		
	140.6 4.4				SS									

END OF BOREHOLE

Water level and cave not measured upon completion of drilling.

50mm monitoring well installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
May 5, 2004	1.7	143.3

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 4, 2003

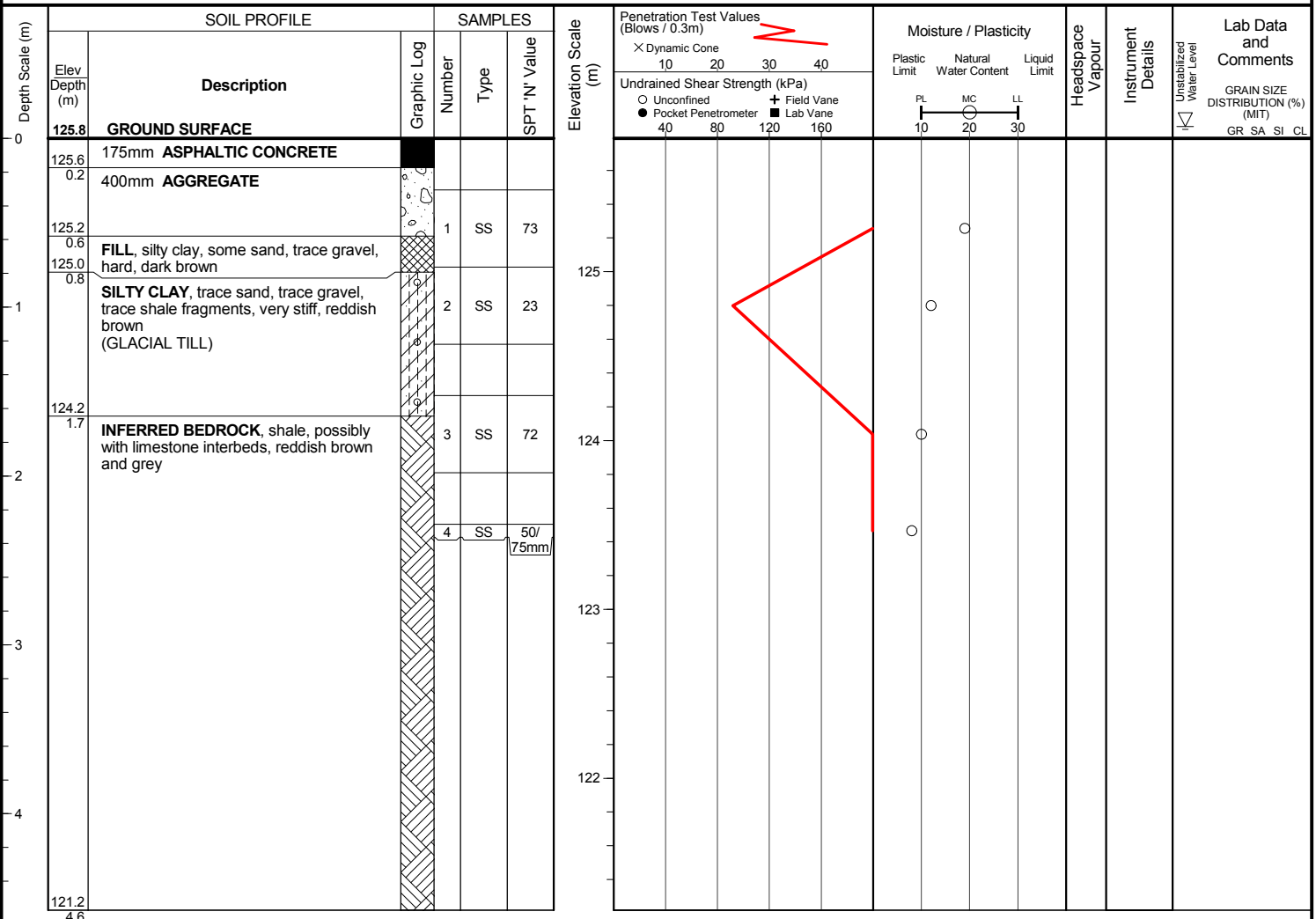
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600443, N: 4805722 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, truck-mounted



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 4, 2003

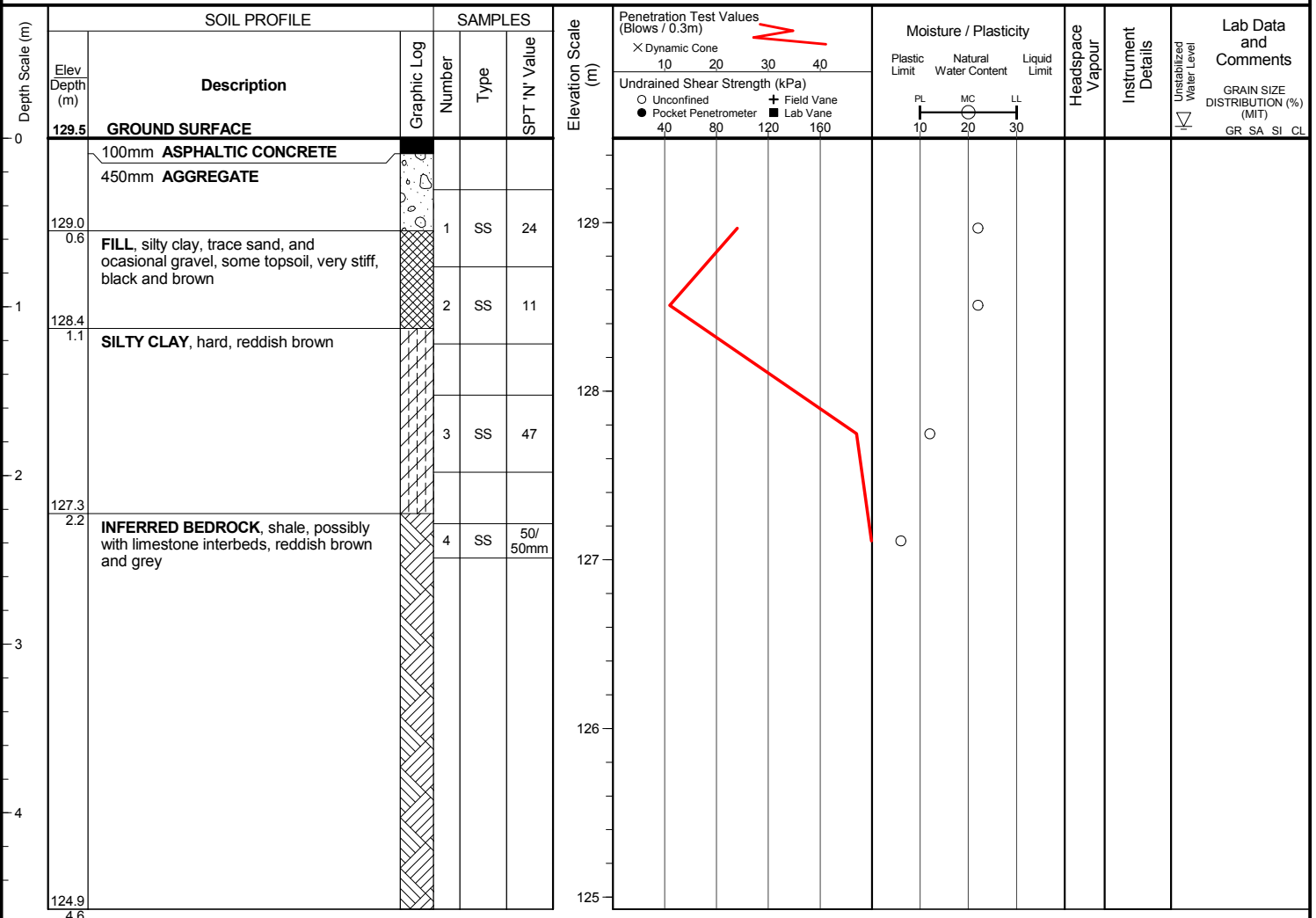
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600097, N: 4806049 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, truck-mounted



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 4, 2003

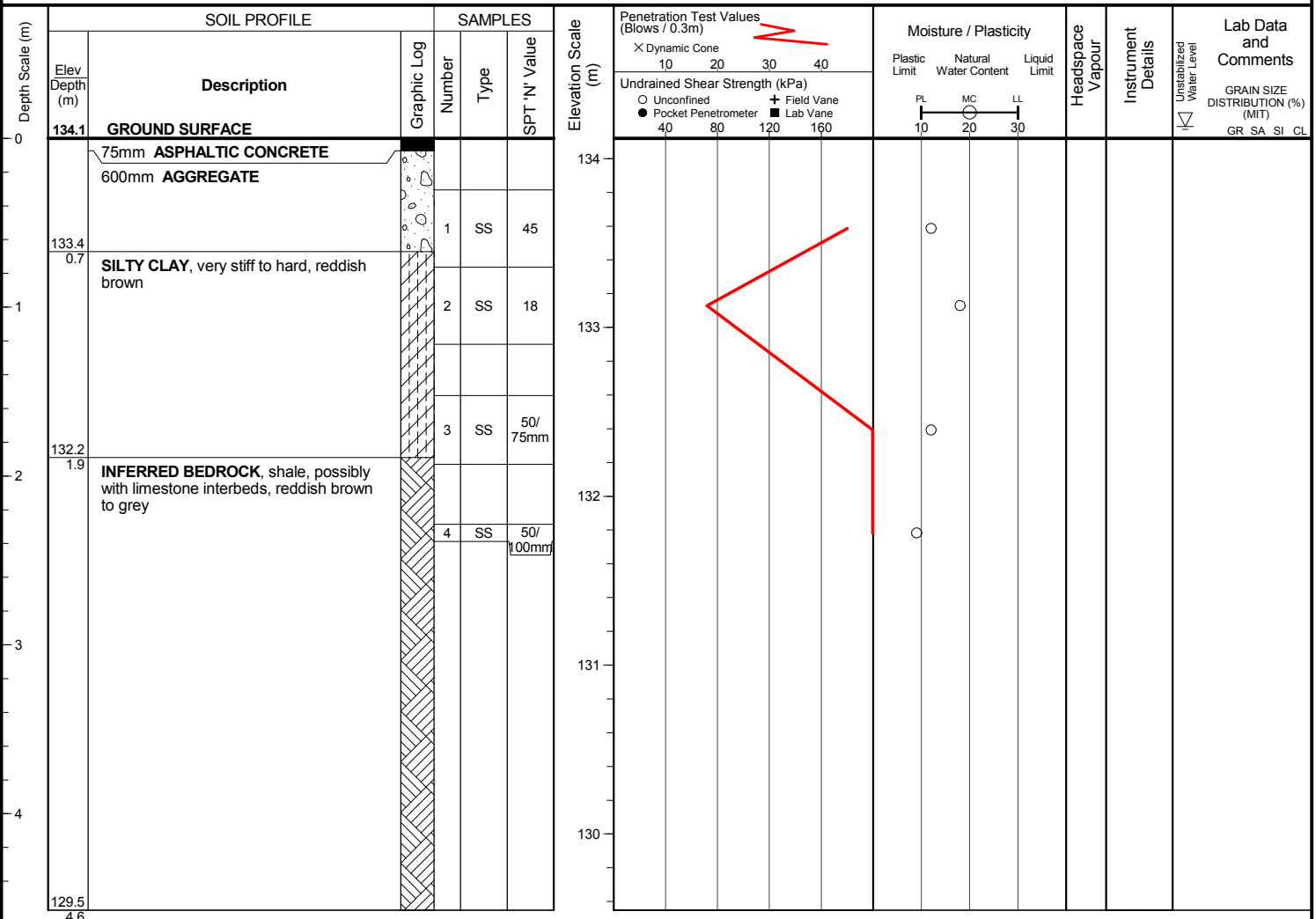
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599757, N: 4806377 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, truck-mounted



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 4, 2003

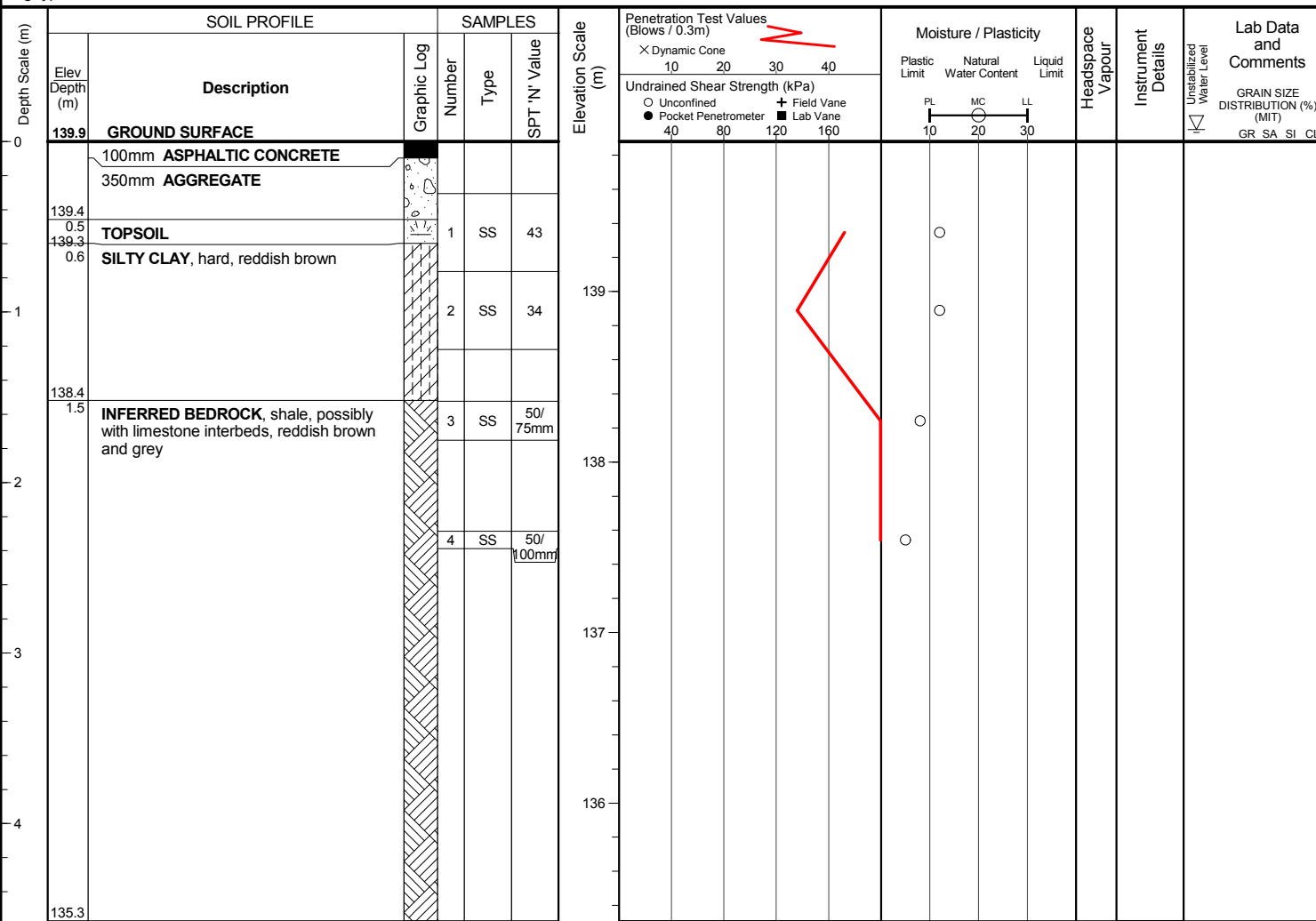
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599444, N: 4806691 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, truck-mounted



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

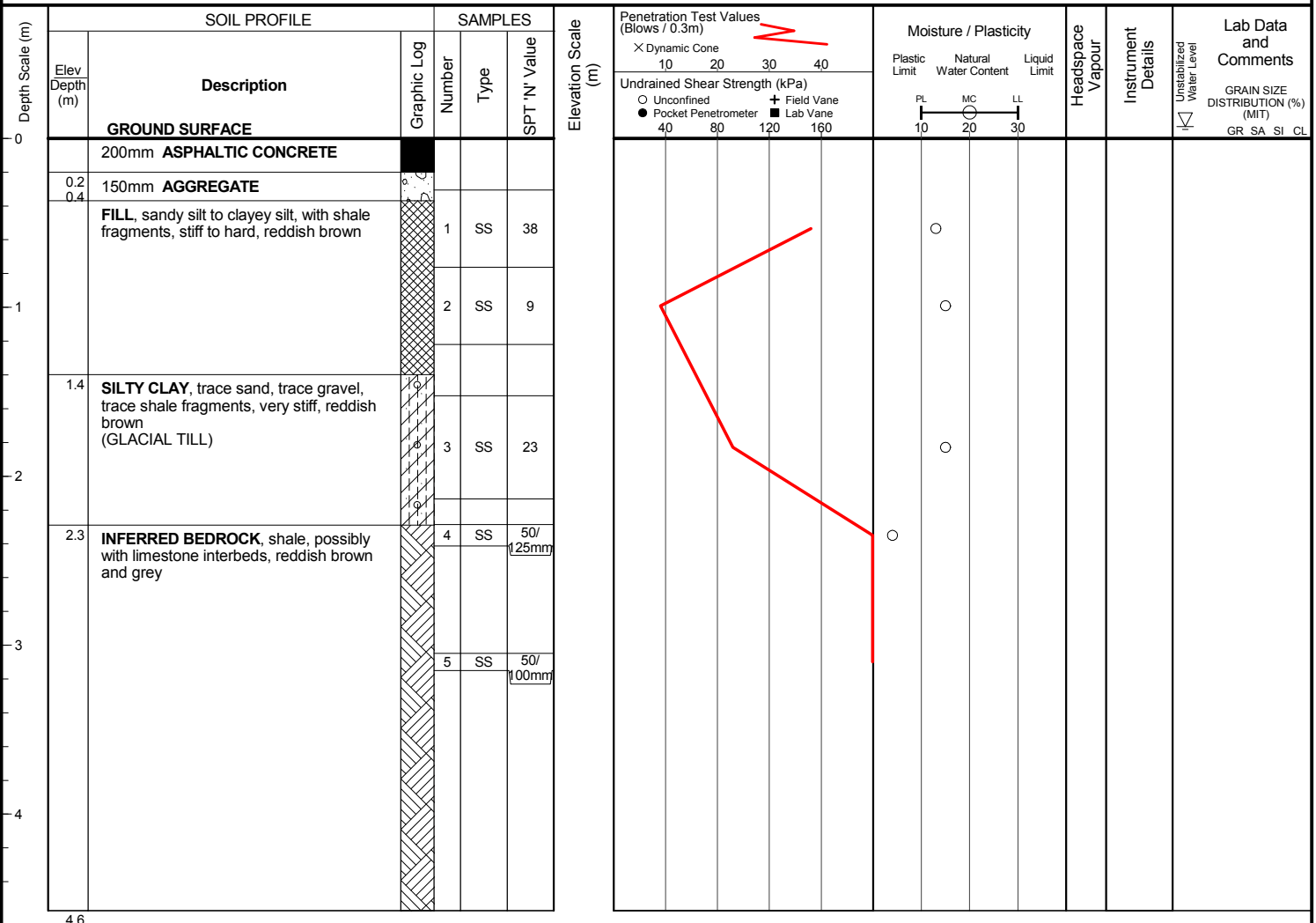
Date started : February 4, 2003

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, truck-mounted



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : February 4, 2003

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, truck-mounted

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Undrained Shear Strength (kPa)		Plastic Limit	Natural Water Content	Liquid Limit			
0		GROUND SURFACE						X Dynamic Cone 10 20 30 40		PL MC LL 10 20 30					GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
0.2	0.2	175mm ASPHALTIC CONCRETE						+ Field Vane 40 80 120 160							
0.3	0.3	130mm AGGREGATE													Unconfined O Pocket Penetrometer
0.7	0.7	FILL , clayey silt, some sand, trace topsoil, hard, brown		1	SS	35									
1	1	SILTY CLAY , trace sand, trace gravel, trace shale fragments, very stiff to hard, reddish brown (GLACIAL TILL)		2	SS	17									Lab Vane + Field Vane
2	2			3	SS	37									
2.2	2.2	INFERRED BEDROCK , shale, possibly with limestone interbeds, reddish brown and grey		4	SS	50/ 100mm									Unstabilized Water Level
3	3			5	SS	50/ 175mm									
4.6	4.6	END OF BOREHOLE													

END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

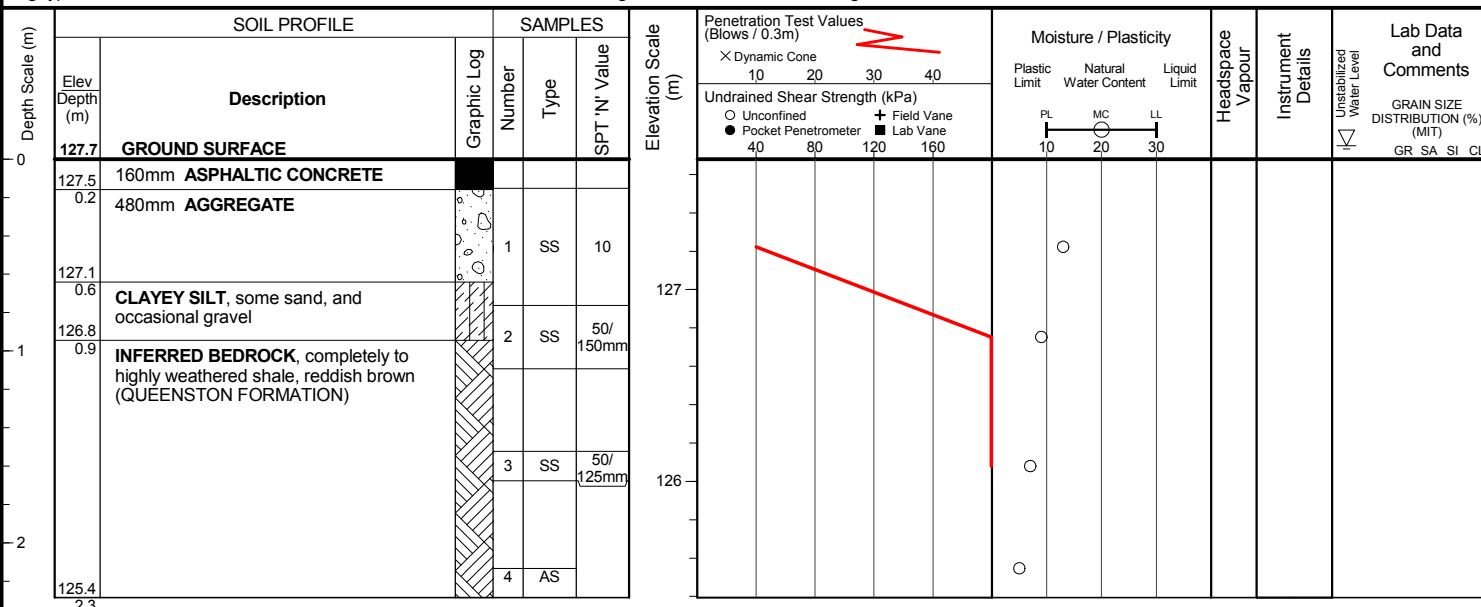
Sheet No. : 1 of 1

Position : E: 600319, N: 4805823 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

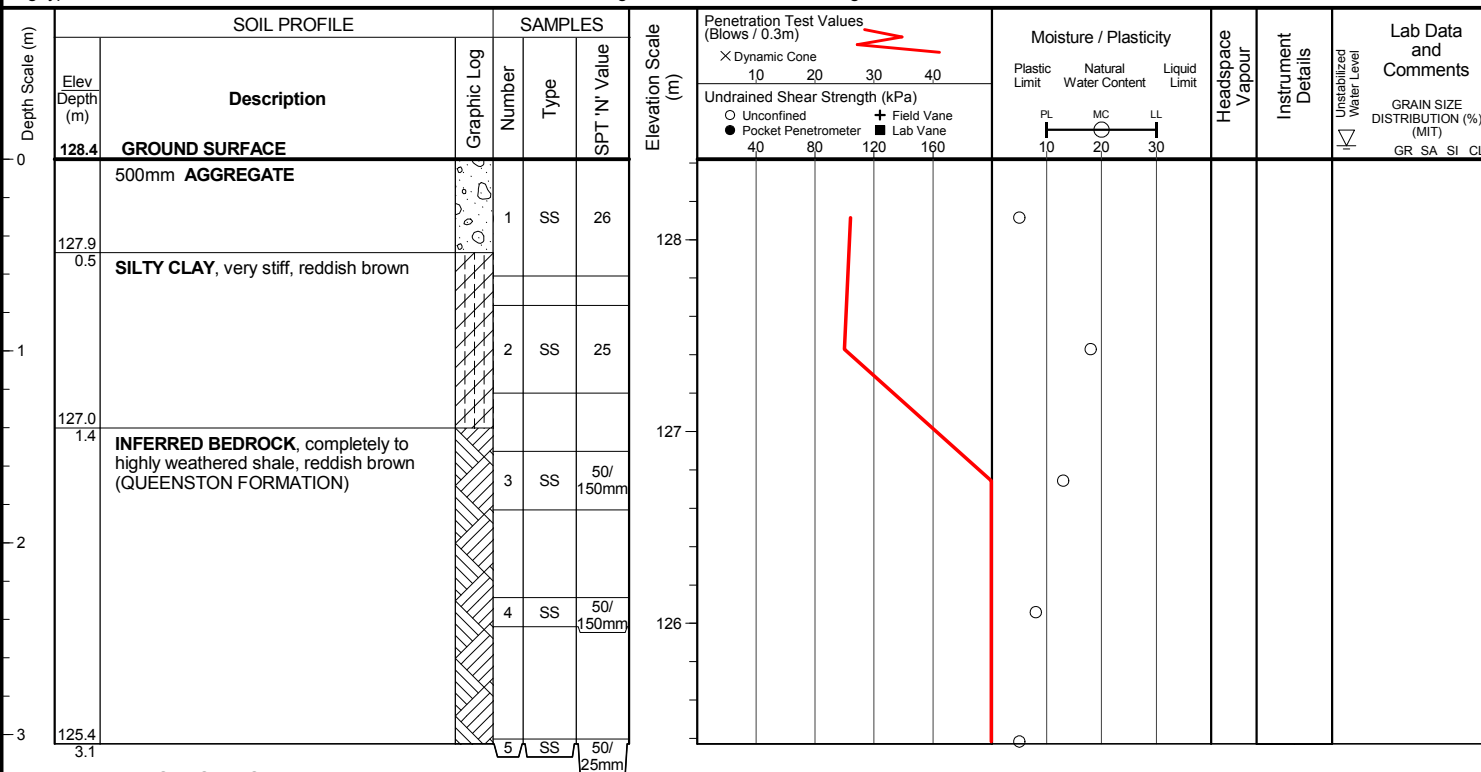
Sheet No. : 1 of 1

Position : E: 600205, N: 4805948 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

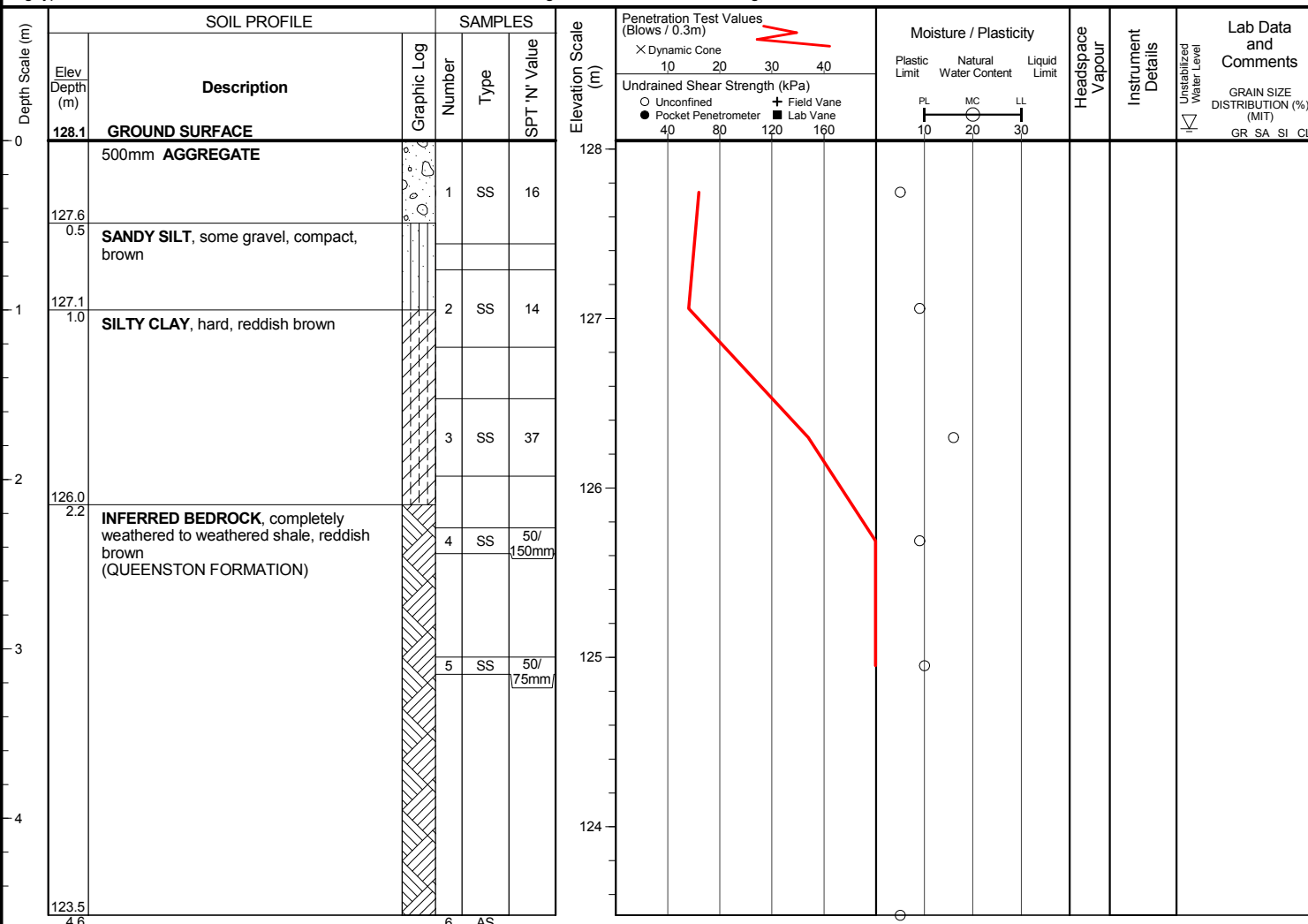
Sheet No. : 1 of 1

Position : E: 600189, N: 4805992 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

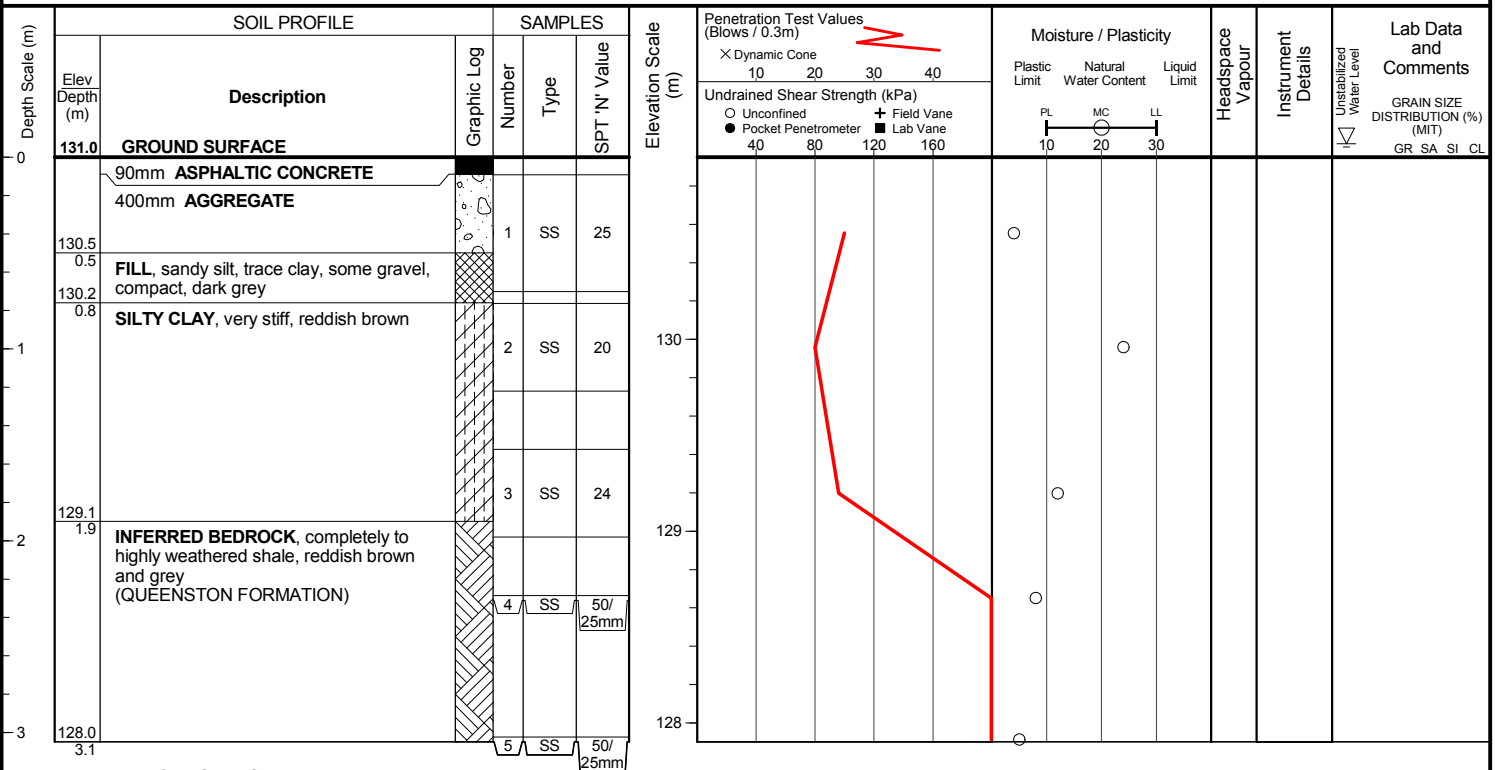
Sheet No. : 1 of 1

Position : E: 599990, N: 4806154 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



Borehole was dry and open upon completion of drilling.



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

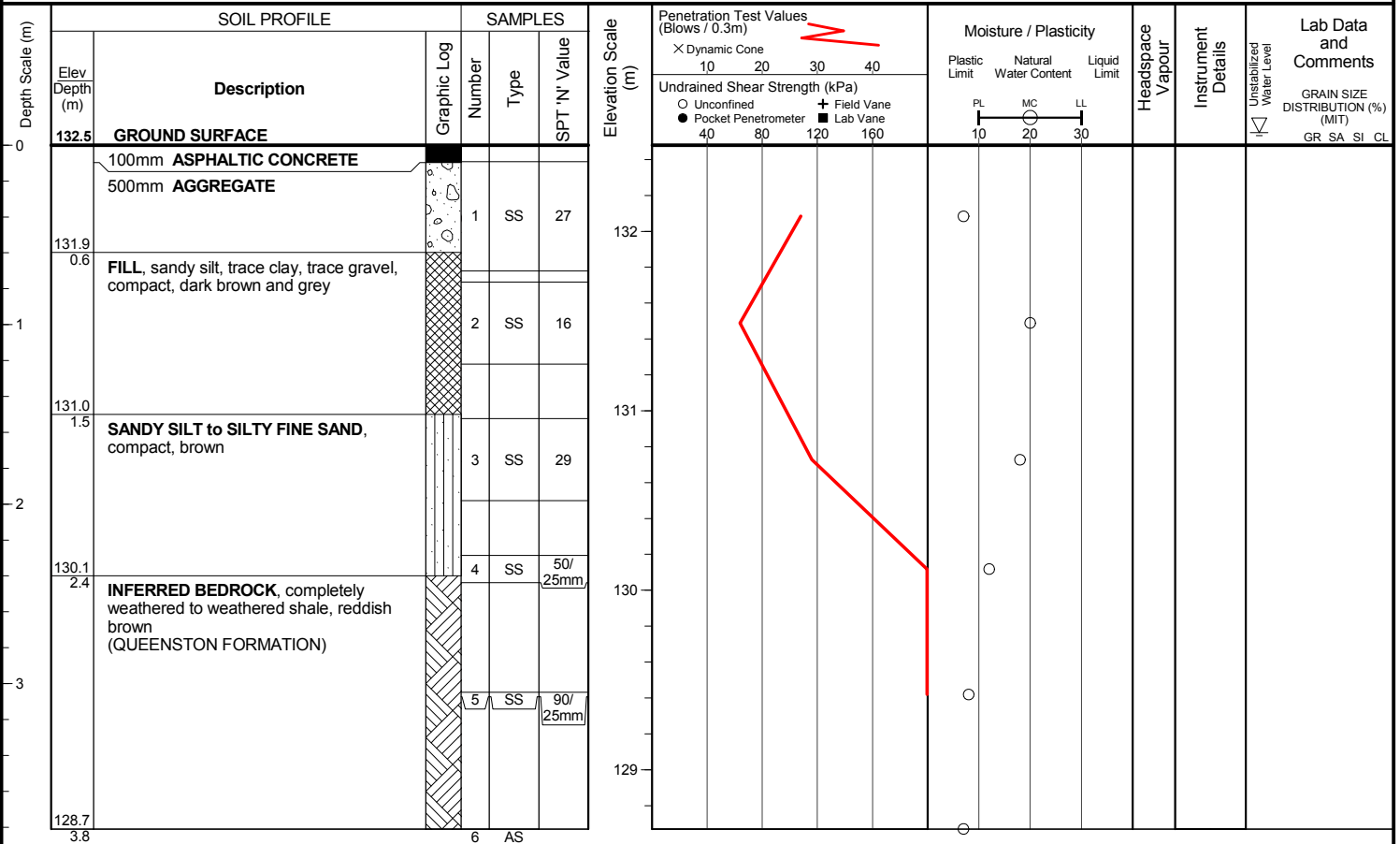
Sheet No. : 1 of 1

Position : E: 599878, N: 4806262 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

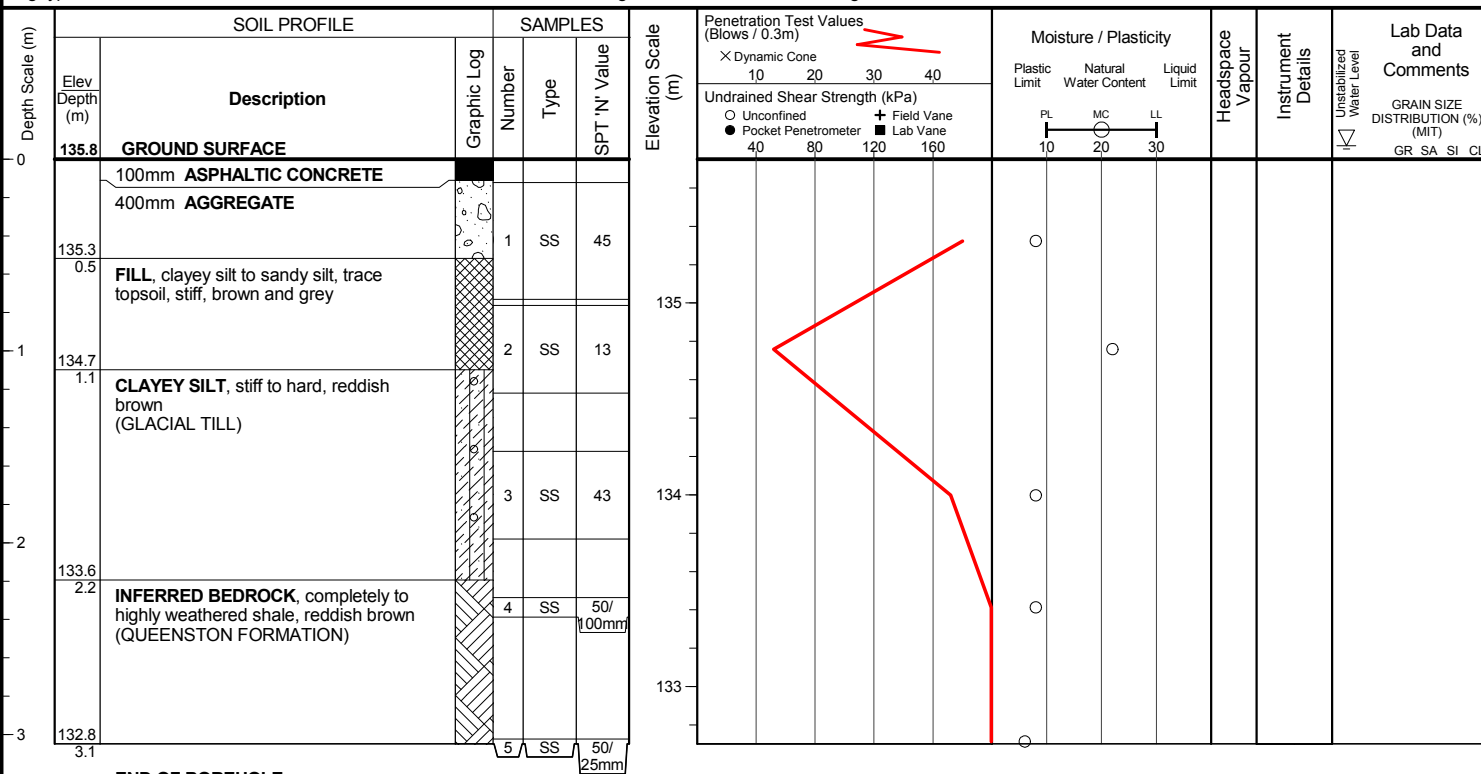
Sheet No. : 1 of 1

Position : E: 599676, N: 4806455 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

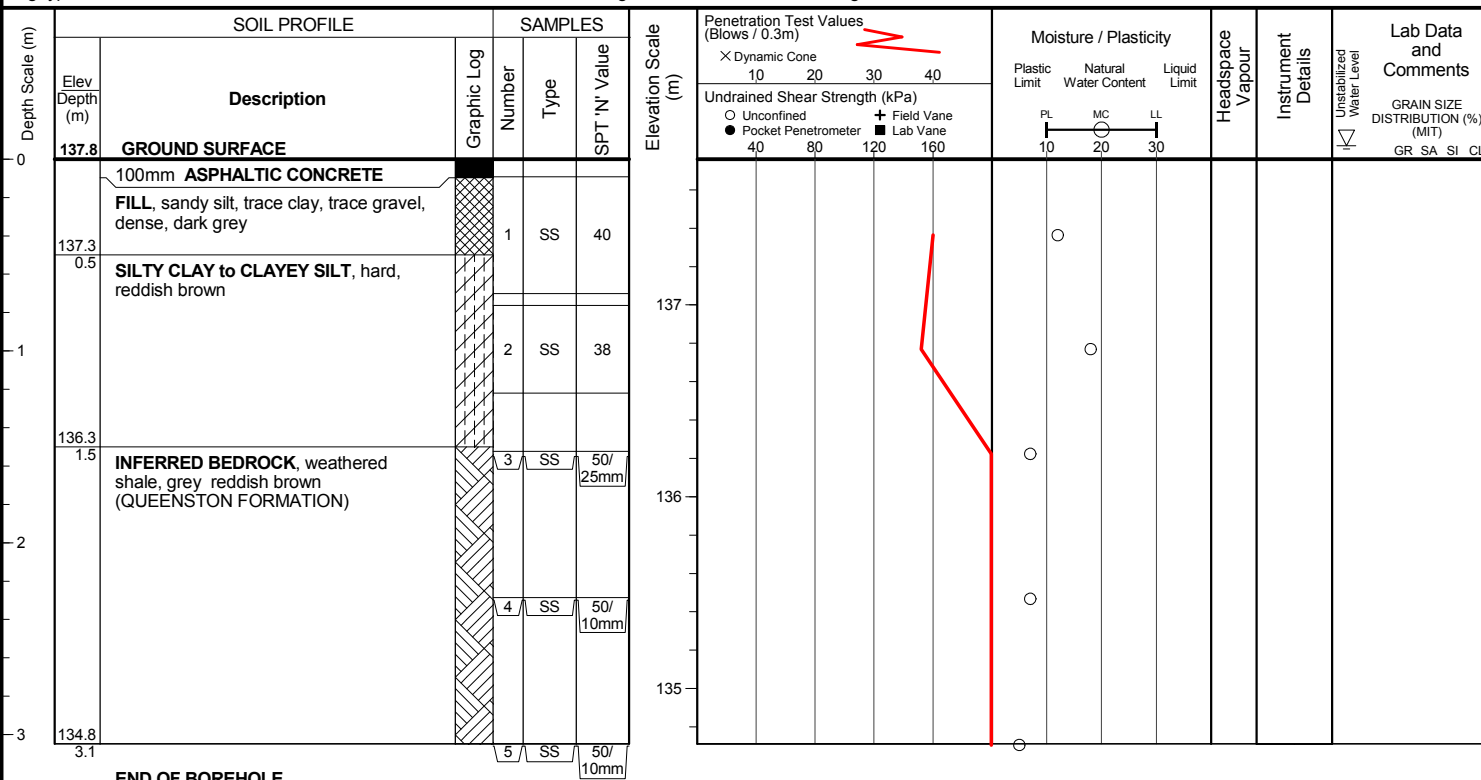
Sheet No. : 1 of 1

Position : E: 599555, N: 4806576 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

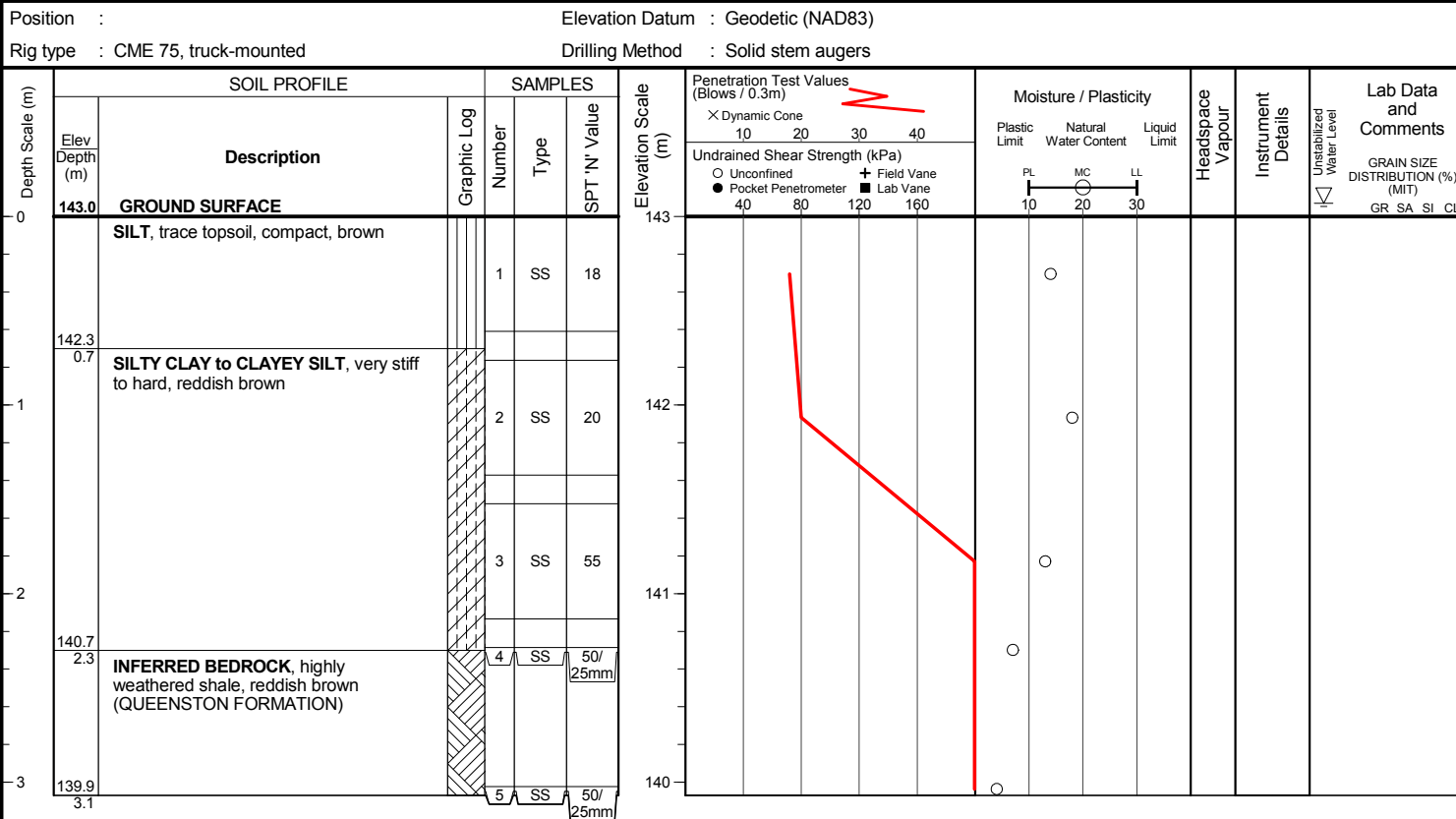
Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

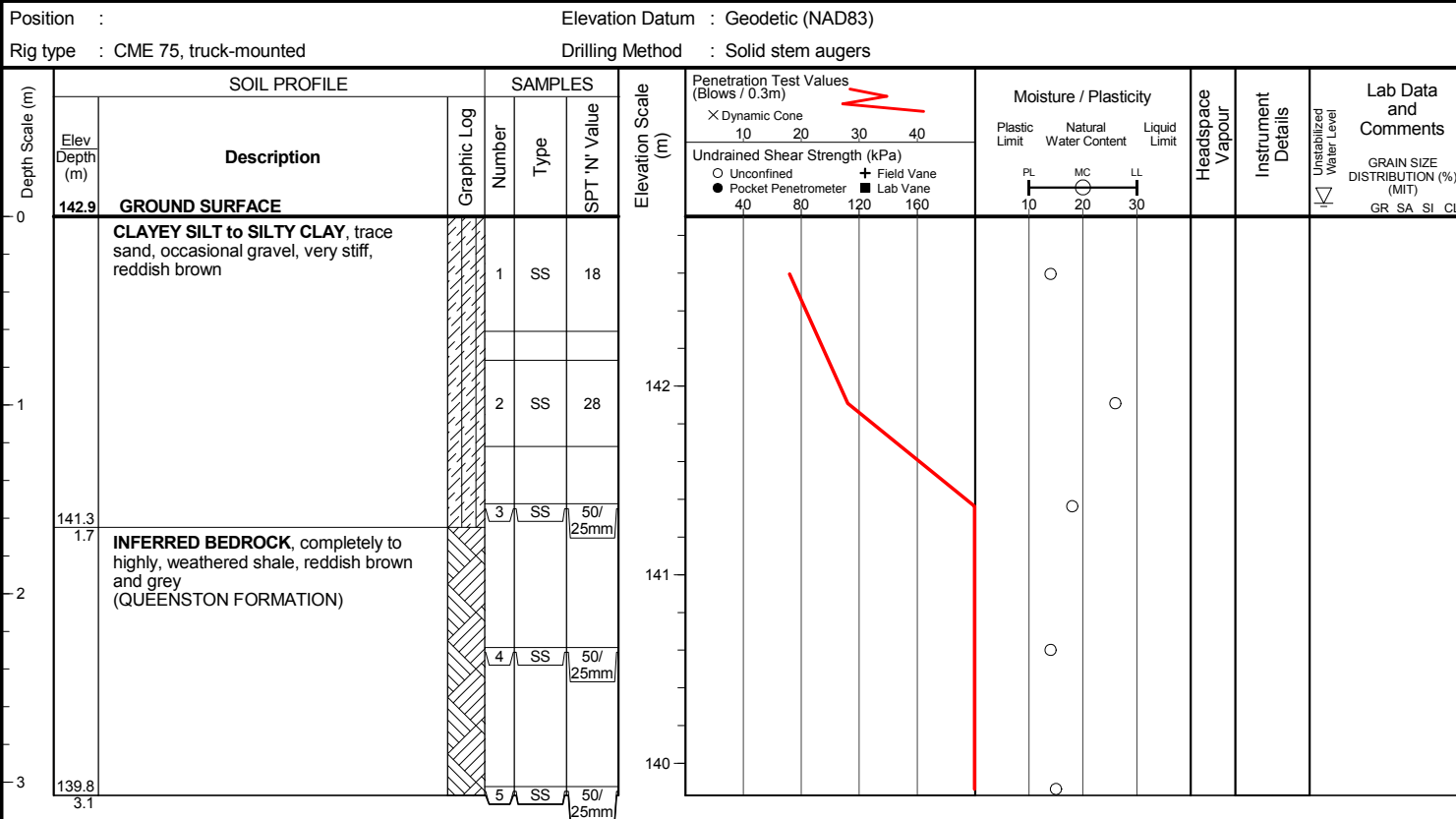
Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : June 12, 2008

Location : Burlington / Oakville, Ontario

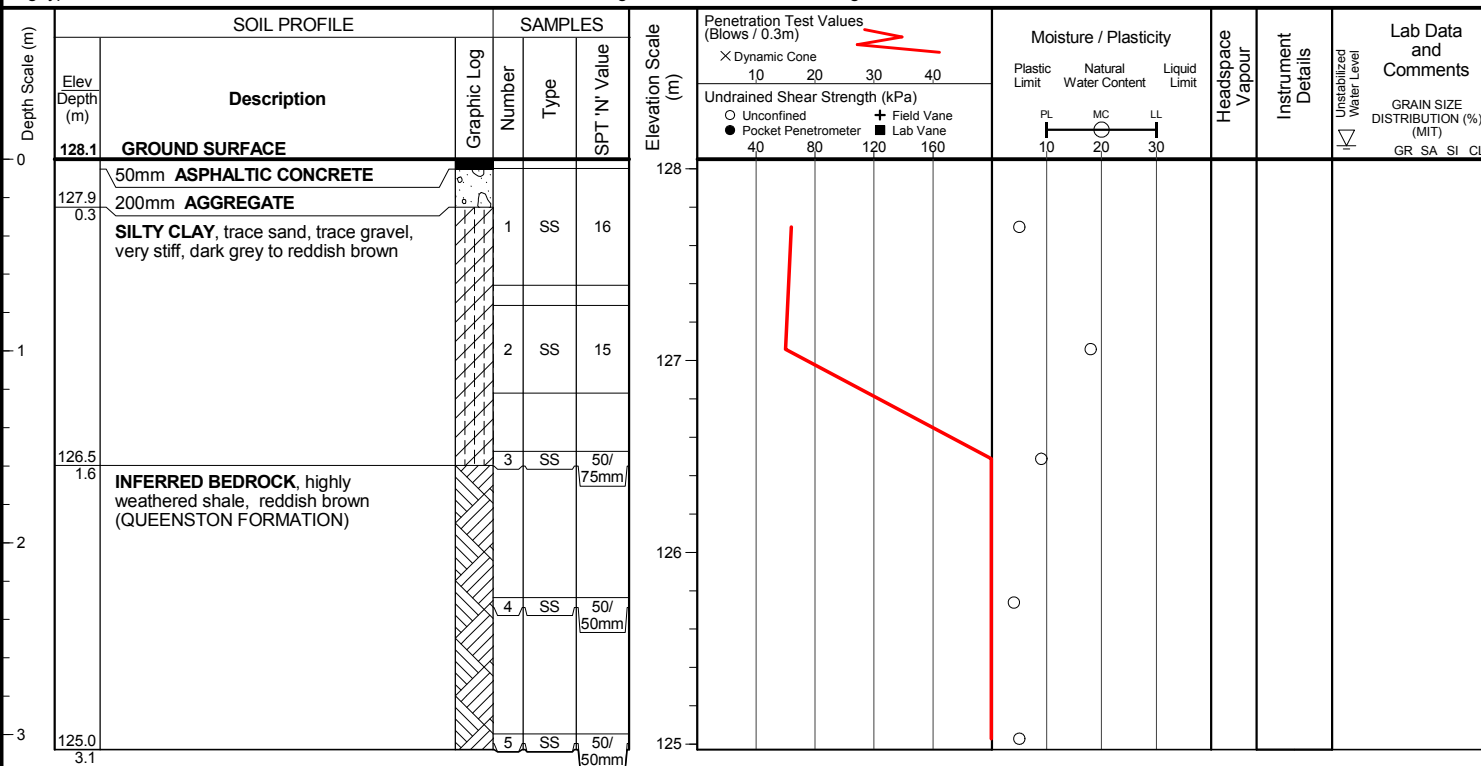
Sheet No. : 1 of 1

Position : E: 600206, N: 4805993 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : April 3, 2009

Location : Burlington / Oakville, Ontario

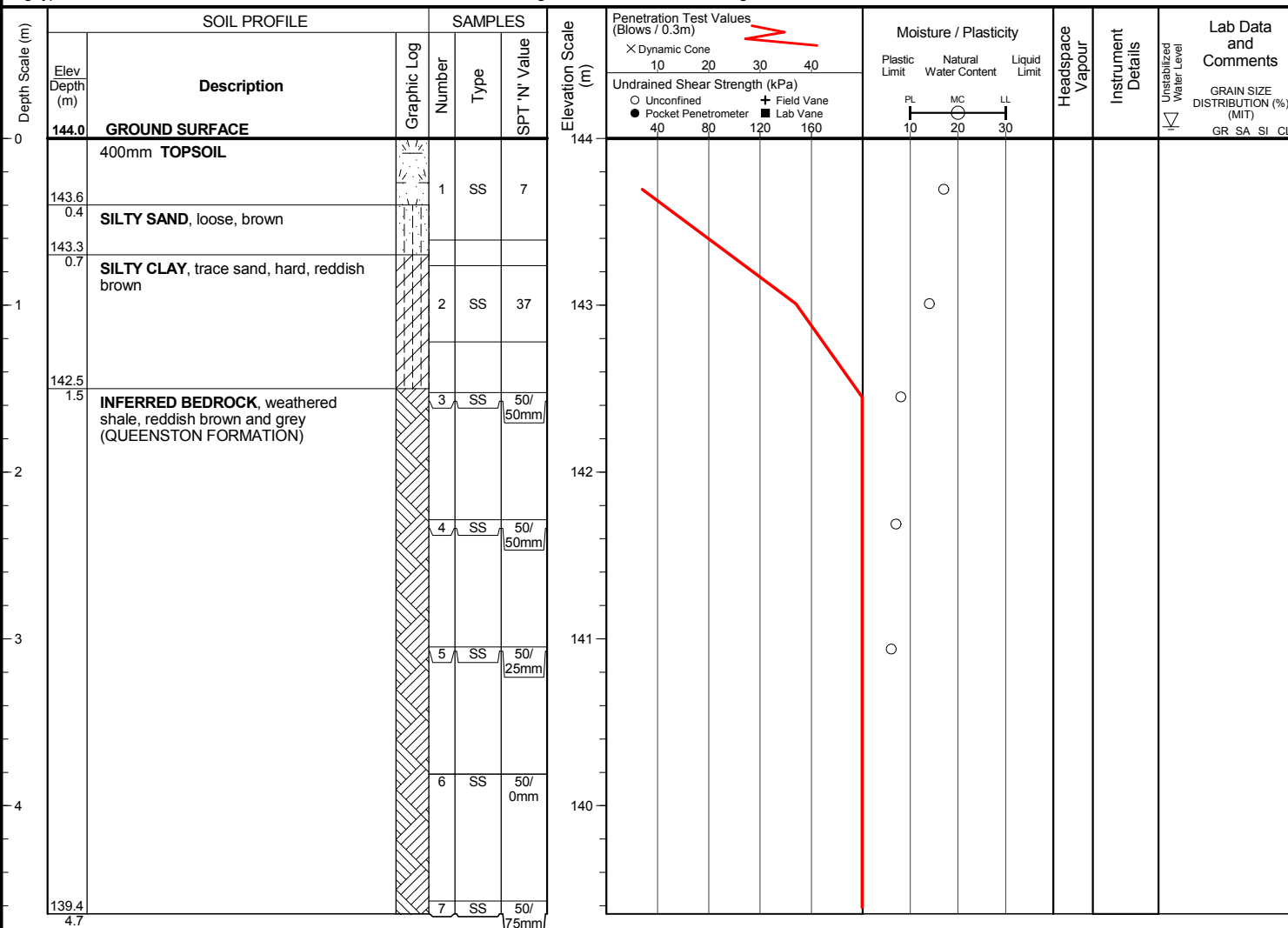
Sheet No. : 1 of 1

Position : E: 599218, N: 4806783 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers

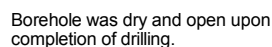


END OF BOREHOLE

Borehole was dry and open upon completion of drilling.



Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : April 3, 2009

Location : Burlington / Oakville, Ontario

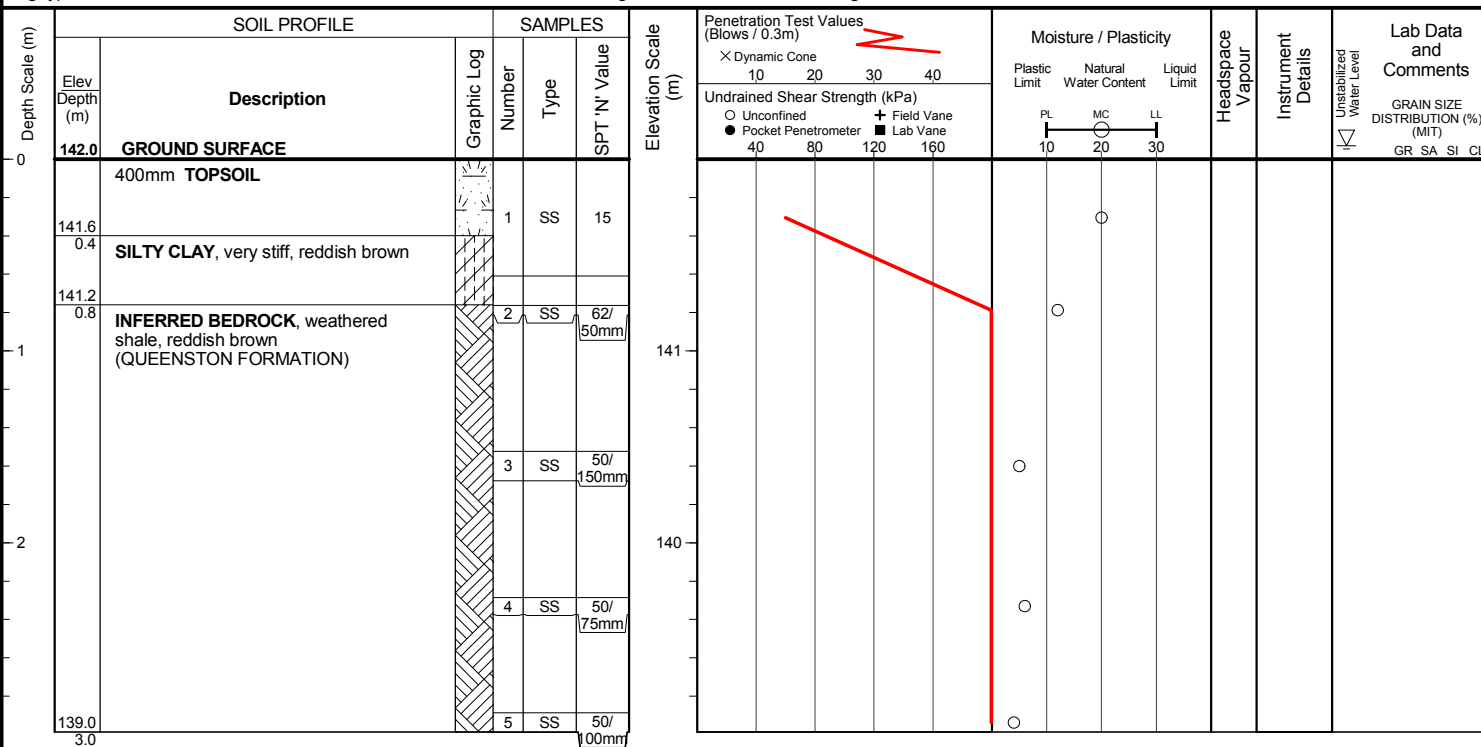
Sheet No. : 1 of 1

Position : E: 599353, N: 4806741 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, truck-mounted

Drilling Method : Solid stem augers



END OF BOREHOLE

Borehole was dry and open upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 29, 2006

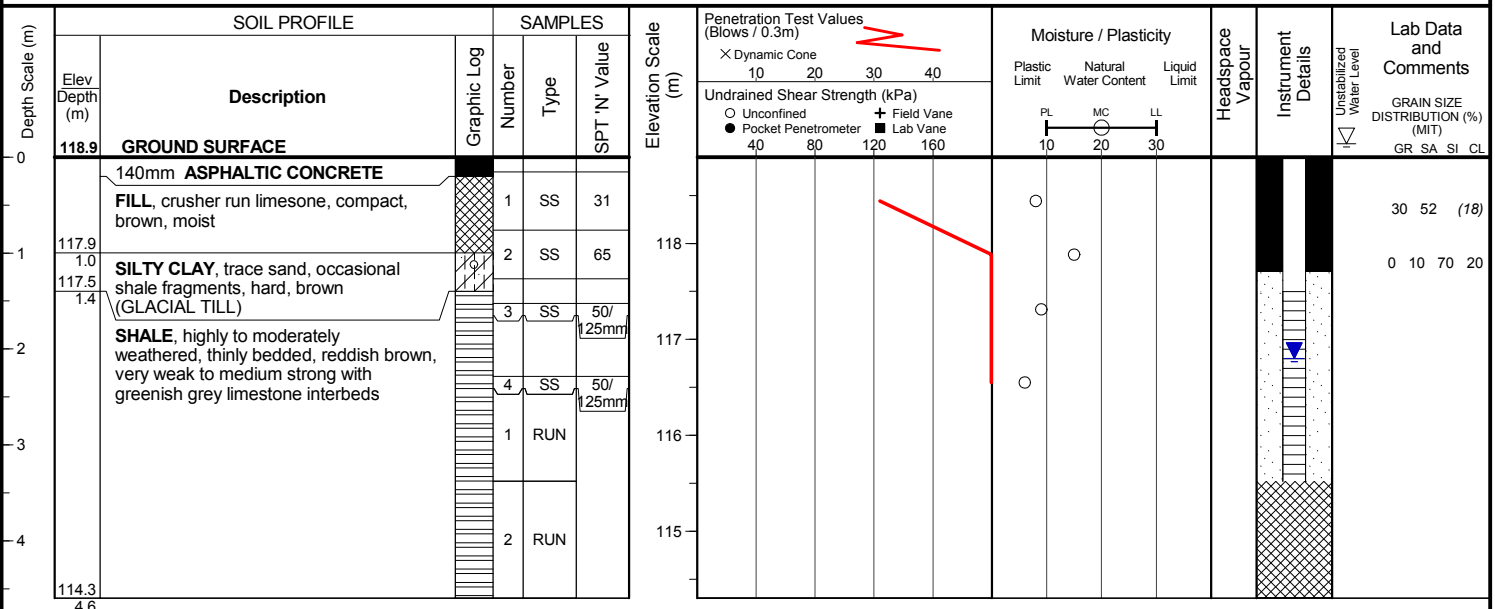
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600664, N: 4805456 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

**END OF BOREHOLE**

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 1.52m slotted screen screen installed.

WATER LEVEL READINGS
Date **Water Depth (m)** **Elevation (m)**
Dec 14, 2006 2.1 116.8

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 29, 2006

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 600664, N: 4805456 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6	Frequency	Spacing	
		Rock coring started at 2.4m below grade	116.5															
3		SHALE, highly to moderately weathered, thinly bedded, reddish brown, very weak to medium strong with greenish grey limestone interbeds (continued)	2.4	TCR = 100% SCR = 69% RQD = 22%	116											7		3.4m : UCS = 30 MPa
			R1													4		
			115.5													4		
4			3.4	TCR = 100% SCR = 82% RQD = 12%	115											>10		
																6		
																8		
			114.3													>10		115

END OF BOREHOLE

4.6m

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 1.52m slotted screen screen installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 18, 2005

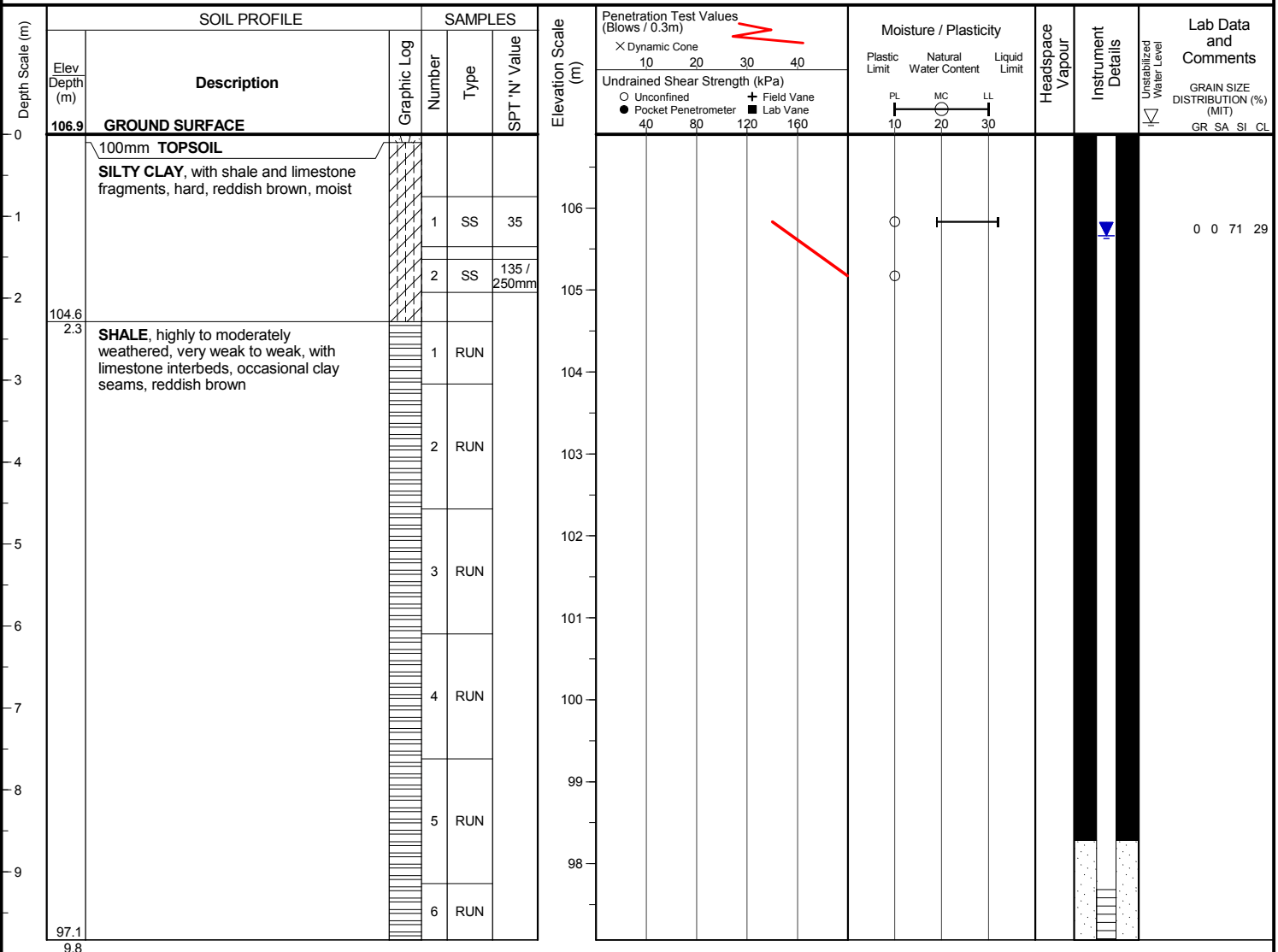
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 601138, N: 4805076 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

**END OF BOREHOLE**

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 0.91m slotted screen installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Dec 6, 2005	1.2	105.7

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 18, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 601138, N: 4805076 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa) ● 5 25 50 100 250 Estimated Strength	Natural Fractures		Laboratory Testing	Comments	Elevation (m)
								Frequency	Spacing			
		Rock coring started at 2.3m below grade	104.6									
3		SHALE, highly to moderately weathered, very weak to weak, with limestone interbeds, occasional clay seams, reddish brown	2.3	TCR = 100% SCR = 100% RQD = 60%	104					2.3m : UCS = 1 MPa	— 2.3-2.4m: limestone interbed	104
			R1									
			103.9							3.0m : UCS = 3.3 MPa		
4			3.0	TCR = 98% SCR = 93% RQD = 79%	103						— 3.6-3.6m: limestone interbed	103
											— 4.2-4.2m: limestone interbed	
											— 4.3-4.5m: limestone interbed	
5			102.3	TCR = 100% SCR = 100% RQD = 92%	102					4.6m : UCS = 2 MPa	— 4.6-4.6m: limestone interbed	102
			4.6									
											— 5.2-5.3m: limestone interbed	
6			100.8	TCR = 95% SCR = 95% RQD = 90%	101					6.1m : UCS = 7.7 MPa		101
			6.1									
											— 7.0-7.1m: limestone interbed	
											— 7.1-7.2m: limestone interbed	
7			99.3	TCR = 100% SCR = 100% RQD = 88%	99					7.6m : UCS = 5.1 MPa		99
			7.6									
											— 8.4-8.4m: limestone interbed	
8			97.8	TCR = 100% SCR = 100% RQD = 75%	98						— 9.0-9.1m: vertical joint	98
			9.1								— 9.4-9.5m: limestone interbed	
			97.1								— 9.6-9.8m: clay seams, 9.75 for 13mm	
9			97.1									

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 0.91m slotted screen screen installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 21, 2005

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 601095, N: 4805115 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Unstabilized Water Level	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone		Plastic Limit	Natural Water Content	Liquid Limit				
								10	20							
	107.7	GROUND SURFACE						Undrained Shear Strength (kPa)								
		100mm TOPSOIL														
		SILTY CLAY, shale fragments, hard, reddish brown, moist		1	SS	50/125mm	107									
106.3	1.4	SHALE, highly to moderately weathered, very weak to weak, reddish brown, with limestone interbeds		2	SS	50/150mm	106									
				3	SS	50/75mm	105									
				1	RUN		104									
				2	RUN		103									
				3	RUN		102									
				4	RUN		101									
				5	RUN		100									
				6	RUN		99									
	97.8						98									

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 21, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 601095, N: 4805115 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa)								Natural Fractures		Laboratory Testing	Comments	Elevation (m)
							Estimated Strength								Frequency	Spacing			
		Rock coring started at 3.0m below grade	104.7																
		SHALE, highly to moderately weathered, very weak to weak, reddish brown, with limestone interbeds (continued)	3.0 R1	TCR = 94% SCR = 94% RQD = 56%	104										4		3.5m : UCS = 6.2 MPa		104
4			3.5												3			— 4.2-4.2m: limestone interbed	
				TCR = 100% SCR = 100% RQD = 95%	103										0				
			R2												1				
5			102.7 5.0												0		6.6m : UCS = 7.8 MPa	— 4.9-5.0m: limestone interbed	103
															1				
				TCR = 98% SCR = 95% RQD = 59%	102										4			— 5.8-5.9m: limestone interbed — 5.9-5.9m: vertical joint	102
6															1				
			101.1 6.6												2			— 6.4-6.5m: limestone interbed	101
7															0			— 7.0-7.0m: limestone interbed	100
				TCR = 100% SCR = 100% RQD = 95%	100										2				
			R4												0				
8			99.6 8.1												2		9.6m : UCS = 7.2 MPa	— 7.8-8.0m: limestone interbed	100
															5			— 8.3-8.3m: limestone interbed	
				TCR = 98% SCR = 93% RQD = 77%	99										2				99
9															1			— 9.0-9.1m: limestone interbed	
			98.1 9.6 R6												1				98
				TCR = 100% SCR = 96% RQD = 71%	98										2			— 9.6-9.7m: limestone interbed	
			9.9m												1				

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 18, 2005

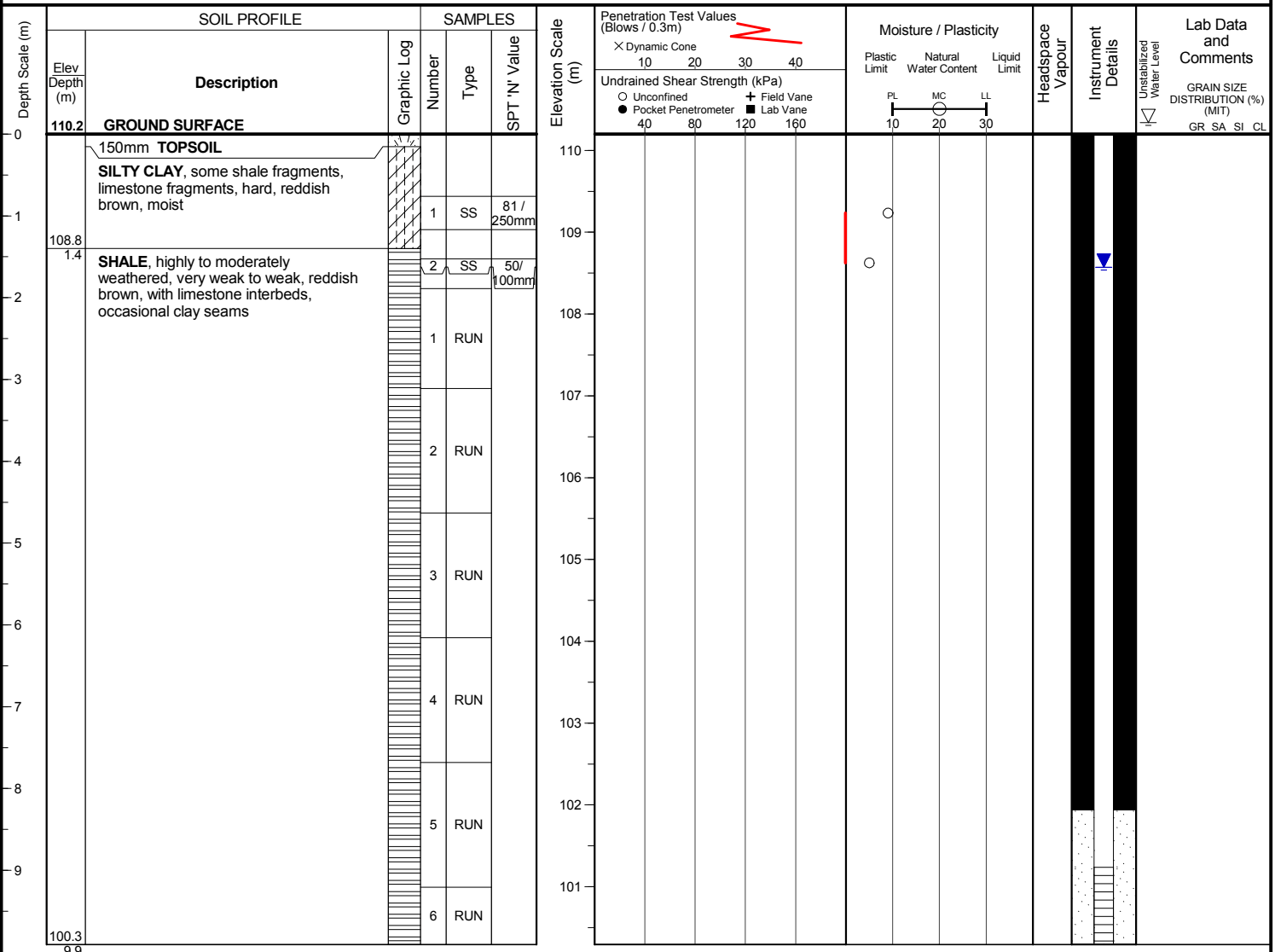
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 601019, N: 4805195 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Hollow stem augers, NQ rock coring

**END OF BOREHOLE**

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 0.91m slotted screen installed.

WATER LEVEL READINGS
Date Dec 6, 2005 **Water Depth (m)** 1.6 **Elevation (m)** 108.6

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 18, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 601019, N: 4805195 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Hollow stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	5	25	50	100	250	Estimated Strength			
															Frequency	Spacing		
		Rock coring started at 1.9m below grade	108.3															
2		SHALE, highly to moderately weathered, very weak to weak, reddish brown, with limestone interbeds, occasional clay seams (<i>continued</i>)	1.9		108										7		3.1m : UCS = 5.8 MPa	108
			R1	TCR = 93% SCR = 87% RQD = 48%											4			
															2			
3			107.1		107										1			107
			3.1												3			
			R2	TCR = 100% SCR = 100% RQD = 73%											2			
															1			
4			105.6		106										2			106
			4.6												4			
5					105										2			
			R3	TCR = 100% SCR = 100% RQD = 92%											2			
															1			
6			104.0		104										0		4.6m : UCS = 4.6 MPa	105
			6.2												0			
7					103										0		6.2m : UCS = 29.1 MPa	104
			R4	TCR = 100% SCR = 100% RQD = 100%											2			
															0		7.7m : UCS = 29.1 MPa	103
			102.5		102										1			
8			7.7												0		9.2m : UCS = 69.8 MPa	102
			R5	TCR = 100% SCR = 100% RQD = 93%											0			
															1			101
9			101.0		101										3			
			9.2												4			
			R6	TCR = 92% SCR = 92% RQD = 83%											2			
			100.3		101										0			
			9.9m															

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 0.91m slotted screen screen installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 17, 2005

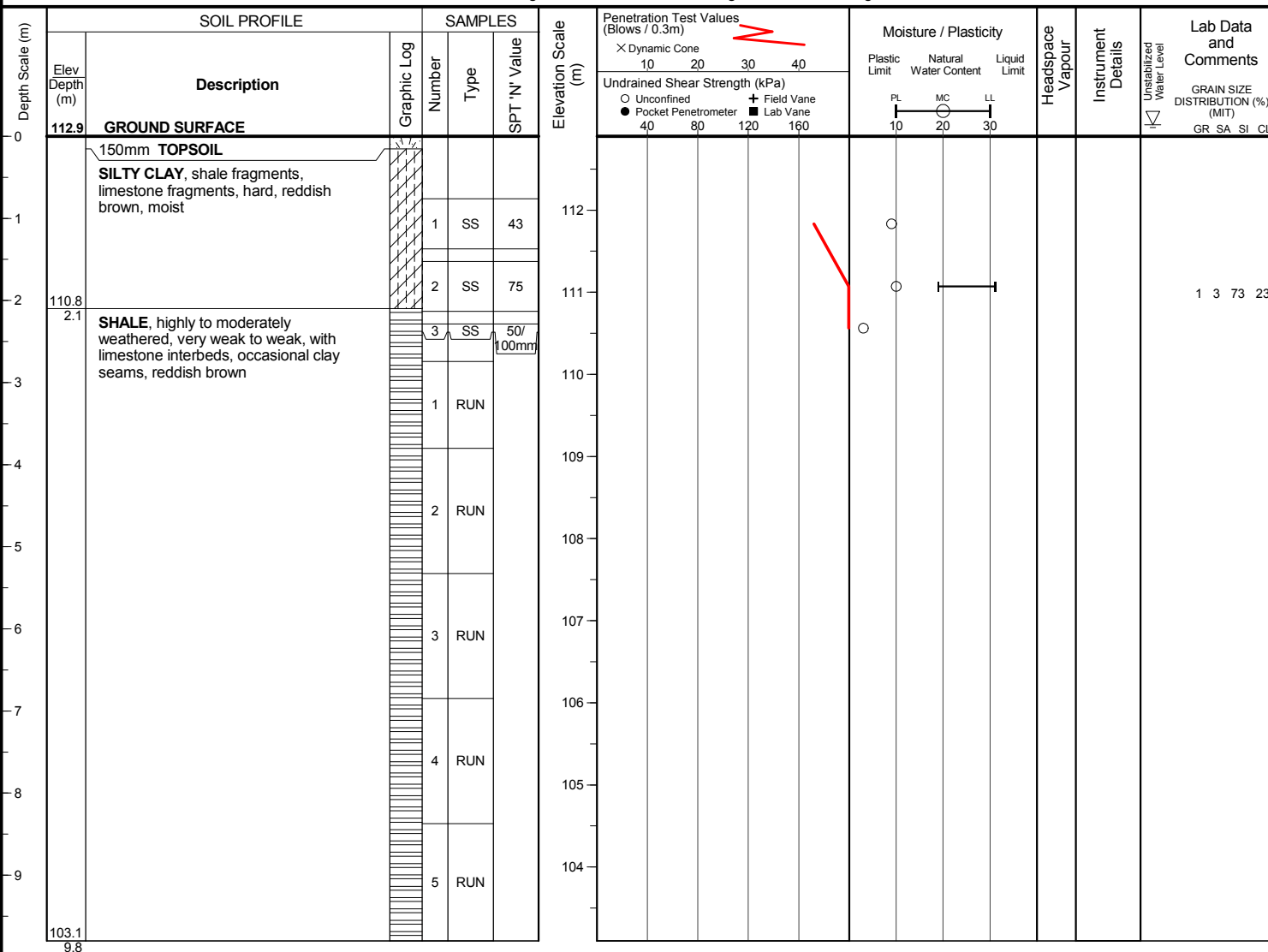
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 599845, N: 4806265 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

**END OF BOREHOLE**

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 17, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 599845, N: 4806265 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones Z1 Z2 Z3 Z4	UCS (MPa)								Natural Fractures		Laboratory Testing	Comments	Elevation (m)
							Estimated Strength								Frequency	Spacing			
		Rock coring started at 2.7m below grade	110.2																
3		SHALE, highly to moderately weathered, very weak to weak, with limestone interbeds, occasional clay seams, reddish brown (continued)	2.7	TCR = 100% SCR = 85% RQD = 31%	110										10		2.7m : UCS = 101.5 MPa	2.9m: clay seams 2.9-3.0m: limestone interbed	110
			R1												7			3.1-3.1m: clay seams	
															6			3.4-3.4m: limestone interbed	
			109.1												3			3.6m: clay seams	
4			3.8	TCR = 100% SCR = 100% RQD = 59%	109										4		4.0m : UCS = 35.1 MPa	3.8-3.8m: limestone interbed	109
															4			3.9-4.0m: limestone interbed	
															1			4.2-4.3m: limestone interbed	
5			107.6		108										2			4.3m: clay seams	108
			5.3												4		5.5m : UCS = 7.9 MPa	4.4m: clay seams	
															2			4.5m: clay seams	
6				TCR = 97% SCR = 95% RQD = 83%	107										3			5.0-5.1m: limestone interbed	107
															4			5.1m: clay seams	
															1			5.2m: clay seams	
															4			5.4-5.5m: vertical joint	
7			106.1		106										3		7.0m : UCS = 43.1 MPa	6.0-6.0m: limestone interbed	106
			6.8	TCR = 97% SCR = 95% RQD = 74%											7			6.0-6.0m: clay seams	
															3			6.8m: clay seams	
															7			7.3-7.3m: clay seams	
8					105										3			7.3-7.4m: limestone interbed	105
															3			7.5-7.6m: limestone interbed	
															1			7.6-7.7m: limestone interbed	
															1			7.7-7.7m: subvertical joint	
			104.5		104										0		8.5m : UCS = 32.7 MPa	8.0-8.1m: limestone interbed	
			8.4												1			8.7-8.7m: limestone interbed	104
9				TCR = 88% SCR = 88% RQD = 79%											0				
															4			9.4-9.4m: limestone interbed	
			103.1												1			9.4-9.7m: subvertical to vertical joint	

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 22, 2005

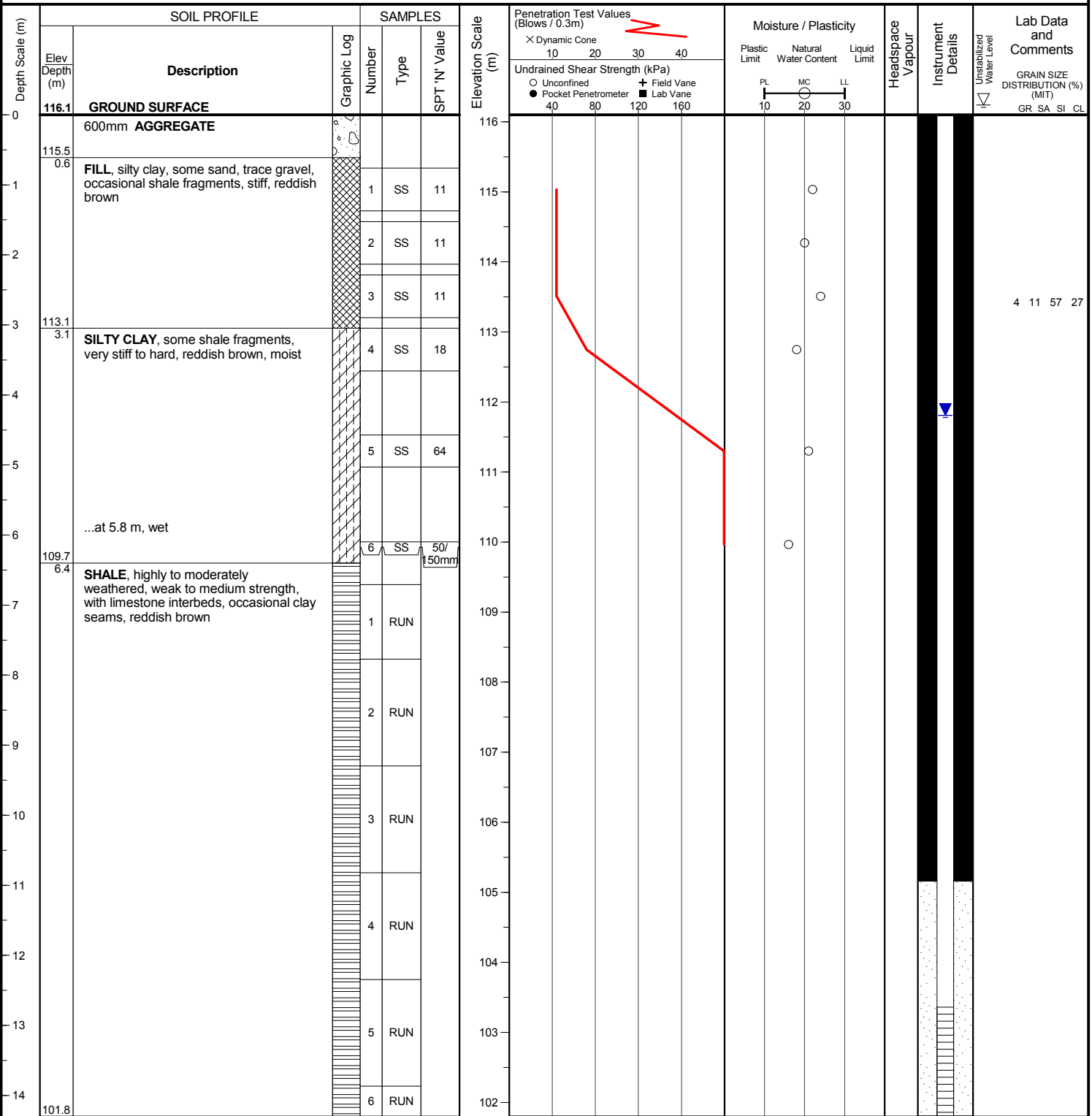
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600906, N: 4805373 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring



END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.

40 PVC pipe with a 1.52m slotted screen installed.

WATER LEVEL READINGS
 Date Water Depth (m) Elevation (m)
 Dec 6, 2005 4.3 111.8

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 22, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 600906, N: 4805373 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
						Z1	Z2	Z3	Z4	R1	R2				R3	R4	R5	R6	Frequency	Spacing																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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		Rock coring started at 6.7m below grade	109.4																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
7		SHALE, highly to moderately weathered, weak to medium strength, with limestone interbeds, occasional clay seams, reddish brown (continued)	6.7	R1	109																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 1.52m slotted screen screen installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 14, 2005

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 2

Position : E: 600826, N: 4805472 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Unstabilized Water Level	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone		Plastic Limit	Natural Water Content	Liquid Limit				
								10	20							
								Undrained Shear Strength (kPa)								
									○ Unconfined ● Pocket Penetrometer							
										+	MC	LL				

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 14, 2005

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 2

Position : E: 600826, N: 4805472 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
16		(continued)						10 20 30 40	40 80 120 160	PL MC LL	10 20 30				
17		SHALE, highly weathered, very weak to medium strength, reddish brown, with limestone interbeds, occasional clay seams (continued)		10	RUN		102								
18	100.2 18.2			11	RUN		101								

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 14, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 600826, N: 4805472 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	5	25	50	100	250	Estimated Strength	Frequency	Spacing	
		Rock coring started at 5.5m below grade	112.9															
6		SHALE, highly weathered, very weak to medium strength, reddish brown, with limestone interbeds, occasional clay seams (<i>continued</i>)	5.5															
			R1	TCR = 43% SCR = 18% RQD = 0%	112											10		
7																12		
			111.4													9		
			7.0													4		
			R2	TCR = 67% SCR = 56% RQD = 18%	111											>10		7.3-7.3m: limestone layer
8			110.5													>10		
			7.9															7.9m : UCS = 51.9 MPa
			R3	TCR = 71% SCR = 23% RQD = 0%	110													7.9-8.2m: clay seams
9			8.5													10		
			R4	TCR = 87% SCR = 72% RQD = 39%	109											1		8.9-8.9m: limestone layer
			108.6													2		9.2-9.6m: limestone layer
			9.8													3		9.7-9.7m: limestone layer
10			R5	TCR = 100% SCR = 89% RQD = 75%	108											8		10.0-10.0m: clay seams 10.0-10.1m: vertical joint
			107.4													1		
11			11.0													2		10.7m : UCS = 20.2 MPa
			R6	TCR = 100% SCR = 100% RQD = 50%	107											3		11.0m : UCS = 1.5 MPa
			11.2													1		10.9-11.0m: limestone layer
12			R7	TCR = 100% SCR = 100% RQD = 77%	106											1		11.1-11.2m: limestone layer
			105.7													1		11.3-11.4m: limestone layer
			12.7													1		11.5-11.6m: limestone layer
13			R8	TCR = 100% SCR = 100% RQD = 87%	105											1		11.7-11.7m: limestone layer
			104.1													1		11.9-11.9m: limestone layer
			14.3													0		12.5m : UCS = 46.9 MPa
14			R9	TCR = 100% SCR = 98% RQD = 80%	104											4		12.9-12.9m: limestone layer
			102.6													0		13.5-13.5m: limestone layer
			15.8													2		13.7-13.8m: limestone layer
15			R10	TCR = 100% SCR = 100% RQD = 100%	103											2		14.0-14.0m: limestone layer
			101.1													3		14.3-14.3m: clay seams
			17.3													3		14.6-14.8m: limestone layer
16			R11	TCR = 100% SCR = 100% RQD = 100%	101											4		15.2m: slightly weathered, strong
			100.2													1		15.5m : UCS = 16.6 MPa
			18.2m													0		15.7-15.8m: limestone layer
																0		16.2-16.3m: limestone layer
																0		16.6-16.8m: limestone layer
																1		17.0m : UCS = 36.5 MPa
																1		17.9-17.9m: limestone layer
																0		

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 28, 2005

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 2

Position : E: 600781, N: 4805497 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160				Plastic Limit	Natural Water Content	Liquid Limit			
0	118.3	GROUND SURFACE					118										
		100mm TOPSOIL															
	117.6	SILTY CLAY, some shale fragments, limestone fragments, brown, moist															
1	0.7	SHALE, highly to moderately weathered, very weak to weak, reddish brown, with limestone interbeds, occasional clay seams		1	SS	50/ 150mm	117										
2				2	SS	81/ 150mm	116										
3				1	RUN		115										
4				2	RUN		114										
5				3	RUN		113										
6				4	RUN		112										
7				5	RUN		111										
8				6	RUN		110										
9				7	RUN		109										
10				8	RUN		108										
11				9	RUN		107										
12							106										
13							105										
14							104										
15							103										

(continued next page)

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 28, 2005

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 2

Position : E: 600781, N: 4805497 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m) X Dynamic Cone 10 20 30 40 Undrained Shear Strength (kPa) ○ Unconfined + Field Vane ● Pocket Penetrometer ■ Lab Vane 40 80 120 160	Moisture / Plasticity Plastic Limit Natural Water Content Liquid Limit PL MC LL 10 20 30	Headspace Vapour	Instrument Details	Lab Data and Comments GRAIN SIZE DISTRIBUTION (%) (MIT) GR SA SI CL
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value						
16		(continued)		9	RUN		102					
17		SHALE, highly to moderately weathered, very weak to weak, reddish brown, with limestone interbeds, occasional clay seams (continued)		10	RUN		101					
100.5 17.8												

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 0.91m slotted screen installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Dec 6, 2005	1.6	116.7

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started November 28, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 600781, N: 4805497 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones				UCS (MPa)				Natural Fractures		Laboratory Testing	Comments	Elevation (m)
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6			
		Rock coring started at 2.7m below grade	115.6															
3		SHALE, highly to moderately weathered, very weak to weak, reddish brown, with limestone interbeds, occasional clay seams (<i>continued</i>)	2.3	R1 TCR = 100% SCR = 90% RQD = 24%	115										7		— 2.7-2.8m: clay seams — 3.0-3.0m: limestone interbed — 3.0-3.3m: limestone interbed	115
4			114.2		114										4		— 3.8-3.9m: vertical joints — 4.1-4.2m: limestone interbed — 4.3-4.4m: limestone interbed — 4.4-4.4m: sub-vertical joint — 4.6-4.7m: clay seams	114
5			4.1	R2 TCR = 100% SCR = 100% RQD = 66%	113										4			
6			112.7		112										1		— 5.1-5.1m: limestone interbed — 5.5-5.5m: limestone interbed — 5.6-5.6m: limestone interbed — 5.7-5.7m: limestone interbed — 5.8-5.8m: limestone interbed — 6.1-6.3m: limestone interbed	113
7			5.6	R3 TCR = 100% SCR = 95% RQD = 64%	112										3			
8			111.1		111										2		— 6.5-6.6m: limestone interbed — 6.6-6.7m: limestone interbed	112
9			7.2	R4 TCR = 100% SCR = 100% RQD = 87%	110										4		— 7.2-7.3m: limestone interbed — 7.3m: slightly weathered weak to medium strength — 7.9-8.0m: limestone interbed — 8.1-8.1m: limestone interbed — 8.2-8.3m: limestone interbed	111
10			109.6		109										8			
11			8.7	R5 TCR = 98% SCR = 98% RQD = 95%	108										3		— 9.1-9.3m: limestone interbed — 9.7-9.8m: limestone interbed — 9.8-9.9m: limestone interbed — 10.0-10.0m: limestone interbed	110
12			108.1		107										2			
13			10.2	R6 TCR = 100% SCR = 100% RQD = 82%	106										1		— 10.9-11.0m: limestone interbed — 11.0-11.3m: clay seams — 11.3-11.6m: limestone interbed — 11.4-11.4m: vertical joint	109
14			106.6		105										5		— 11.9-12.1m: limestone interbed	108
15			11.7	R7 TCR = 100% SCR = 100% RQD = 92%	104										2			
16			105.0		103										2		— 13.2-13.2m: limestone interbed — 13.3-13.4m: limestone interbed — 13.5-13.5m: limestone interbed	107
17			13.3	R8 TCR = 98% SCR = 98% RQD = 90%	102										2		— 13.9-13.9m: limestone interbed — 14.1-14.2m: limestone interbed — 14.1-14.1m: vertical joint — 14.4-14.4m: limestone interbed	106
18			103.5		101										1			
19			14.8	R9 TCR = 100% SCR = 100% RQD = 89%	100										3		— 15.1-15.2m: limestone interbed — 15.5-15.5m: limestone interbed	105
20			102.0		99										3		— 16.1-16.2m: limestone interbed	104
21			16.3	R10 TCR = 100% SCR = 98% RQD = 93%	98										1		— 17.0-17.1m: limestone interbed — 17.3-17.4m: limestone interbed — 17.4-17.5m: limestone interbed — 17.6-17.7m: limestone interbed	103
22			100.5		97										2			

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 0.91m slotted screen screen installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : November 30, 2005

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600674, N: 4805555 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		Dynamic Cone X	Undrained Shear Strength (kPa)	Plastic Limit	Natural Water Content	Liquid Limit			
0	121.1	GROUND SURFACE					121								
		200mm TOPSOIL													
		FILL , silty clay, occasional topsoil, staining, very stiff, brown, moist													
1				1	SS	16	120								
	119.6														
	1.5	SILTY CLAY , with shale fragments, limestone fragments, hard, reddish brown, moist		2	SS	34									
2															
	118.9														
	2.2	SHALE , highly to moderately weathered, thinly bedded, very weak to weak, reddish brown, with limestone interbeds, occasional clay seams		3	SS	95 / 275mm									
3															
4				1	RUN										
5															
				2	RUN										
6															
7				3	RUN										
8															
				4	RUN										
9															
10				5	RUN										
11		...at 10.7 m, slightly weathered													
				6	RUN										
12															
13				7	RUN										
14															
				8	RUN										
15															
	105.8						106								
	15.3														

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Sheet No. 1 of 1

Drilling Method : Solid stem augers, NQ rock coring

library: library - terraprobe gint - copy.glb **report:** terraprobe rock core log **file:** 11-12-2073 bh logs (other consultants).gpl

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : December 2, 2005

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 2

Position : E: 600591, N: 4805607 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE			SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)				Moisture / Plasticity			Headspace Vapour	Instrument Details	Unstabilized Water Level	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type	SPT 'N' Value		X Dynamic Cone				Plastic Limit	Natural Water Content	Liquid Limit				
0	121.8	GROUND SURFACE						10	20	30	40	10	20	30				
		150mm TOPSOIL																
1	120.6	SILTY CLAY with SHALE FRAGMENTS, hard, reddish brown, moist		1	SS	57	121											0 2 75 23
2	1.3	SHALE, highly weathered, thinly bedded, very weak, reddish brown, with limestone interbeds		2	SS	50/125mm	120											
3				1	RUN		119											
4				2	RUN		118											
5				3	RUN		117											
6				4	RUN		116											
7				5	RUN		115											
8				6	RUN		114											
9				7	RUN		113											
10				8	RUN		112											
11				9	RUN		111											
12							110											
13							109											
14							108											
15							107											
							106											

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Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : December 2, 2005

Location : Burlington / Oakville, Ontario

Sheet No. : 2 of 2

Position : E: 600591, N: 4805607 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

Depth Scale (m)	SOIL PROFILE		SAMPLES			Elevation Scale (m)	Penetration Test Values (Blows / 0.3m)		Moisture / Plasticity			Headspace Vapour	Instrument Details	Lab Data and Comments
	Elev Depth (m)	Description	Graphic Log	Number	Type		Dynamic Cone 10 20 30 40	Undrained Shear Strength (kPa) 40 80 120 160	Plastic Limit 10 20 30	Natural Water Content MC	Liquid Limit LL			
16		(continued)		9	RUN									
17		SHALE, highly weathered, thinly bedded, very weak, reddish brown, with limestone interbeds (continued)		10	RUN	105								
104.1 17.7														

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 1.52m slotted screen installed.

WATER LEVEL READINGS

Date	Water Depth (m)	Elevation (m)
Dec 6, 2005	4.4	117.4

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started December 2, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 600591, N: 4805607 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)						
								Estimated Strength		Frequency	Spacing									
								5	25						50	100	250			
		Rock coring started at 2.6m below grade	119.2			Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6					
3		SHALE, highly weathered, thinly bedded, very weak, reddish brown, with limestone interbeds (continued)	2.6	R1	TCR = 92% SCR = 83% RQD = 13%	119										9		— 2.7-2.9m: limestone interbed — 2.9m: clay seams — 3.0m: clay seams — 3.1-3.2m: limestone interbed — 3.2m: clay seams	119	
															7					
															5					
															4					
4			117.7	R2	TCR = 100% SCR = 83% RQD = 15%	118										2		— 3.7-3.8m: vertical joint — 3.7-3.8m: limestone interbed — 3.8-3.9m: vertical joint — 3.9-3.9m: limestone interbed — 4.2-4.2m: clay seams — 4.3-4.4m: vertical joint	118	
																6				
5			4.1	R2	TCR = 100% SCR = 83% RQD = 15%	117										10		— 4.8-4.8m: sub-vertical joint — 5.1-5.2m: limestone interbed — 5.2-5.3m: sub-vertical joint	117	
																5				
6			116.2	R3	TCR = 100% SCR = 98% RQD = 48%	116										2		— 6.1-6.3m: limestone interbed — 6.3-6.3m: clay seams — 6.3-6.4m: limestone interbed	116	
																6				
7			5.6	R3	TCR = 100% SCR = 98% RQD = 48%	115										2			115	
																4				
																3				
																3				
8			114.7	R4	TCR = 100% SCR = 98% RQD = 82%	114										4		— 7.2-7.3m: clay seams — 7.4-7.5m: limestone interbed — 7.6-7.6m: limestone interbed — 7.8-7.8m: limestone interbed — 7.8-7.8m: clay seams — 8.2m: moderately to slightly weathered — weak to medium strength — 8.3-8.4m: limestone interbed — 8.5-8.6m: limestone interbed — 8.8-8.8m: limestone interbed	114	
																1				
																3				
																4				
9			113.1	R5	TCR = 98% SCR = 98% RQD = 97%	113										1			113	
																1				
																2				
																1				
10			111.6	R6	TCR = 98% SCR = 98% RQD = 83%	112										0		— 9.7-9.8m: limestone interbed	112	
																1				
11			10.2	R6	TCR = 98% SCR = 98% RQD = 83%	111										3		— 10.1-10.1m: limestone interbed — 10.3-10.5m: limestone interbed — 10.6-10.7m: limestone interbed	111	
																4				
																	0			
																2				
12			110.1	R7	TCR = 98% SCR = 98% RQD = 90%	110										0		— 11.3-11.4m: limestone interbed	110	
																0				
																0				
																3				
13			109	R7	TCR = 98% SCR = 98% RQD = 90%	109										1		— 12.3-12.4m: limestone interbed	109	
																0				
14			108.6	R8	TCR = 100% SCR = 100% RQD = 96%	108										0		— 13.2-13.5m: limestone interbed	108	
																4				
																0				
																0				
15			107.0	R9	TCR = 100% SCR = 100% RQD = 100%	107										2		— 13.7-13.8m: limestone interbed — 13.9-13.9m: limestone interbed — 14.0-14.1m: limestone interbed	107	
																0				
																0				
																0				
16			14.8	R9	TCR = 100% SCR = 100% RQD = 100%	106										0		— 15.0m: strong — 15.1m: limestone interbed	106	
																0				
																0				
																0				
17			105.5	R10	TCR = 100% SCR = 100% RQD = 100%	105										0		— 16.2-16.3m: limestone interbed	105	
																0				
																0				
																0				
			104.1	R10	TCR = 100% SCR = 100% RQD = 100%	105										0		— 16.9m: limestone interbed — 17.1-17.1m: limestone interbed — 17.5-17.5m: limestone interbed — 17.6m: limestone interbed	105	
																0				
																0				
																0				

END OF BOREHOLE

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

19mm piezometer installed.
40 PVC pipe with a 1.52m slotted screen screen installed.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : December 5, 2005

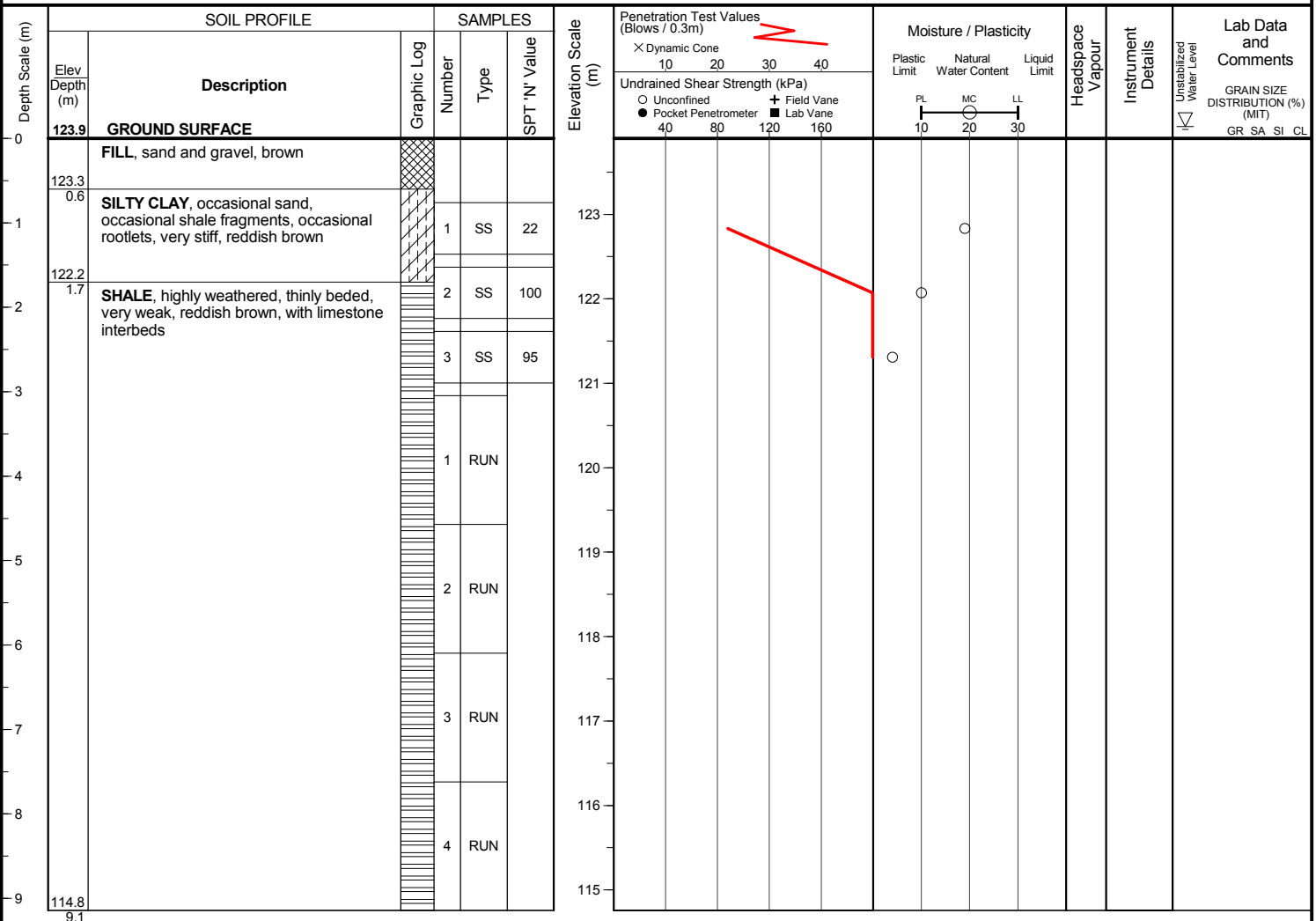
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600528, N: 4805647 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

**END OF BOREHOLE**

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started December 5, 2005

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 600528, N: 4805647 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : NQ, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)								
										●												
						5	25	50	100	250	Estimated Strength				Frequency	Spacing						
						Z1	Z2	Z3	Z4	R1	R2	R3	R4	R5	R6							
		Rock coring started at 3.0m below grade	120.9																			
		SHALE, highly weathered, thinly bedded, very weak, reddish brown, with limestone interbeds (continued)	3.0														5			3.0-3.3m: rubble zone		
			R1	TCR = 100% SCR = 60% RQD = 60%	120													4			3.3-3.3m: limestone interbed	
4																		1			3.8-3.8m: limestone interbed	120
																		>5			3.9-4.0m: rubble zone	
			119.3															>5			4.3-4.4m: rubble zone	
5			4.6															1			4.3-4.4m: limestone interbed	
																		2			4.8-4.9m: limestone interbed	119
																		0			5.2-5.2m: limestone interbed	
																		0			5.5-5.5m: limestone interbed	
6			117.8															1			6.0-6.1m: limestone interbed	118
			6.1															0			6.2-6.3m: limestone interbed	
																		1			6.7-6.8m: limestone interbed	117
7																		0				
																		0				
																		1			7.4-7.5m: limestone interbed	
			116.3															0			7.5m: limestone interbed	
8			7.6															0			7.6m: limestone interbed	116
																		0				
																		0			8.2-8.4m: void	
																		0			8.4m: limestone interbed	
																		3			8.4-8.5m: limestone interbed	
9			114.8															1			8.5m: limestone interbed	115

END OF BOREHOLE

9.1m

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : January 18, 2008

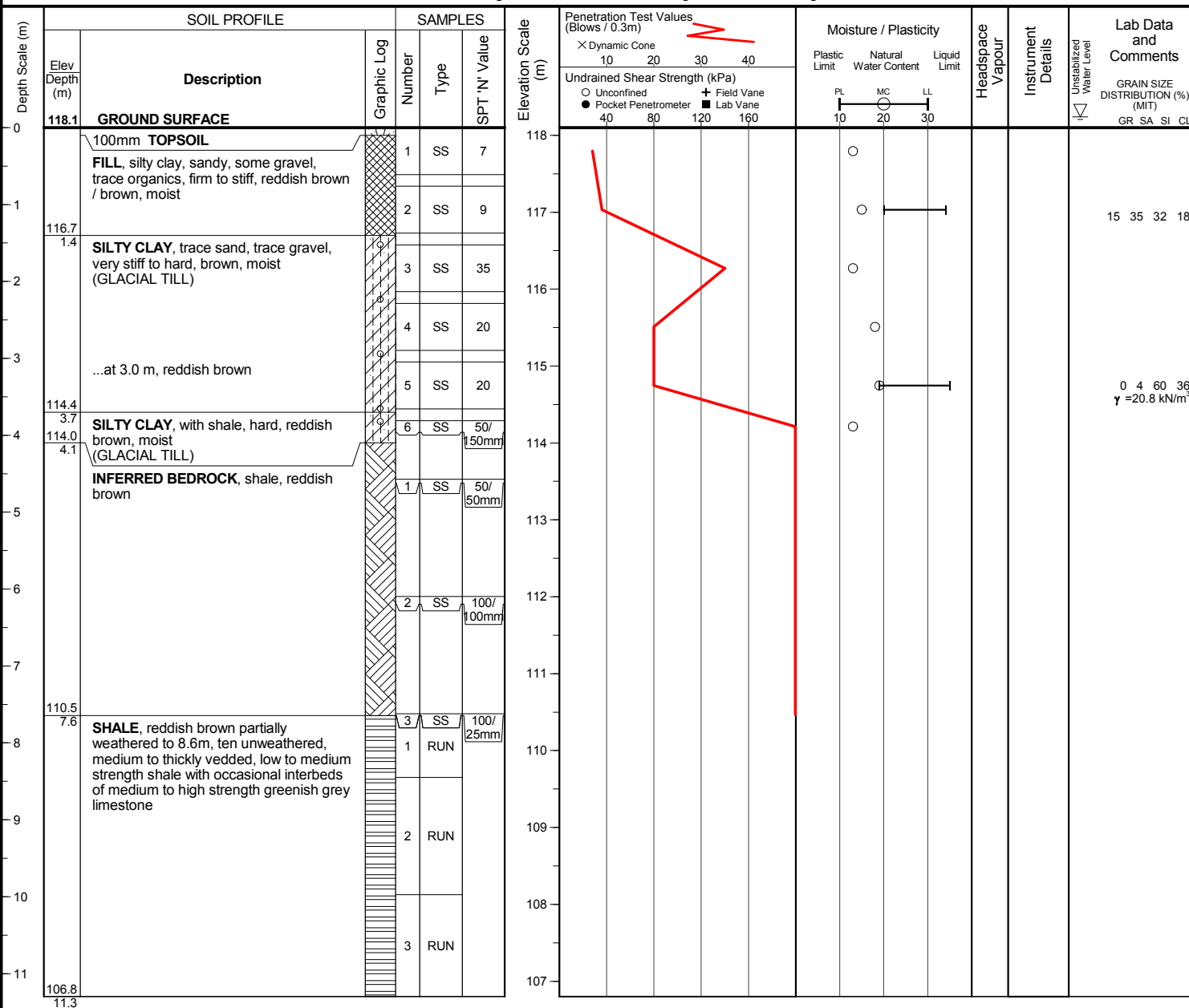
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 600716, N: 4805320 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers, NQ rock coring

**END OF BOREHOLE**

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No. OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started January 18, 2008

Location: Burlington / Oakville, Ontario

Sheet No. 1 of 1

Position : E: 600716, N: 4805320 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Hole Diameter : **NQ**, OD=76mm, ID=48mm

Drilling Method : Solid stem augers, NQ rock coring

Depth (m)	Graphic Log	GENERAL DESCRIPTION	Run Elev. Depth (m)	Recovery	Elevation (m)	Weathering Zones		UCS (MPa)		Natural Fractures		Laboratory Testing	Comments	Elevation (m)		
						Z1	Z2	Z3	Z4	R1	R2				R3	R4
Rock coring started at 7.6m below grade														110.5		
8		SHALE, reddish brown partially weathered to 8.6m, ten unweathered, medium to thickly bedded, low to medium strength shale with occasional interbeds of medium to high strength greenish grey limestone	7.6	TCR = 85% SCR = 85% RQD = 28%	110									110		
			R1													
	109.7		TCR = 99% SCR = 99% RQD = 89%	109									109			
	8.4				R2											
9				108.1	TCR = 100% SCR = 100% RQD = 78%	108								108		
			10.0	R3												
10						107								107		
				106.8												
11.3m																

END OF BOREHOLE

11.3m

Borehole contained drill water upon completion of drilling. Unstabilized water level and cave not measured.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : April 25, 2001

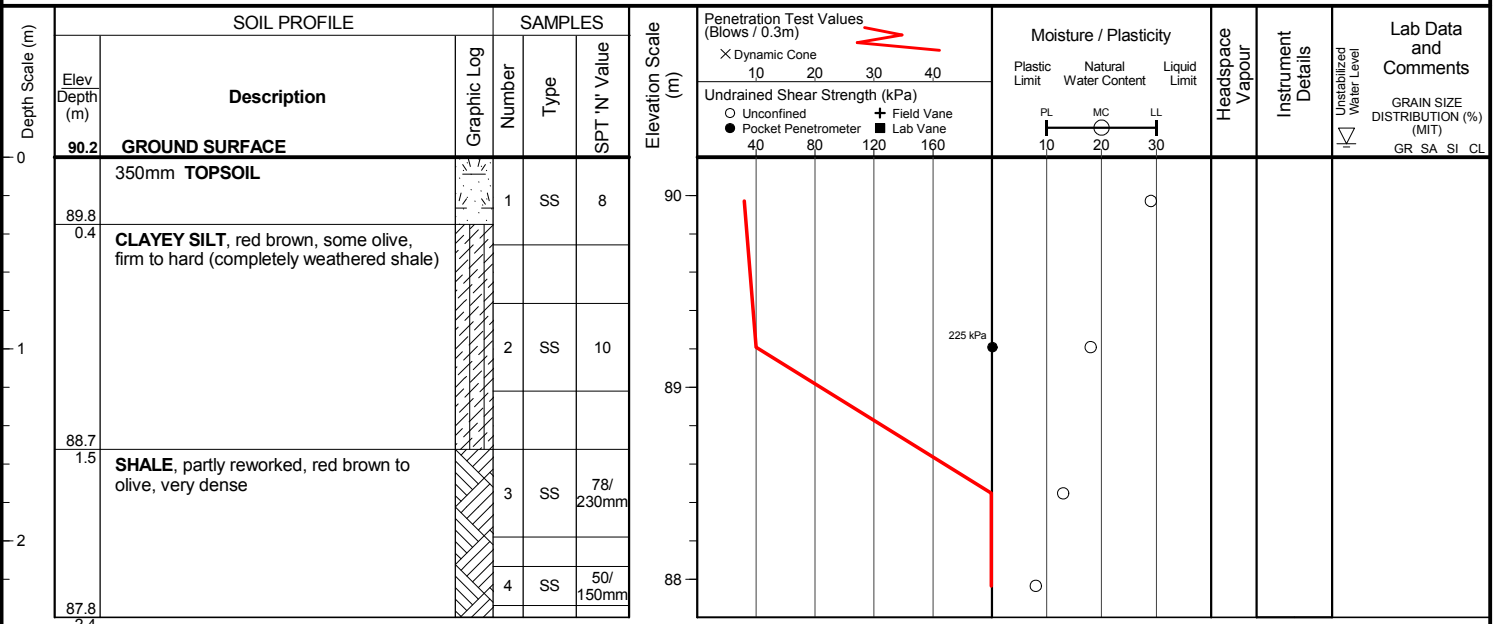
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 602559, N: 4804331 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 29, 2000

Location : Burlington / Oakville, Ontario

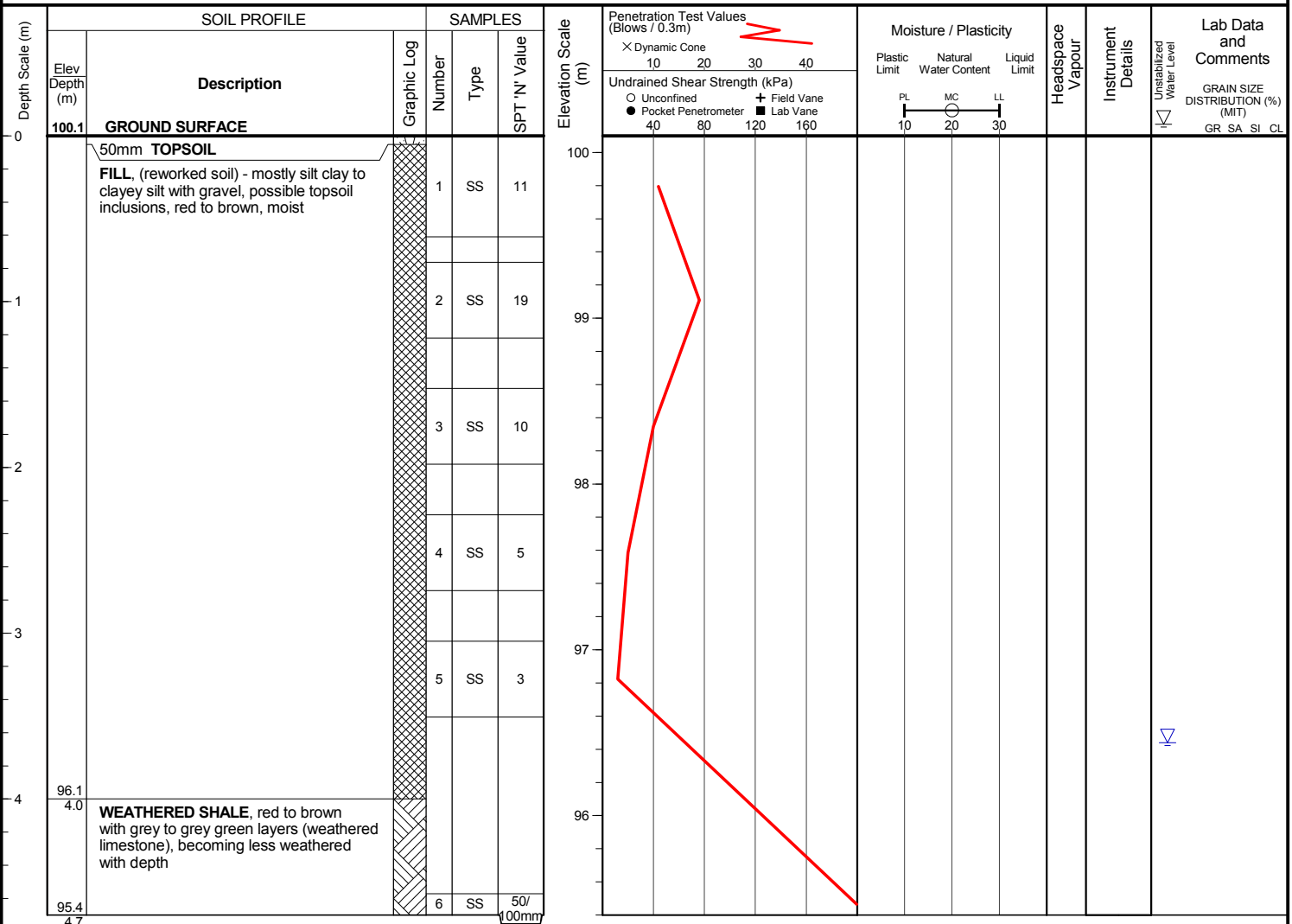
Sheet No. : 1 of 1

Position : E: 601620, N: 4804590 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 75, track-mounted

Drilling Method : Solid stem augers

**END OF BOREHOLE**

Unstabilized water level measured at 3.7m below grade; borehole caved to 4.3m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 28, 2000

Location : Burlington / Oakville, Ontario

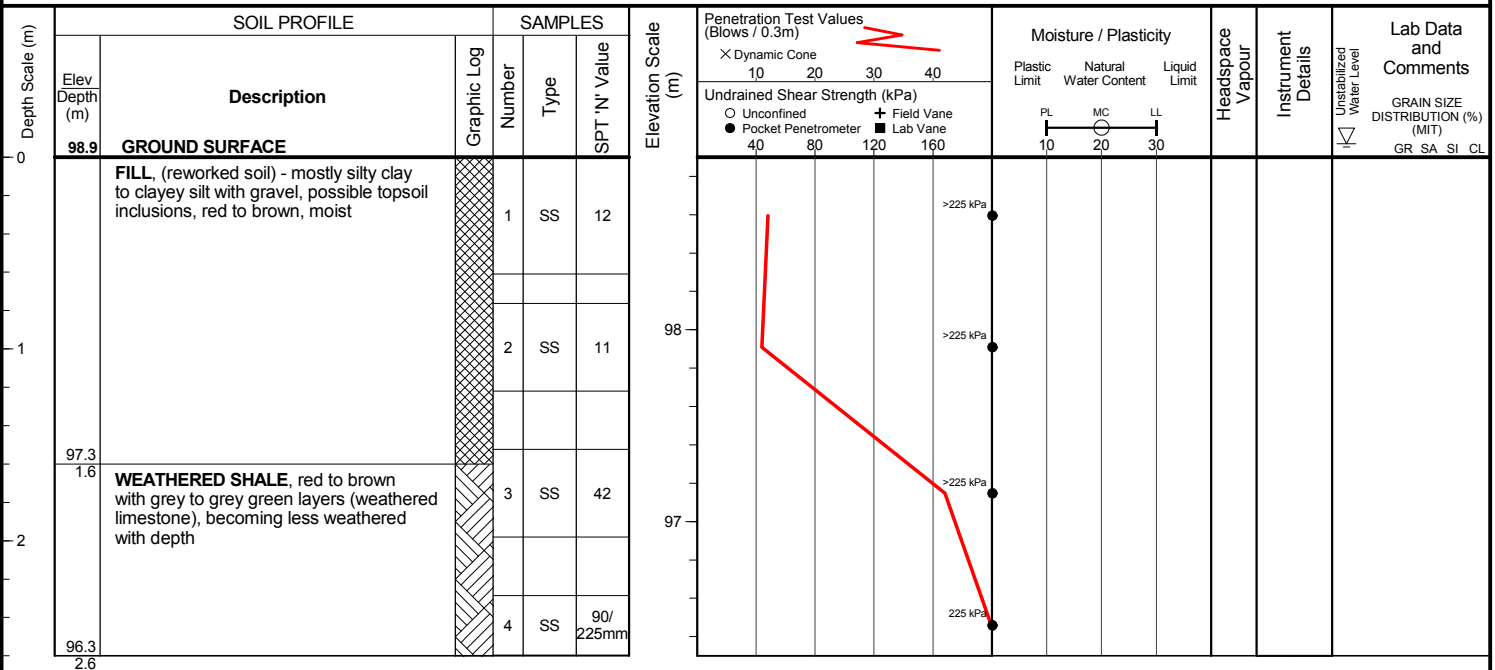
Sheet No. : 1 of 1

Position : E: 601724, N: 4804516 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers

**END OF BOREHOLE**

Borehole was dry and caved to 2.2m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : September 1, 2000

Location : Burlington / Oakville, Ontario

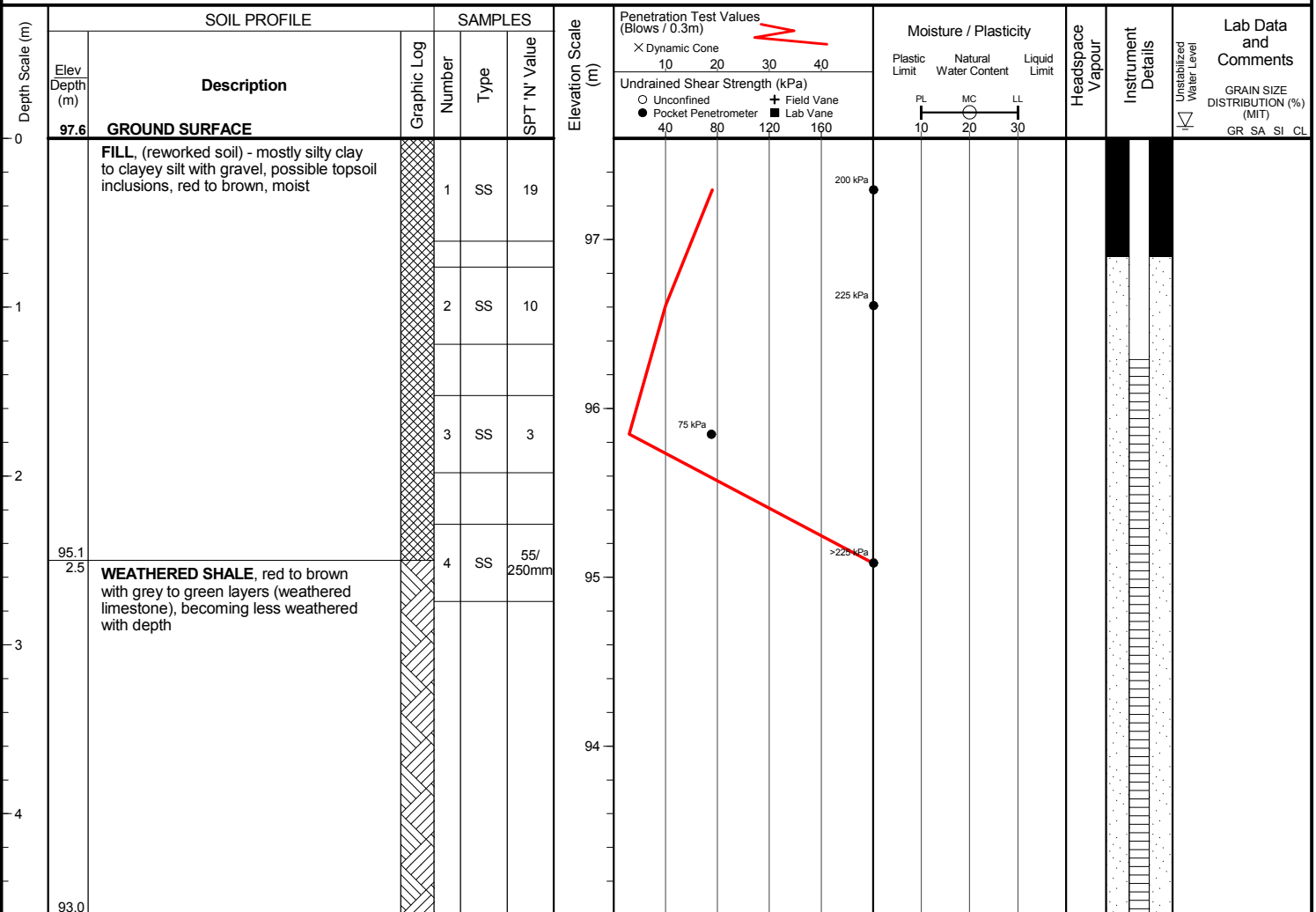
Sheet No. : 1 of 1

Position : E: 601809, N: 4804428 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers

**END OF BOREHOLE**

Borehole was dry and caved to 4.3m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 28, 2000

Location : Burlington / Oakville, Ontario

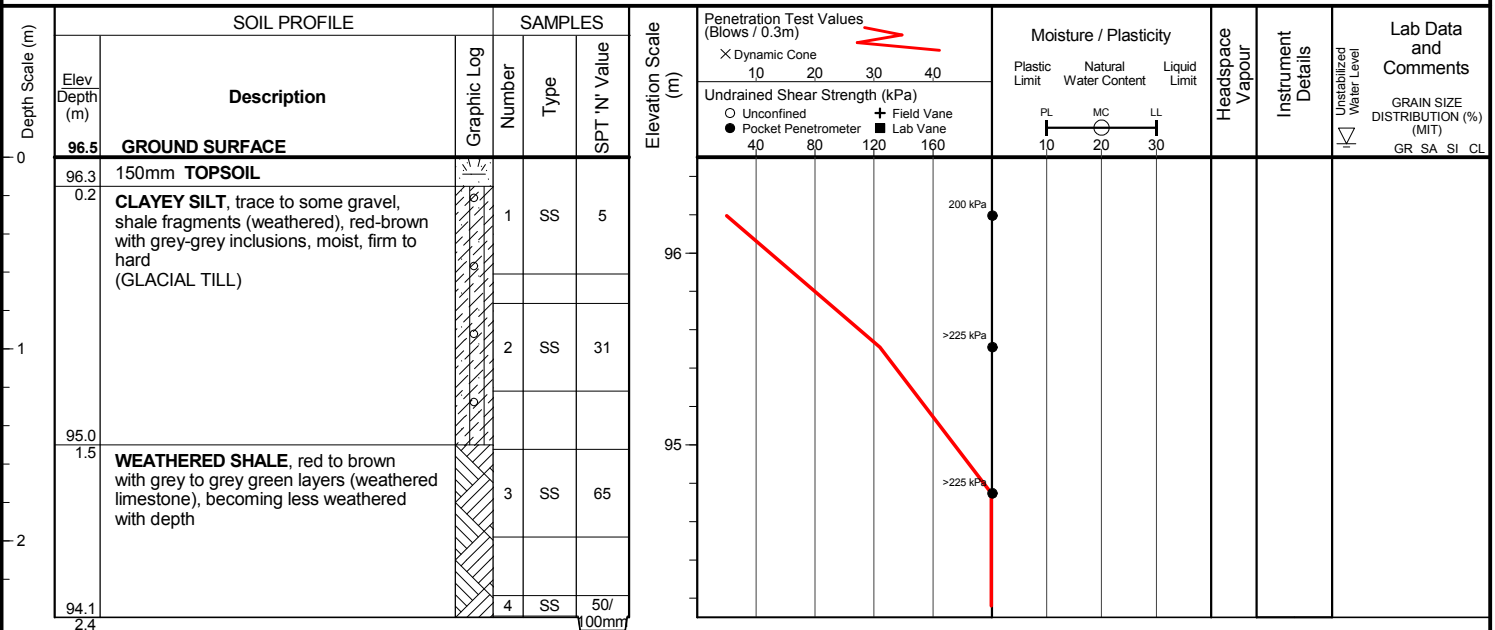
Sheet No. : 1 of 1

Position : E: 601961, N: 4804524 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 28, 2000

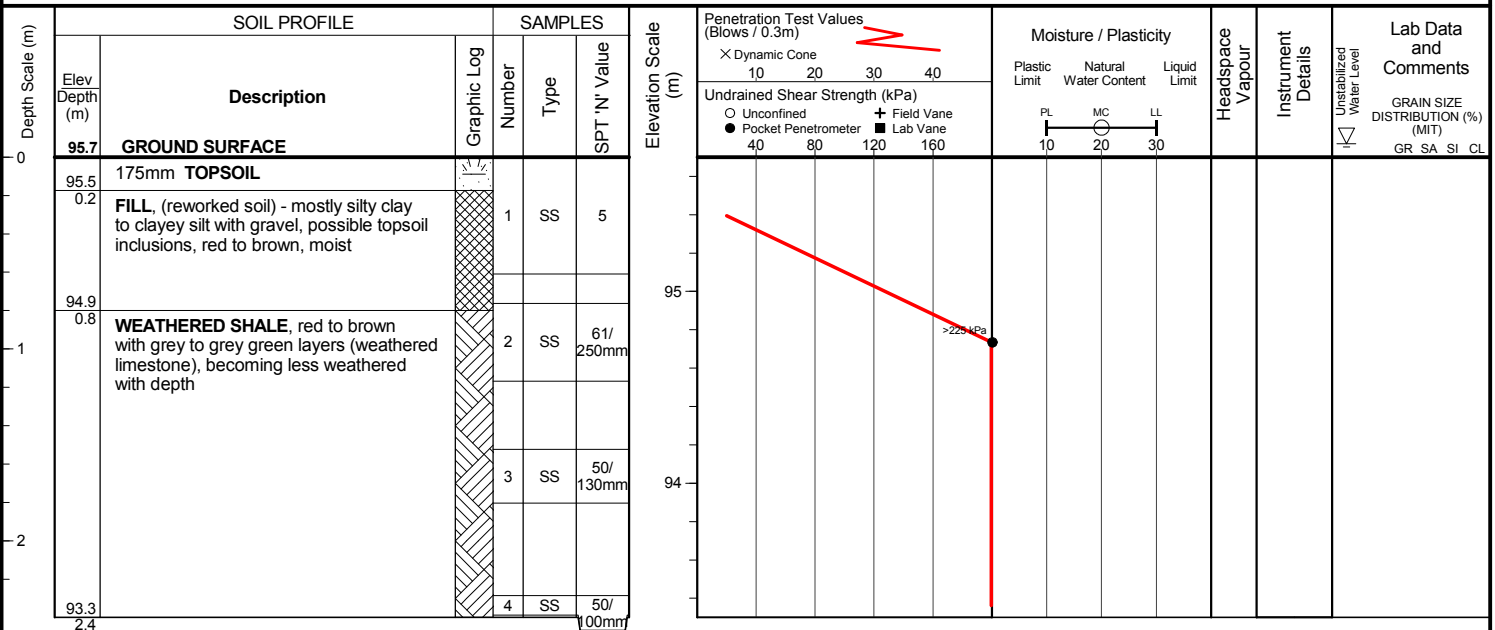
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 601875, N: 4804373 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

**END OF BOREHOLE**

Borehole was dry and caved to 2.0m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 28, 2000

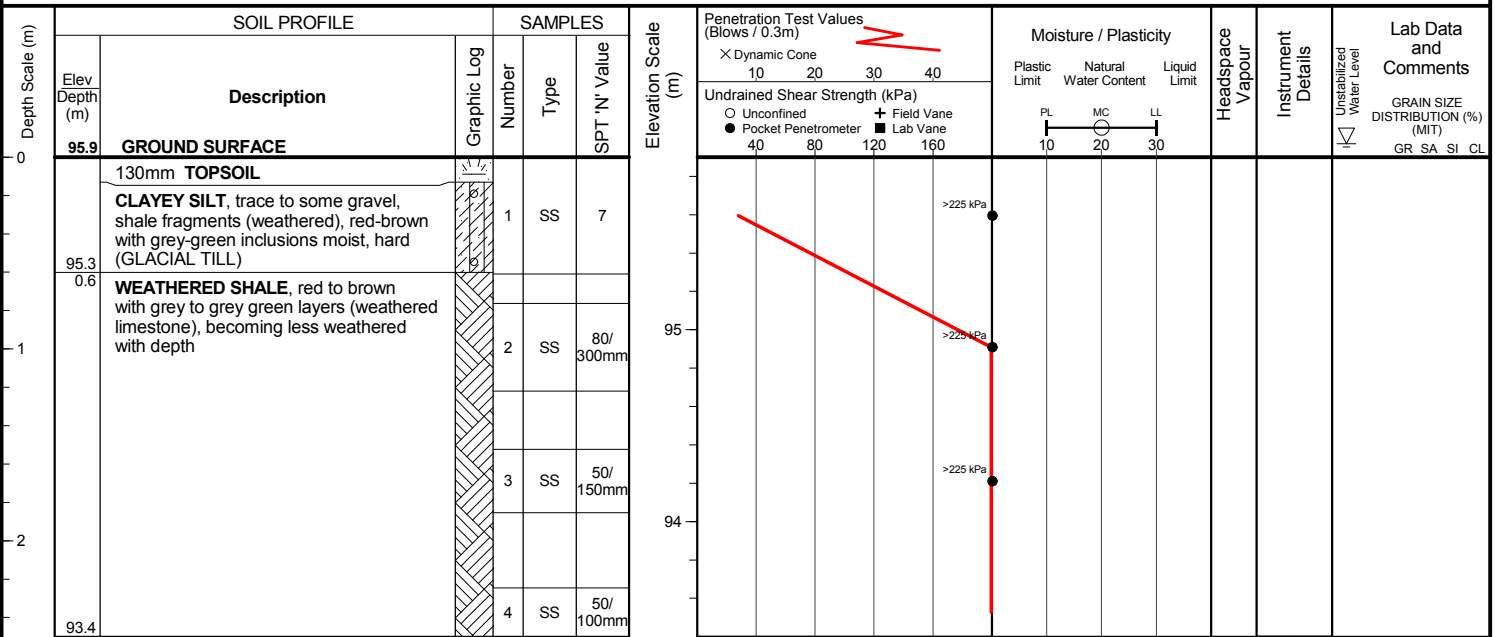
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 601981, N: 4804410 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

**END OF BOREHOLE**

Borehole was dry and caved to 2.1m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 28, 2000

Location : Burlington / Oakville, Ontario

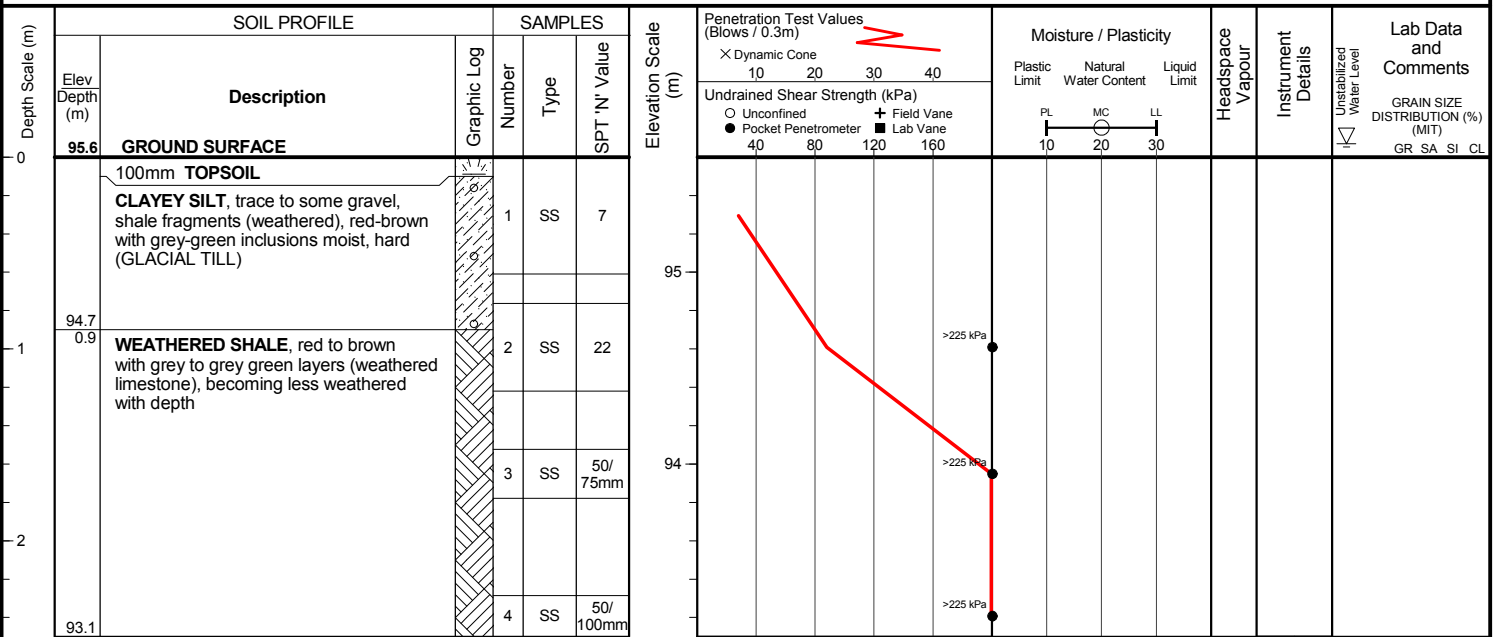
Sheet No. : 1 of 1

Position : E: 602029, N: 4804521 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 28, 2000

Location : Burlington / Oakville, Ontario

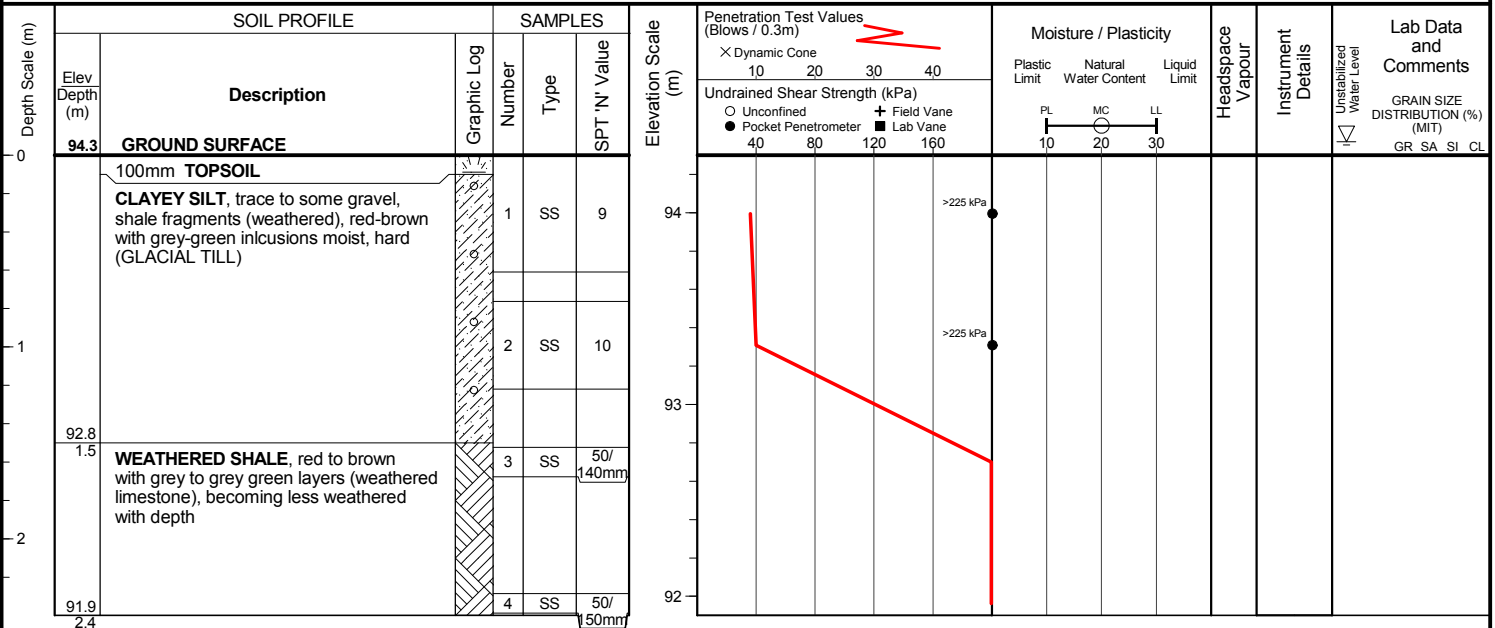
Sheet No. : 1 of 1

Position : E: 602150, N: 4804424 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : September 6, 2000

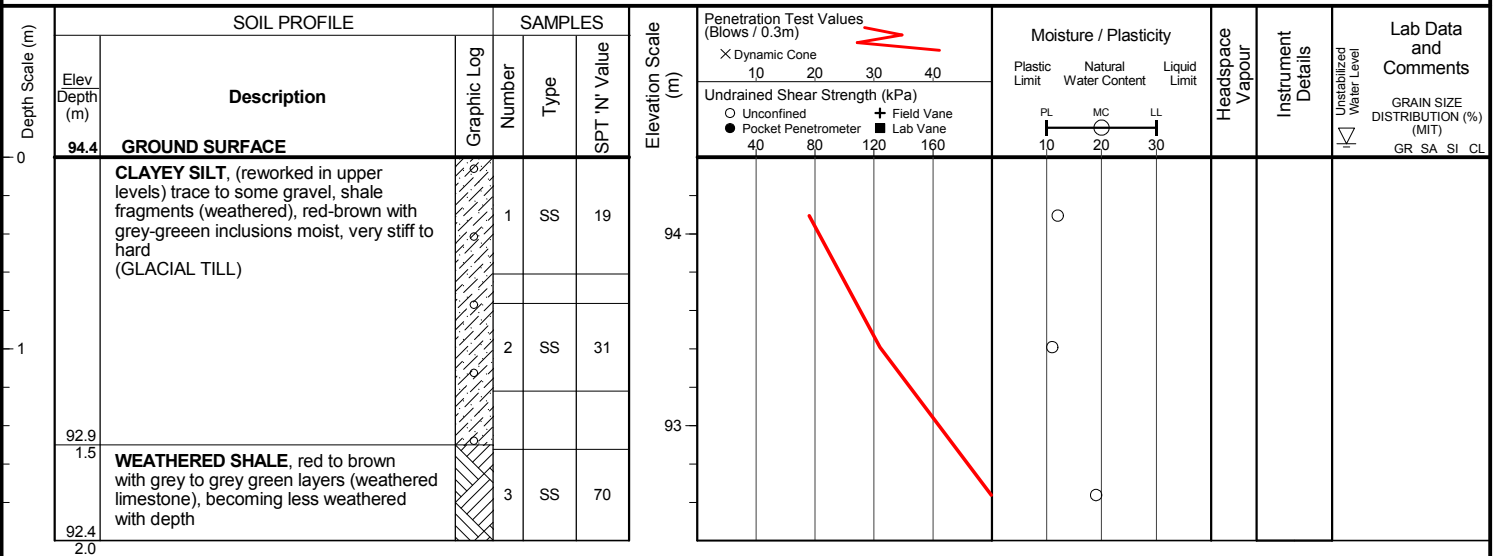
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 602193, N: 4804504 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

**END OF BOREHOLE**

Borehole was dry and caved to 1.5m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

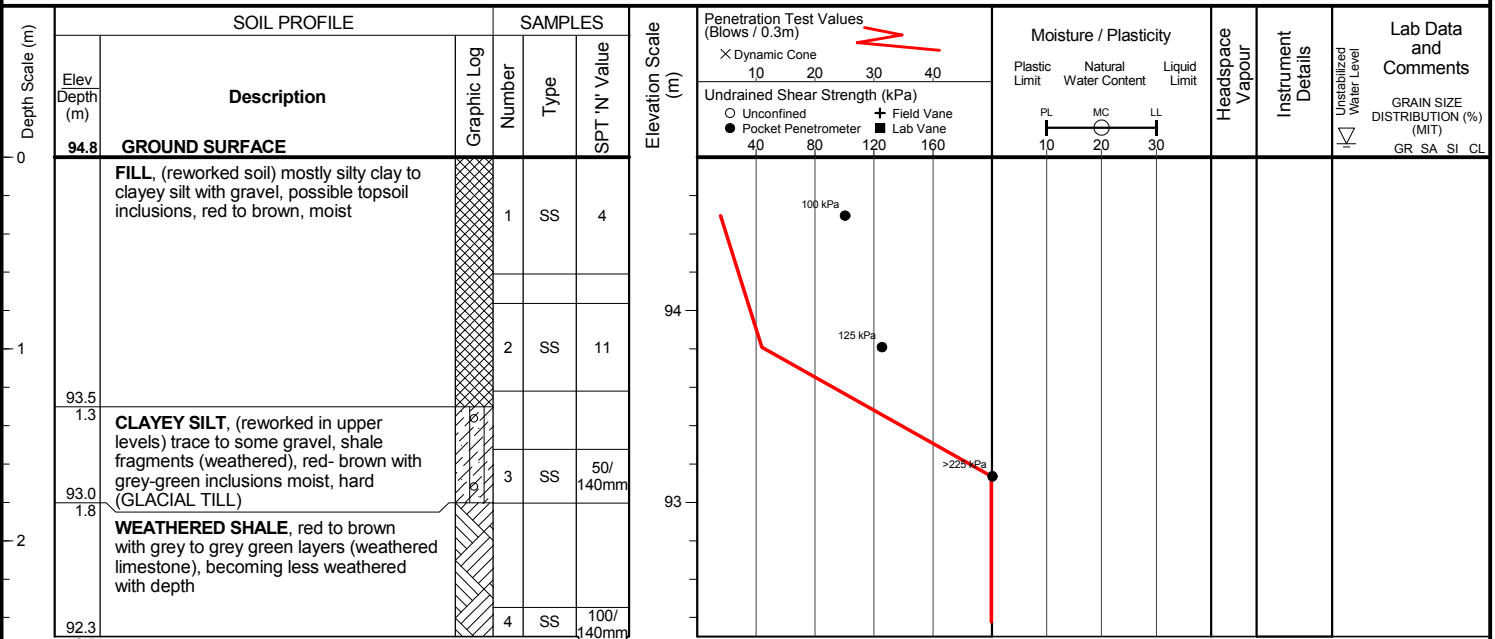
Date started : September 5, 2000

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

**END OF BOREHOLE**

Borehole was dry and caved to 2.4m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 28, 2000

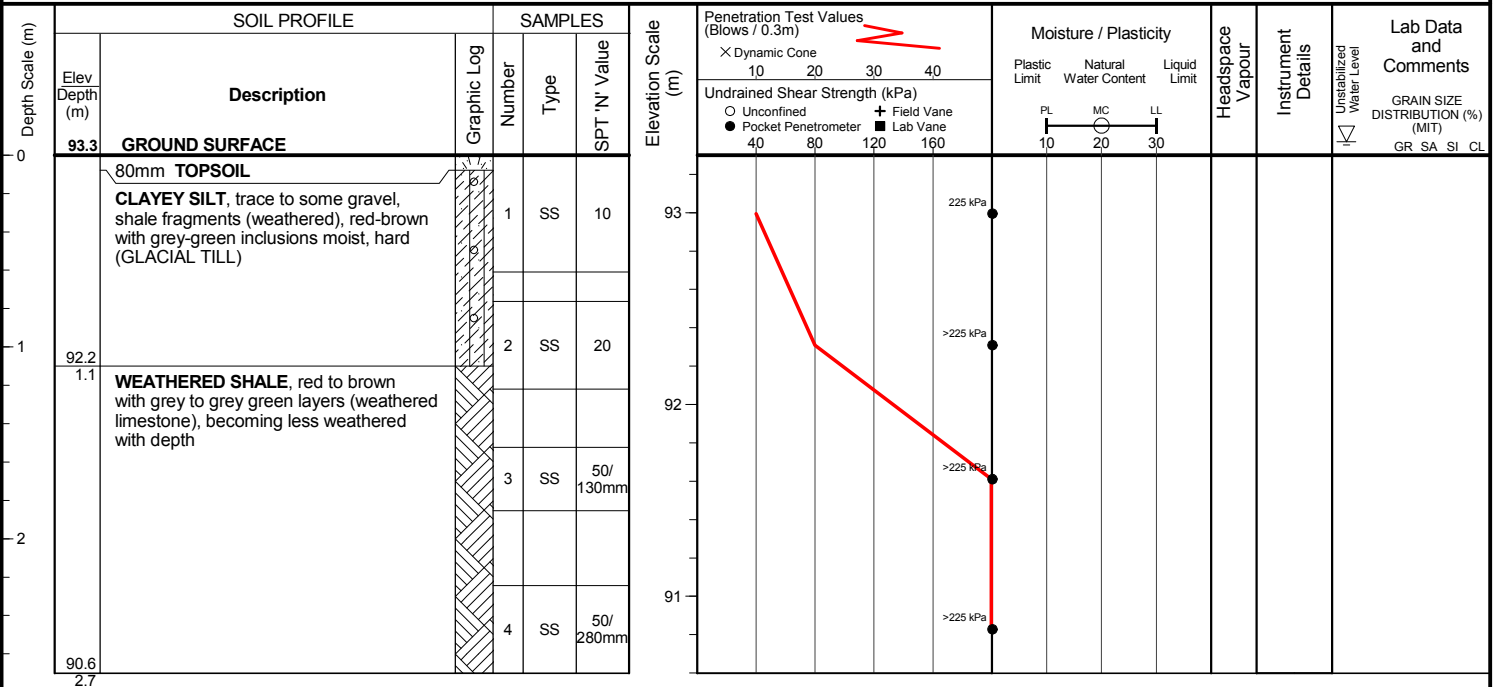
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 602211, N: 4804371 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

**END OF BOREHOLE**

Borehole was dry and caved to 2.1m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : September 6, 2000

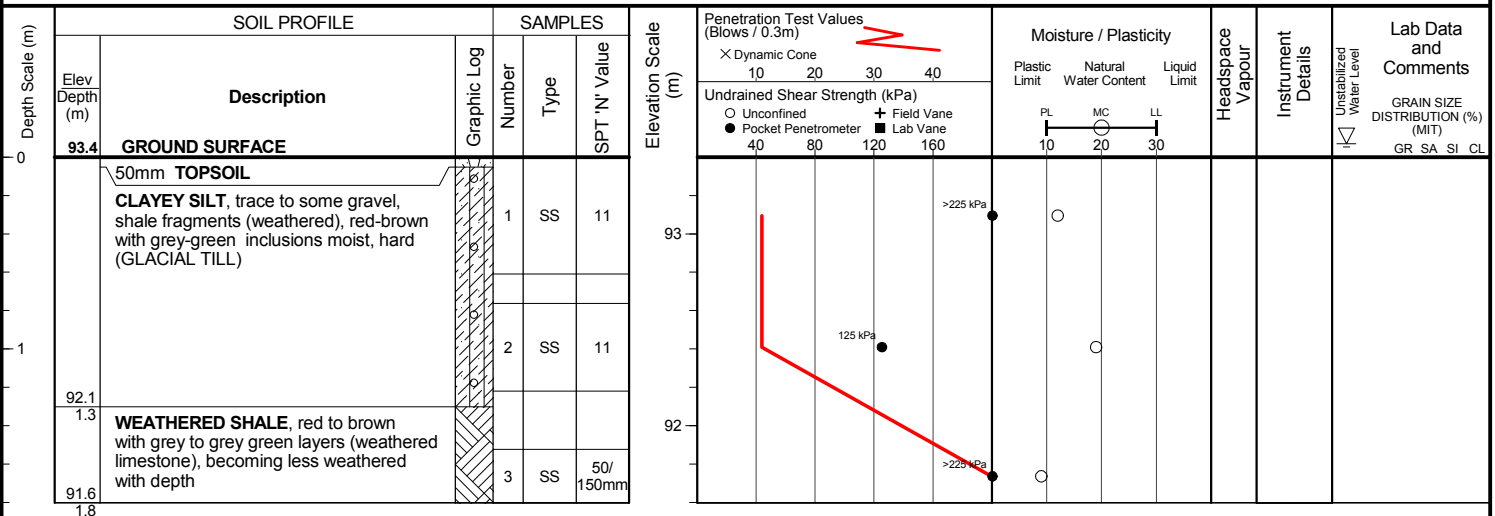
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 602281, N: 4804426 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

**END OF BOREHOLE**

Borehole was dry and caved to 1.5m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : September 5, 2000

Location : Burlington / Oakville, Ontario

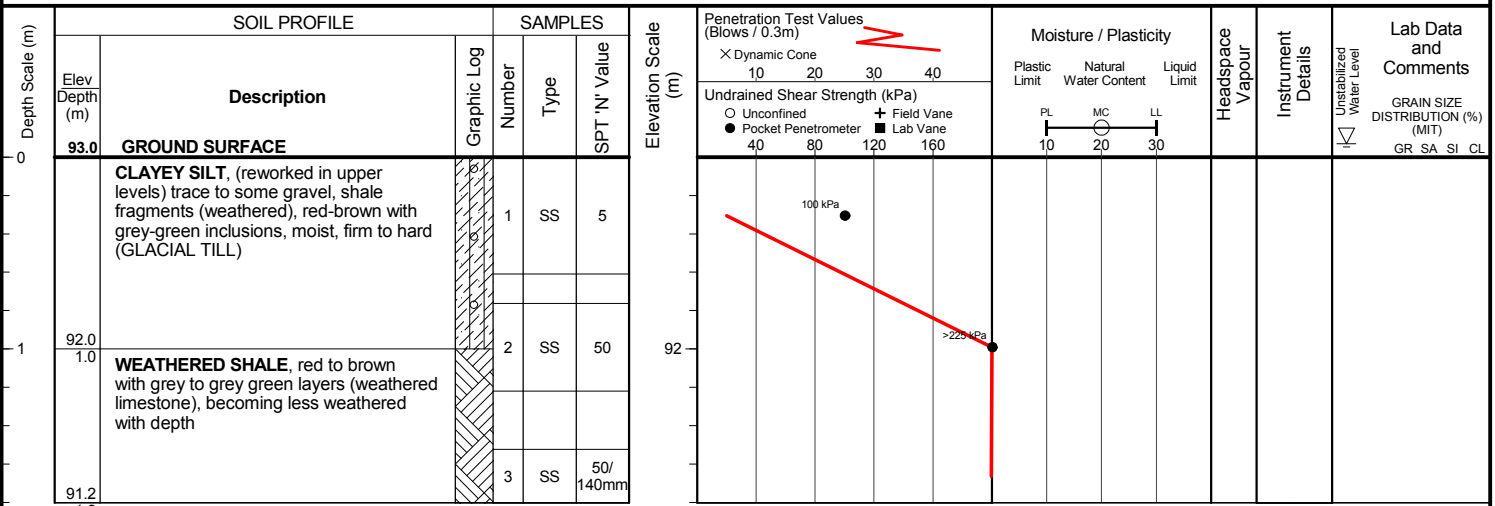
Sheet No. : 1 of 1

Position : E: 602336, N: 4804469 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers

**END OF BOREHOLE**

Borehole was dry and caved to 1.8m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 25, 2000

Location : Burlington / Oakville, Ontario

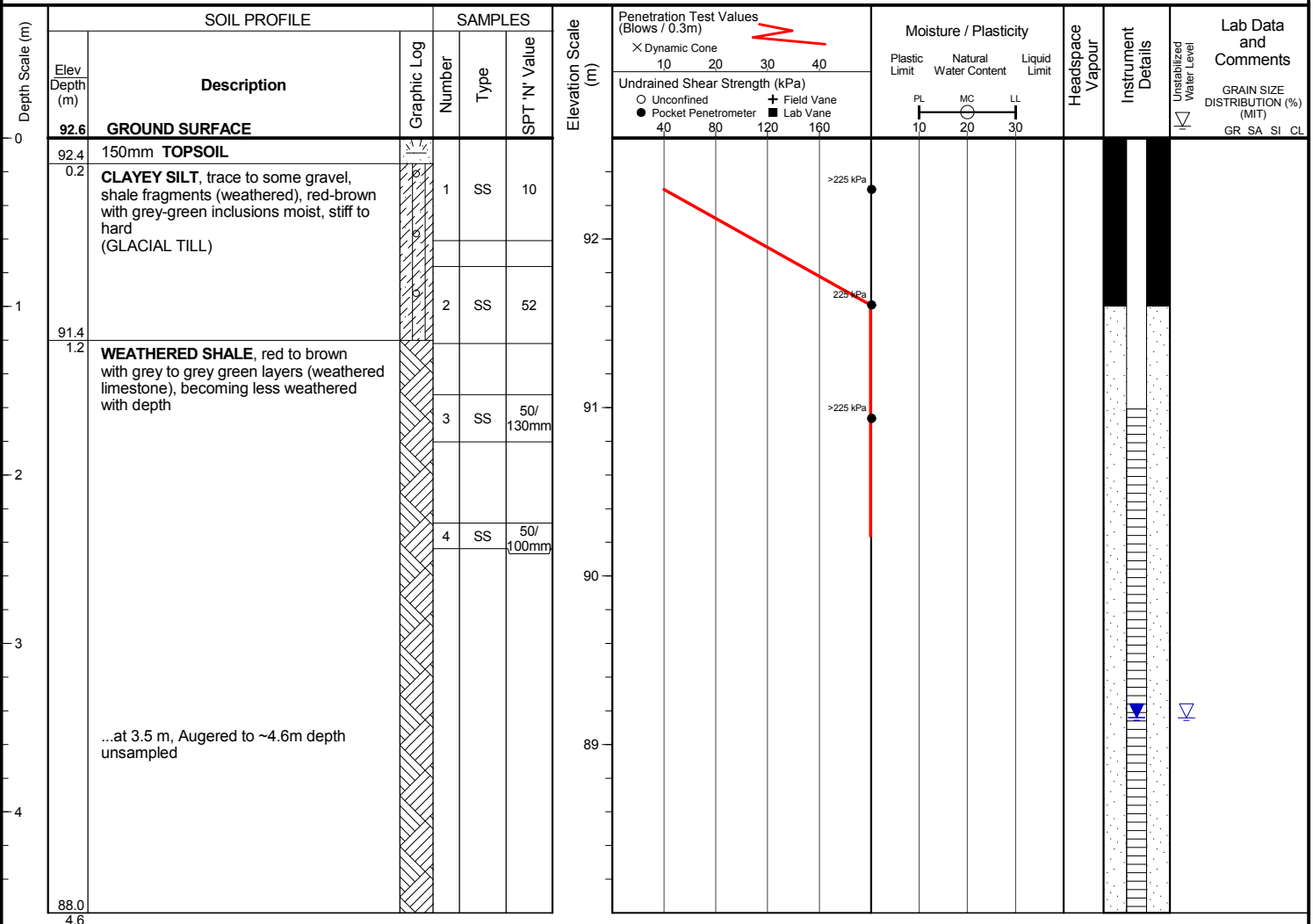
Sheet No. : 1 of 1

Position : E: 602242, N: 4804387 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : September 6, 2000

Location : Burlington / Oakville, Ontario

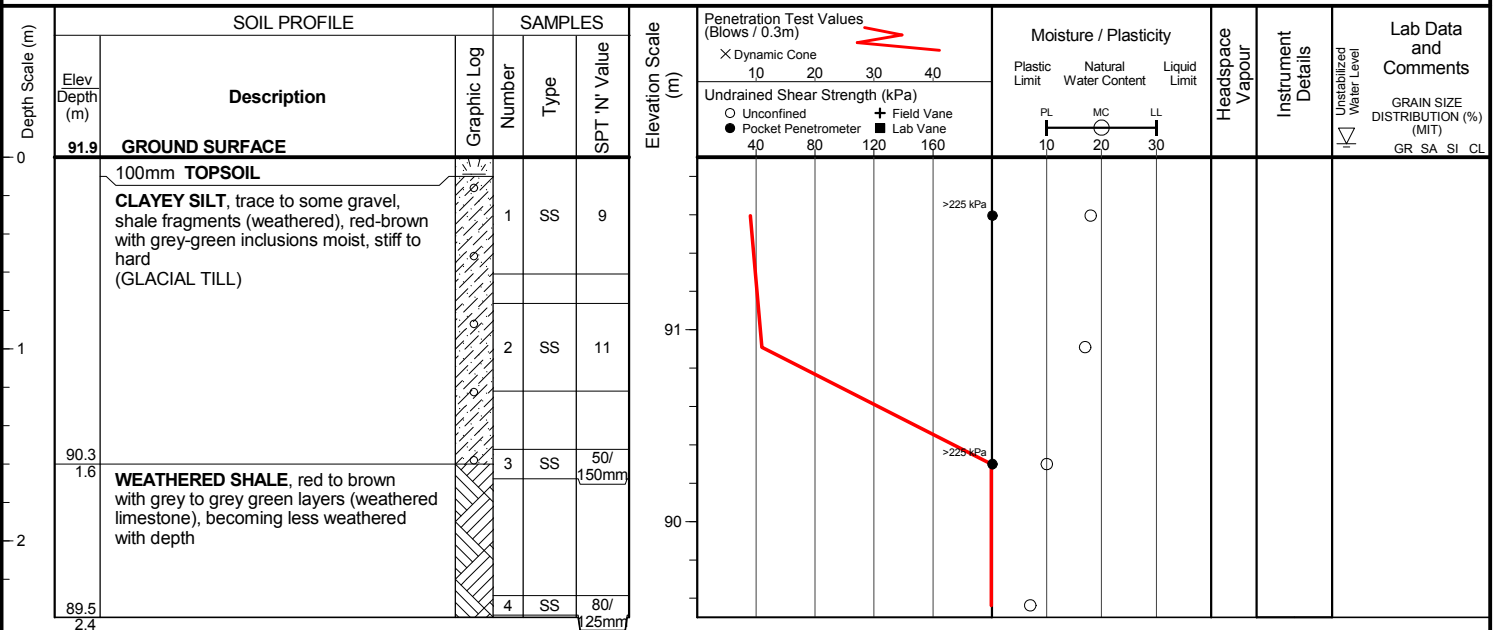
Sheet No. : 1 of 1

Position : E: 602398, N: 4804328 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : September 6, 2000

Location : Burlington / Oakville, Ontario

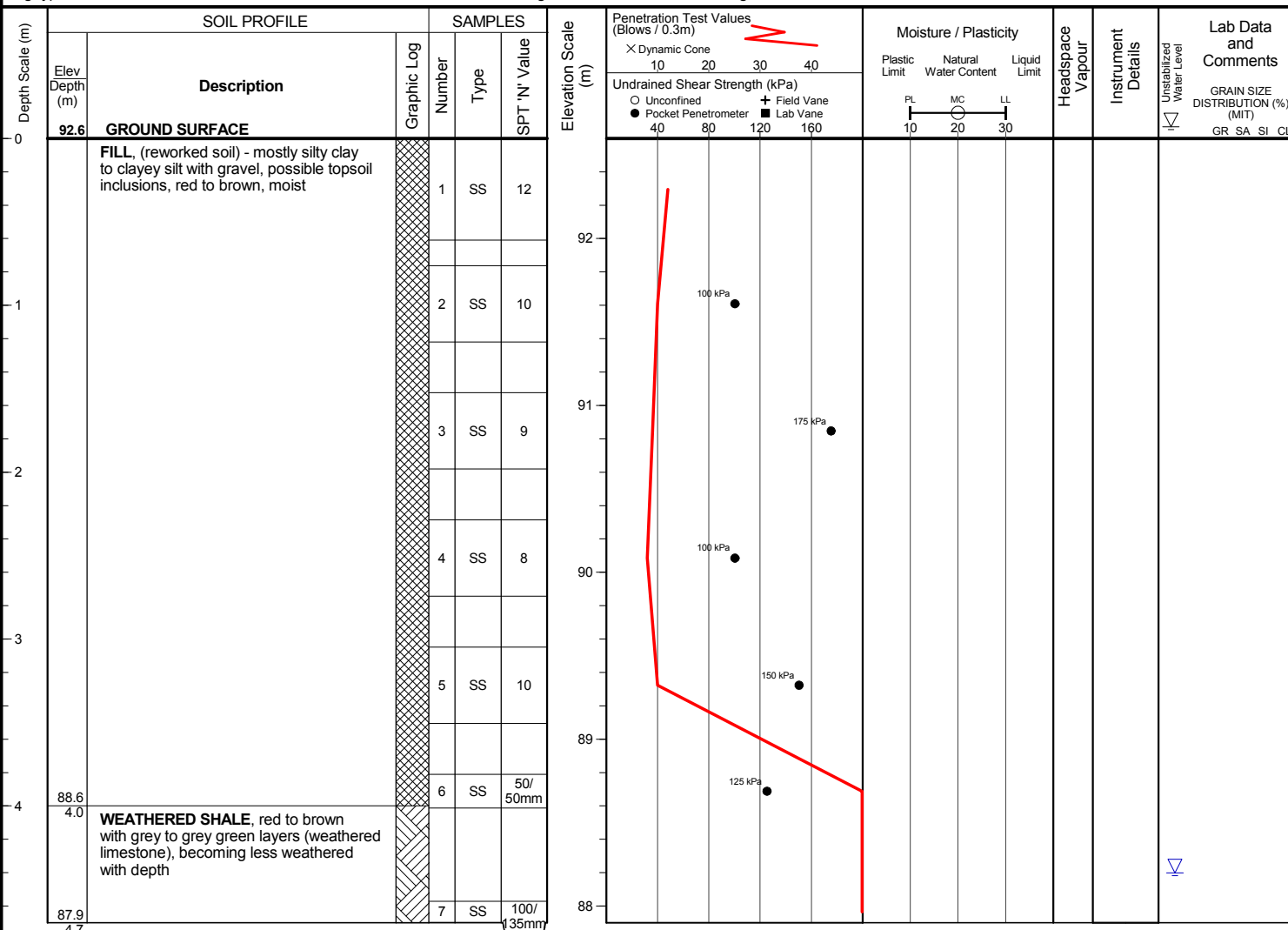
Sheet No. : 1 of 1

Position : E: 602482, N: 4804420 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers

**END OF BOREHOLE**

Unstabilized water level measured at 4.4m below grade; borehole caved to 4.7m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 25, 2000

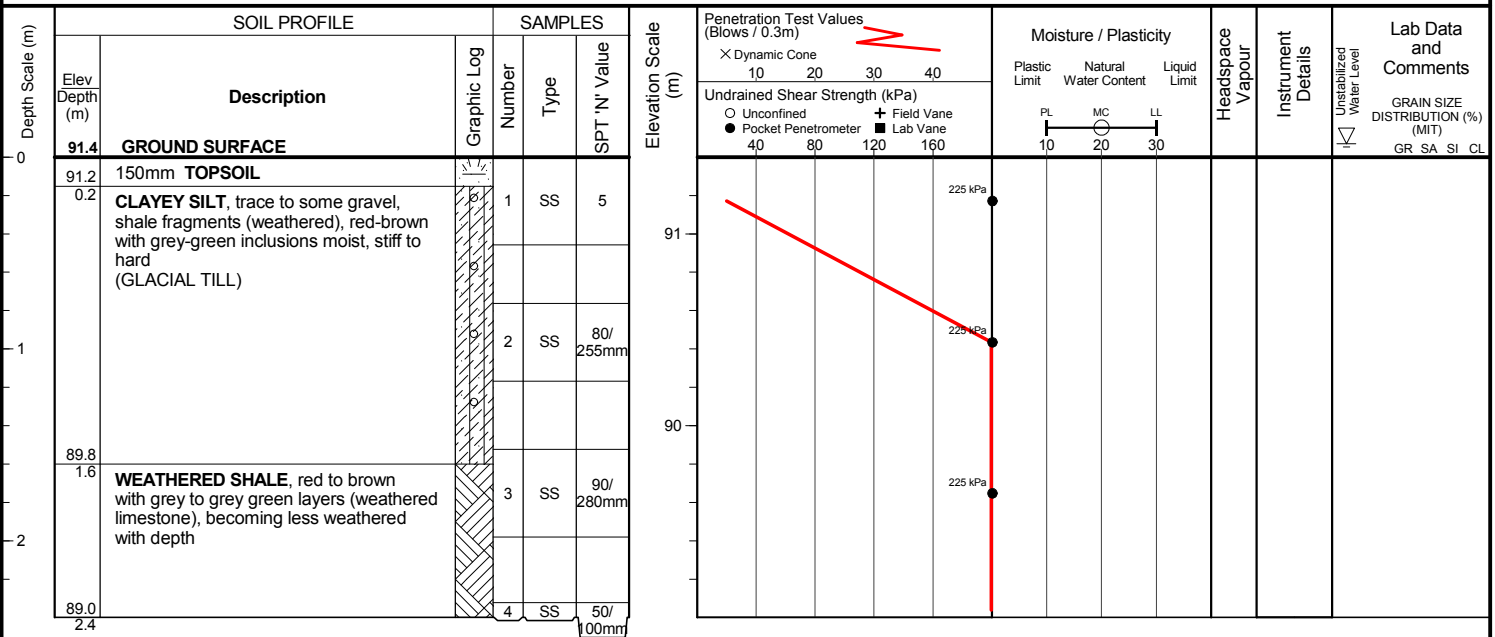
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

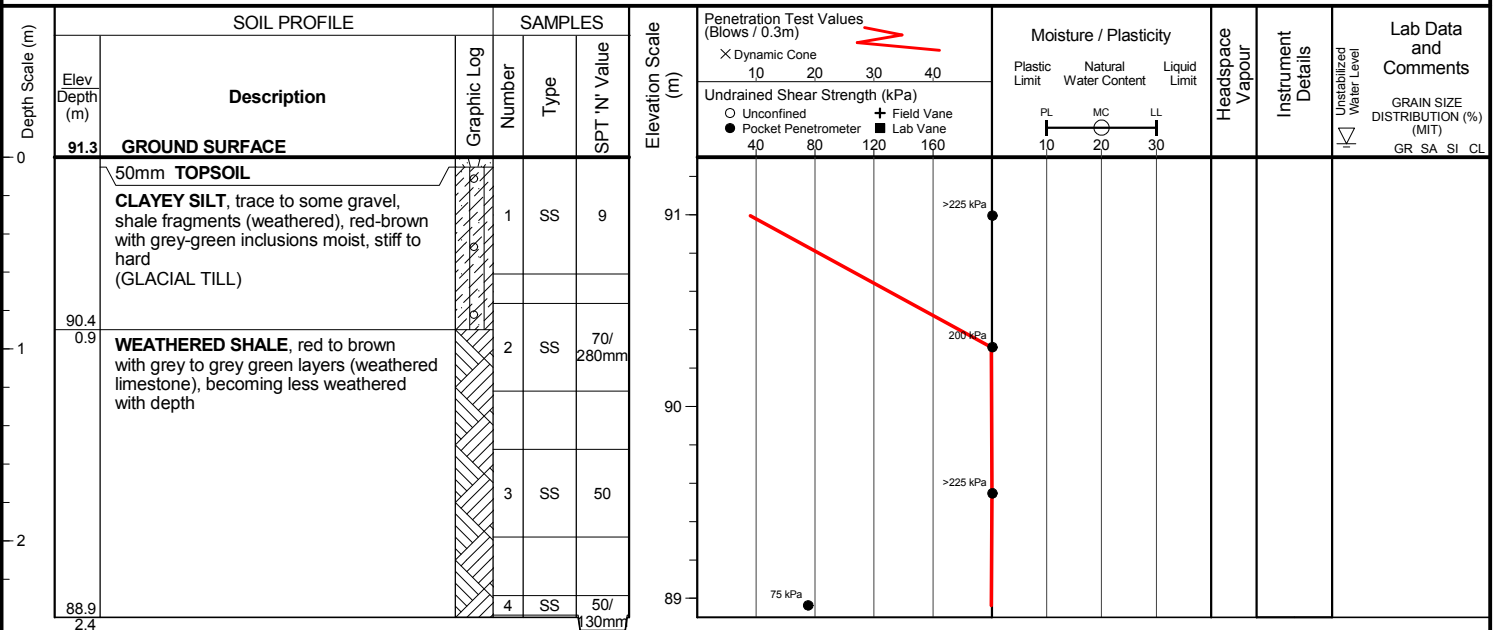
Date started : August 25, 2000

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : Elevation Datum : Geodetic (NAD83)

Rig type : CME 55, track-mounted

**END OF BOREHOLE**

Borehole was dry and caved to 2.4m below grade upon completion of drilling.

Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

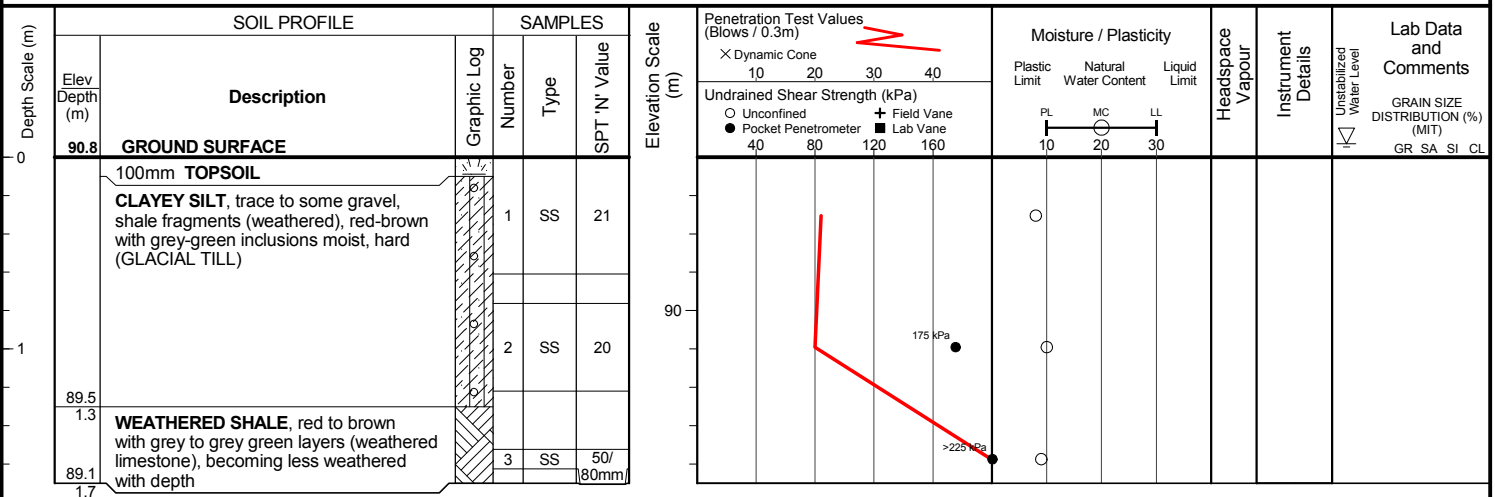
Project : Halton Zone 1 Watermain

Date started : September 7, 2000

Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : Elevation Datum : Geodetic (NAD83)
 Rig type : CME 55, track-mounted Drilling Method : Solid stem augers



Client : R.V Anderson Associates Limited

Project No.: OTHER CONSULTANTS

Project : Halton Zone 1 Watermain

Date started : August 28, 2000

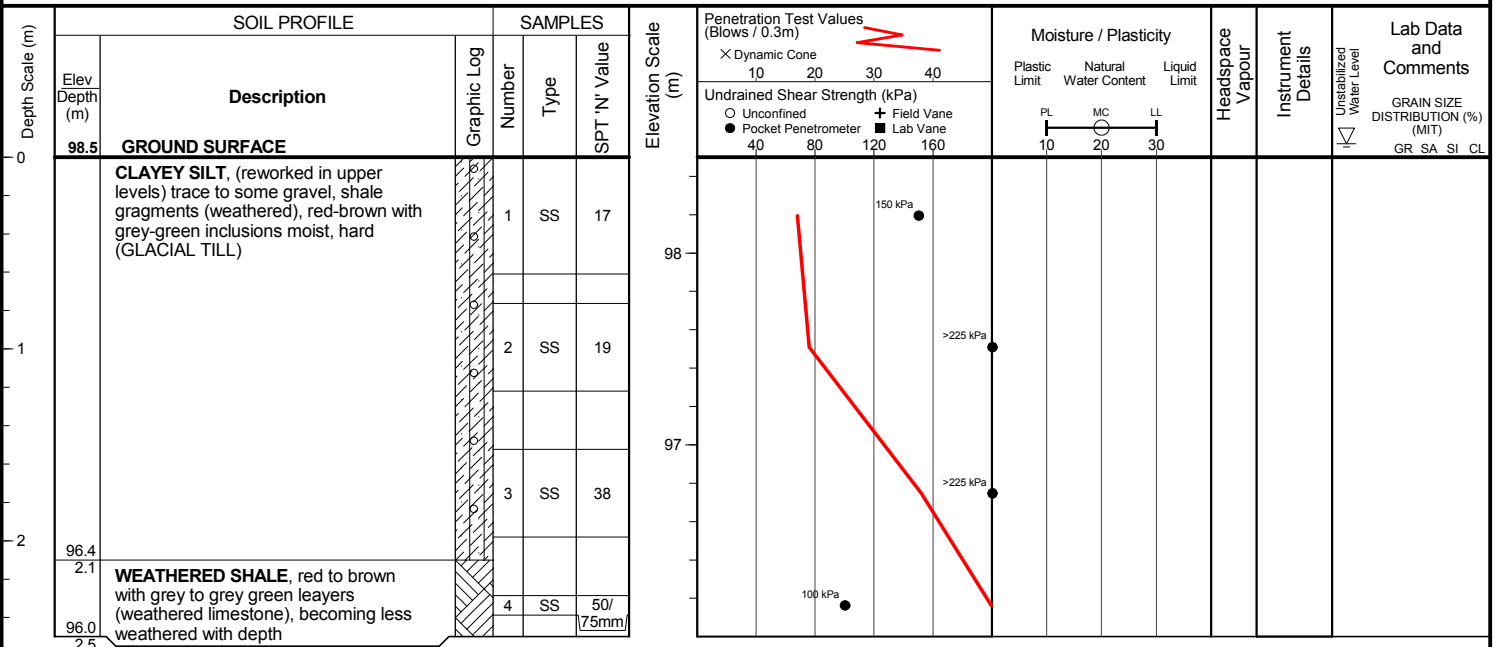
Location : Burlington / Oakville, Ontario

Sheet No. : 1 of 1

Position : E: 601803, N: 4804500 (UTM 17T)

Elevation Datum : Geodetic (NAD83)

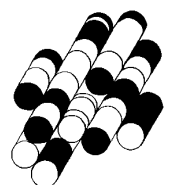
Rig type : CME 55, track-mounted

**END OF BOREHOLE**

Borehole was dry and caved to 2.2m below grade upon completion of drilling.

APPENDIX E

TERRAPROBE INC.



NULL SWELL TEST (Determination of Swelling Stress)

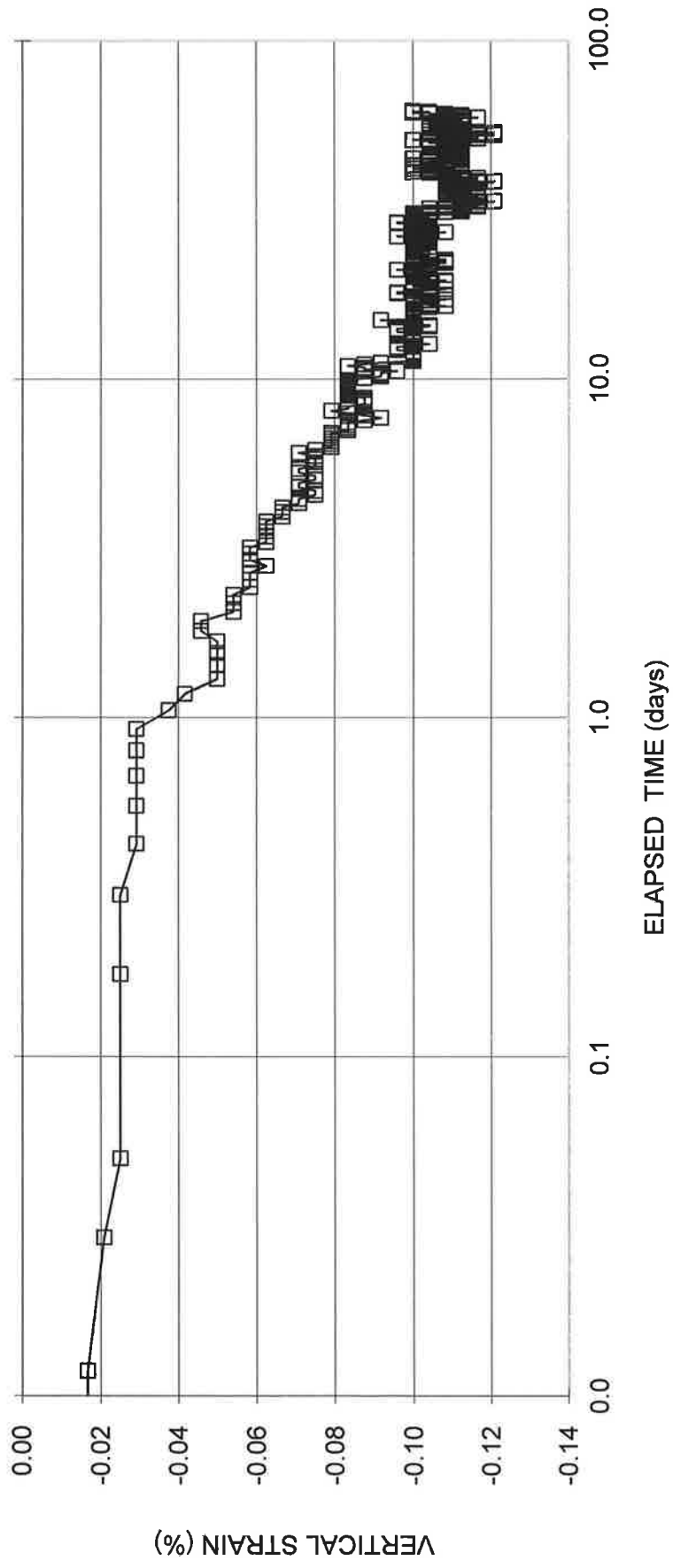
SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 9
BOREHOLE NUMBER	2+425	SAMPLE DEPTH, m	89'7"-90'8"
TEST CONDITIONS			
CELL NUMBER	1	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	09/24/2012
DIVISION, mm	0.001	DURATION OF TEST, days	108
SUBMERGING LIQUID	200g/L NaCl	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cylinder	APPLIED SEATING LOAD, kPa	0.8
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	2.40	WATER CONTENT, (specimen) %	4.07
DIAMETER, cm	6.34	WET DENSITY, g/cm ³	2.61
SAMPLE AREA, cm ²	31.57	DRY DENSITY, g/cm ³	2.51
SAMPLE VOLUME, cm ³	75.77	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	197.72		
DRY WEIGHT, g	189.99		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	2.40	WATER CONTENT, (specimen) %	4.12
DIAMETER, cm	6.34	WET DENSITY, g/cm ³	2.61
SAMPLE AREA, cm ²	31.57	DRY DENSITY, g/cm ³	2.50
SAMPLE VOLUME, cm ³	75.85	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	197.82		
DRY WEIGHT, g	189.99		
TEST RESULTS			
		SWELLING STRAIN, %	-0.10
		SWELLING STRESS, kPa	0.81

NOTE: Last portion of the test removed due to salt accumulation between tip of transducer and the top of pedestal.

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

NULL SWELL TEST (Determination of Swelling Stress)

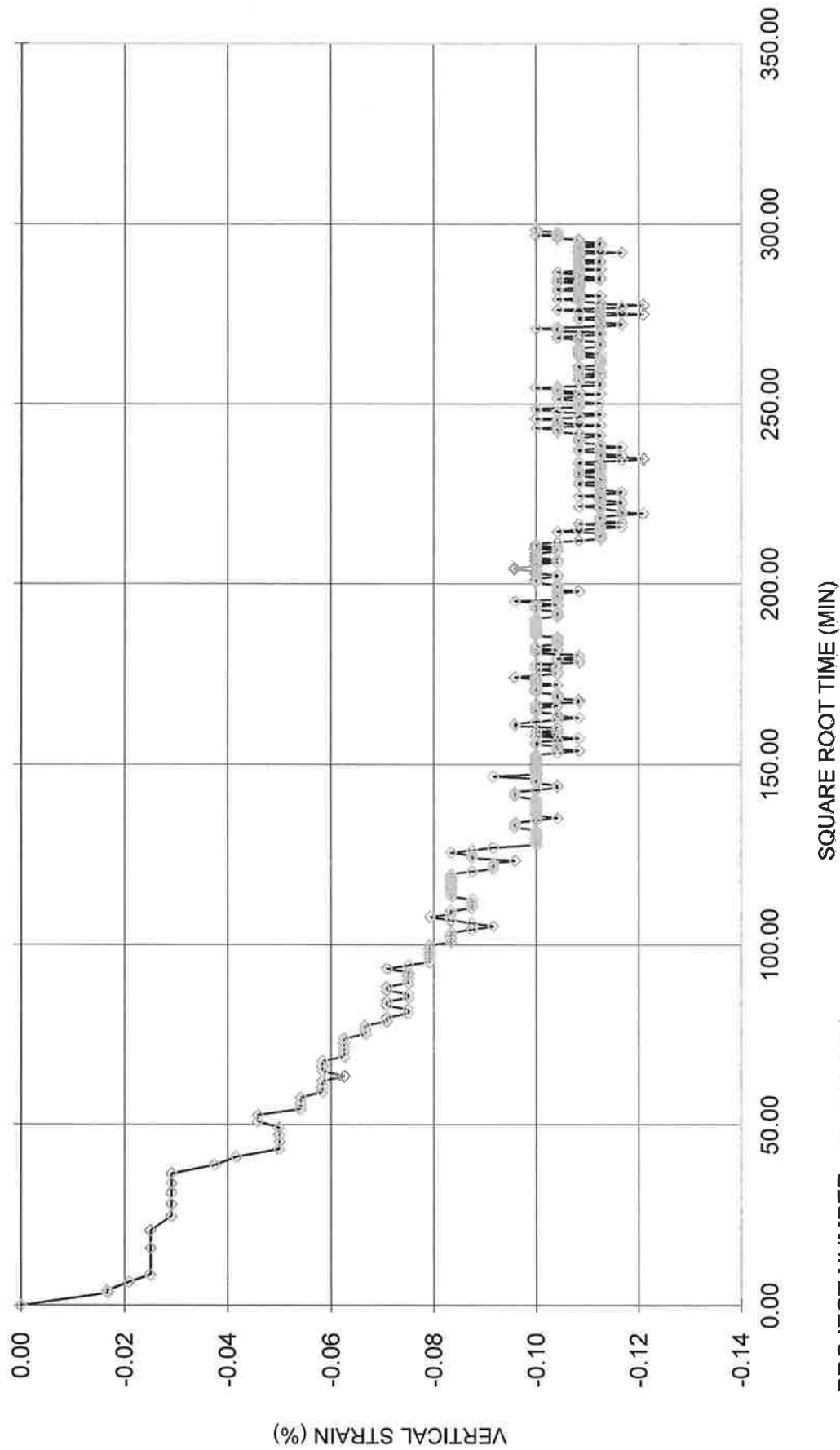
BH 2+425 RUN 9 89'7" - 90'8"



PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

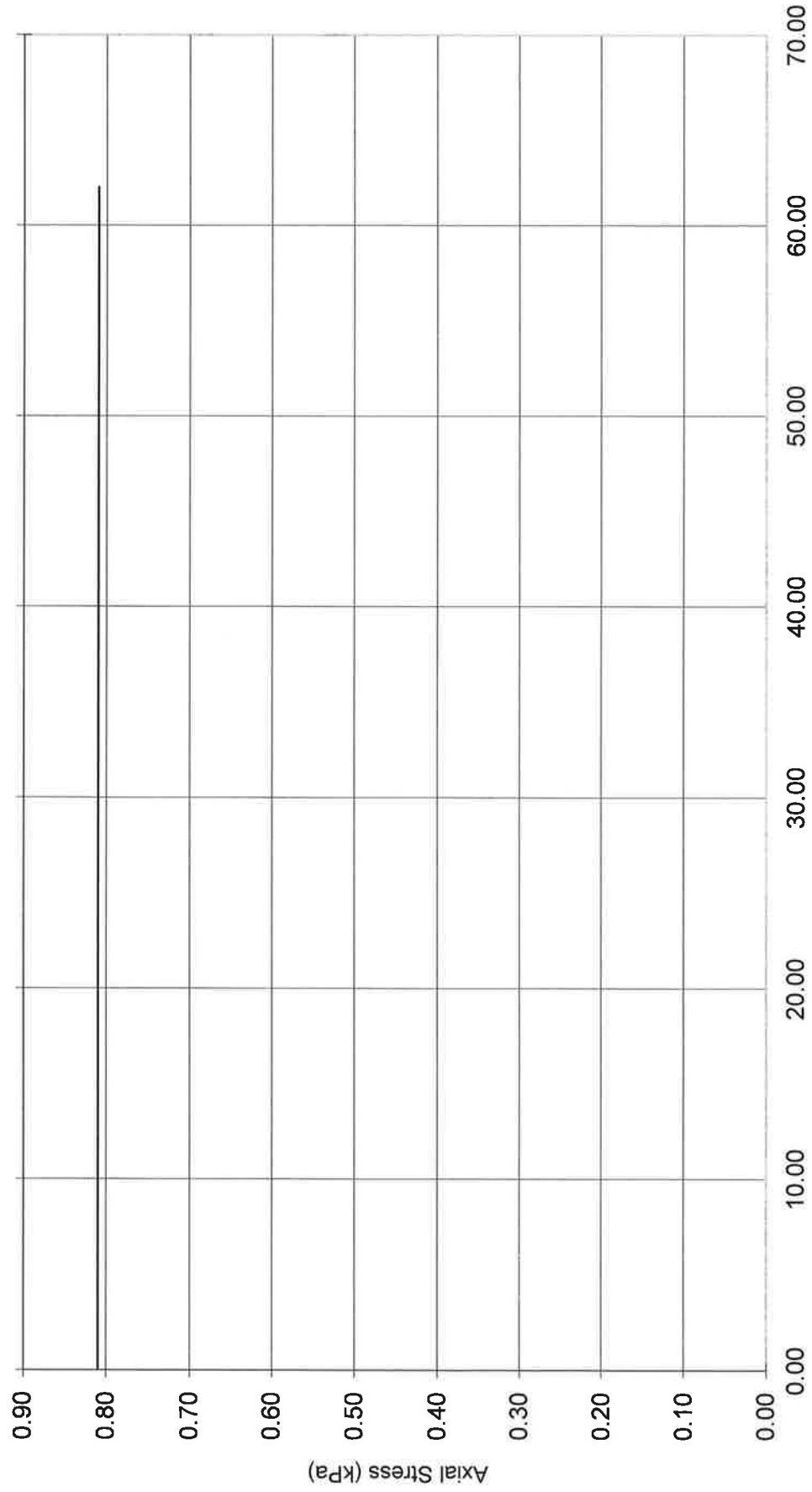
BH 2+425 RUN 9 89'7" - 90'8"



PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

BH 2+425 RUN 9 89'7"-90'8"



ELAPSED TIME (Days)

PROJECT NUMBER 12-1183-0101

PROJECT NUMBER 12-1183-0101

FREE SWELL TEST

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	Run 9
BOREHOLE NUMBER	2+425	SAMPLE DEPTH, ft	86'10"-88'6"

TEST CONDITIONS

CELL NUMBER	1	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	09/22/2012
RESOLUTION, mm	0.001	DURATION OF TEST, days	114
SUBMERGING LIQUID	200g/L NaCl	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cube		

PHYSICAL PROPERTIES (INITIAL)

HEIGHT, cm	4.99	DRY WEIGHT, g	294.22
WIDTH A, cm	4.91	WATER CONTENT, (specimen) %	3.40
WIDTH B, cm	4.80	WET DENSITY, g/cm ³	2.59
SAMPLE AREA, cm ²	23.57	DRY DENSITY, g/cm ³	2.50
SAMPLE VOLUME, cm ³	117.60	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	304.21		

PHYSICAL PROPERTIES (FINAL)

HEIGHT, cm	4.99	DRY WEIGHT, g	294.22
WIDTH A, cm	4.91	WATER CONTENT, (specimen) %	3.61
WIDTH B, cm	4.80	WET DENSITY, g/cm ³	2.59
SAMPLE AREA, cm ²	23.56	DRY DENSITY, g/cm ³	2.50
SAMPLE VOLUME, cm ³	117.59	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	304.84		

TEST RESULTS

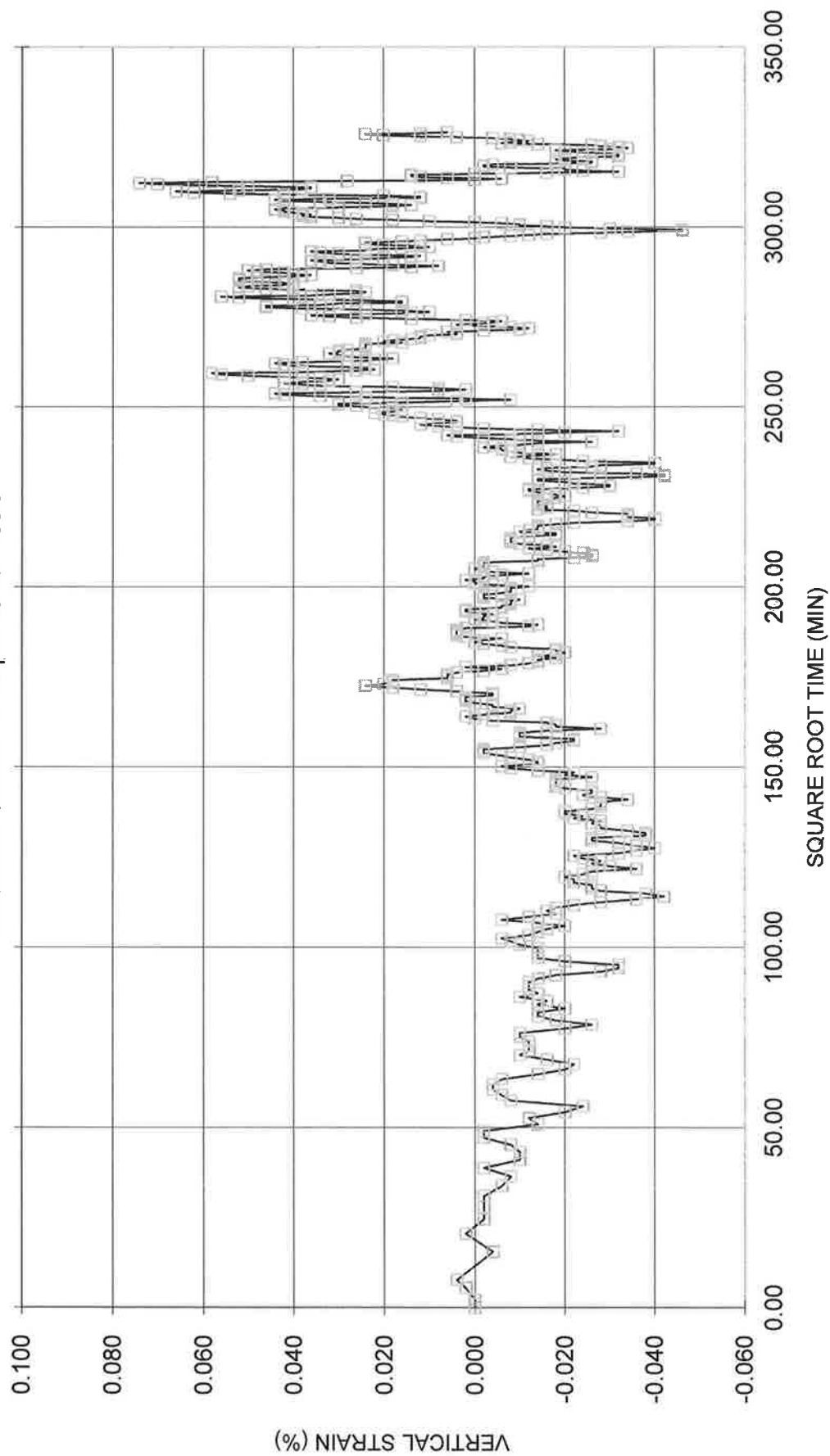
VERTICAL STRAIN, %	0.01
HORIZONTAL STRAIN A, %	-0.04
HORIZONTAL STRAIN B, %	0.02

NOTE: Last portion of the test removed due to salt accumulation between tip of transducer and the top of pedestal.

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

FREE SWELL
Vertical Strain

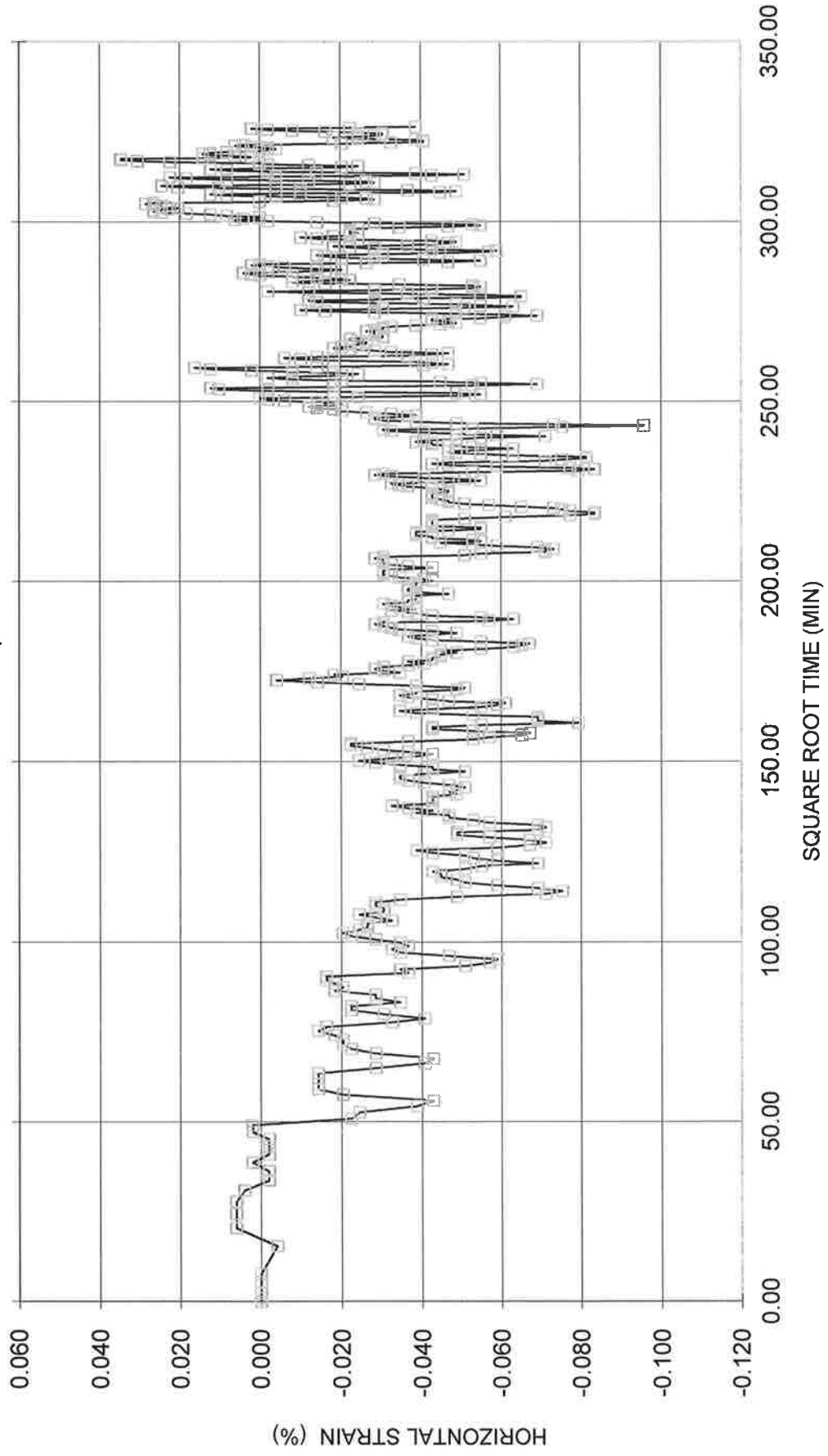
BH 2+425 SA Run 9 Depth 86'10" - 88'6"



PROJECT NUMBER 12-1183-0101

FREE SWELL
Horizontal Strain A

BH 2+425 SA Run 9 Depth 86'10" - 88'6"

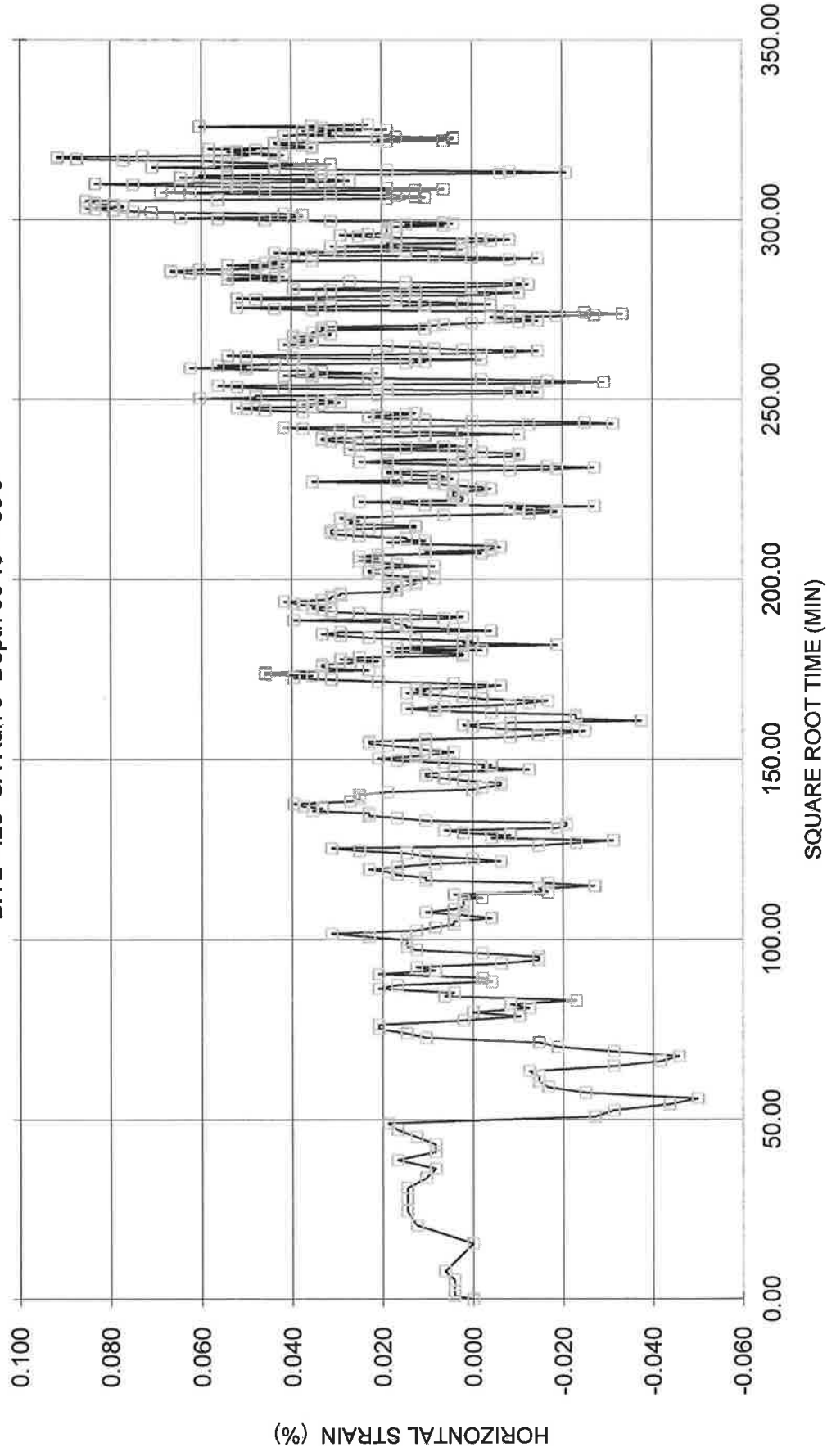


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

BH 2+425 SA Run 9 Depth 86'10" - 88'6"

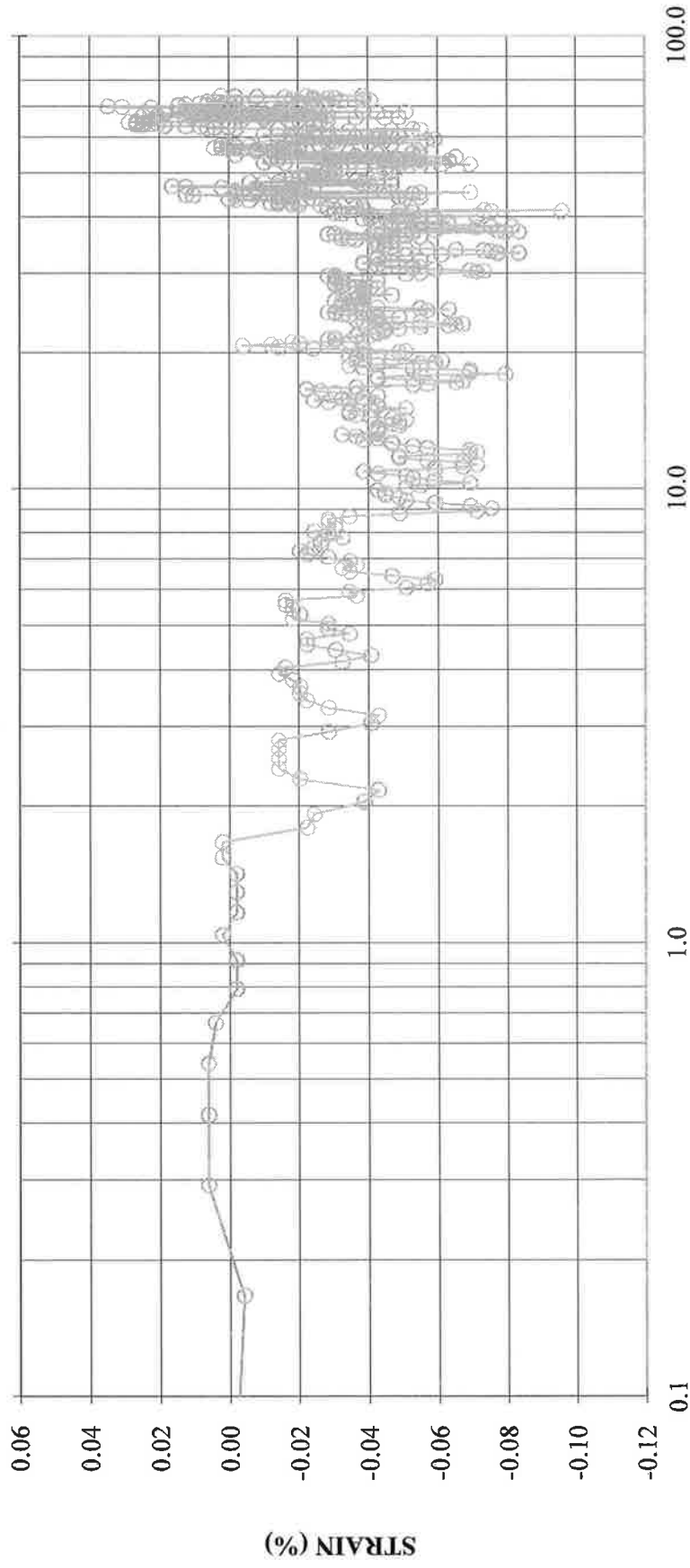


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain A

BH 2+425 SA Run 9 Depth 86'10" - 88'6"



ELAPSED TIME (days)

Horizontal Strain A

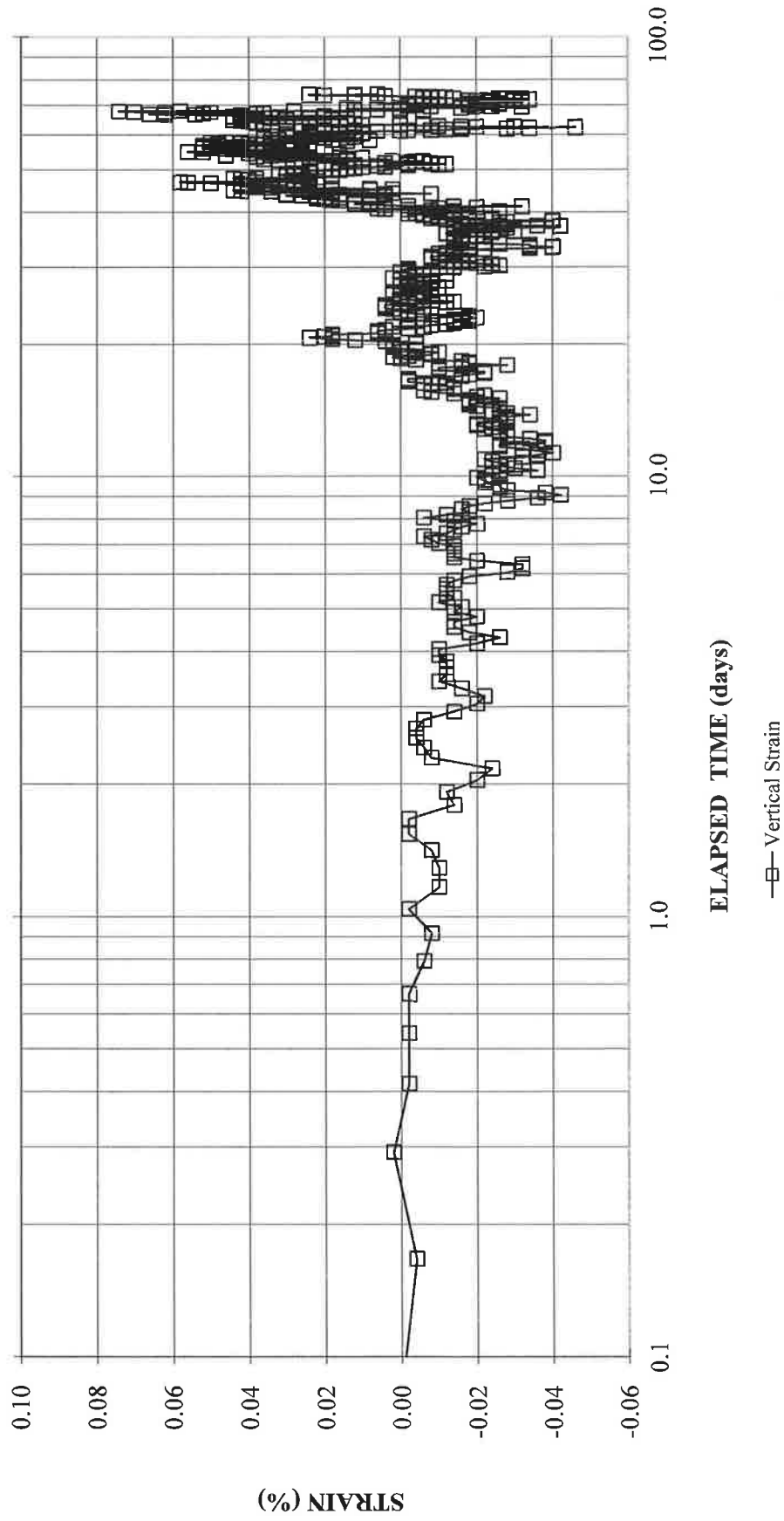
PROJECT NUMBER 12-1183-0101

2

FREE SWELL

Vertical Strain

BH 2+425 SA Run 9 Depth 86'10" - 88'6"

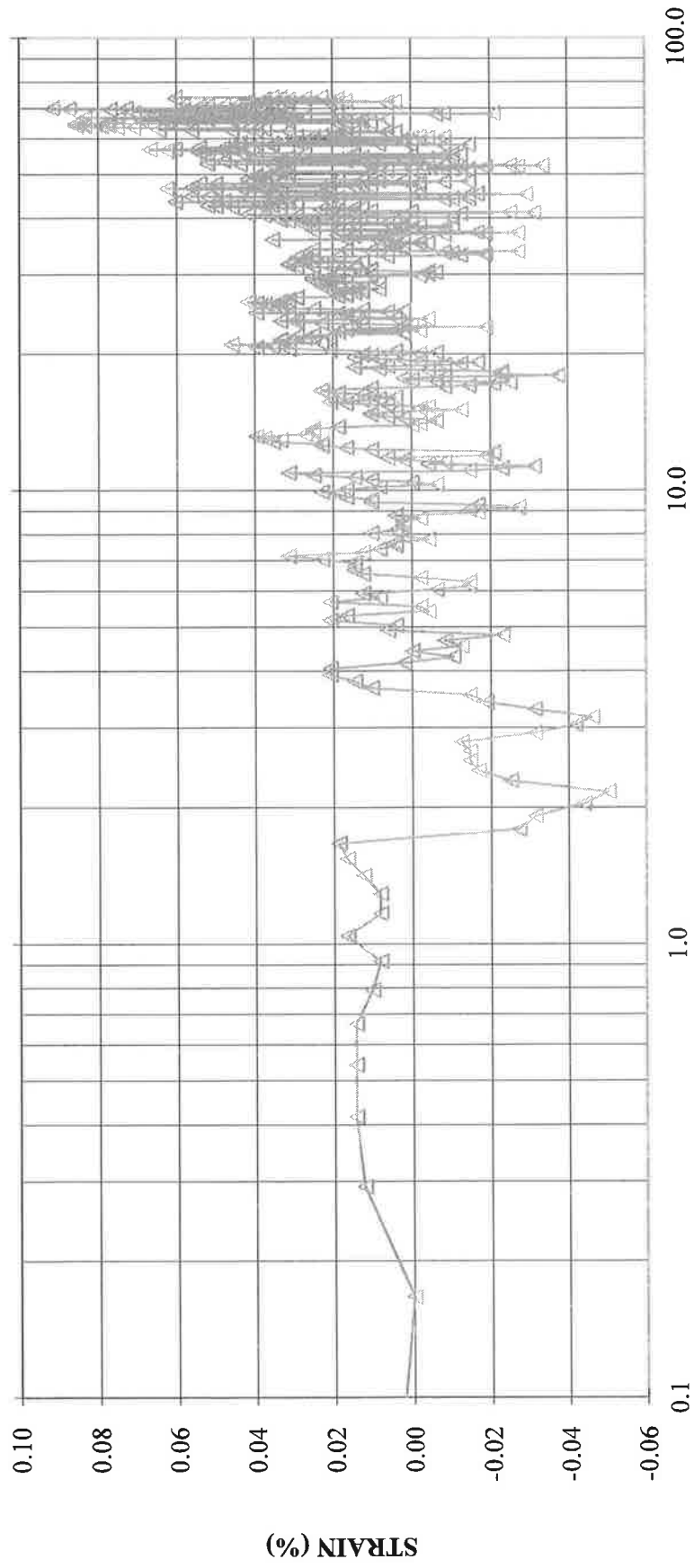


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

BH 2+425 SA Run 9 Depth 86'10" - 88'6"



ELAPSED TIME (days)

Horizontal Strain B

PROJECT NUMBER 12-1183-0101

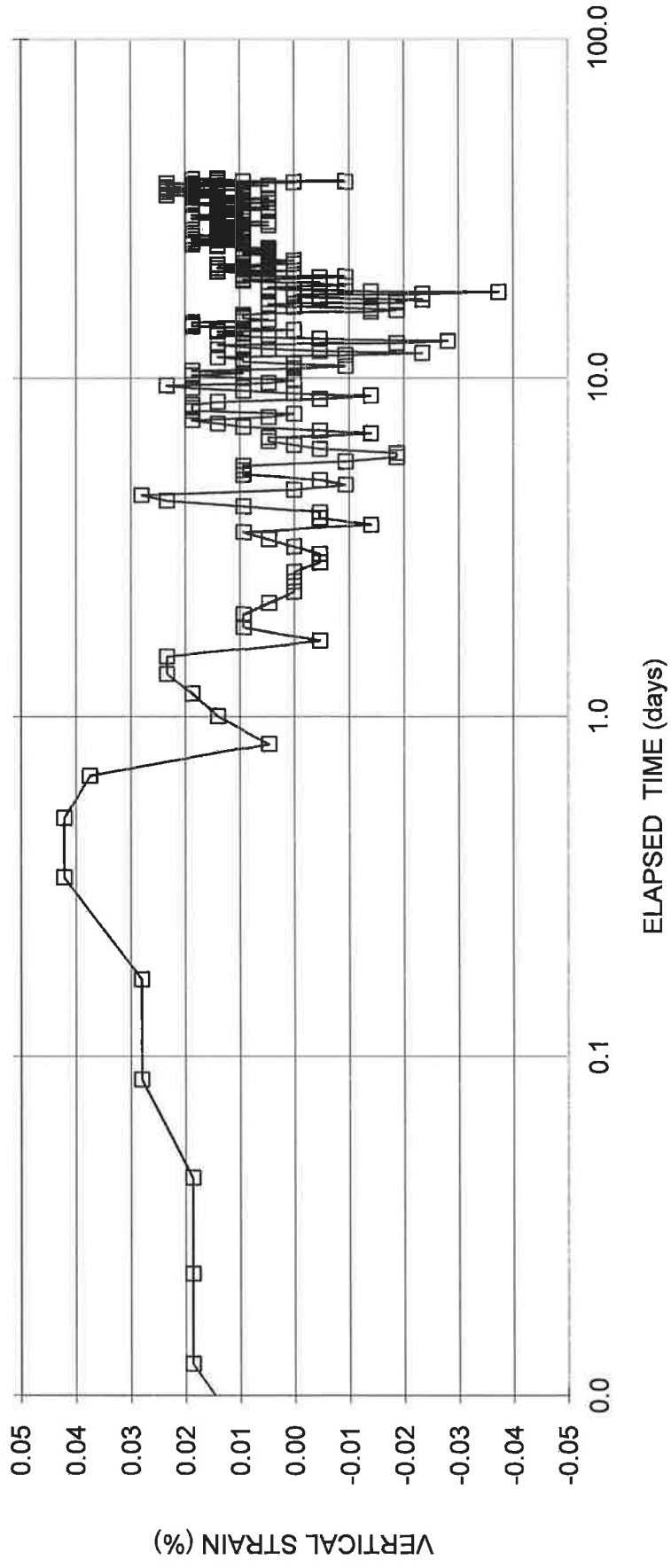
NULL SWELL TEST (Determination of Swelling Stress)

SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 11
BOREHOLE NUMBER	2+585	SAMPLE DEPTH, m	100'9"-101'
TEST CONDITIONS			
CELL NUMBER	1	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	12/01/2012
DIVISION, mm	0.001	DURATION OF TEST, days	39
SUBMERGING LIQUID	200g/L NaCl	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cylinder	APPLIED SEATING LOAD, kPa	0.8
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	2.14	WATER CONTENT, (specimen) %	3.55
DIAMETER, cm	6.31	WET DENSITY, g/cm ³	2.65
SAMPLE AREA, cm ²	31.30	DRY DENSITY, g/cm ³	2.56
SAMPLE VOLUME, cm ³	66.99	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	177.44		
DRY WEIGHT, g	171.35		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	2.14	WATER CONTENT, (specimen) %	3.70
DIAMETER, cm	6.31	WET DENSITY, g/cm ³	2.65
SAMPLE AREA, cm ²	31.30	DRY DENSITY, g/cm ³	2.56
SAMPLE VOLUME, cm ³	66.98	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	177.69		
DRY WEIGHT, g	171.35		
TEST RESULTS			
		SWELLING STRAIN, %	0.01
		SWELLING STRESS, kPa	11.75

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

NULL SWELL TEST (Determination of Swelling Stress)

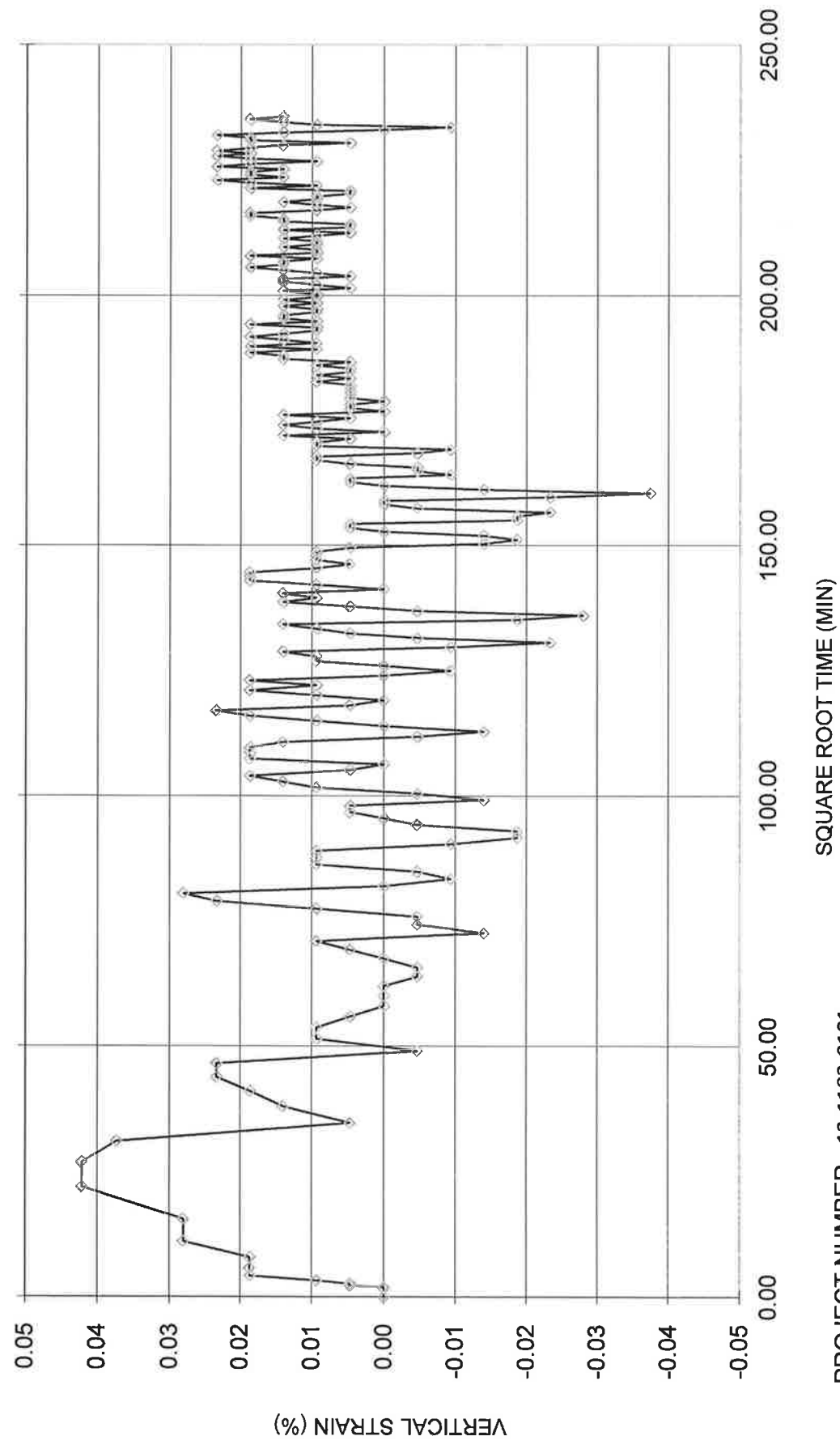
BH 2+585 RUN 11 100'9"-101'



PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

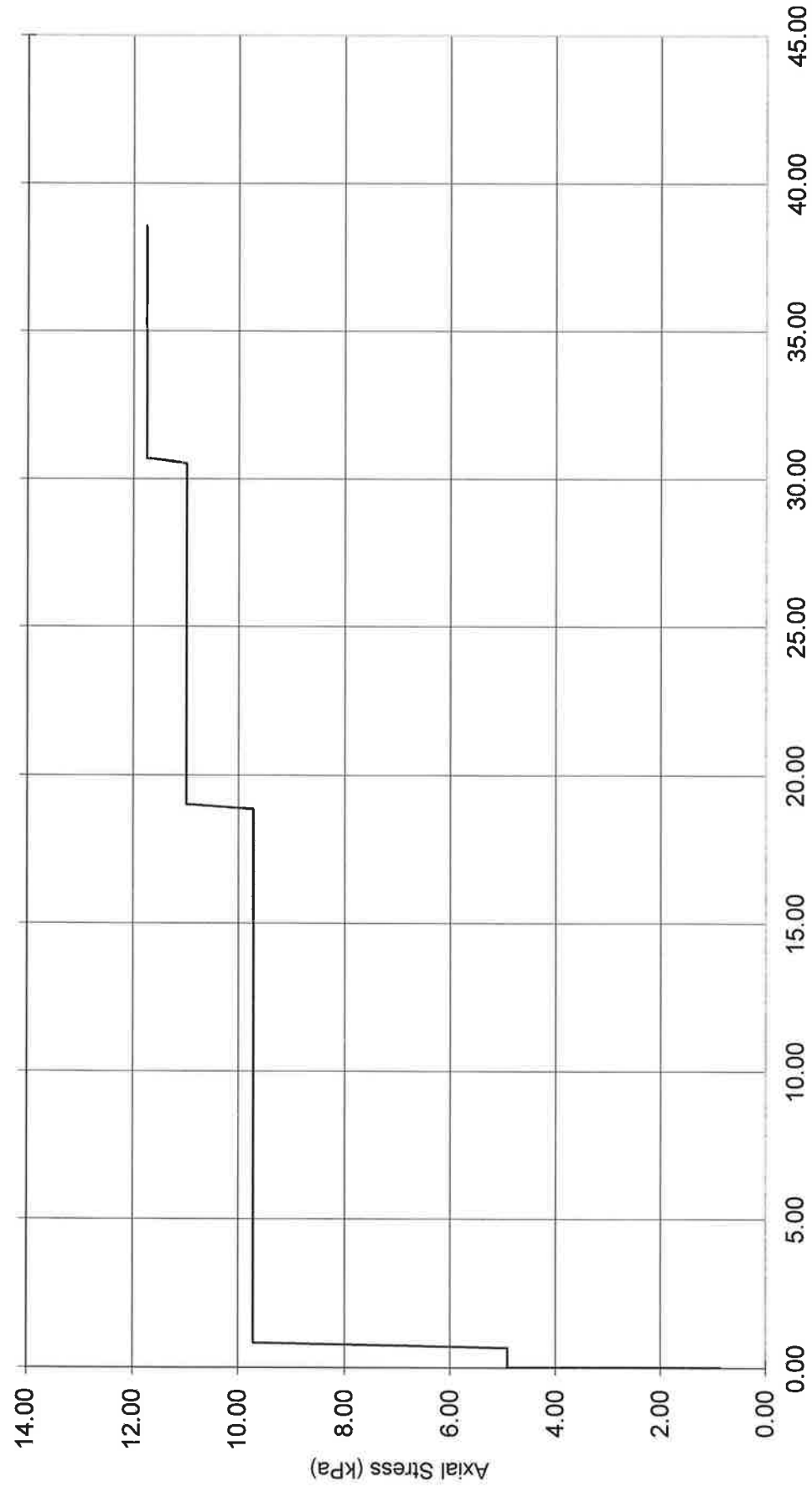
BH 2+585 RUN 11 100'9"-101'



PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

BH 2+585 RUN 11 100'9"-101'



ELAPSED TIME (Days)

PROJECT NUMBER 12-1183-0101

AXIAL STRESS (kPa)

FREE SWELL TEST

SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 10
BOREHOLE NUMBER	2+585	SAMPLE DEPTH, m	94'5"-95'6"
TEST CONDITIONS			
CELL NUMBER	1	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	15/01/13
RESOLUTION, mm	0.001	DURATION OF TEST, days	71
SUBMERGING LIQUID	NaCl Solution	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cube		
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	5.02	DRY WEIGHT, g	310.38
WIDTH A, cm	4.94	WATER CONTENT, (specimen) %	1.82
WIDTH B, cm	4.99	WET DENSITY, g/cm ³	2.55
SAMPLE AREA, cm ²	24.65	DRY DENSITY, g/cm ³	2.51
SAMPLE VOLUME, cm ³	123.75	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	316.02		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	5.03	DRY WEIGHT, g	310.38
WIDTH A, cm	4.94	WATER CONTENT, (specimen) %	2.20
WIDTH B, cm	4.99	WET DENSITY, g/cm ³	2.56
SAMPLE AREA, cm ²	24.66	DRY DENSITY, g/cm ³	2.50
SAMPLE VOLUME, cm ³	123.97	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	317.20		
TEST RESULTS			
		VERTICAL STRAIN, %	0.12
		HORIZONTAL STRAIN A, %	0.05
		HORIZONTAL STRAIN B, %	0.00

REMARKS:

Test performed following:

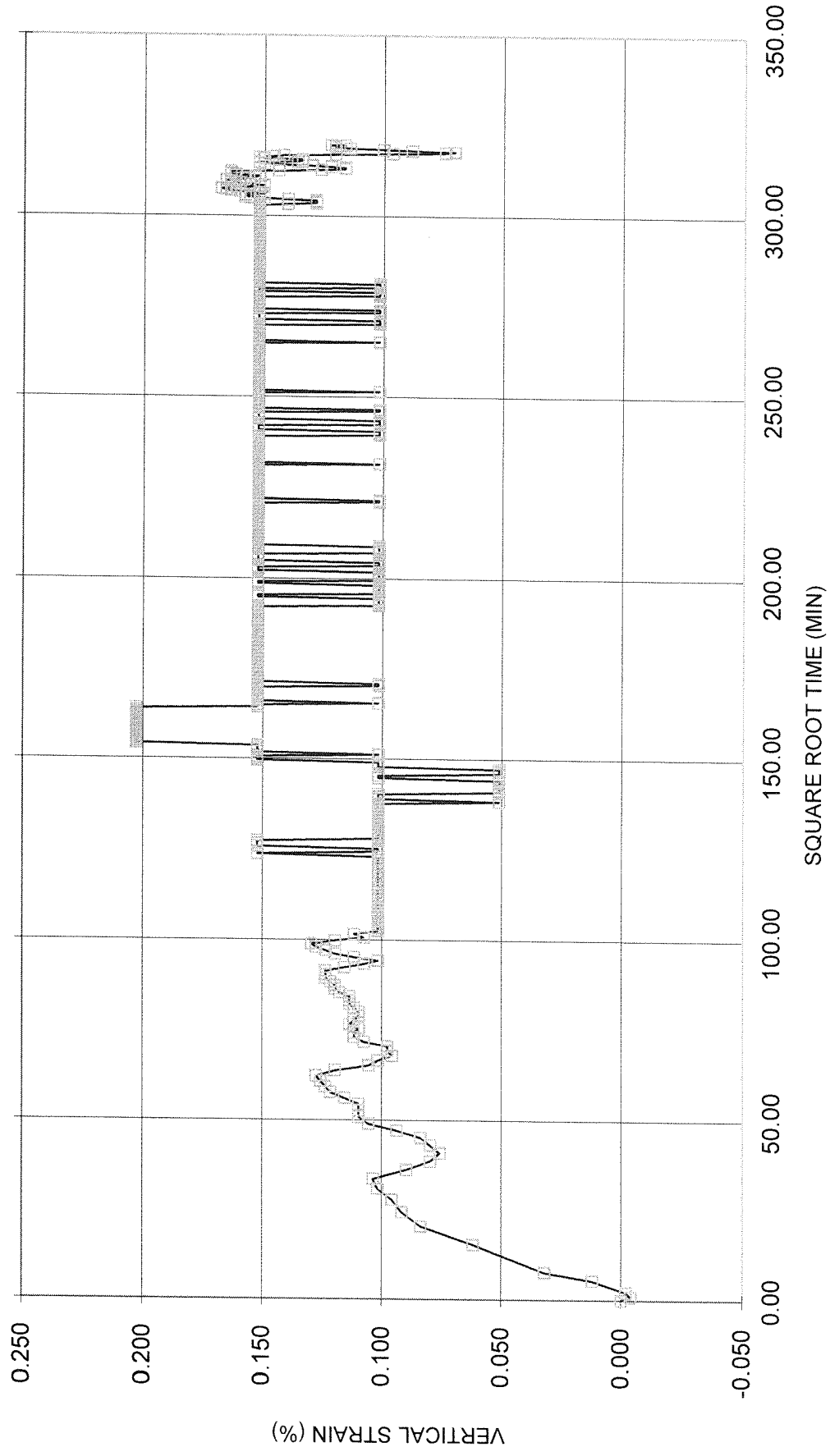
"Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
and

"Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

Handwritten signature

FREE SWELL
Vertical Strain

BH 2+585 SA RUN 10 94'5"-95'6"



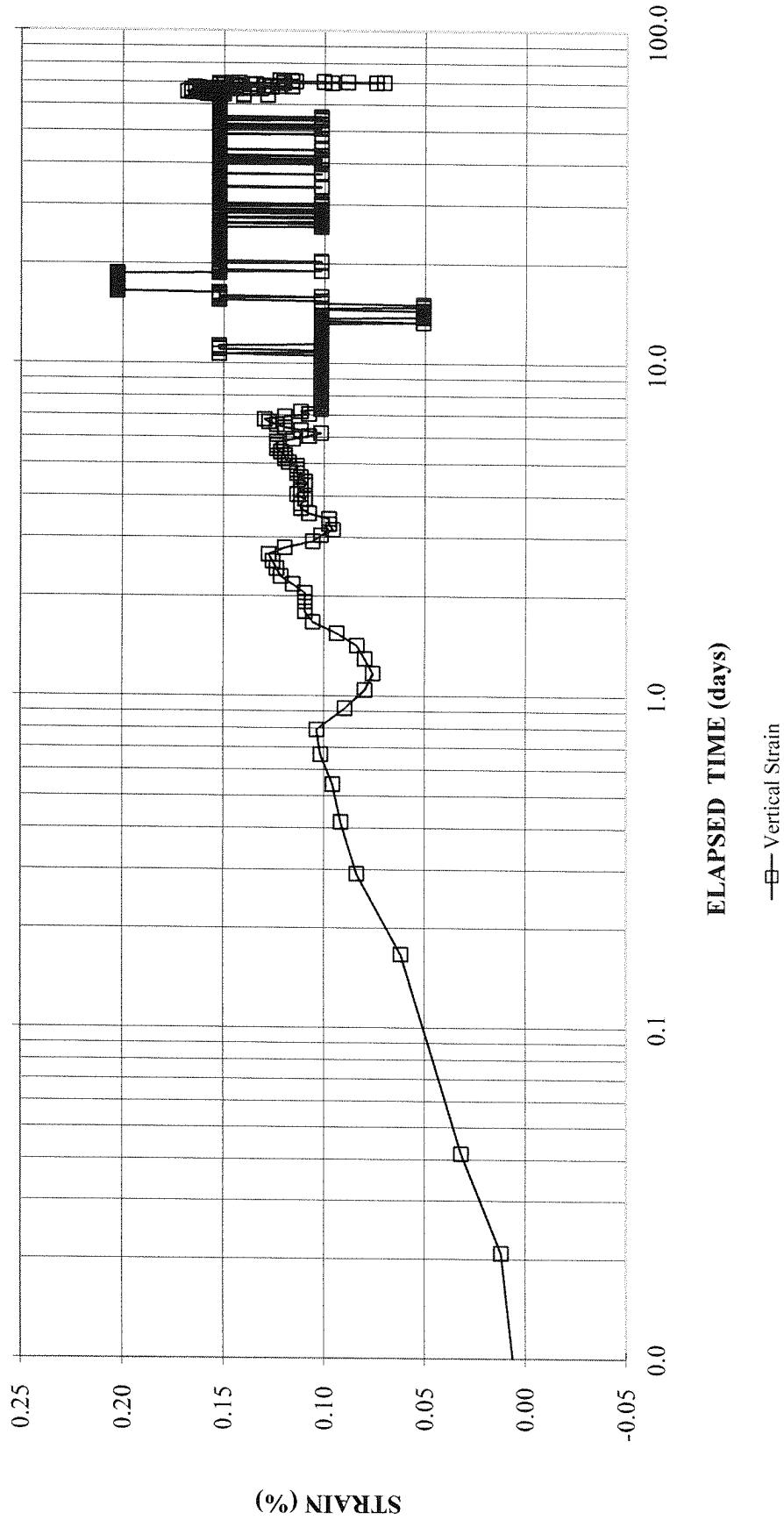
PROJECT NUMBER 12-1183-0101

h4

FREE SWELL

Vertical Strain

BH 2+585 SA RUN 10 94'5"-95'6"

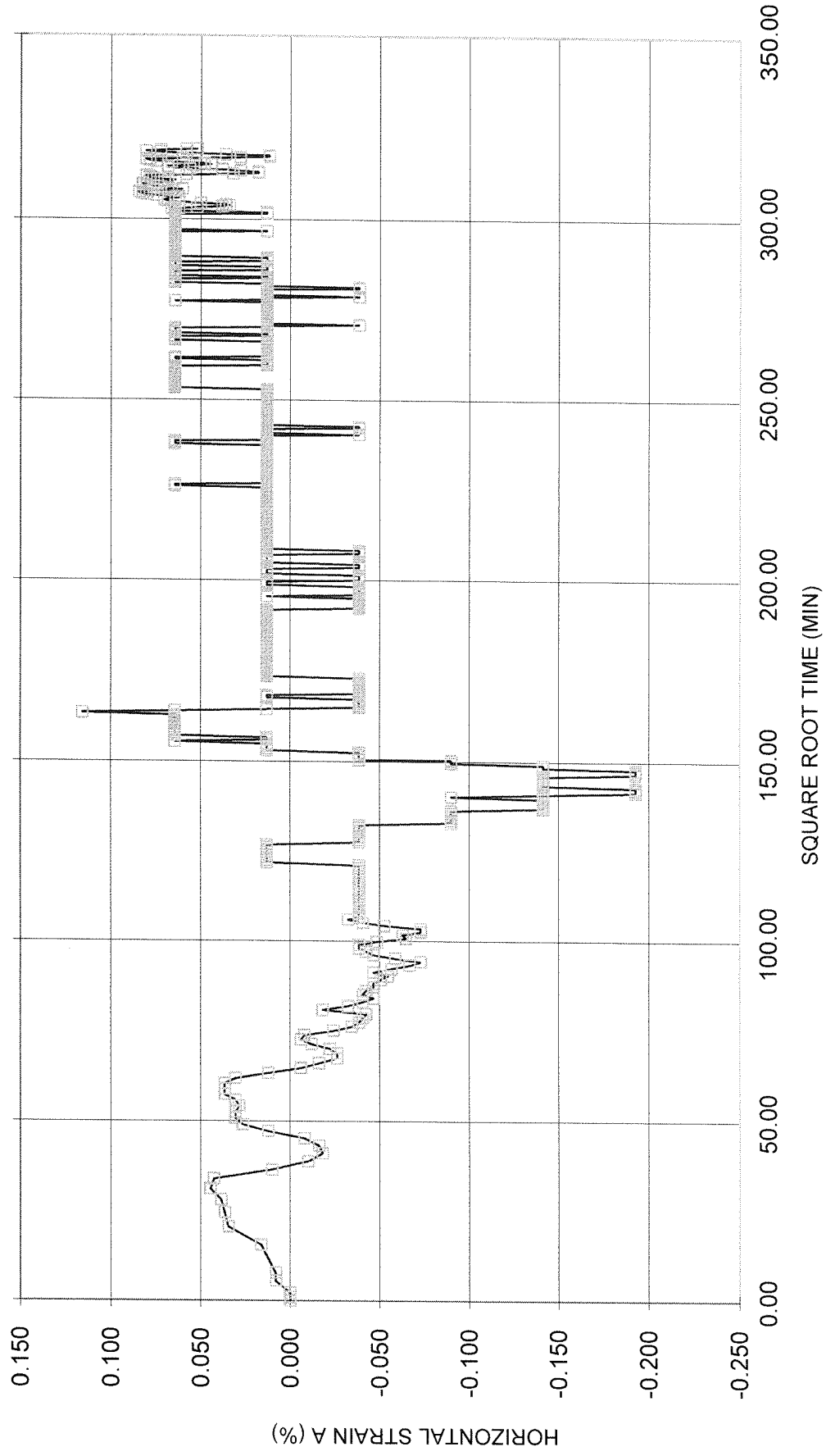


PROJECT NUMBER 12-1183-0101

74

FREE SWELL
Horizontal Strain A

BH 2+585 SA RUN 10 94'5"-95'6"



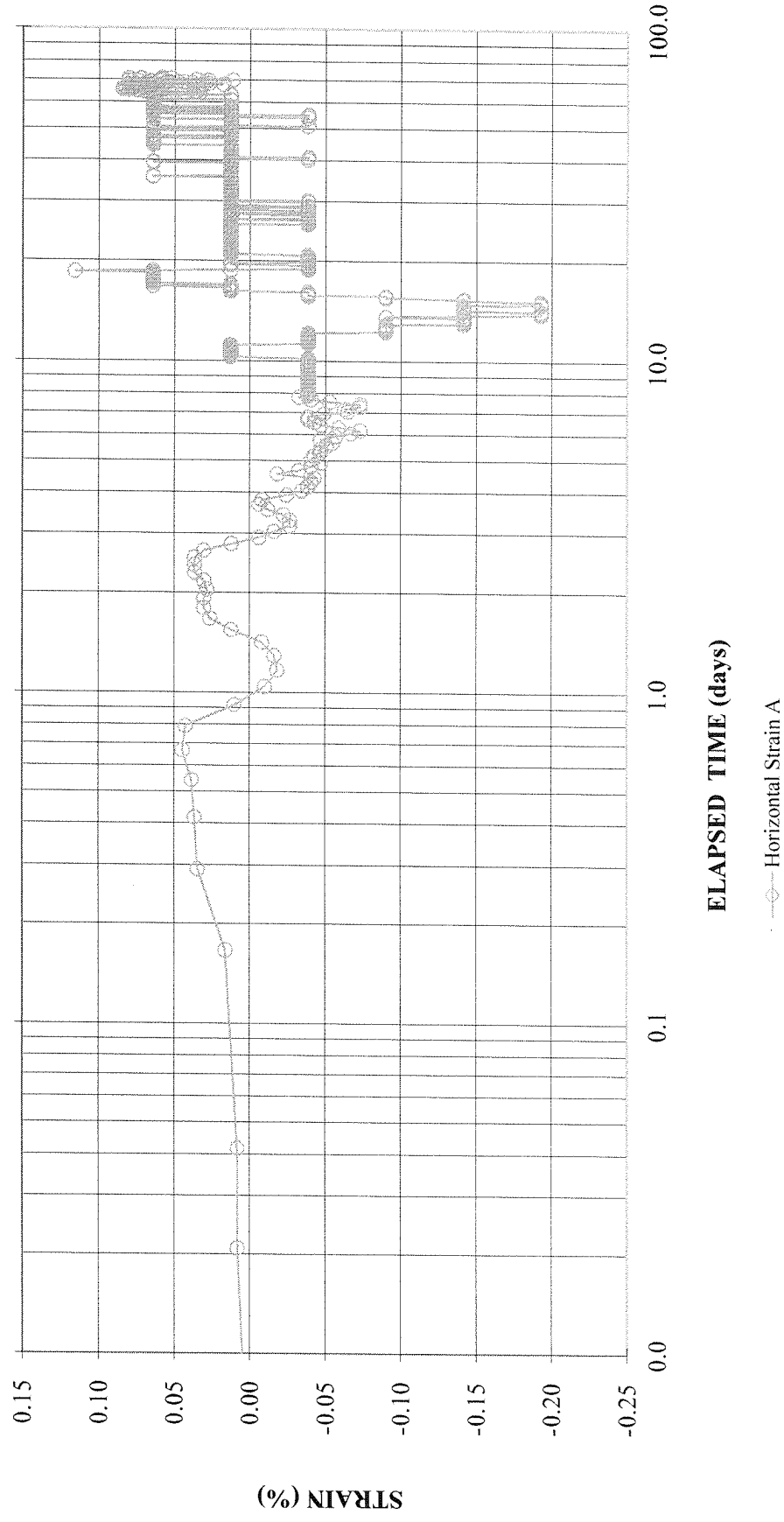
PROJECT NUMBER 12-1183-0101

Handwritten signature

FREE SWELL

Horizontal Strain A

BH 2+585 SA RUN 10 94'5"-95'6"



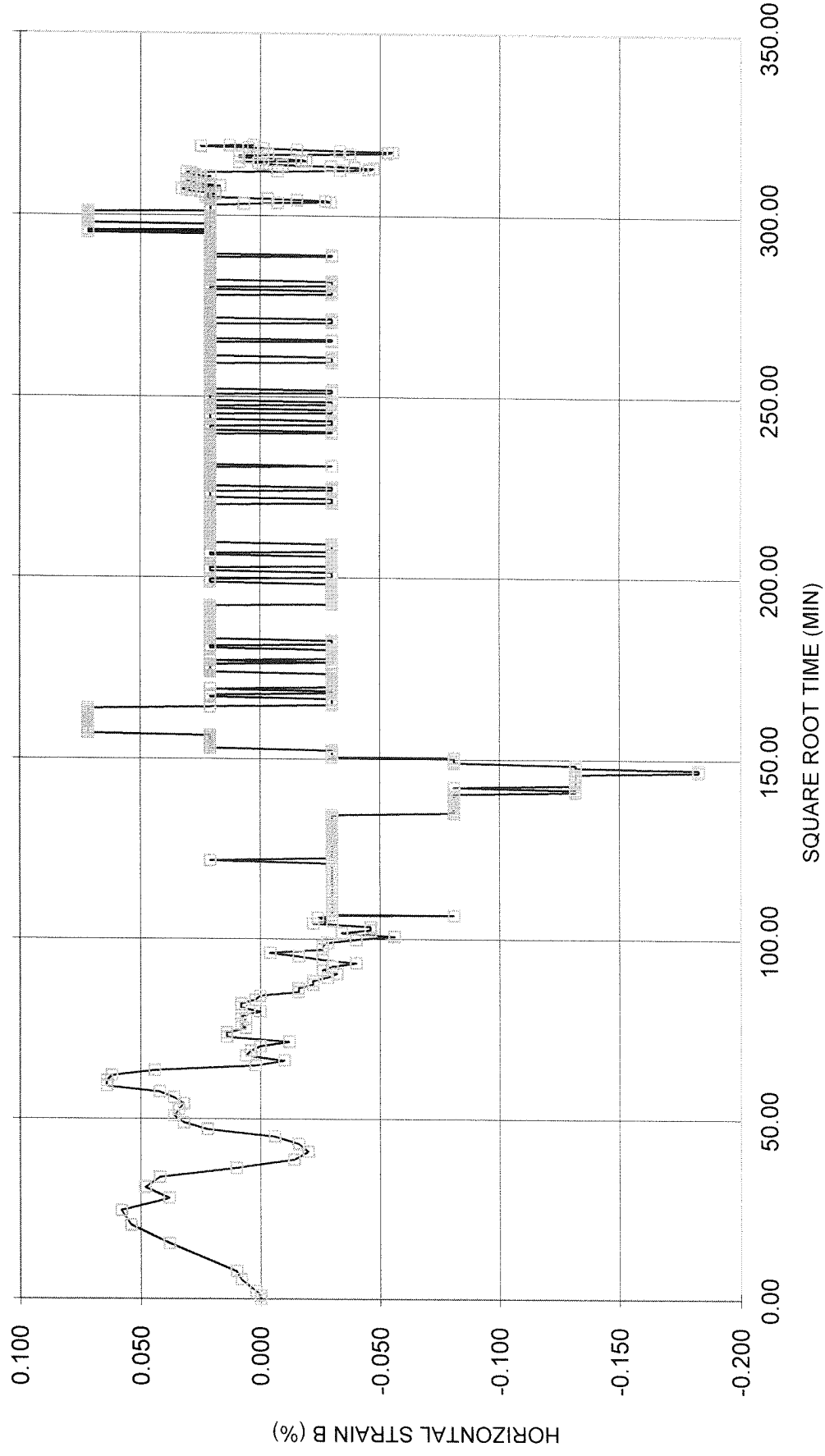
PROJECT NUMBER 12-1183-0101

hly

FREE SWELL

Horizontal Strain B

BH 2+585 SA RUN 10 94'5"-95'6"



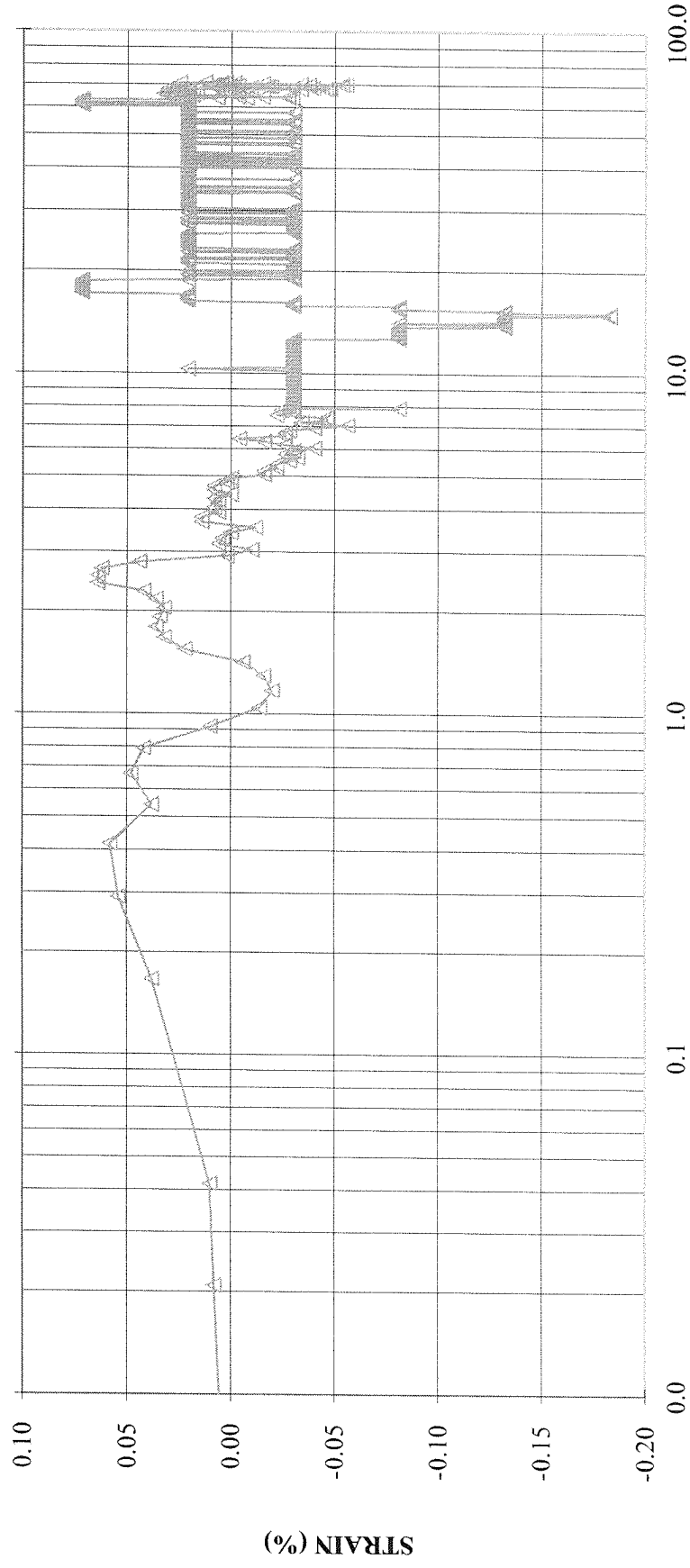
PROJECT NUMBER 12-1183-0101

Handwritten signature

FREE SWELL

Horizontal Strain B

BH 2+585 SA RUN 10 94'5"-95'6"



ELAPSED TIME (days)

Horizontal Strain B

PROJECT NUMBER 12-1183-0101

Handwritten signature

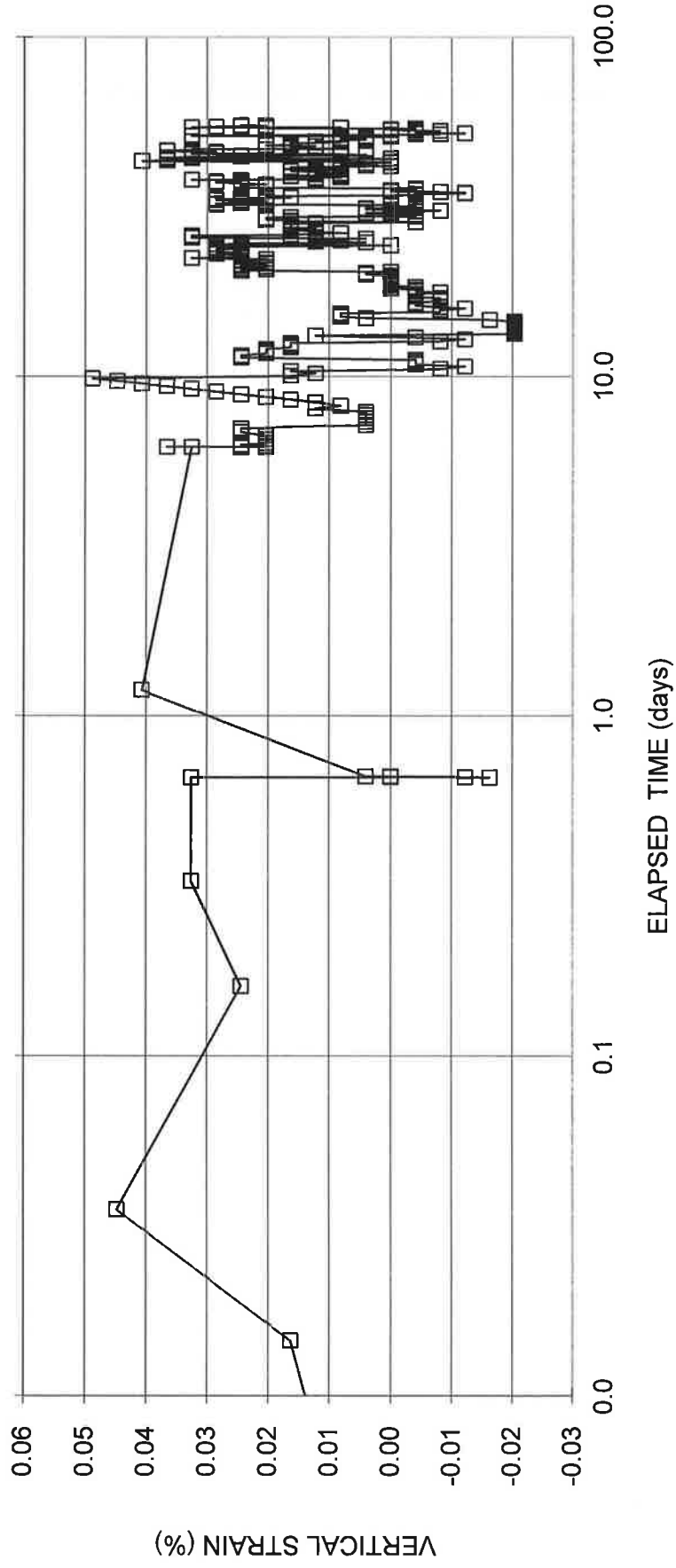
NULL SWELL TEST (Determination of Swelling Stress)

SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 10
BOREHOLE NUMBER	2+640	SAMPLE DEPTH, m	96'11"-98'
TEST CONDITIONS			
CELL NUMBER	7	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	04-10-12
DIVISION, mm	0.001	DURATION OF TEST, days	55
SUBMERGING WATER	Distilled	BEDDING PLANES ORIENTATION	
GEOMETRY OF SPECIMEN	cylinder	APPLIED SEATING LOAD, kPa	0.8
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	2.46	WATER CONTENT, (specimen) %	4.00
DIAMETER, cm	6.30	WET DENSITY, g/cm ³	2.61
SAMPLE AREA, cm ²	31.17	DRY DENSITY, g/cm ³	2.51
SAMPLE VOLUME, cm ³	76.69	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	199.97		
DRY WEIGHT, g	192.27		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	2.46	WATER CONTENT, (specimen) %	4.12
DIAMETER, cm	6.30	WET DENSITY, g/cm ³	2.61
SAMPLE AREA, cm ²	31.17	DRY DENSITY, g/cm ³	2.51
SAMPLE VOLUME, cm ³	76.67	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	200.19		
DRY WEIGHT, g	192.27		
TEST RESULTS			
		SWELLING STRAIN, %	0.02
		SWELLING STRESS, kPa	121.49

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

NULL SWELL TEST (Determination of Swelling Stress)

BH 2+640 SA RUN 10 96'11"-98'

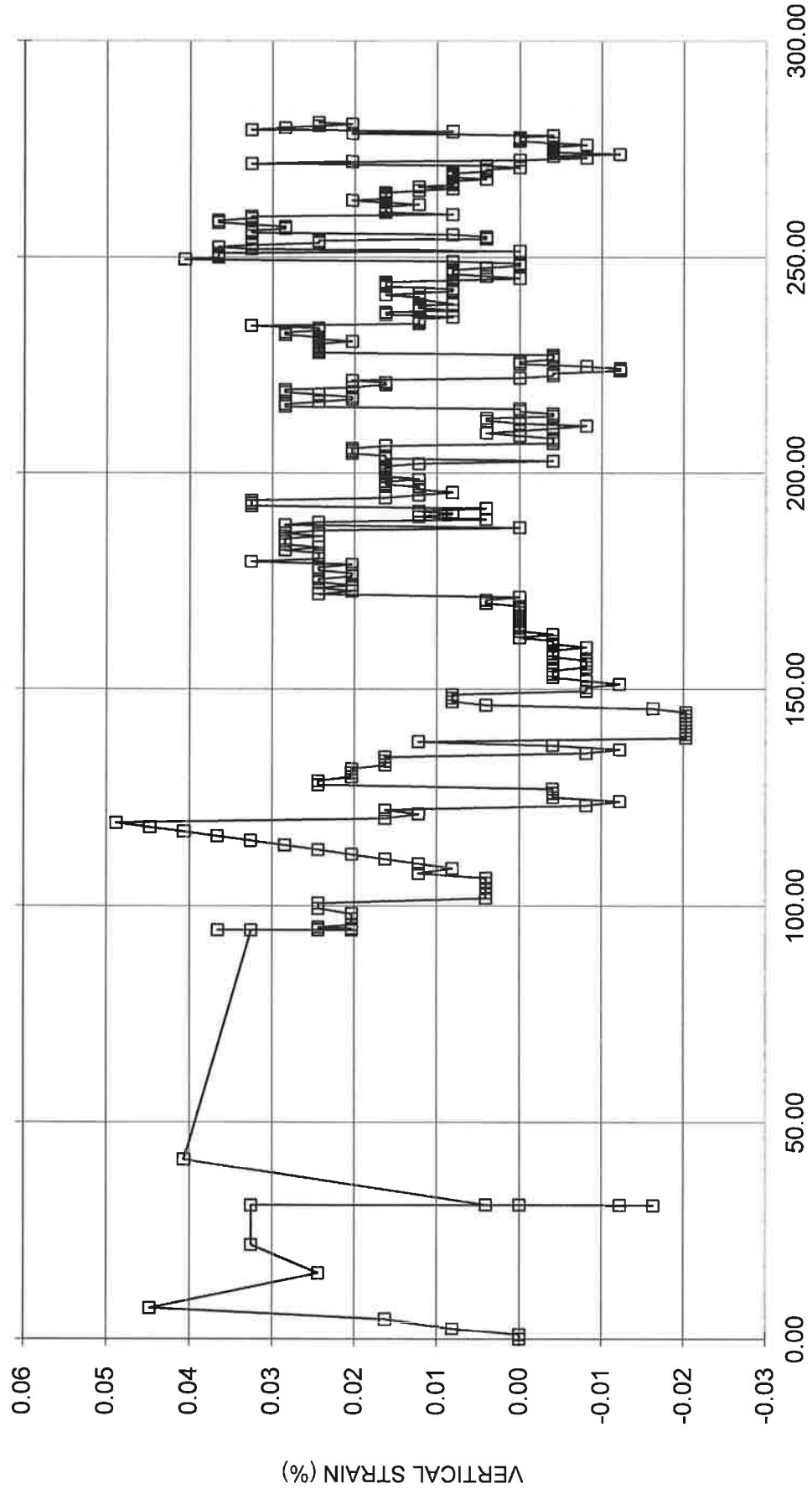


PROJECT NUMBER 12-1183-0101

Ro

NULL SWELL TEST (Determination of Swelling Stress)

BH 2+640 SA RUN 10 96'11"-98'

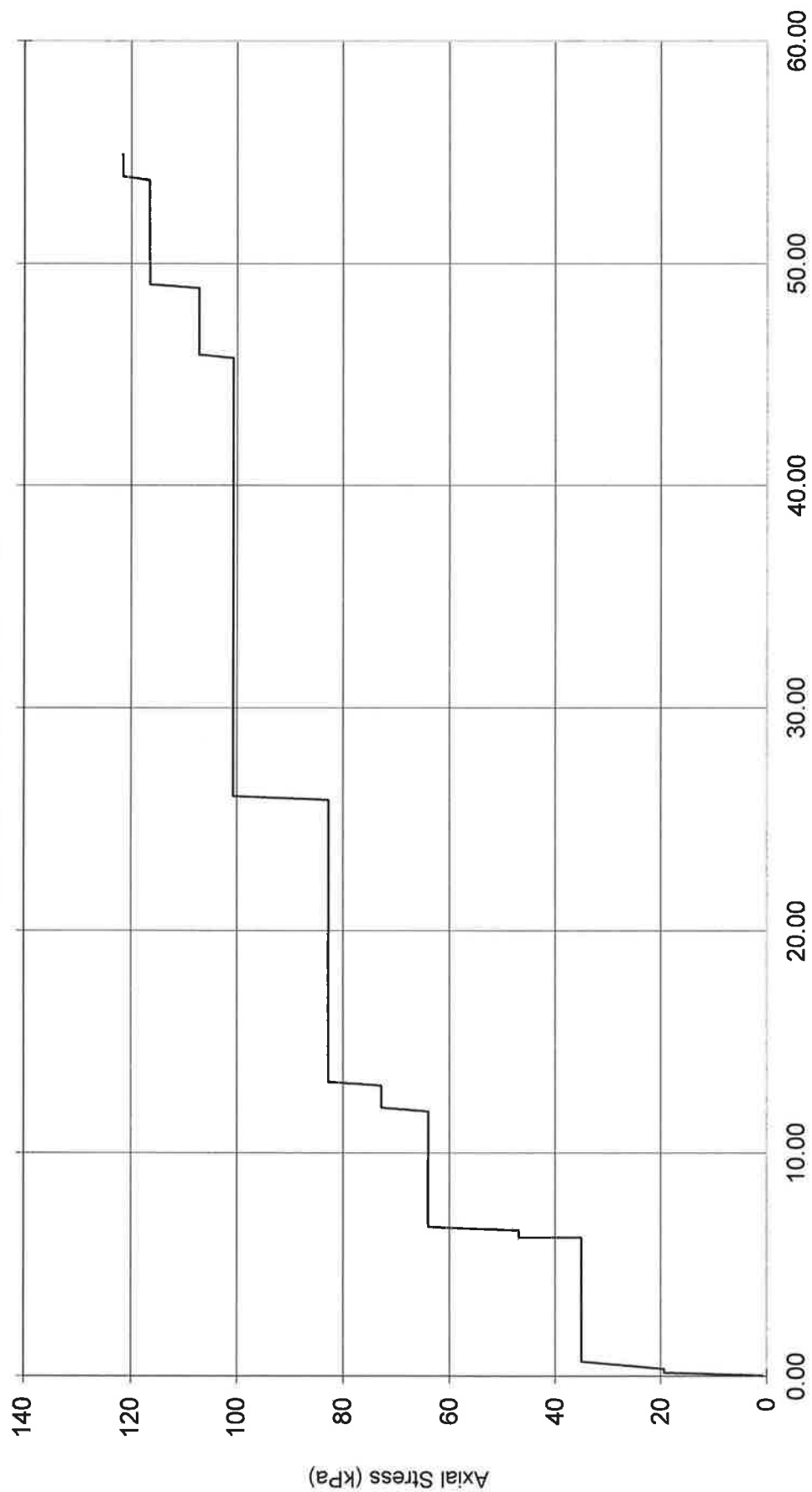


SQUARE ROOT TIME (MIN)

PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

BH 2+640 SA RUN 10 96'11"-98'



ELAPSED TIME (Days)

PROJECT NUMBER 12-1183-0101

PO

FREE SWELL TEST

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	Run 10
BOREHOLE NUMBER	2+640	SAMPLE DEPTH, ft	91'9"-93'

TEST CONDITIONS

CELL NUMBER	3	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	01/12/2012
RESOLUTION, mm	0.001	DURATION OF TEST, days	44
SUBMERGING LIQUID	Distilled water	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cube		

PHYSICAL PROPERTIES (INITIAL)

HEIGHT, cm	5.35	DRY WEIGHT, g	318.08
WIDTH A, cm	4.79	WATER CONTENT, (specimen) %	4.08
WIDTH B, cm	5.00	WET DENSITY, g/cm ³	2.58
SAMPLE AREA, cm ²	23.95	DRY DENSITY, g/cm ³	2.48
SAMPLE VOLUME, cm ³	128.23	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	331.07		

PHYSICAL PROPERTIES (FINAL)

HEIGHT, cm	5.42	DRY WEIGHT, g	318.08
WIDTH A, cm	4.80	WATER CONTENT, (specimen) %	4.66
WIDTH B, cm	5.02	WET DENSITY, g/cm ³	2.55
SAMPLE AREA, cm ²	24.09	DRY DENSITY, g/cm ³	2.44
SAMPLE VOLUME, cm ³	130.47	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	332.90		

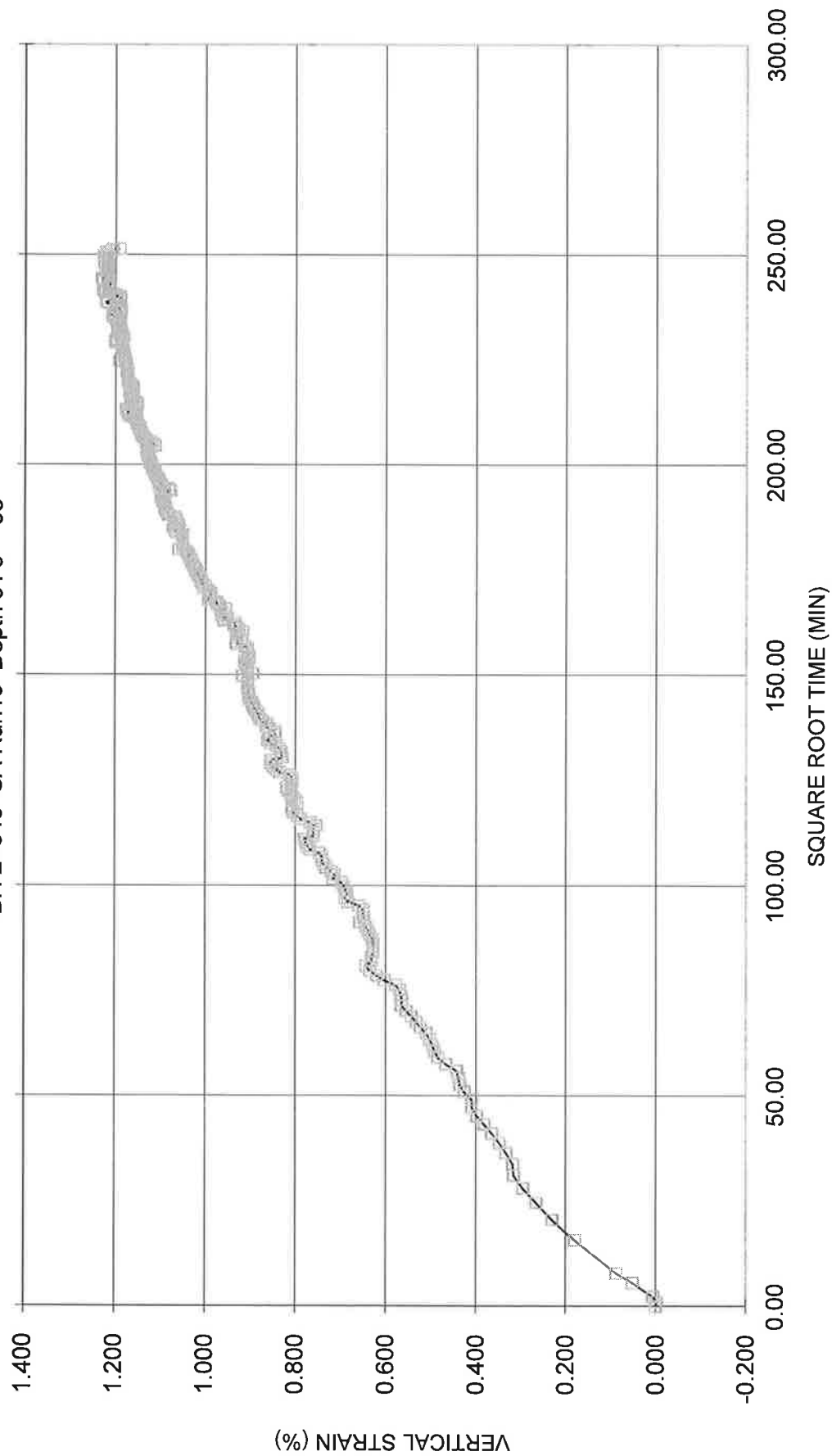
TEST RESULTS

VERTICAL STRAIN, %	1.19
HORIZONTAL STRAIN A, %	0.25
HORIZONTAL STRAIN B, %	0.30

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

FREE SWELL
Vertical Strain

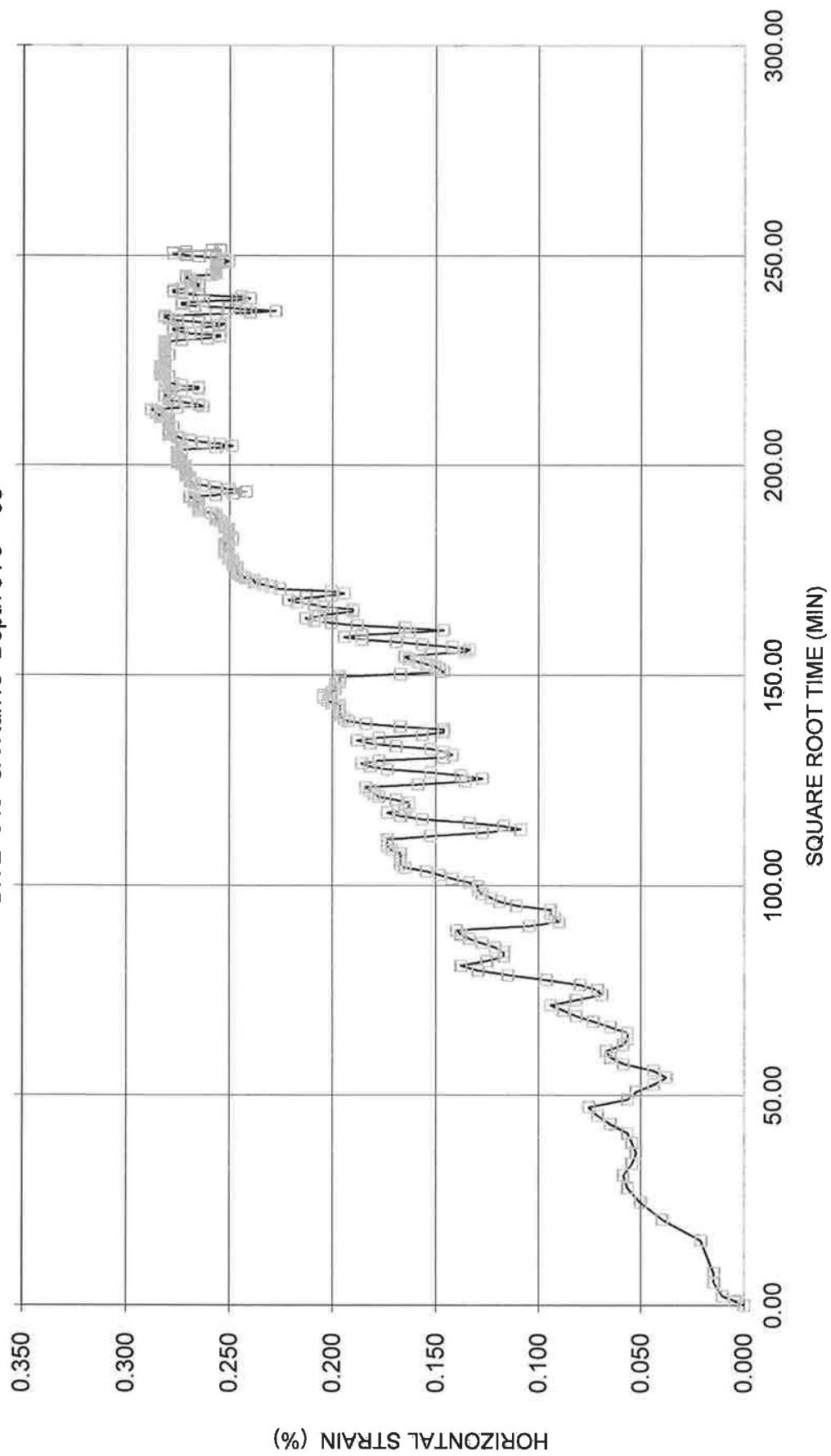
BH 2+640 SA Run10 Depth 91'9" - 93'



PROJECT NUMBER 12-1183-0101

FREE SWELL
Horizontal Strain A

BH 2+640 SA Run10 Depth 91'9" - 93'

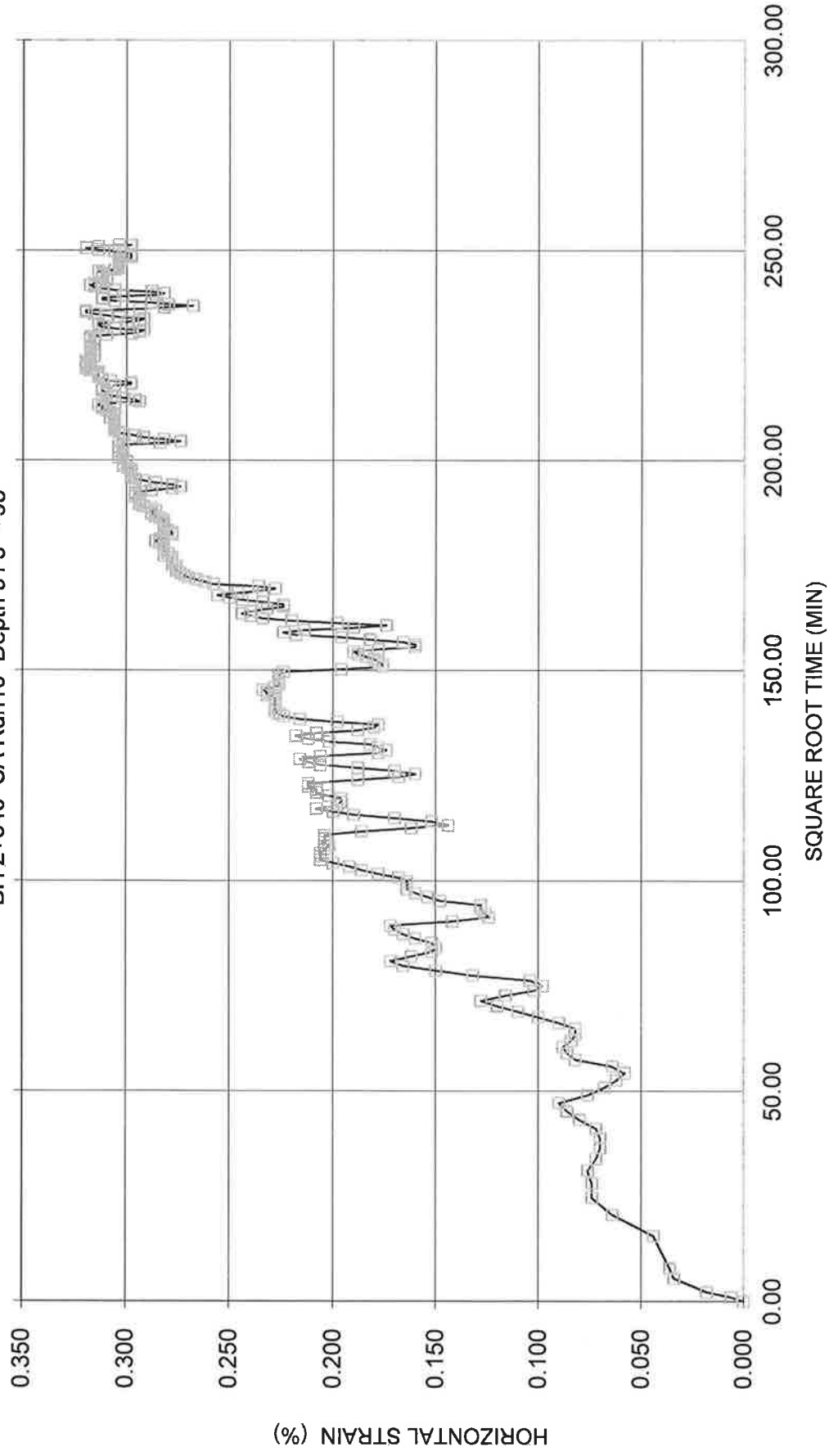


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

BH 2+640 SA Run10 Depth 91'9" - 93'

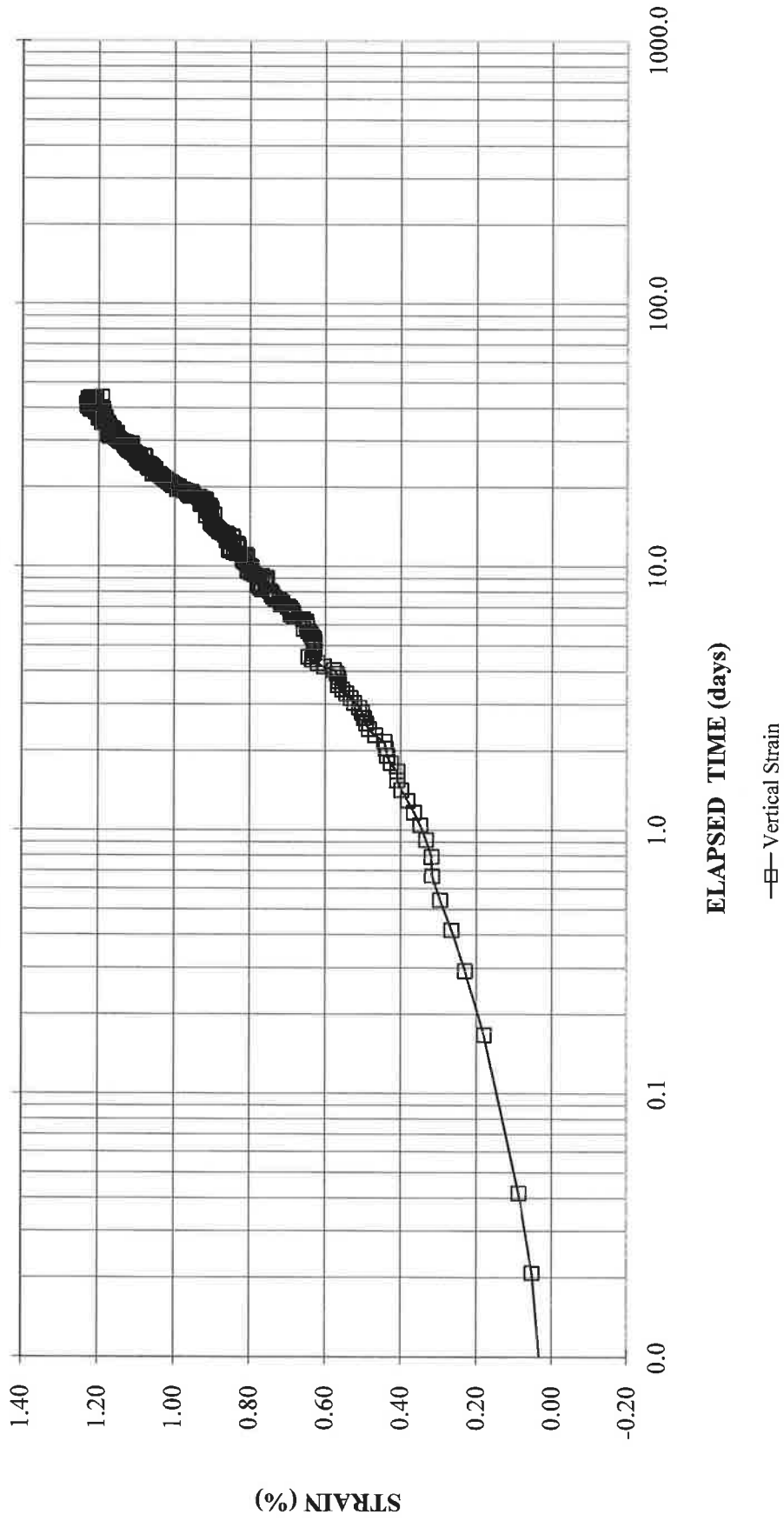


PROJECT NUMBER 12-1183-0101

FREE SWELL

Vertical Strain

BH 2+640 SA Run10 Depth 91'9" - 93'

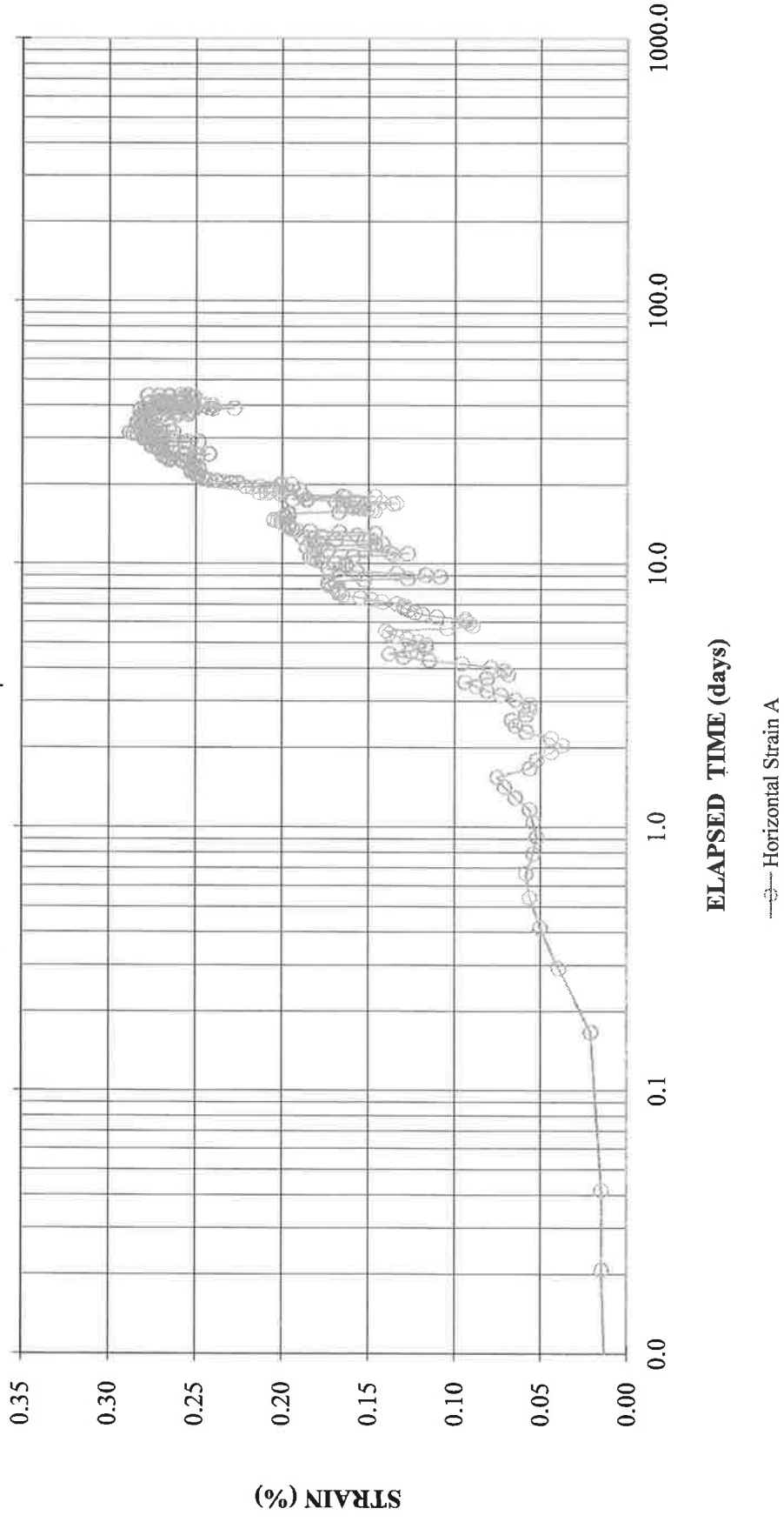


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain A

BH 2+640 SA Run10 Depth 91'9" - 93'



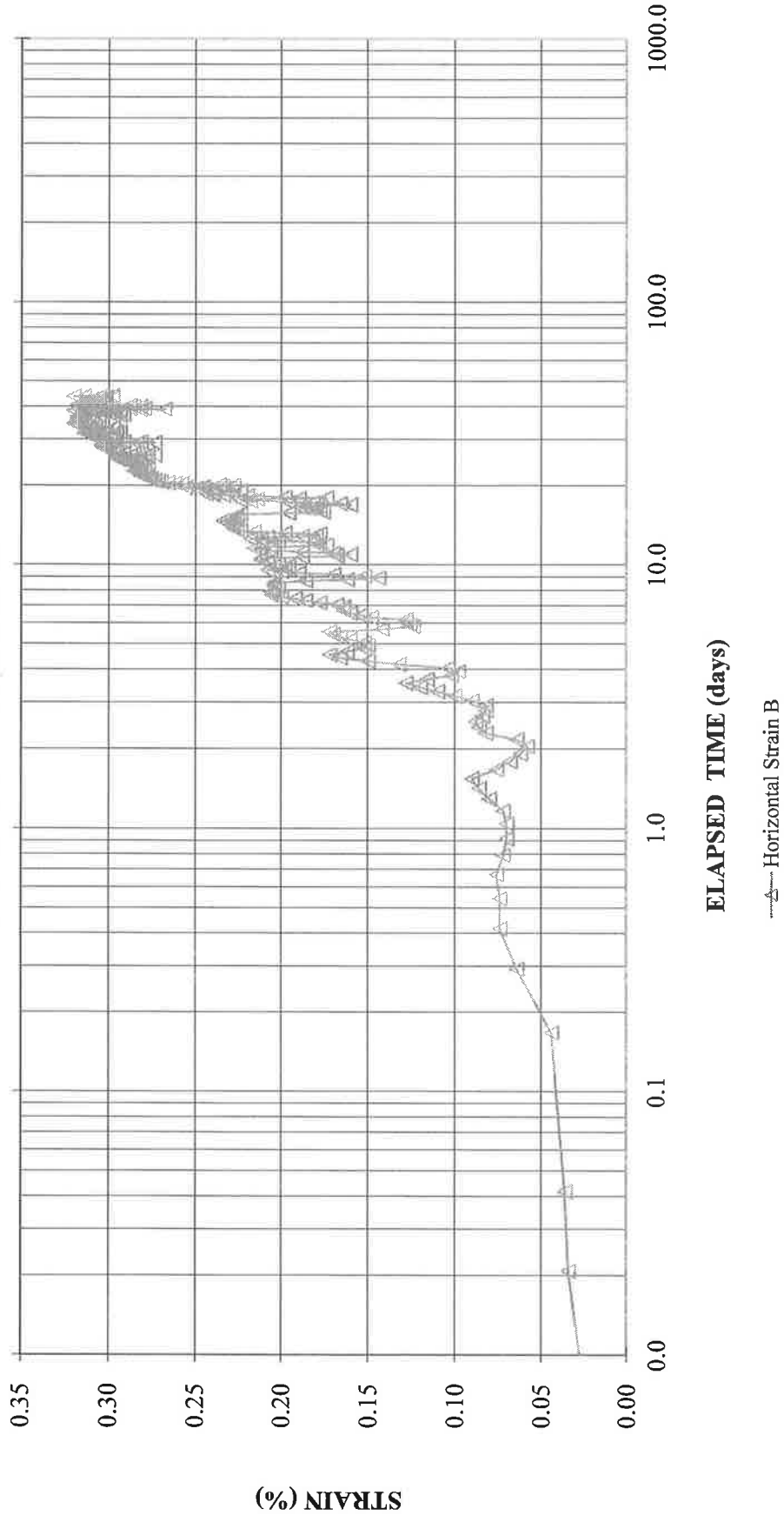
PROJECT NUMBER 12-1183-0101

2

FREE SWELL

Horizontal Strain B

BH 2+640 SA Run10 Depth 91'9" - 93'



PROJECT NUMBER 12-1183-0101

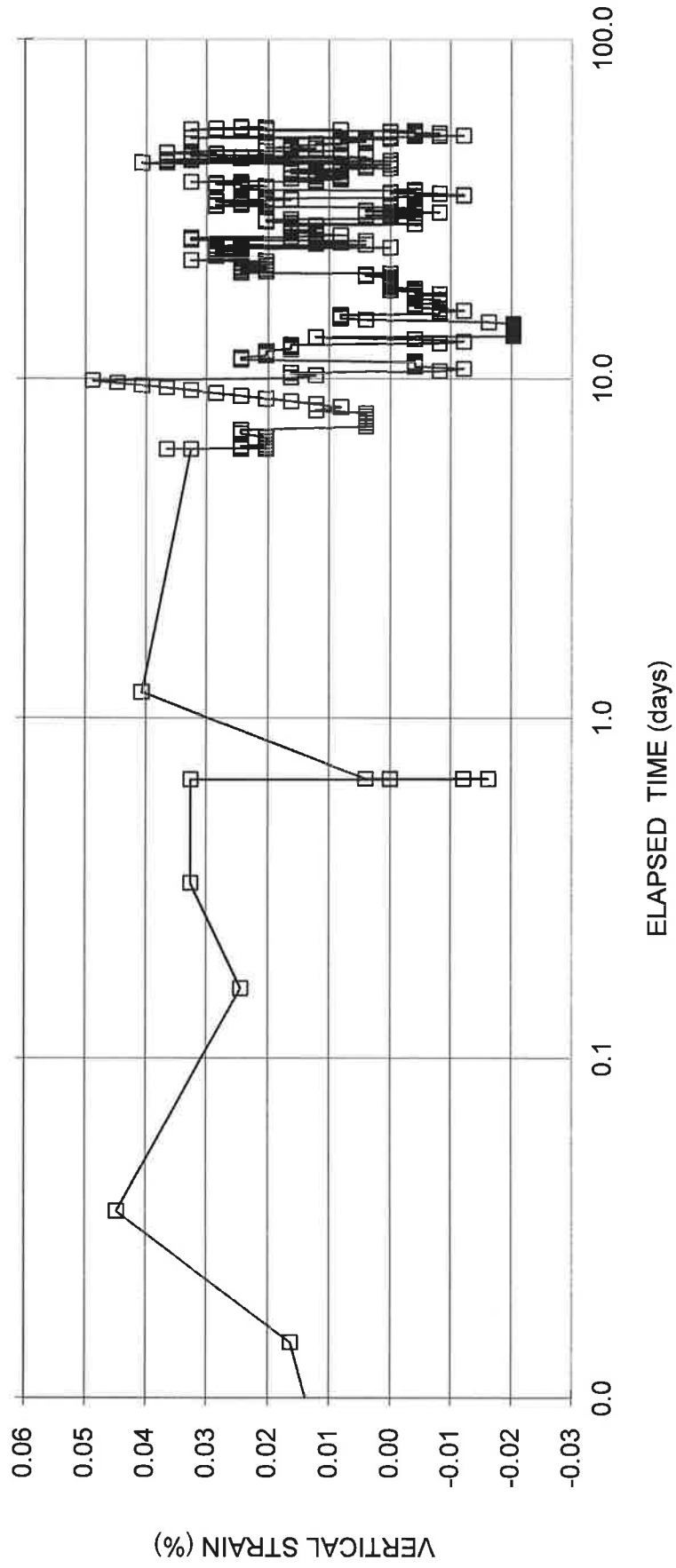
NULL SWELL TEST (Determination of Swelling Stress)

SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 10
BOREHOLE NUMBER	2+640	SAMPLE DEPTH, m	96'11"-98'
TEST CONDITIONS			
CELL NUMBER	7	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	04-10-12
DIVISION, mm	0.001	DURATION OF TEST, days	55
SUBMERGING WATER	Distilled	BEDDING PLANES ORIENTATION	
GEOMETRY OF SPECIMEN	cylinder	APPLIED SEATING LOAD, kPa	0.8
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	2.46	WATER CONTENT, (specimen) %	4.00
DIAMETER, cm	6.30	WET DENSITY, g/cm ³	2.61
SAMPLE AREA, cm ²	31.17	DRY DENSITY, g/cm ³	2.51
SAMPLE VOLUME, cm ³	76.69	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	199.97		
DRY WEIGHT, g	192.27		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	2.46	WATER CONTENT, (specimen) %	4.12
DIAMETER, cm	6.30	WET DENSITY, g/cm ³	2.61
SAMPLE AREA, cm ²	31.17	DRY DENSITY, g/cm ³	2.51
SAMPLE VOLUME, cm ³	76.67	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	200.19		
DRY WEIGHT, g	192.27		
TEST RESULTS			
		SWELLING STRAIN, %	0.02
		SWELLING STRESS, kPa	121.49

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

NULL SWELL TEST (Determination of Swelling Stress)

BH 2+640 SA RUN 10 96'11"-98'

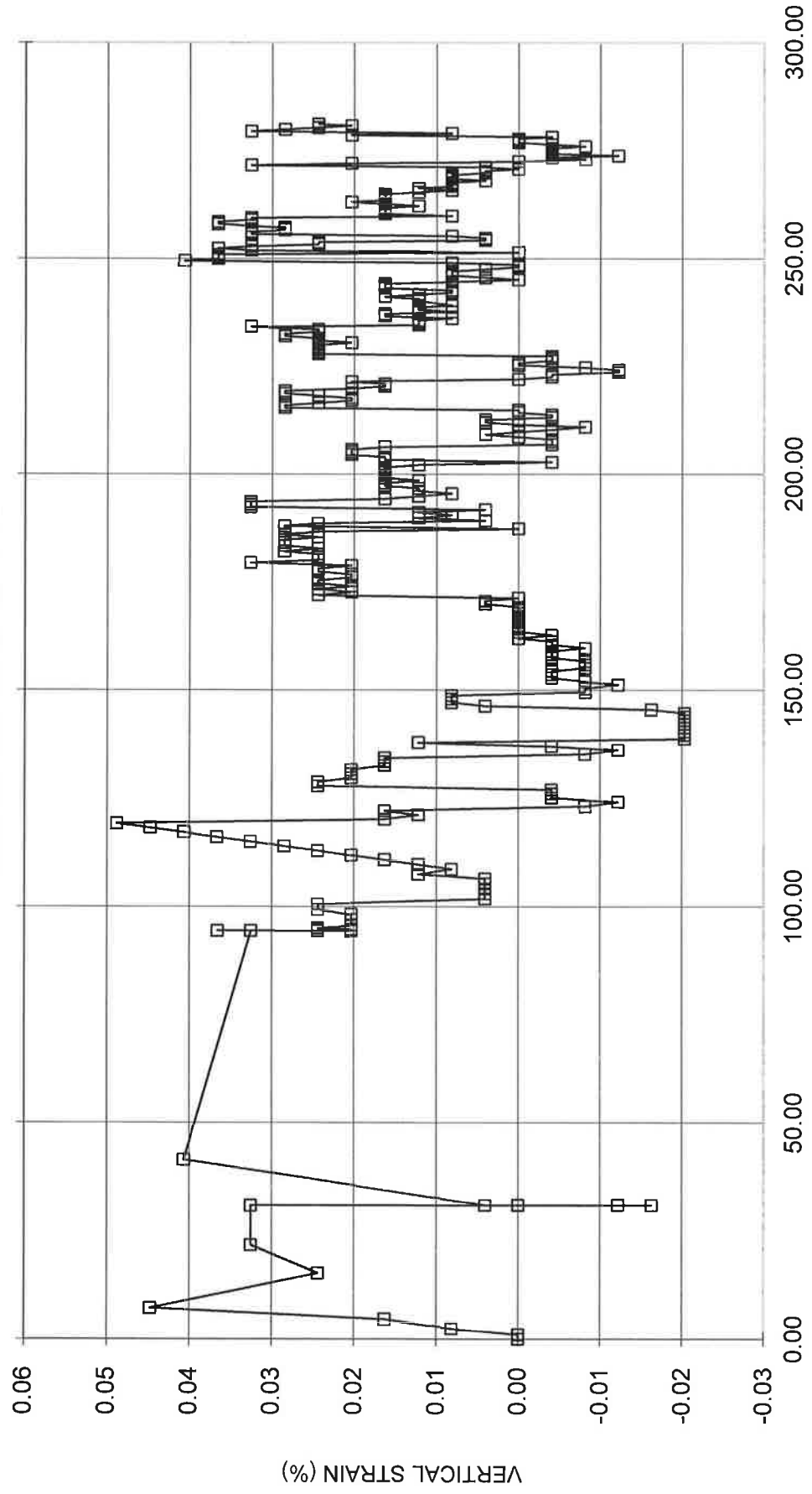


PROJECT NUMBER 12-1183-0101

Ro

NULL SWELL TEST (Determination of Swelling Stress)

BH 2+640 SA RUN 10 96'11"-98'

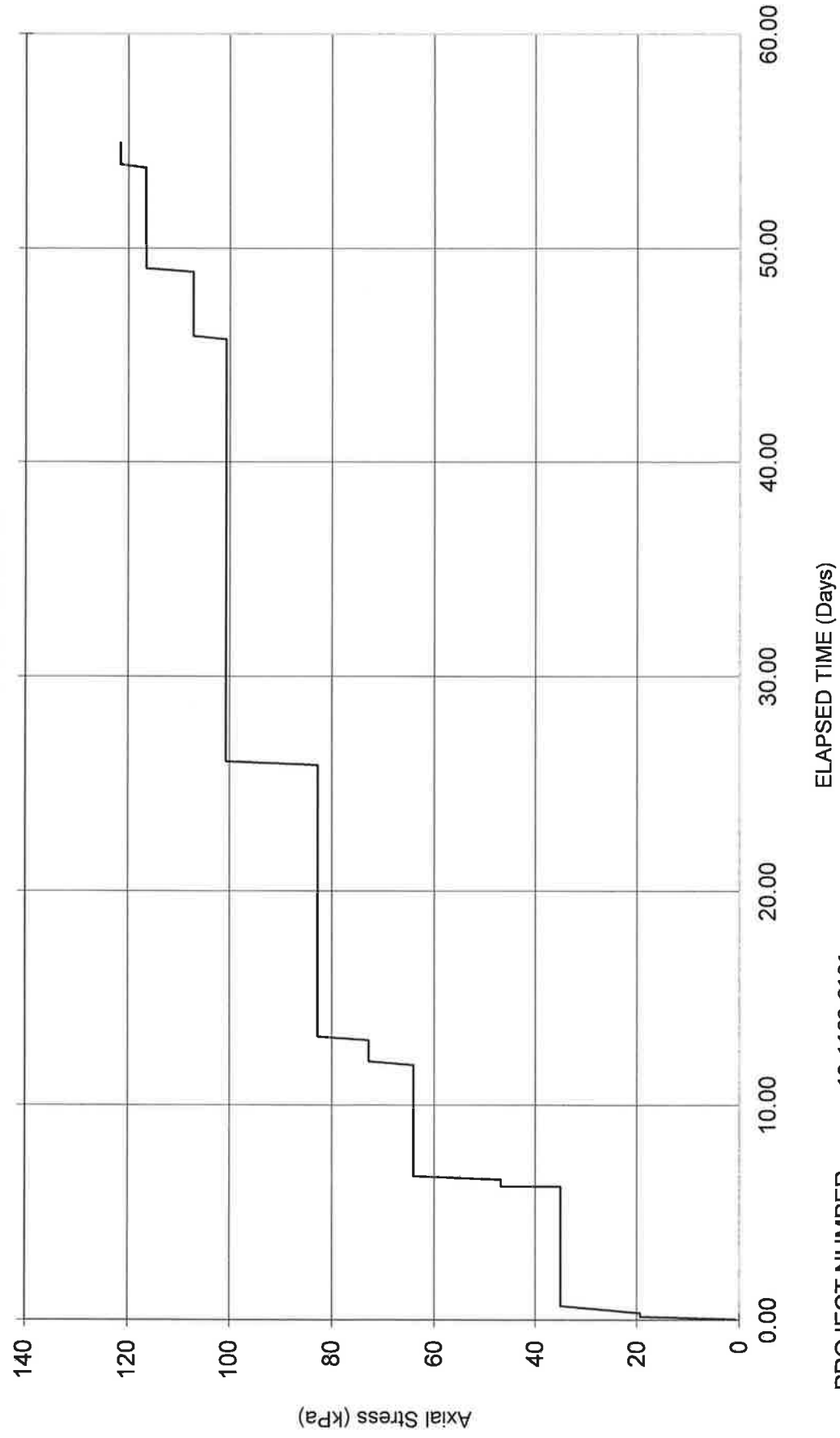


SQUARE ROOT TIME (MIN)

PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

BH 2+640 SA RUN 10 96'11"-98'



PROJECT NUMBER 12-1183-0101

20

FREE SWELL TEST

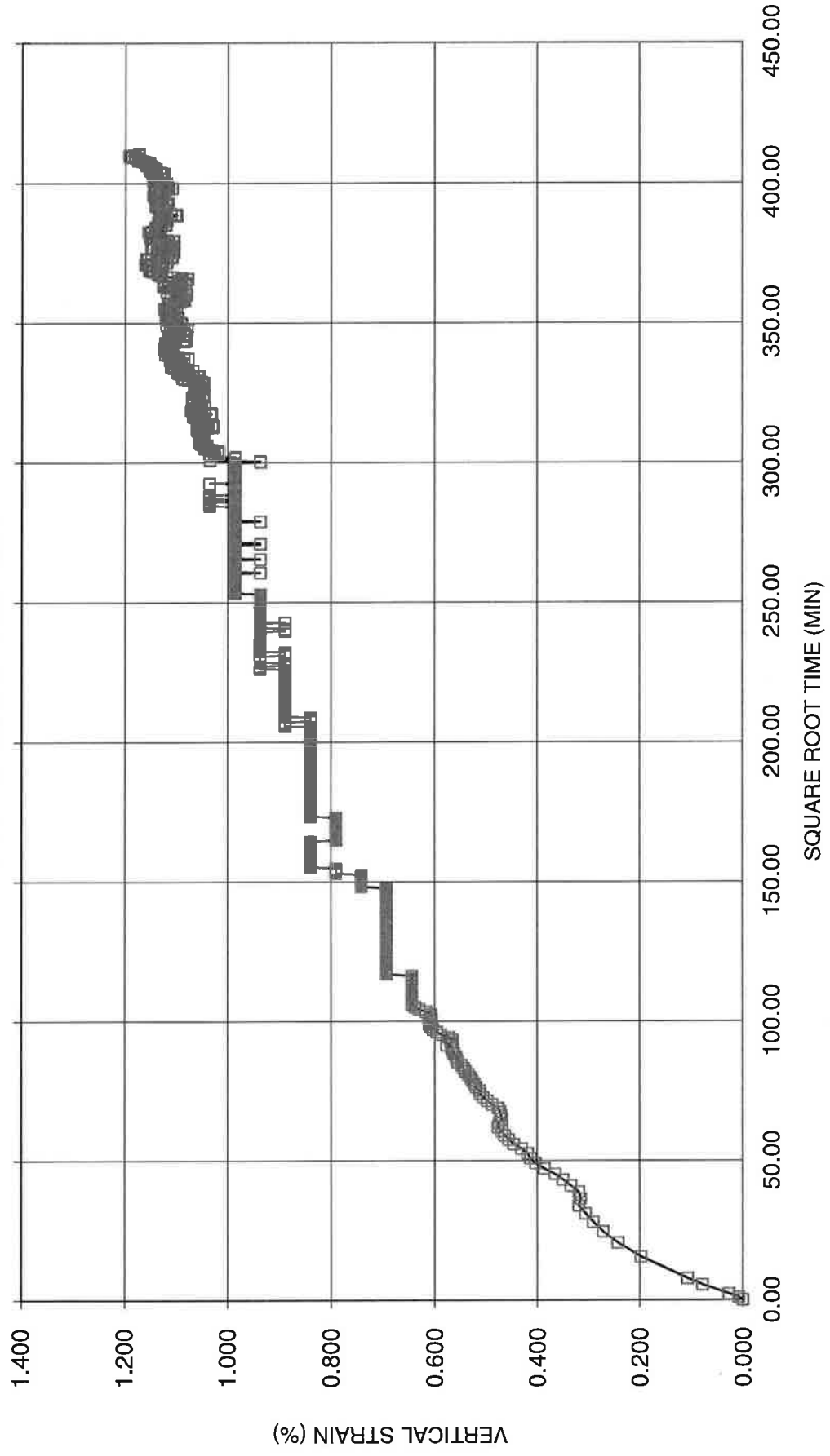
SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 17
BOREHOLE NUMBER	3+930	SAMPLE DEPTH, m	169'6"-170'8"
TEST CONDITIONS			
CELL NUMBER	2	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	15/01/13
RESOLUTION,mm	0.001	DURATION OF TEST,days	117
SUBMERGING LIQUID	Distilled Water	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cube		
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	5.20	DRY WEIGHT, g	298.63
WIDTH A, cm	5.04	WATER CONTENT, (specimen) %	3.8
WIDTH B, cm	4.84	WET DENSITY, g/cm ³	2.44
SAMPLE AREA, cm ²	24.39	DRY DENSITY, g/cm ³	2.35
SAMPLE VOLUME, cm ³	126.85	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	310.02		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	5.26	DRY WEIGHT, g	298.63
WIDTH A, cm	5.05	WATER CONTENT, (specimen) %	4.2
WIDTH B, cm	4.85	WET DENSITY, g/cm ³	2.42
SAMPLE AREA, cm ²	24.48	DRY DENSITY, g/cm ³	2.32
SAMPLE VOLUME, cm ³	128.78	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	311.21		
TEST RESULTS			
		VERTICAL STRAIN, %	1.17
		HORIZONTAL STRAIN A, %	0.15
		HORIZONTAL STRAIN B, %	0.20

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

chd

FREE SWELL
Vertical Strain

BH 3+930 SA RUN 17 169'6"-170'8"

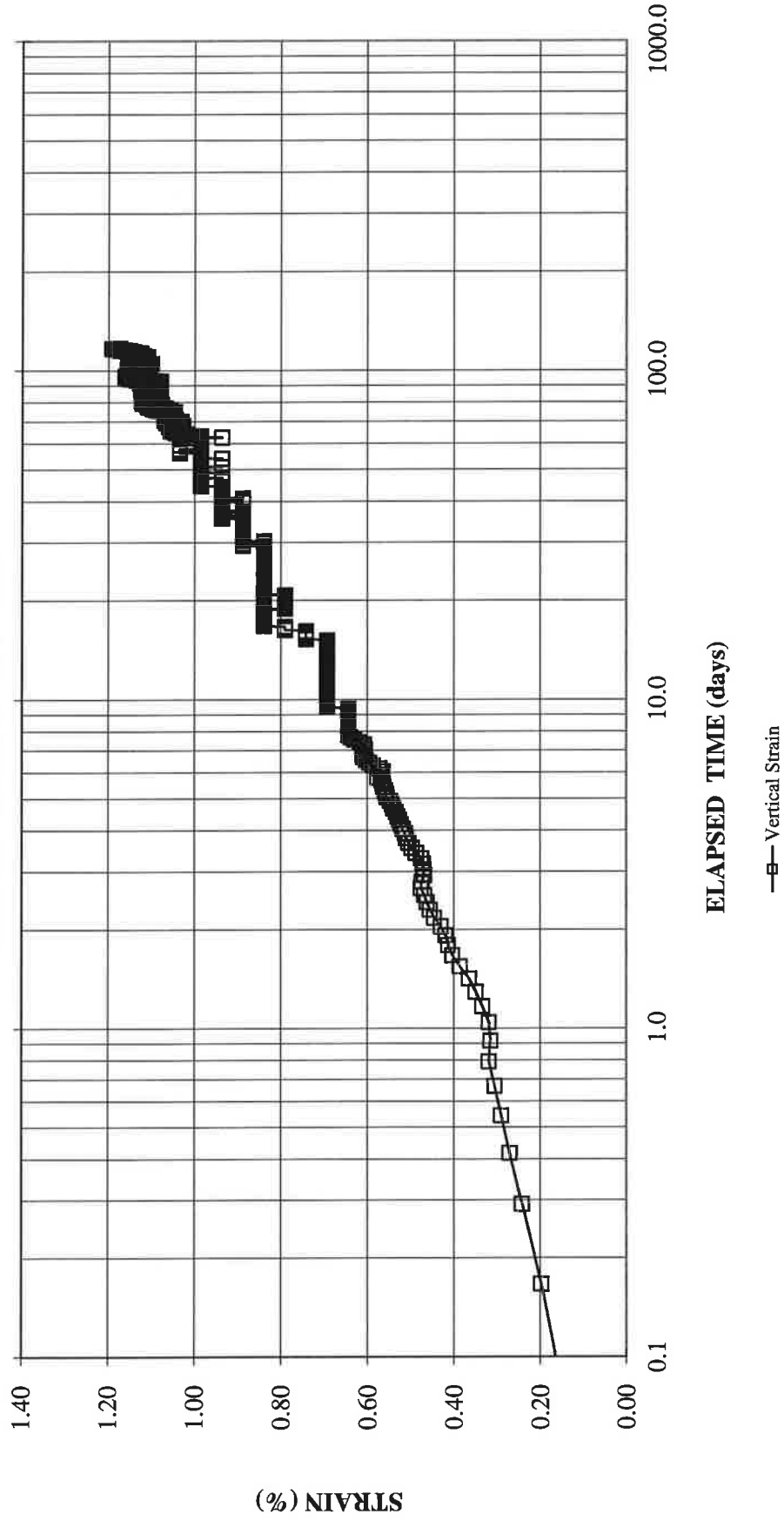


PROJECT NUMBER 12-1183-0101

lyl

FREE SWELL
Vertical Strain

BH 3+930 SA RUN 17 169'6"-170'8"

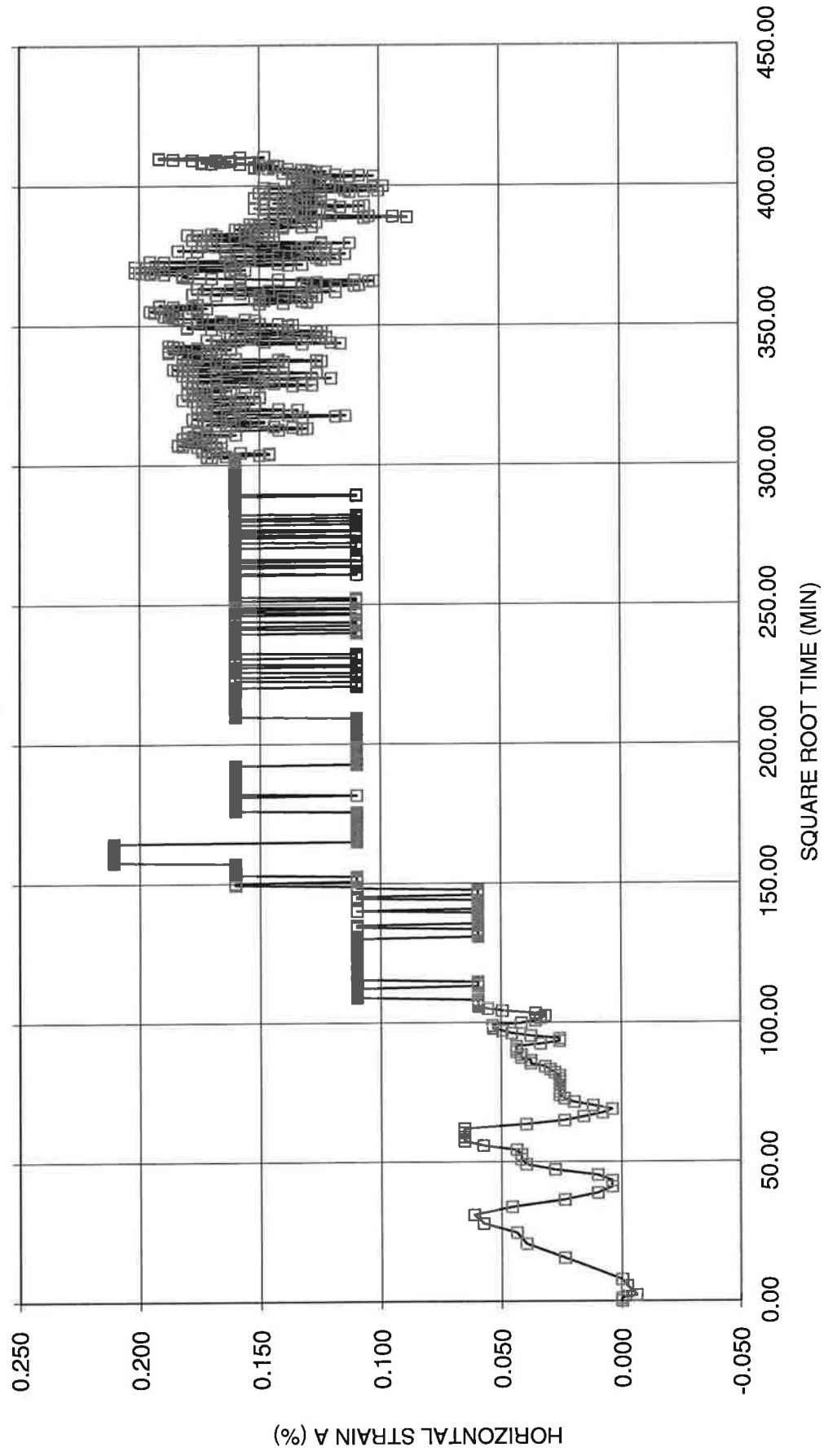


PROJECT NUMBER 12-1183-0101

44

FREE SWELL
Horizontal Strain A

BH 3+930 SA RUN 17 169'6"-170'8"



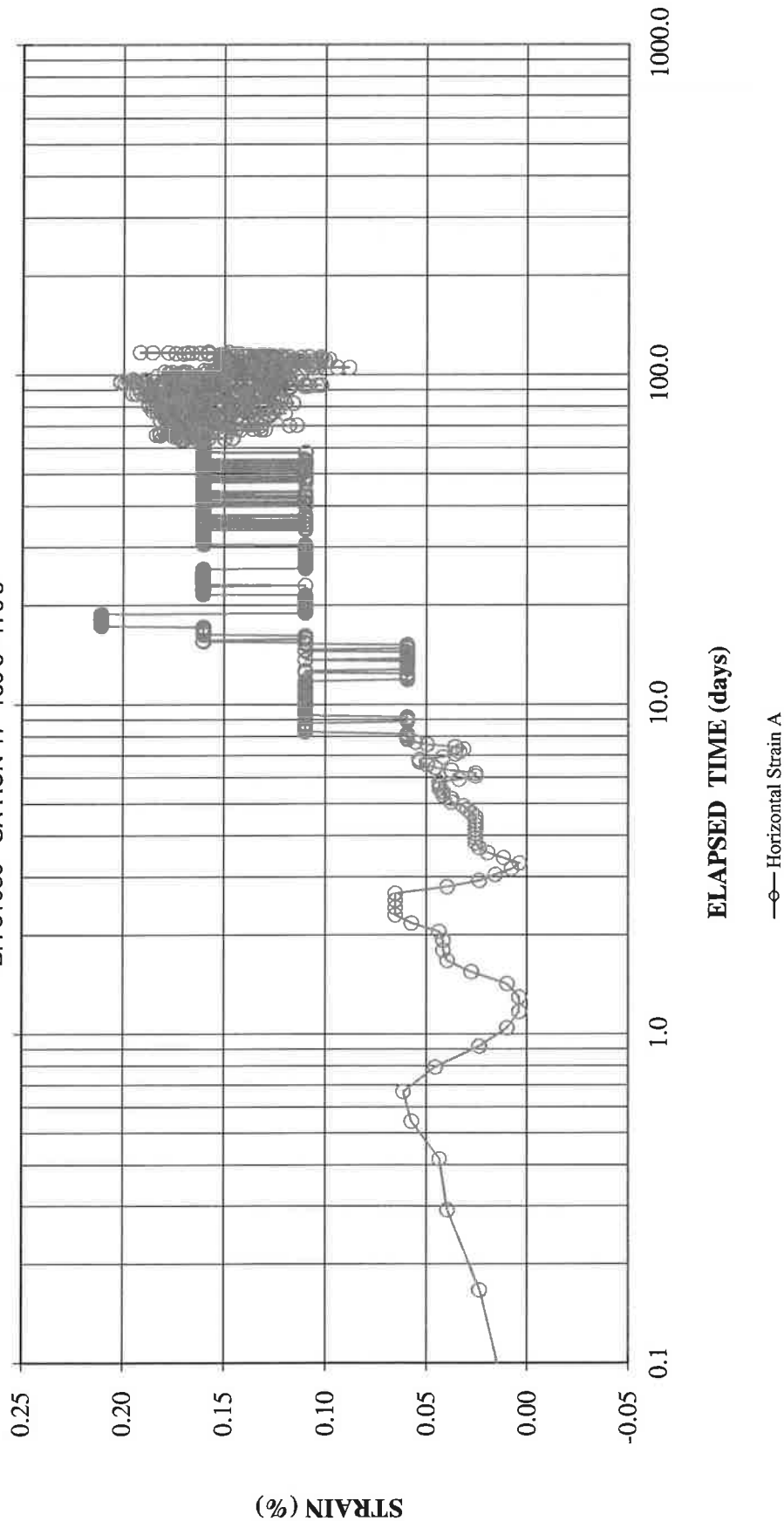
PROJECT NUMBER 12-1183-0101

my

FREE SWELL

Horizontal Strain A

BH 3+930 SA RUN 17 169'6"-170'8"



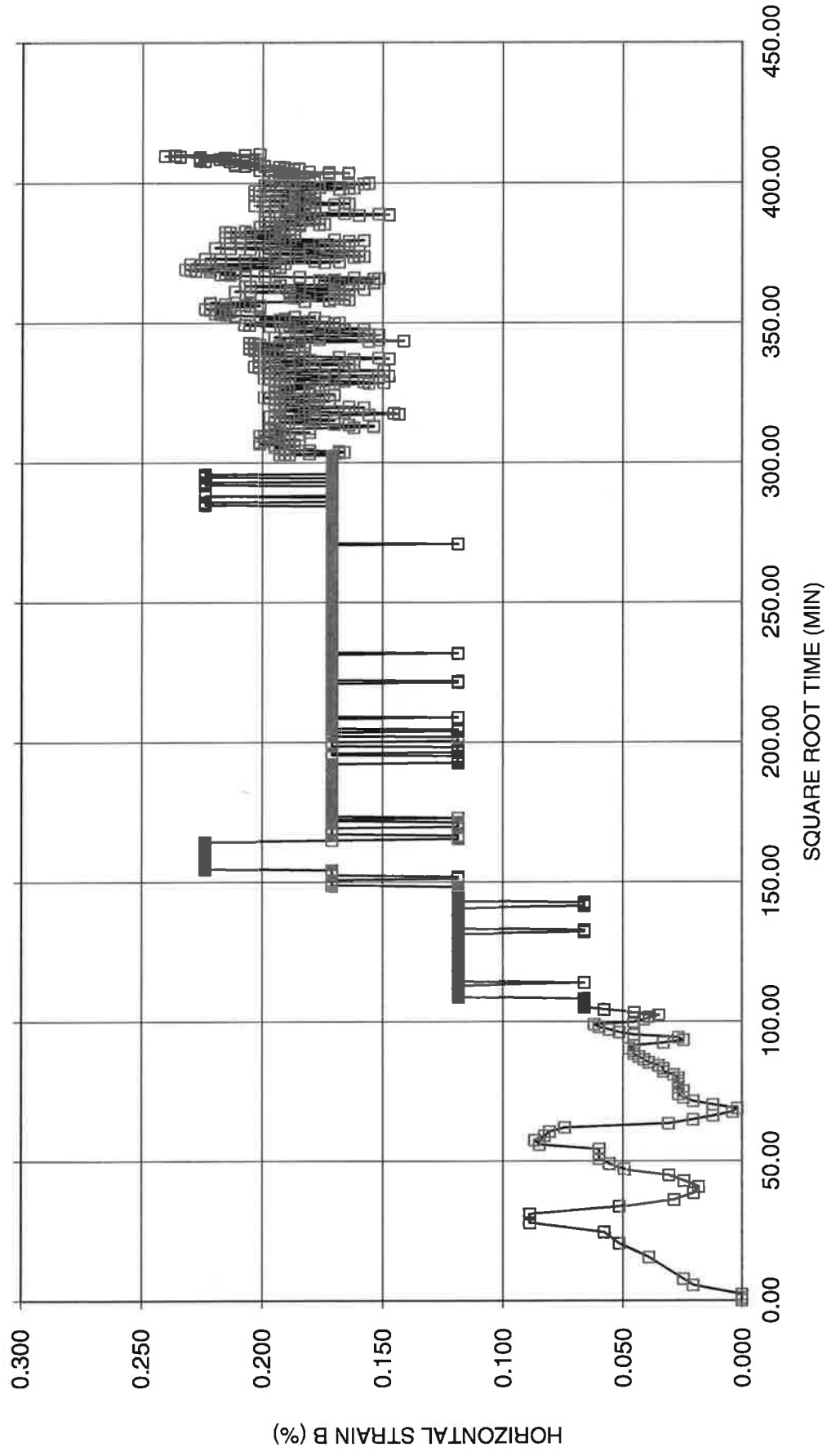
PROJECT NUMBER 12-1183-0101

44

FREE SWELL

Horizontal Strain B

BH 3+930 SA RUN 17 169'6"-170'8"



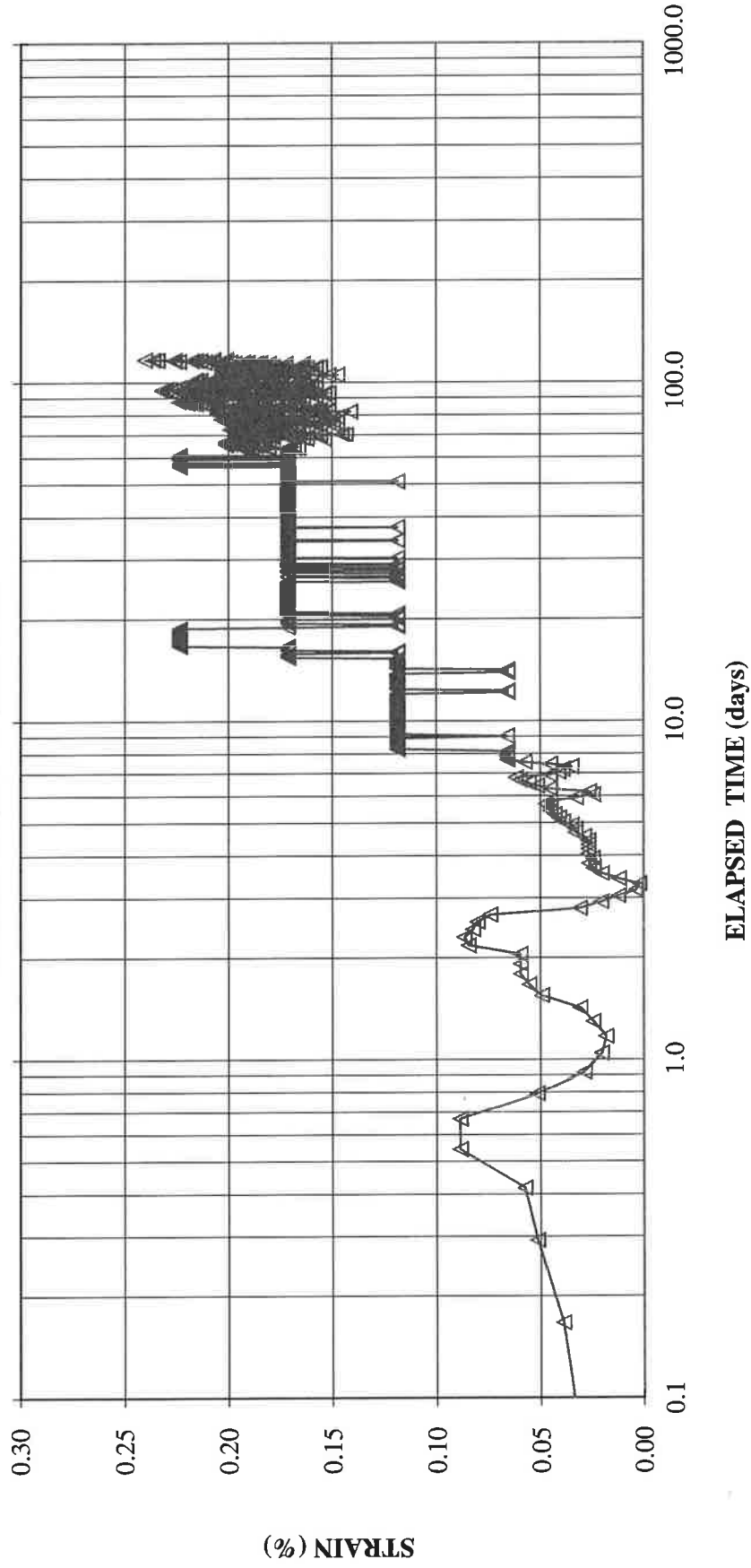
PROJECT NUMBER 12-1183-0101

44

FREE SWELL

Horizontal Strain B

BH 3+930 SA RUN 17 169'6"-170'8"



—△— Horizontal Strain B

PROJECT NUMBER 12-1183-0101

hls

FREE SWELL TEST

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 12
BOREHOLE NUMBER	3+065	SAMPLE DEPTH, m	113'6"-114'9"

TEST CONDITIONS

CELL NUMBER	2	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	09/16/2012
RESOLUTION, mm	0.001	DURATION OF TEST, days	120
SUBMERGING LIQUID	Distilled water	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cube		

PHYSICAL PROPERTIES (INITIAL)

HEIGHT, cm	5.07	DRY WEIGHT, g	331.72
WIDTH A, cm	5.13	WATER CONTENT, (specimen) %	3.64
WIDTH B, cm	5.18	WET DENSITY, g/cm ³	2.55
SAMPLE AREA, cm ²	26.57	DRY DENSITY, g/cm ³	2.46
SAMPLE VOLUME, cm ³	134.65	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	343.78		

PHYSICAL PROPERTIES (FINAL)

HEIGHT, cm	5.11	DRY WEIGHT, g	331.72
WIDTH A, cm	5.12	WATER CONTENT, (specimen) %	3.80
WIDTH B, cm	5.19	WET DENSITY, g/cm ³	2.54
SAMPLE AREA, cm ²	26.57	DRY DENSITY, g/cm ³	2.45
SAMPLE VOLUME, cm ³	135.67	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	344.34		

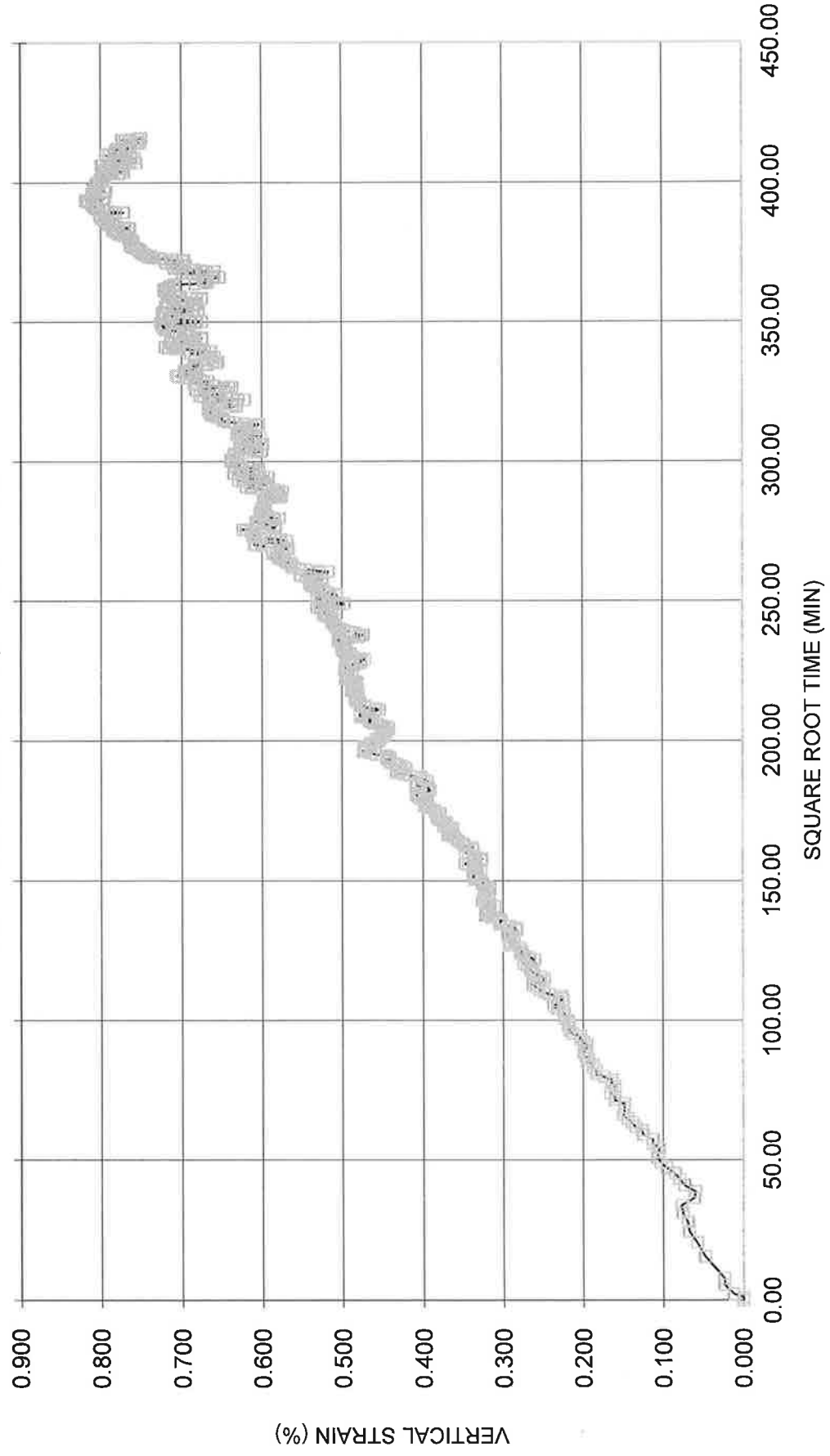
TEST RESULTS

VERTICAL STRAIN, %	0.75
HORIZONTAL STRAIN A, %	-0.11
HORIZONTAL STRAIN B, %	0.12

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

FREE SWELL
Vertical Strain

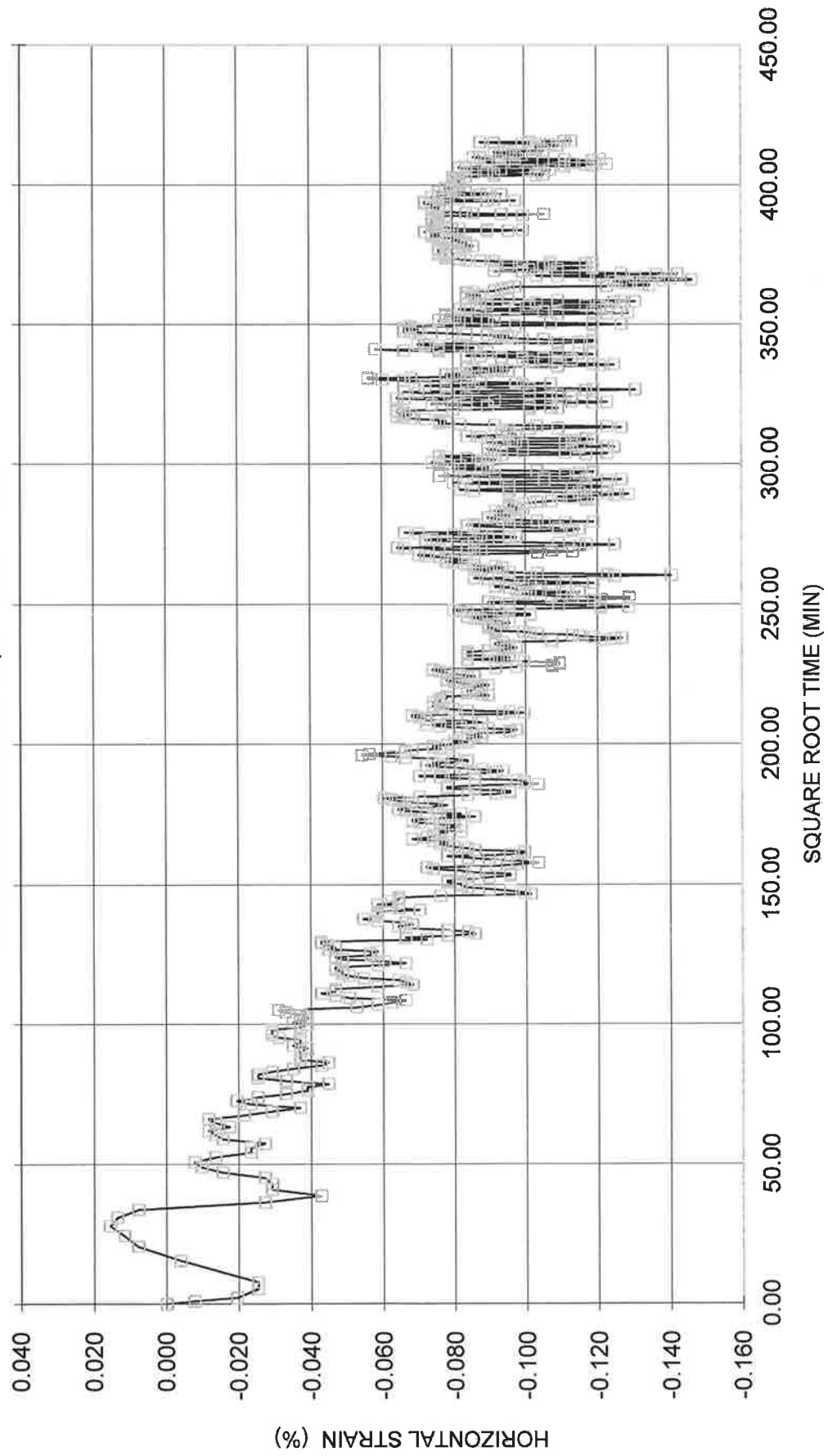
BH 3+065 SA RUN 12 Depth 113'6" - 114'9"



PROJECT NUMBER 12-1183-0101

FREE SWELL
Horizontal Strain A

BH 3+065 SA RUN 12 Depth 113'6" - 114'9"

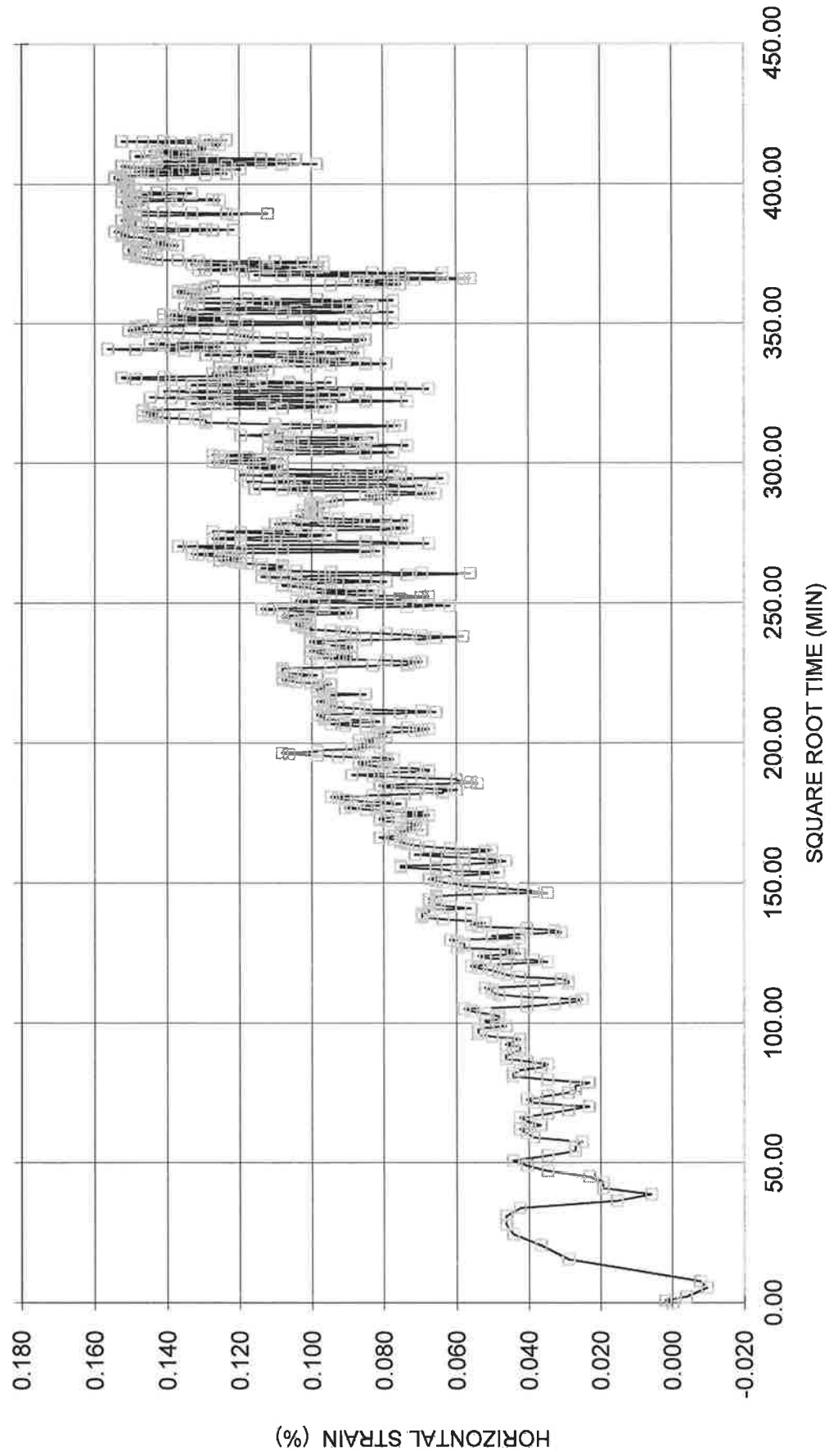


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

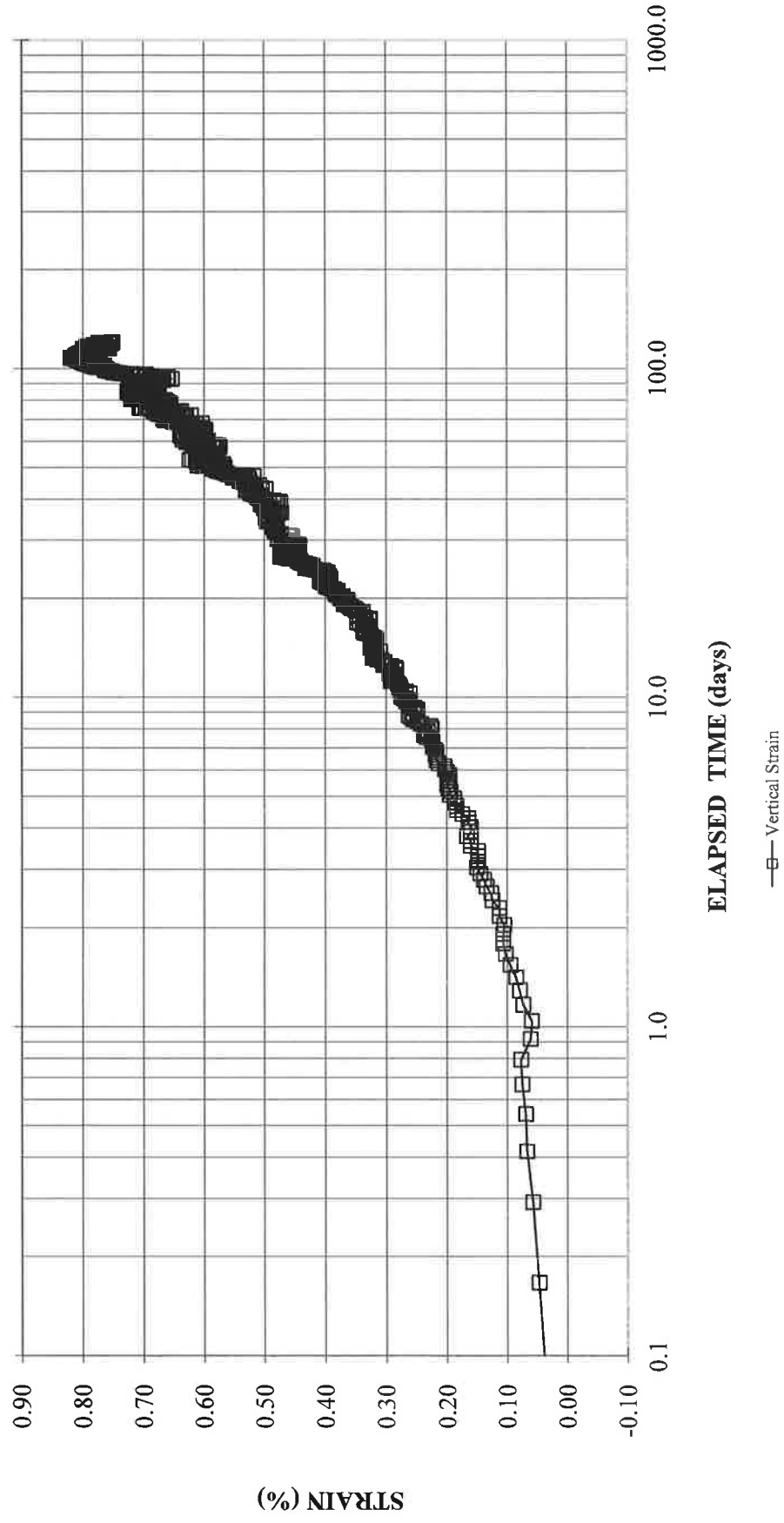
BH 3+065 SA RUN 12 Depth 113'6" - 114'9"



PROJECT NUMBER 12-1183-0101

FREE SWELL
Vertical Strain

BH 3+065 SA RUN 12 Depth 113'6" - 114'9"

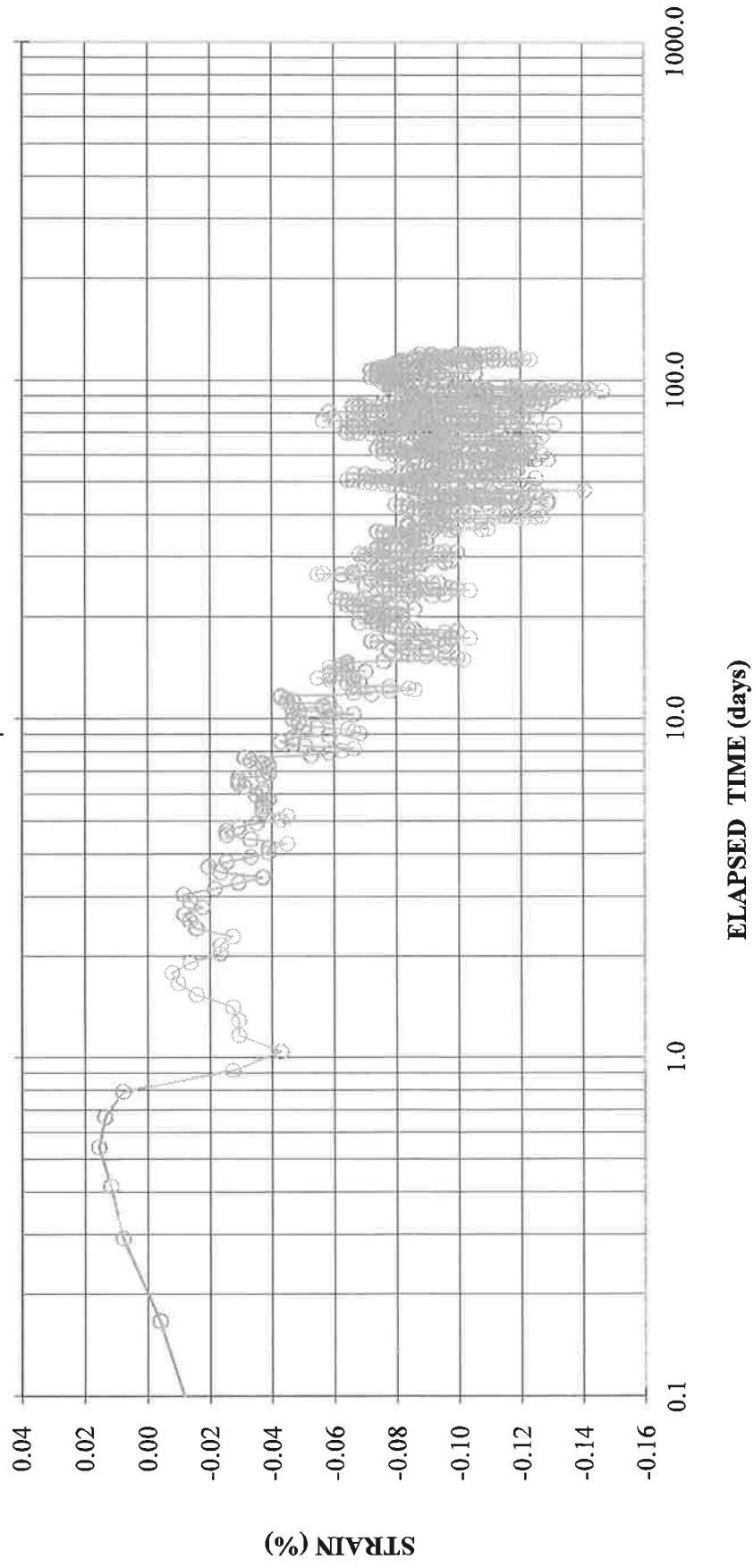


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain A

BH 3+065 SA RUN 12 Depth 113'6" - 114'9"



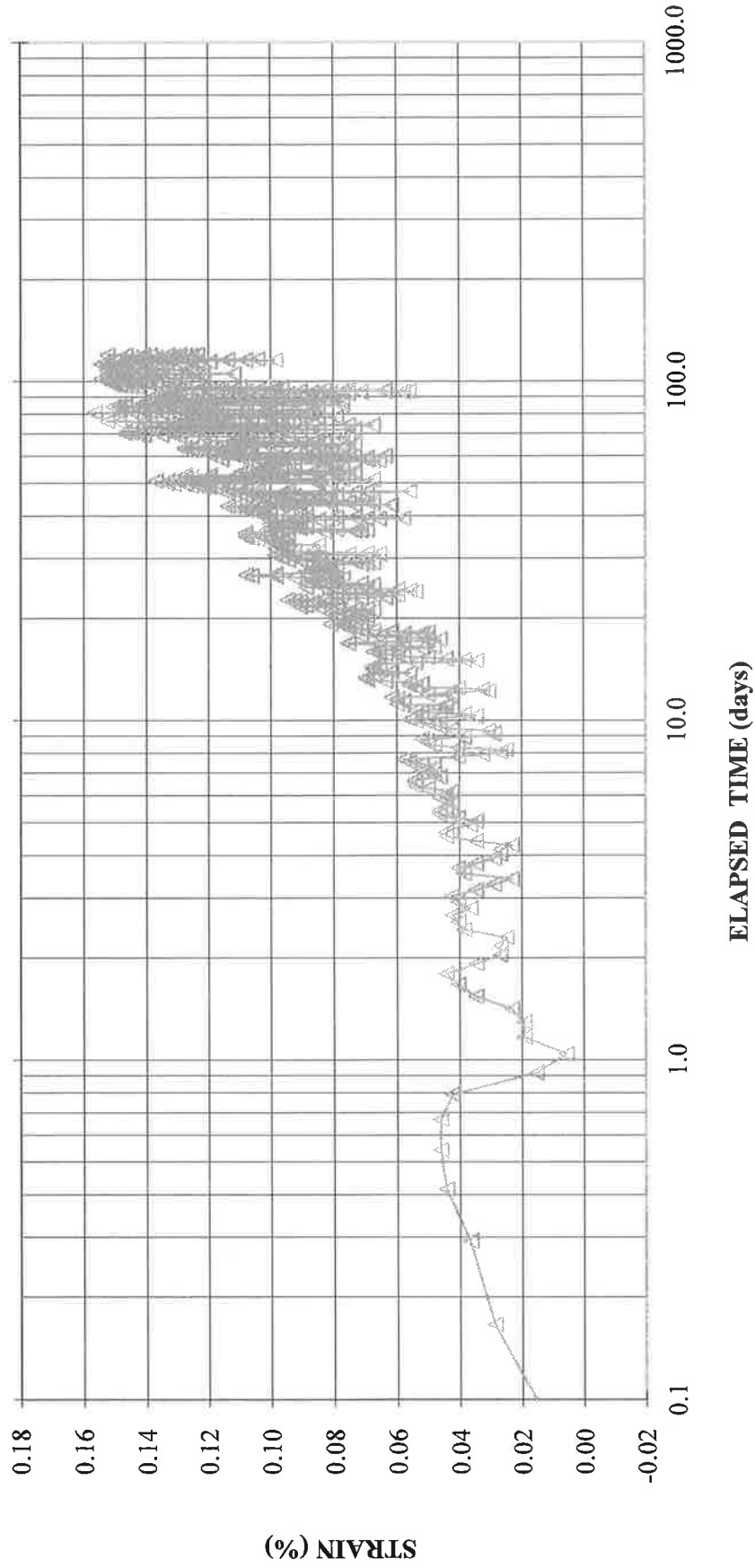
Horizontal Strain A

PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

BH 3+065 SA RUN 12 Depth 113'6" - 114'9"



Horizontal Strain B

PROJECT NUMBER 12-1183-0101

FREE SWELL TEST

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	Run 17
BOREHOLE NUMBER	3+930	SAMPLE DEPTH, ft	165'10"-167'1"

TEST CONDITIONS

CELL NUMBER	3	DATE OF SAMPLING	
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	09/16/2012
RESOLUTION, mm	0.001	DURATION OF TEST, days	76
SUBMERGING LIQUID	Distilled Water	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cube		

PHYSICAL PROPERTIES (INITIAL)

HEIGHT, cm	5.19	DRY WEIGHT, g	312.98
WIDTH A, cm	5.03	WATER CONTENT, (specimen) %	3.78
WIDTH B, cm	4.93	WET DENSITY, g/cm ³	2.53
SAMPLE AREA, cm ²	24.76	DRY DENSITY, g/cm ³	2.44
SAMPLE VOLUME, cm ³	128.47	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	324.82		

PHYSICAL PROPERTIES (FINAL)

HEIGHT, cm	5.23	DRY WEIGHT, g	312.98
WIDTH A, cm	5.03	WATER CONTENT, (specimen) %	4.24
WIDTH B, cm	4.94	WET DENSITY, g/cm ³	2.51
SAMPLE AREA, cm ²	24.88	DRY DENSITY, g/cm ³	2.40
SAMPLE VOLUME, cm ³	130.21	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	326.25		

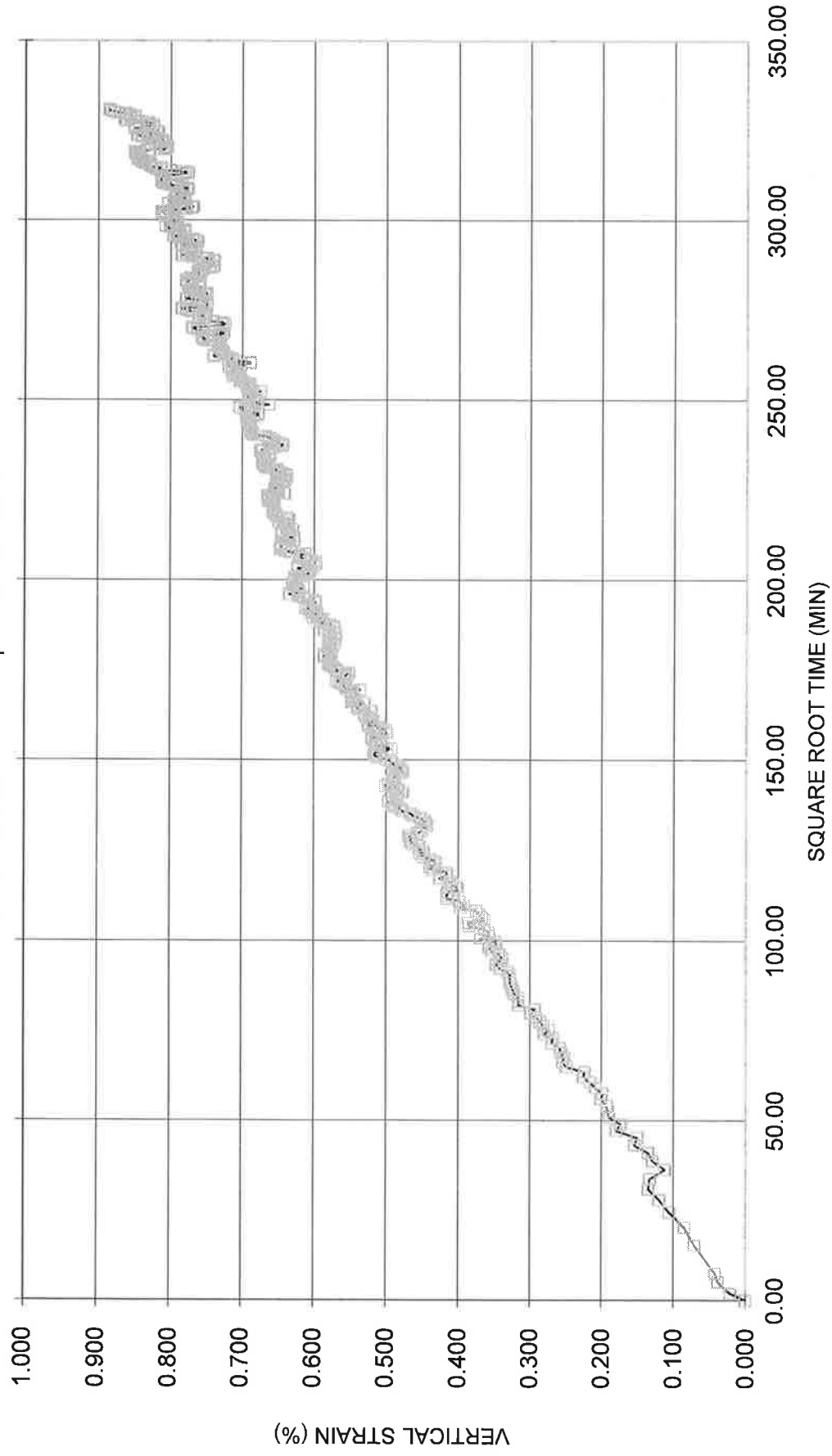
TEST RESULTS

VERTICAL STRAIN, %	0.88
HORIZONTAL STRAIN A, %	0.19
HORIZONTAL STRAIN B, %	0.28

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

FREE SWELL
Vertical Strain

BH 3+930 SA Run 17 Depth 165'10"-167'1"



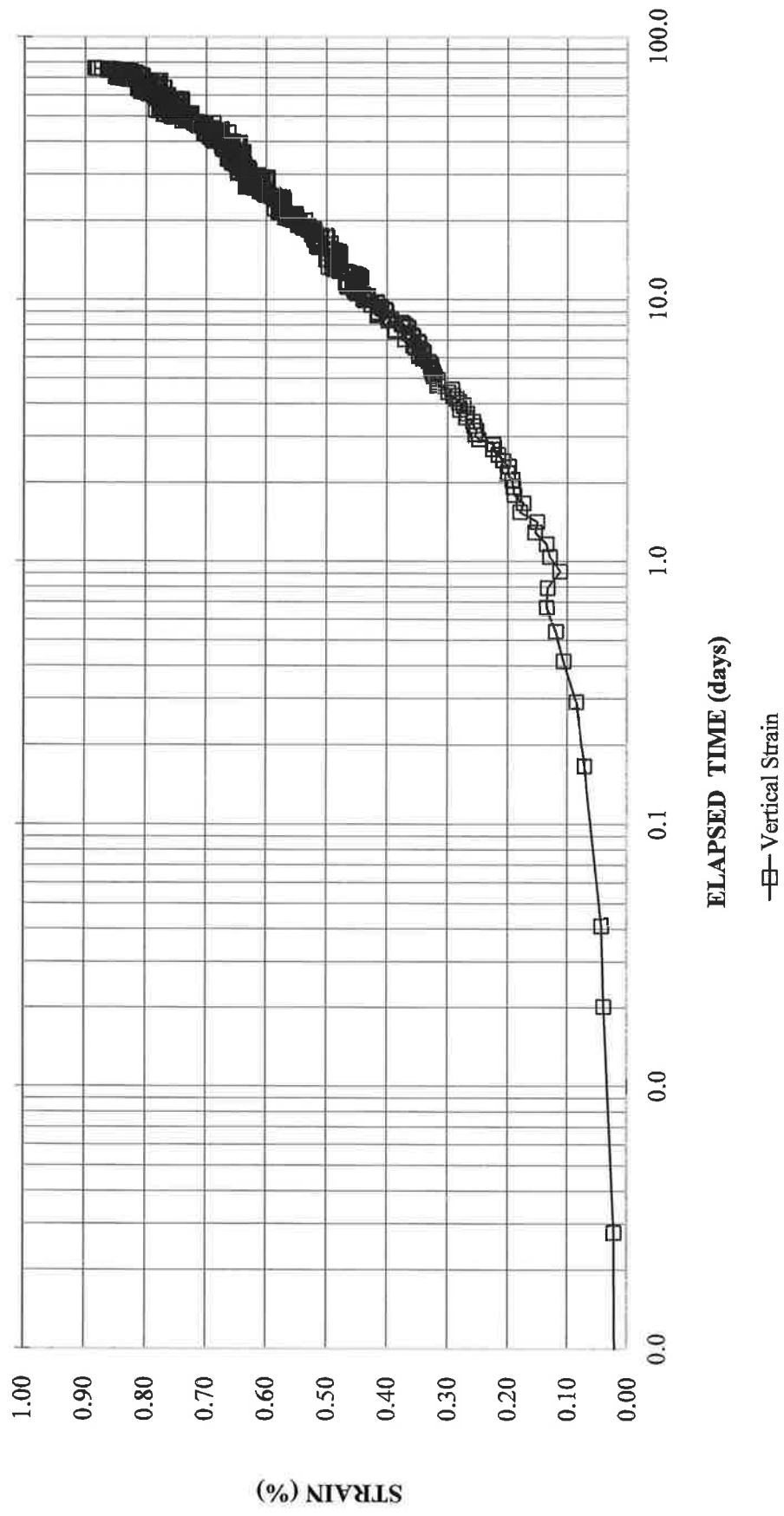
PROJECT NUMBER 12-1183-0101

Ro

FREE SWELL

Vertical Strain

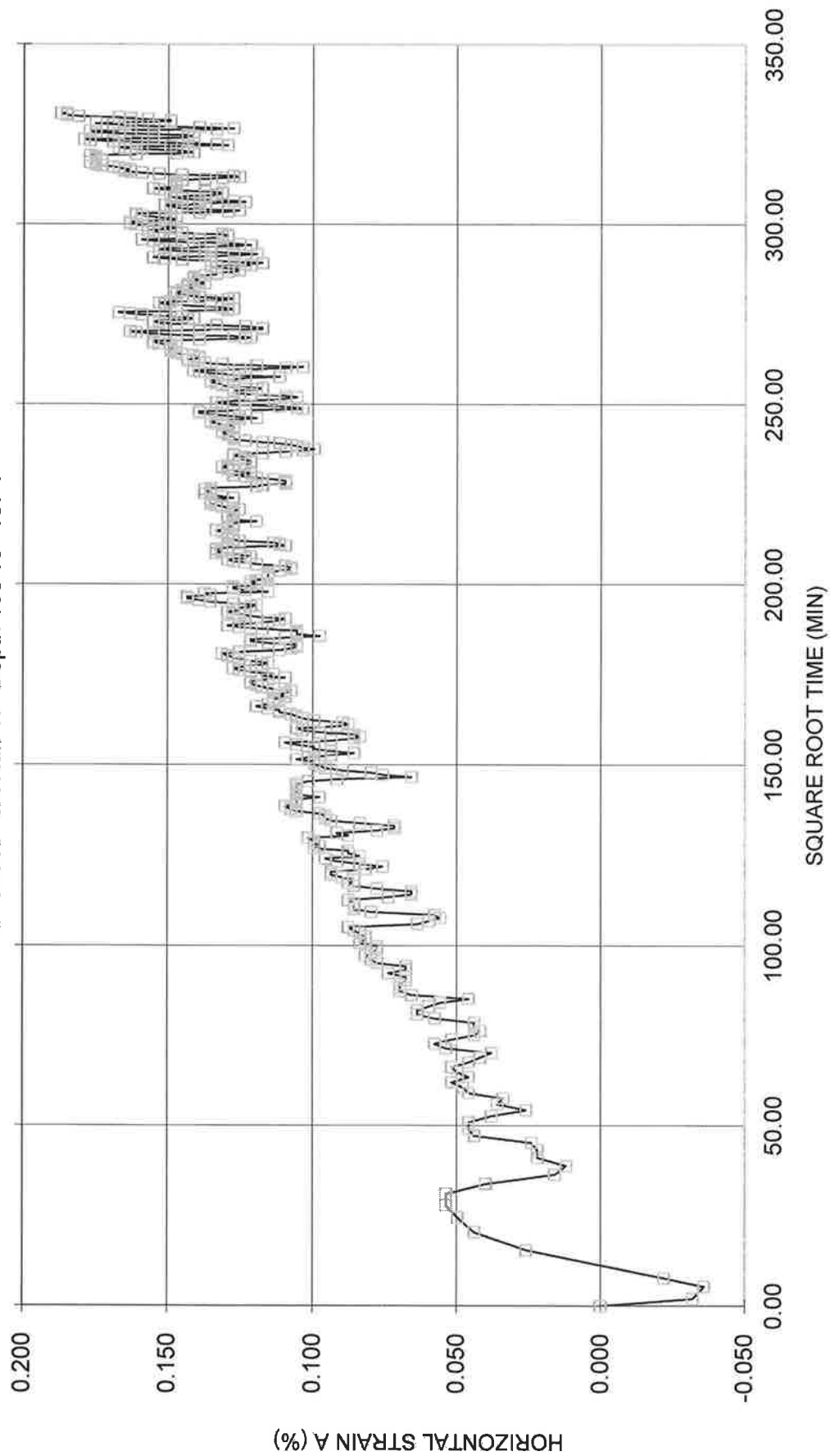
BH 3+930 SA Run 17 Depth 165'10"-167'1"



PROJECT NUMBER 12-1183-0101

FREE SWELL
Horizontal Strain A

BH 3+930 SA Run 17 Depth 165'10"-167'1"

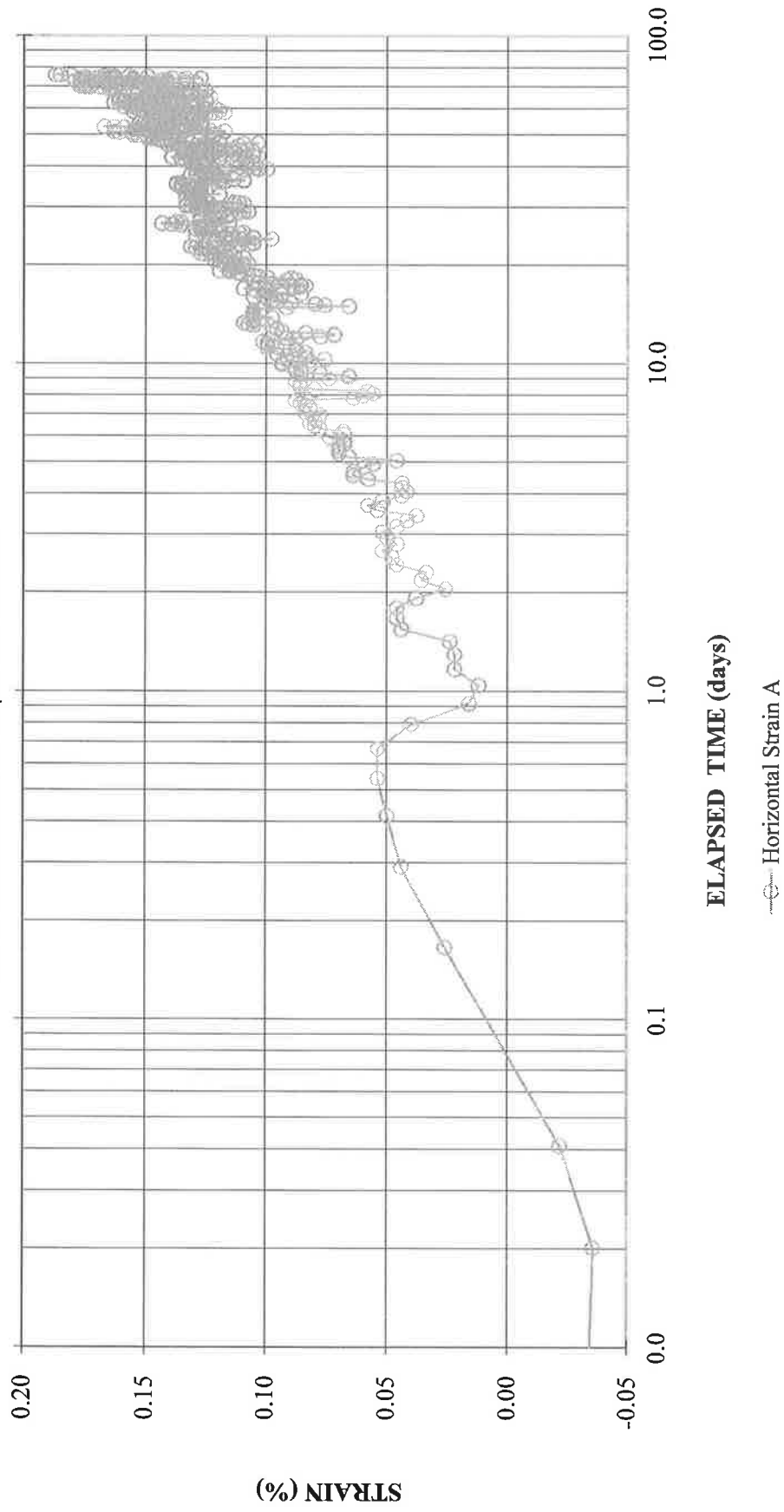


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain A

BH 3+930 SA Run 17 Depth 165'10"-167'1"

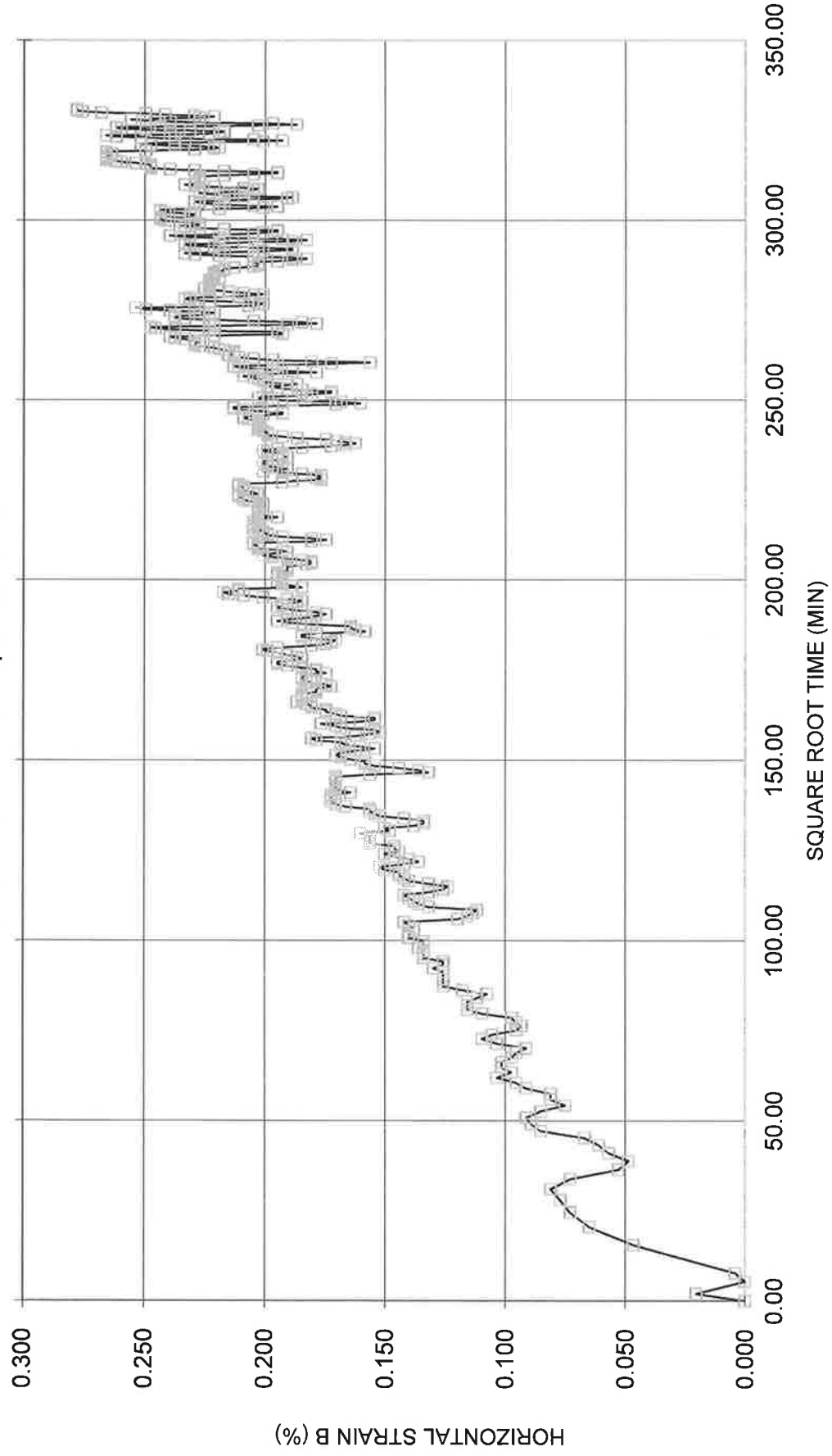


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

BH 3+930 SA Run 17 Depth 165'10"-167'1"



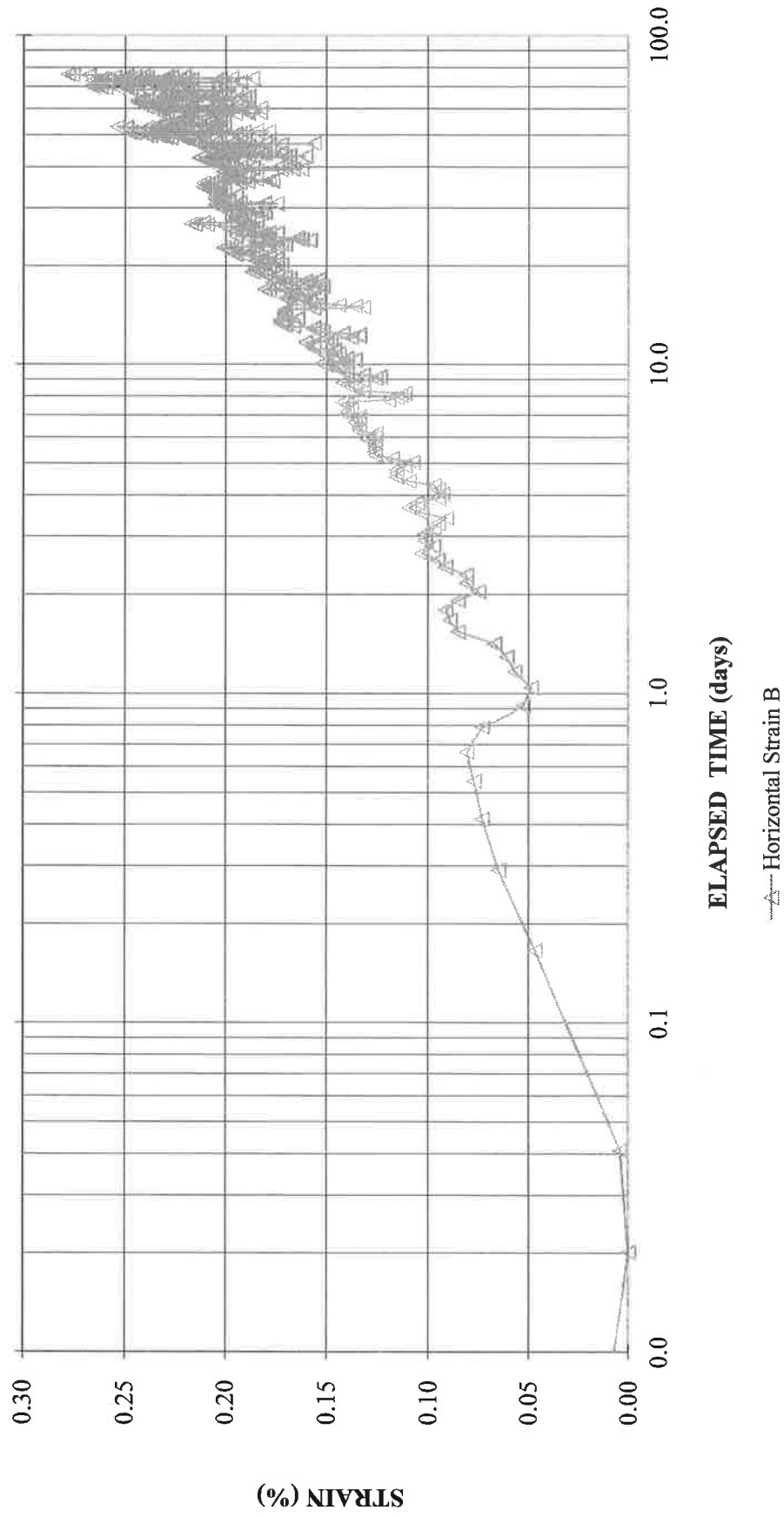
PROJECT NUMBER 12-1183-0101

23

FREE SWELL

Horizontal Strain B

BH 3+930 SA Run 17 Depth 165'10"-167'1"



PROJECT NUMBER 12-1183-0101

FREE SWELL TEST

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	Run 16
BOREHOLE NUMBER	4+495	SAMPLE DEPTH, m	168'10"-169'10"

TEST CONDITIONS

CELL NUMBER	4	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	09/16/2012
RESOLUTION, mm	0.001	DURATION OF TEST, days	120
SUBMERGING LIQUID	Distilled Water	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cube		

PHYSICAL PROPERTIES (INITIAL)

HEIGHT, cm	4.83	DRY WEIGHT, g	289.82
WIDTH A, cm	4.96	WATER CONTENT, (specimen) %	3.62
WIDTH B, cm	4.86	WET DENSITY, g/cm ³	2.58
SAMPLE AREA, cm ²	24.09	DRY DENSITY, g/cm ³	2.49
SAMPLE VOLUME, cm ³	116.44	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	300.32		

PHYSICAL PROPERTIES (FINAL)

HEIGHT, cm	4.91	DRY WEIGHT, g	289.82
WIDTH A, cm	4.98	WATER CONTENT, (specimen) %	4.13
WIDTH B, cm	4.87	WET DENSITY, g/cm ³	2.53
SAMPLE AREA, cm ²	24.26	DRY DENSITY, g/cm ³	2.43
SAMPLE VOLUME, cm ³	119.09	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	301.78		

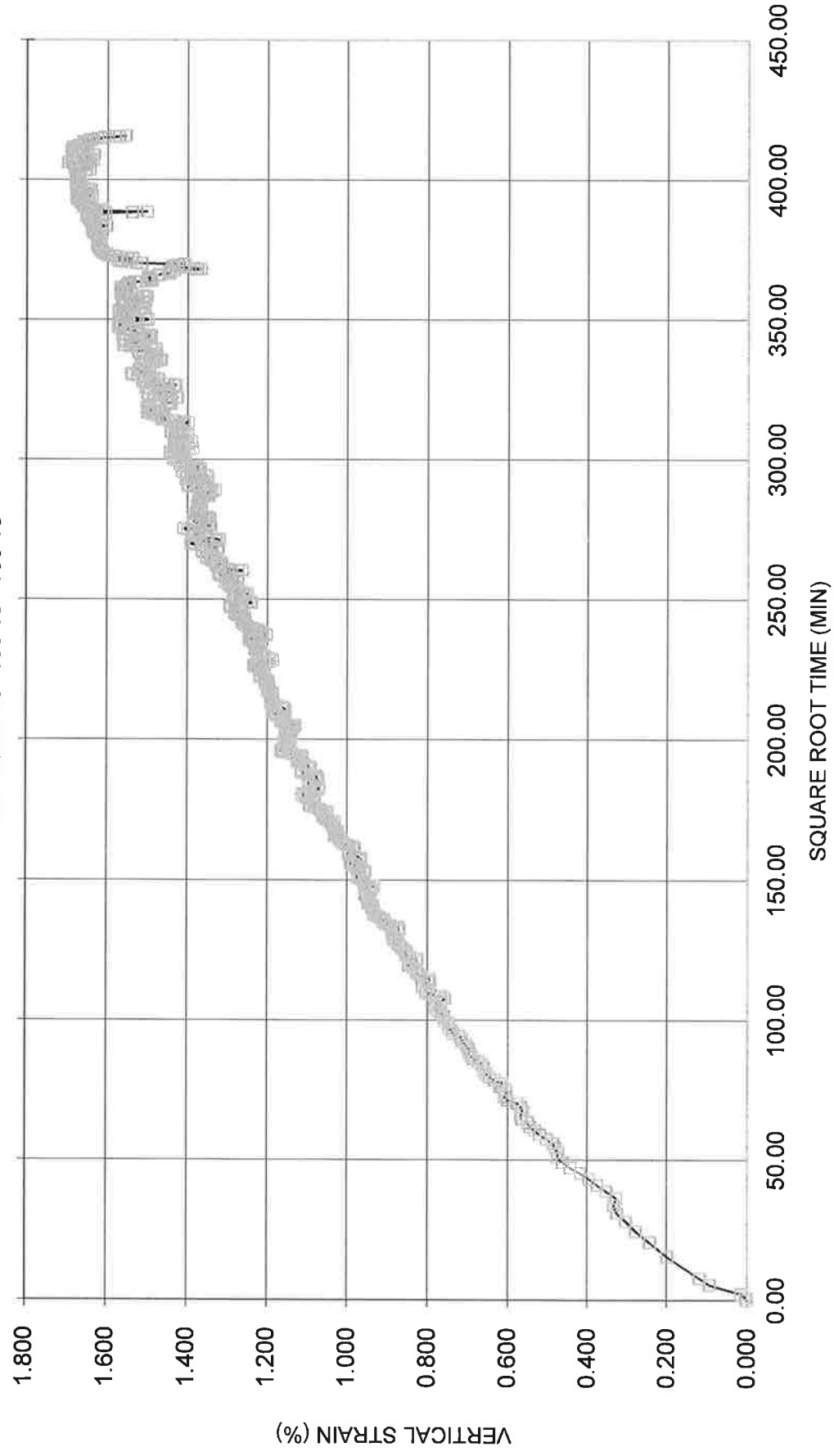
TEST RESULTS

VERTICAL STRAIN, %	1.56
HORIZONTAL STRAIN A, %	0.31
HORIZONTAL STRAIN B, %	0.40

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

FREE SWELL
Vertical Strain

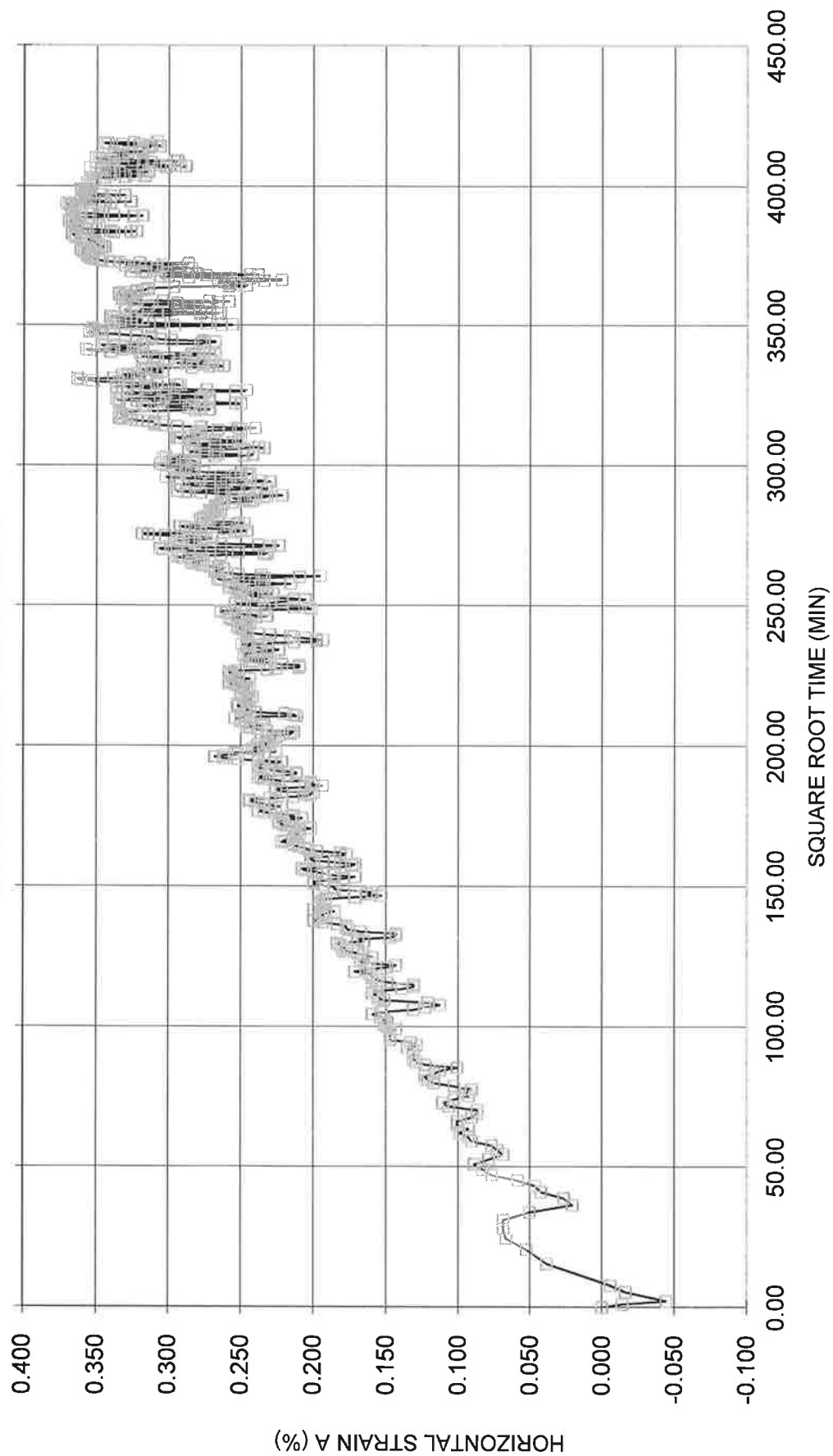
BH 4+495 RUN 16 168'10"-169'10"



PROJECT NUMBER 12-1183-0101

FREE SWELL
Horizontal Strain A

BH 4+495 RUN 16 168'10"-169'10"

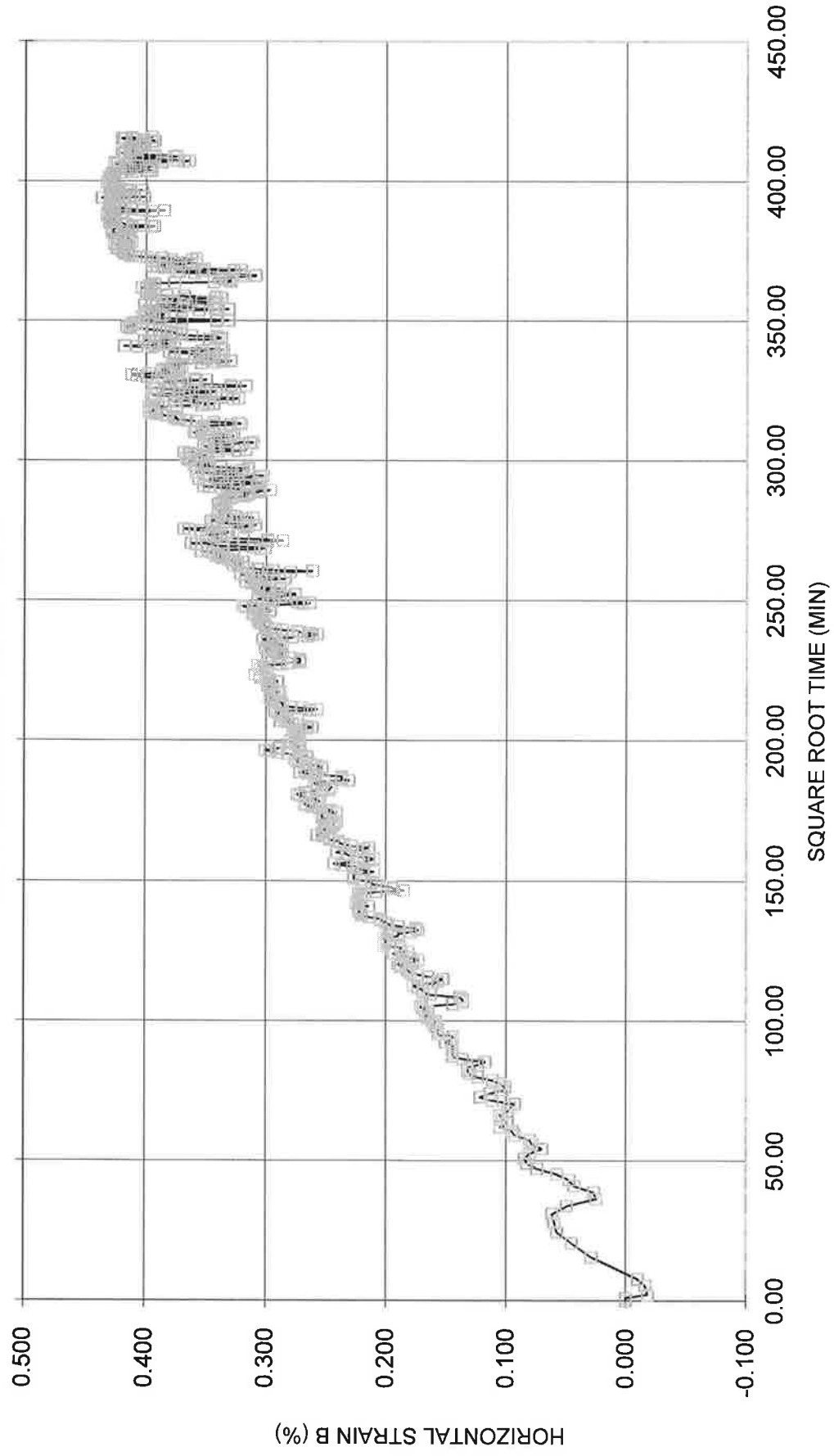


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

BH 4+495 RUN 16 168'10"-169'10"

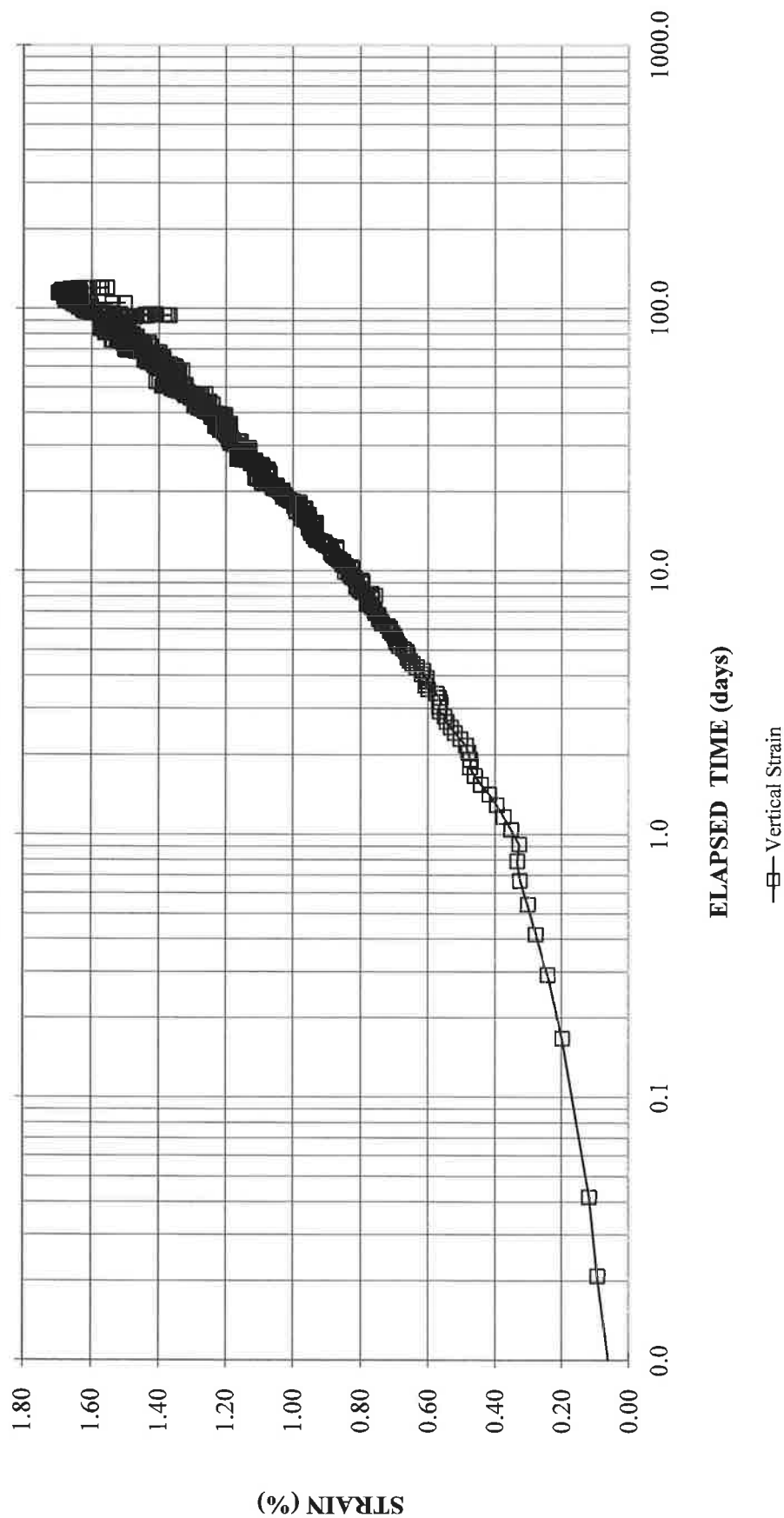


PROJECT NUMBER 12-1183-0101

FREE SWELL

Vertical Strain

BH 4+495 RUN 16 168'10"-169'10"

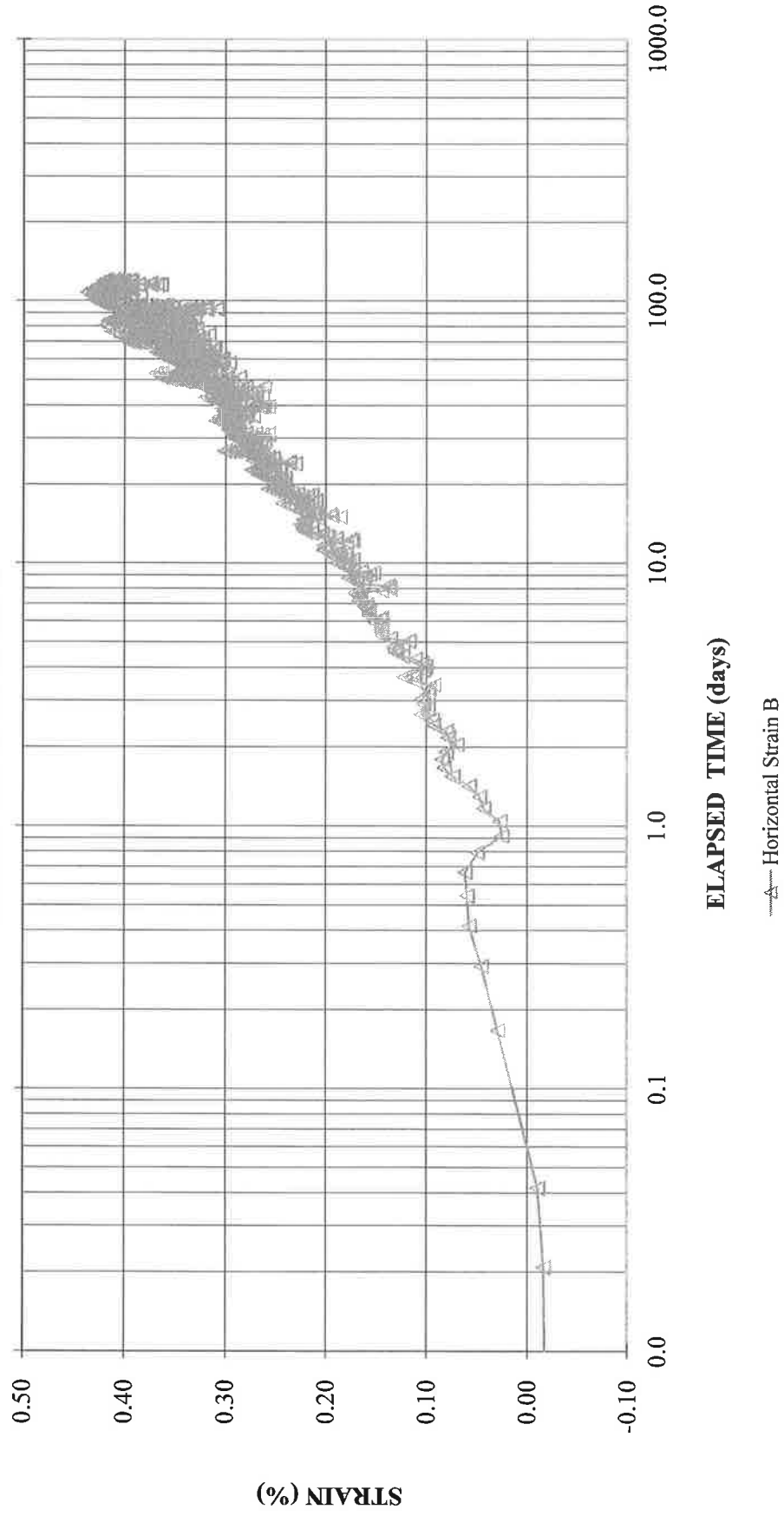


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

BH 4+495 RUN 16 168'10"-169'10"

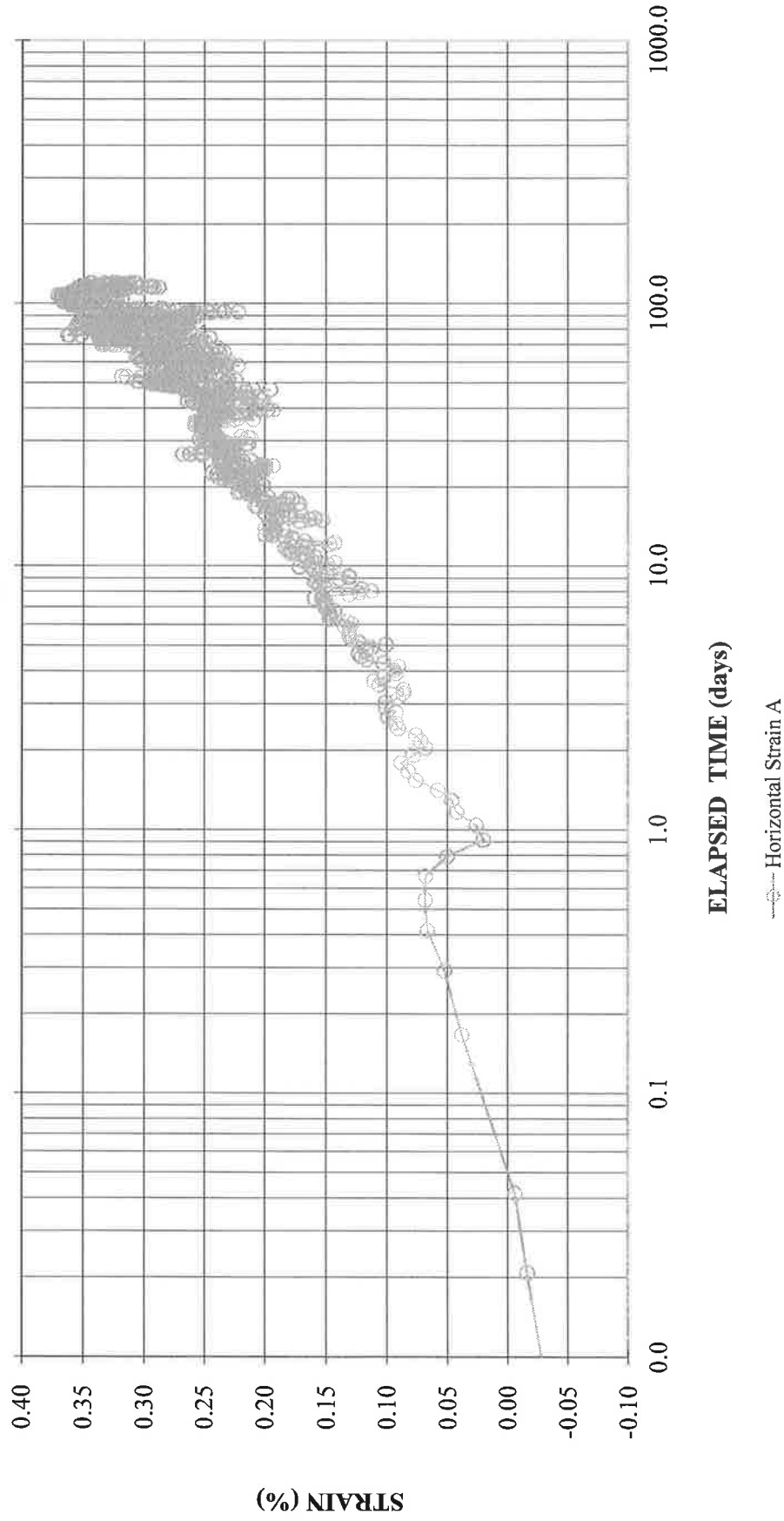


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain A

BH 4+495 RUN 16 168'10"-169'10"



PROJECT NUMBER 12-1183-0101

20

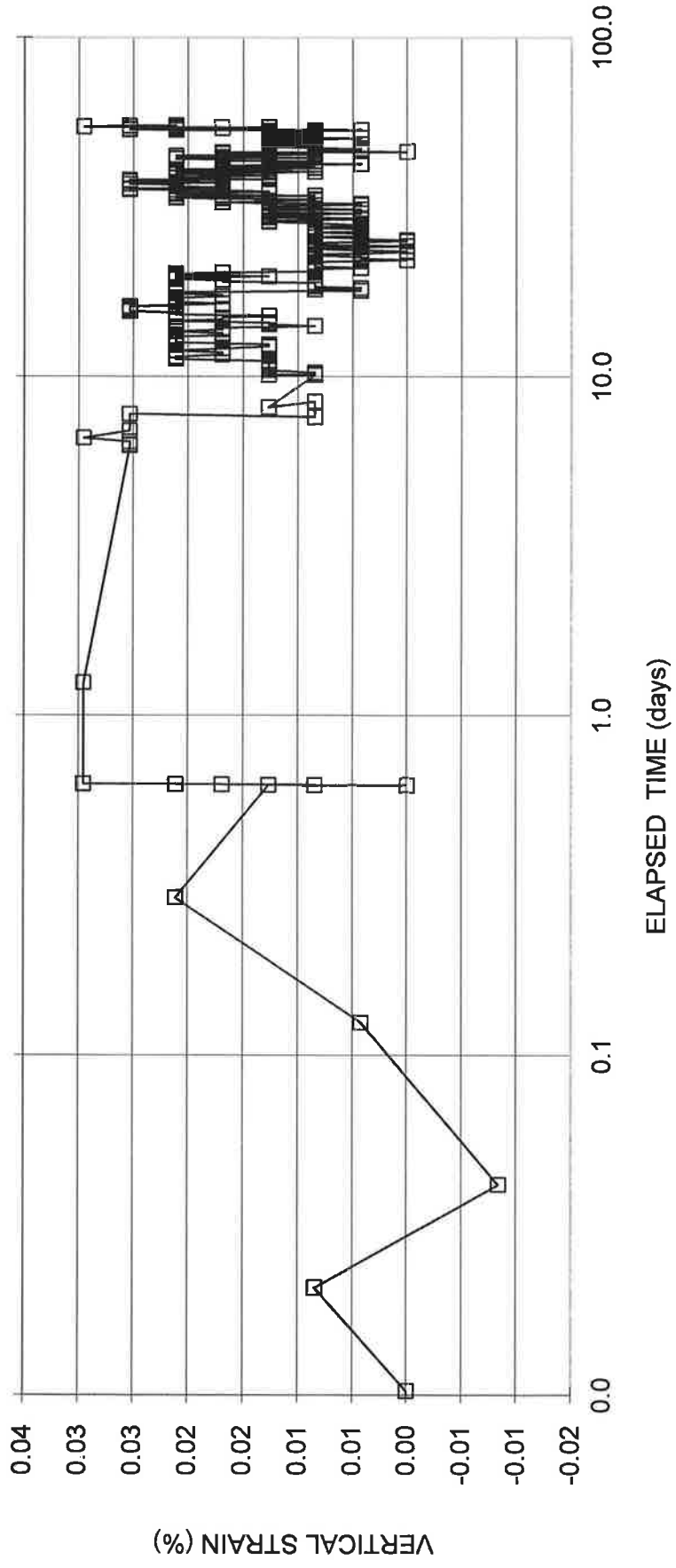
NULL SWELL TEST (Determination of Swelling Stress)

SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	Run 18
BOREHOLE NUMBER	4+990	SAMPLE DEPTH, m	185'19"-187'1"
TEST CONDITIONS			
CELL NUMBER	4	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	04-10-12
DIVISION, mm	0.001	DURATION OF TEST, days	55
SUBMERGING WATER	Distilled	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	cylinder	APPLIED SEATING LOAD, kPa	0.8
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	2.37	WATER CONTENT, (specimen) %	3.54
DIAMETER, cm	6.32	WET DENSITY, g/cm ³	2.65
SAMPLE AREA, cm ²	31.37	DRY DENSITY, g/cm ³	2.56
SAMPLE VOLUME, cm ³	74.35	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	196.89		
DRY WEIGHT, g	190.16		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	2.37	WATER CONTENT, (specimen) %	3.67
DIAMETER, cm	6.32	WET DENSITY, g/cm ³	2.65
SAMPLE AREA, cm ²	31.37	DRY DENSITY, g/cm ³	2.56
SAMPLE VOLUME, cm ³	74.34	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	197.14		
DRY WEIGHT, g	190.16		
TEST RESULTS			
		SWELLING STRAIN, %	0.02
		SWELLING STRESS, kPa	155.87

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

NULL SWELL TEST (Determination of Swelling Stress)

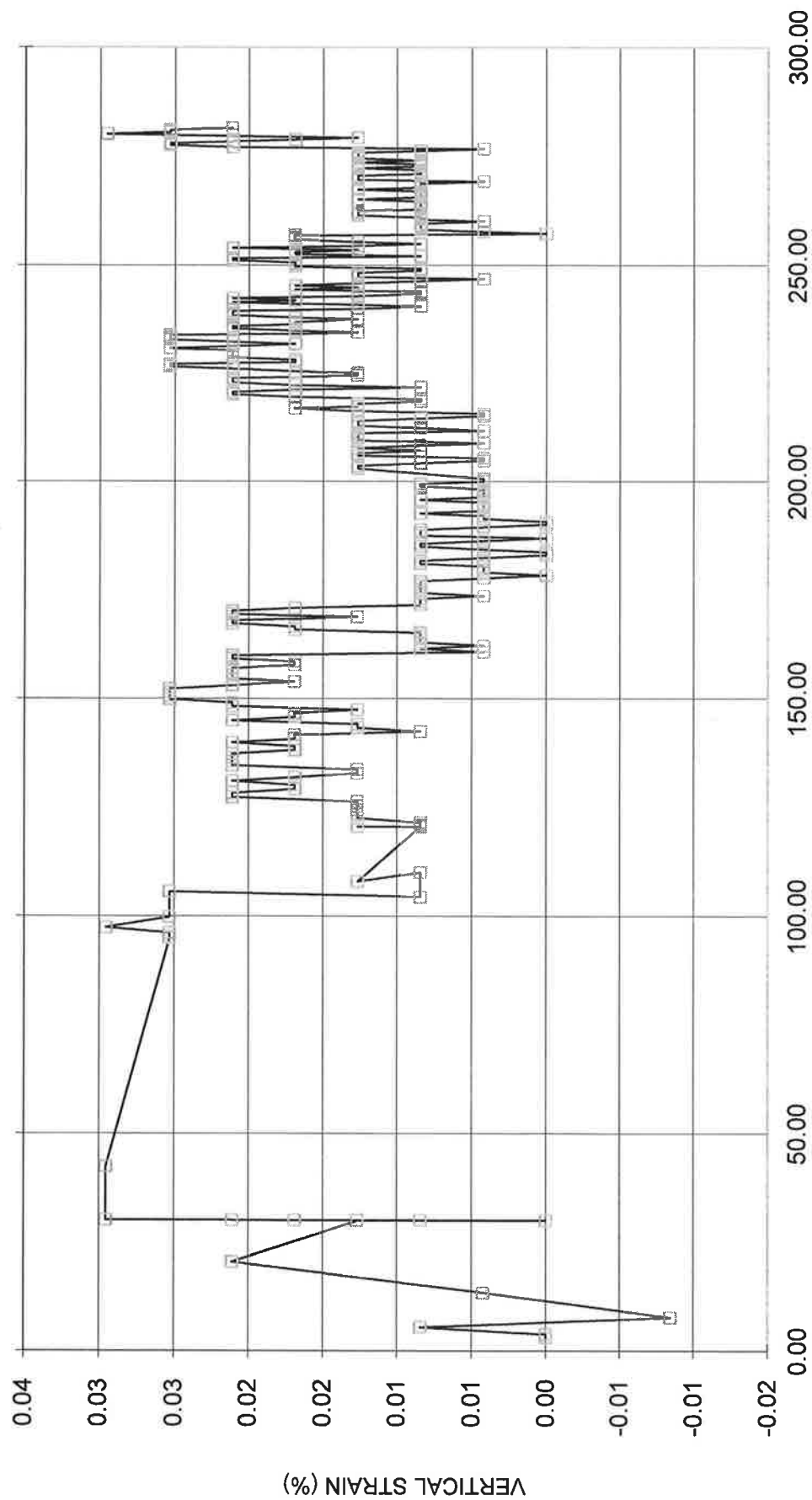
BH 4+990 SA RUN 18 185'19"-187'1"



PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

BH 4+990 SA RUN 18 185'19"-187'1"

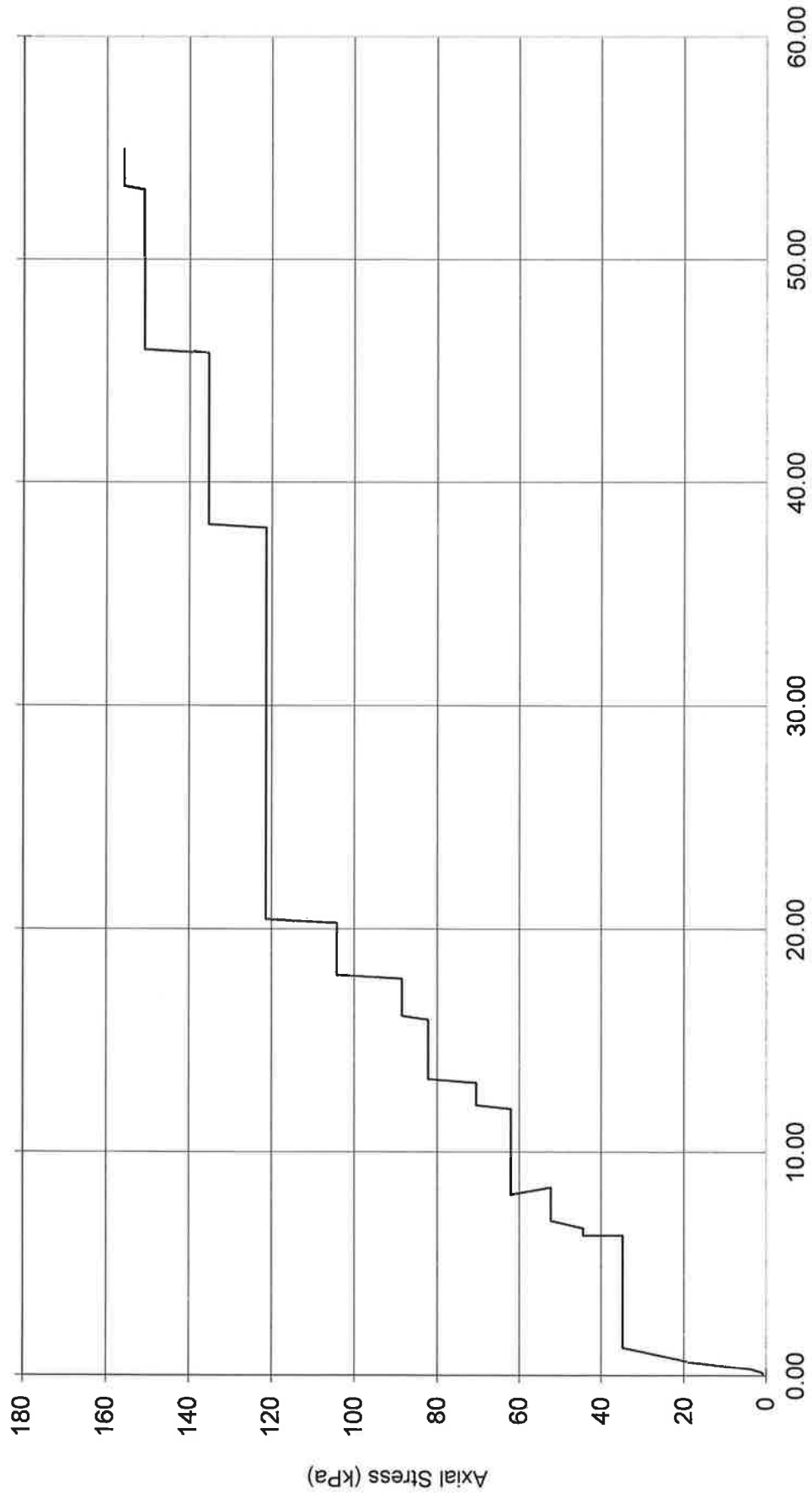


SQUARE ROOT TIME (MIN)

PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

BH 4+990 SA RUN 18 185'19"-187'1"



ELAPSED TIME (Days)

PROJECT NUMBER 12-1183-0101

AXIAL STRESS (kPa)

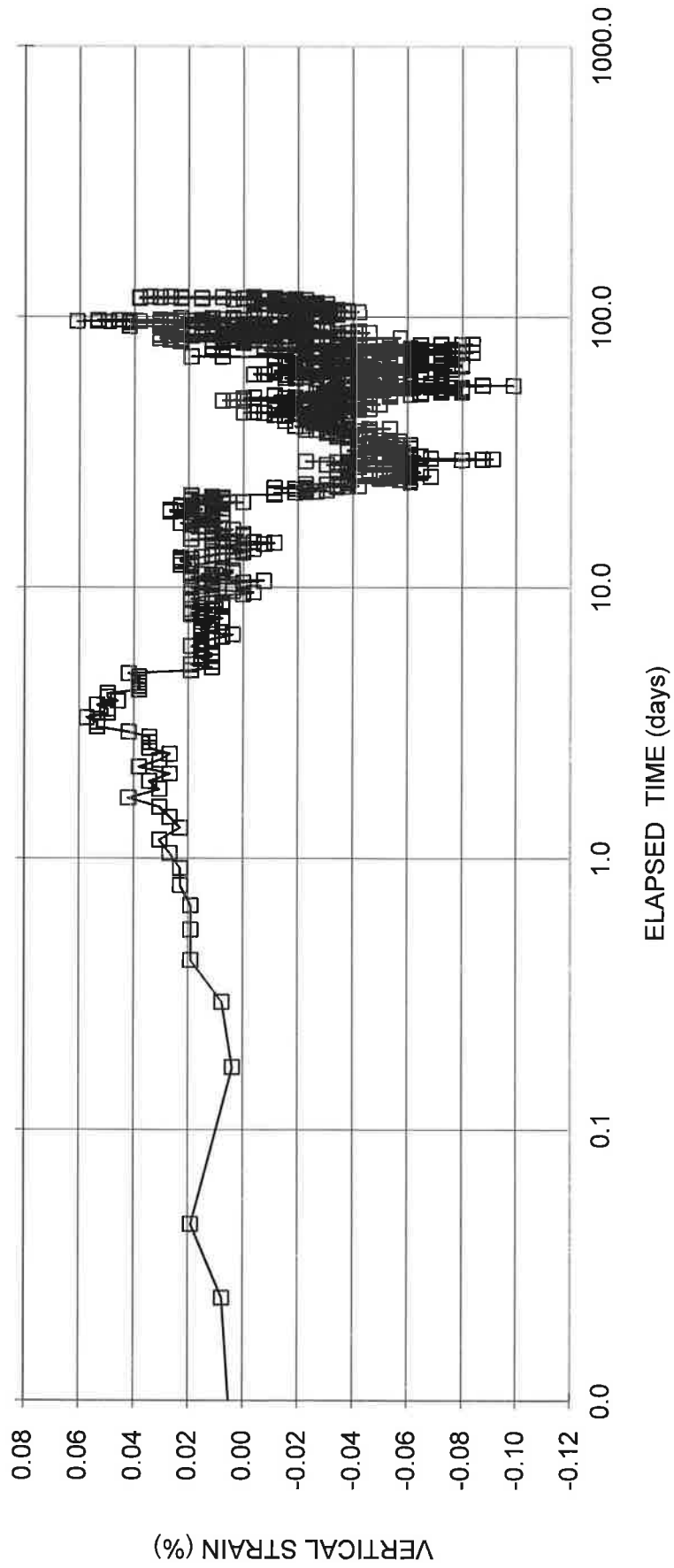
NULL SWELL TEST (Determination of Swelling Stress)

SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 16
BOREHOLE NUMBER	4+495	SAMPLE DEPTH, m	162'6"-163'7"
TEST CONDITIONS			
CELL NUMBER	3	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	09/13/2012
DIVISION, mm	0.001	DURATION OF TEST, days	119
SUBMERGING WATER	Distilled	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	cylinder	APPLIED SEATING LOAD, kPa	1.0
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	2.63	WATER CONTENT, (specimen) %	2.77
DIAMETER, cm	6.29	WET DENSITY, g/cm ³	2.63
SAMPLE AREA, cm ²	31.04	DRY DENSITY, g/cm ³	2.56
SAMPLE VOLUME, cm ³	81.56	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	214.36		
DRY WEIGHT, g	208.58		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	2.63	WATER CONTENT, (specimen) %	2.74
DIAMETER, cm	6.29	WET DENSITY, g/cm ³	2.63
SAMPLE AREA, cm ²	31.04	DRY DENSITY, g/cm ³	2.56
SAMPLE VOLUME, cm ³	81.53	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	214.30		
DRY WEIGHT, g	208.58		
TEST RESULTS			
		SWELLING STRAIN, %	0.03
		SWELLING STRESS, kPa	64.67

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

NULL SWELL TEST (Determination of Swelling Stress)

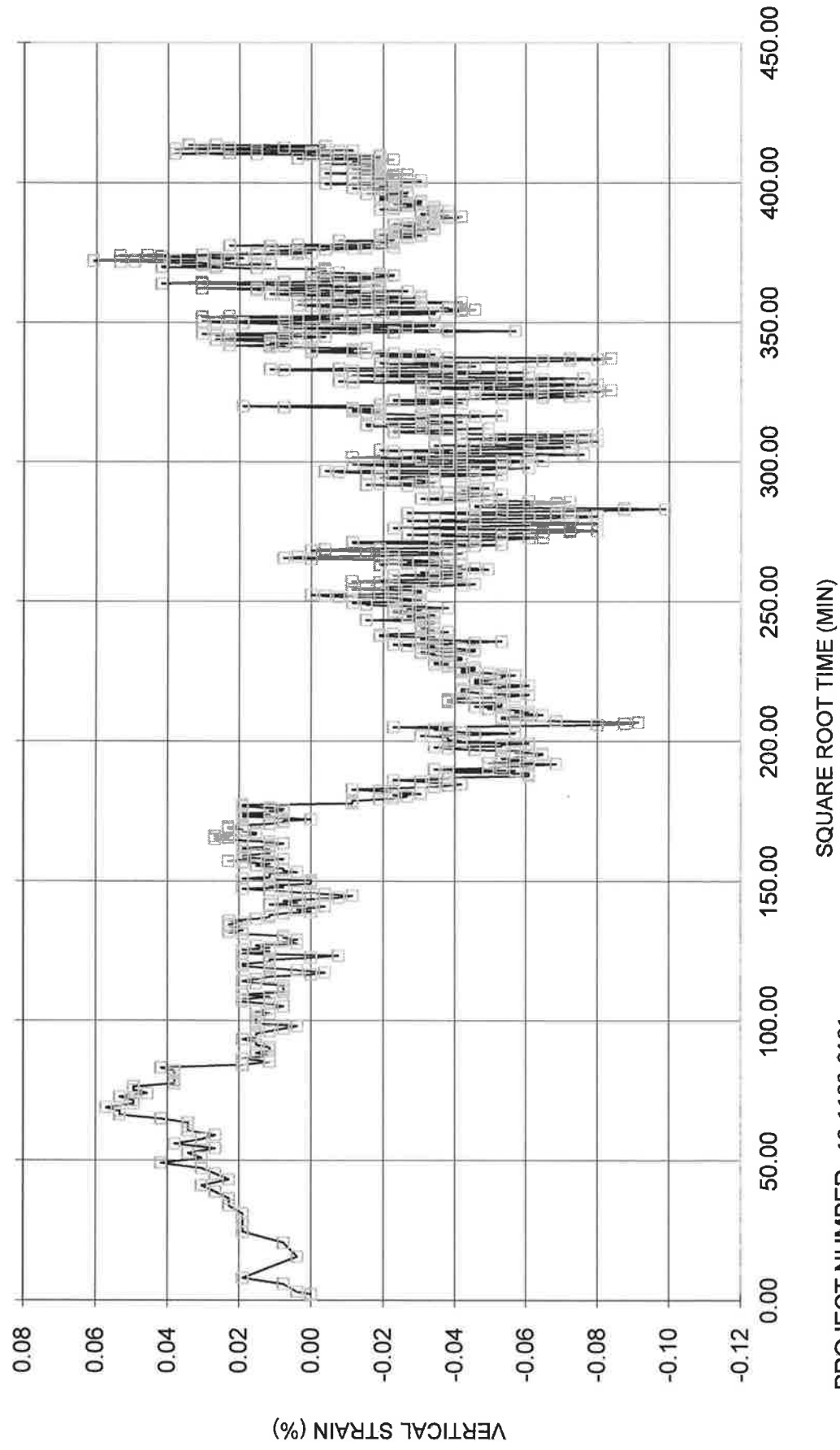
BH 4+495 RUN 16 162'6" - 163'7"



PROJECT NUMBER 12-1183-0101

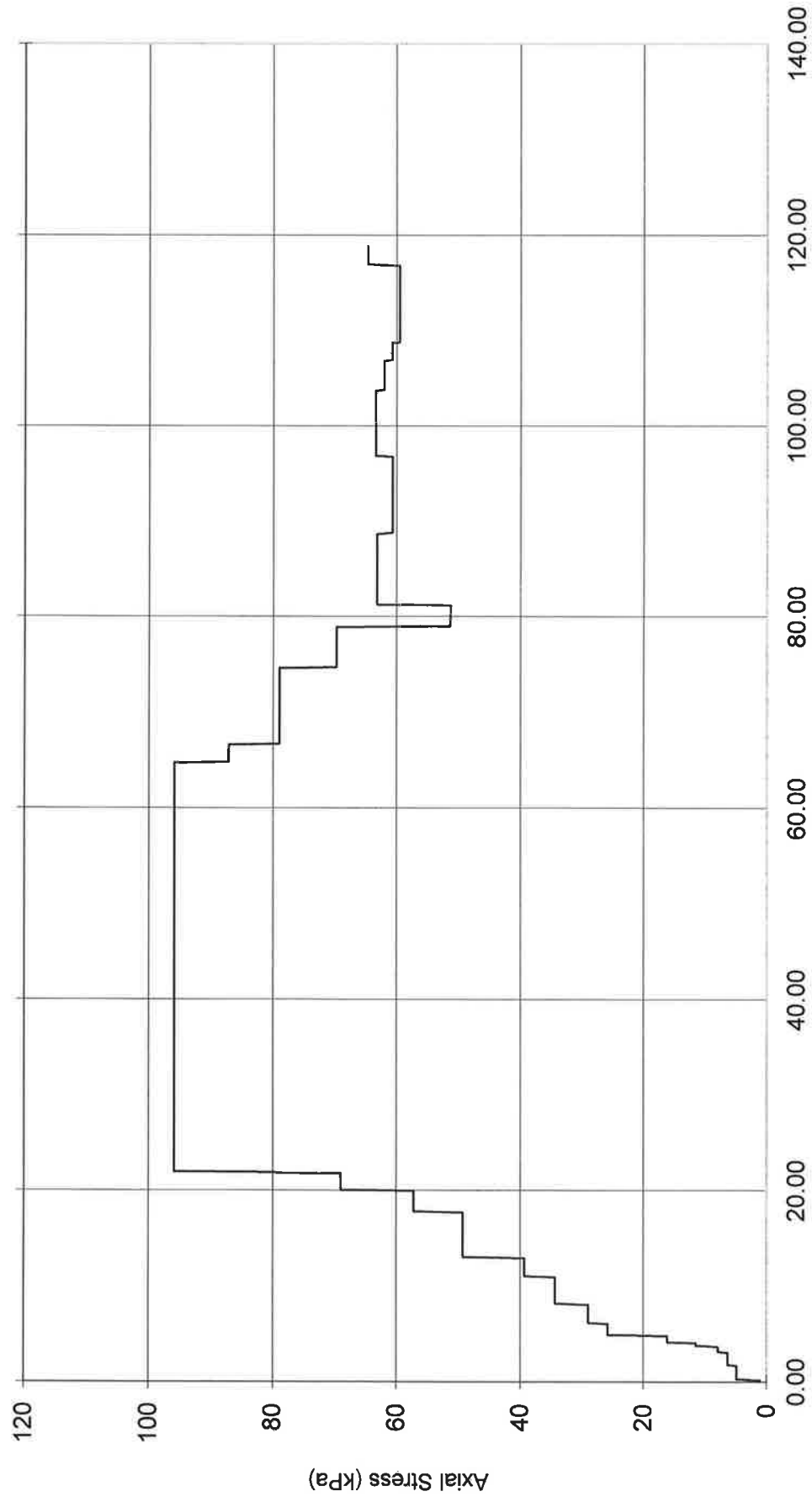
NULL SWELL TEST (Determination of Swelling Stress)

BH 4+495 RUN 16 162'6" - 163'7"



NULL SWELL TEST (Determination of Swelling Stress)

BH 4+495 RUN 16 162'6" - 163'7"



ELAPSED TIME (Days)

PROJECT NUMBER 12-1183-0101

20

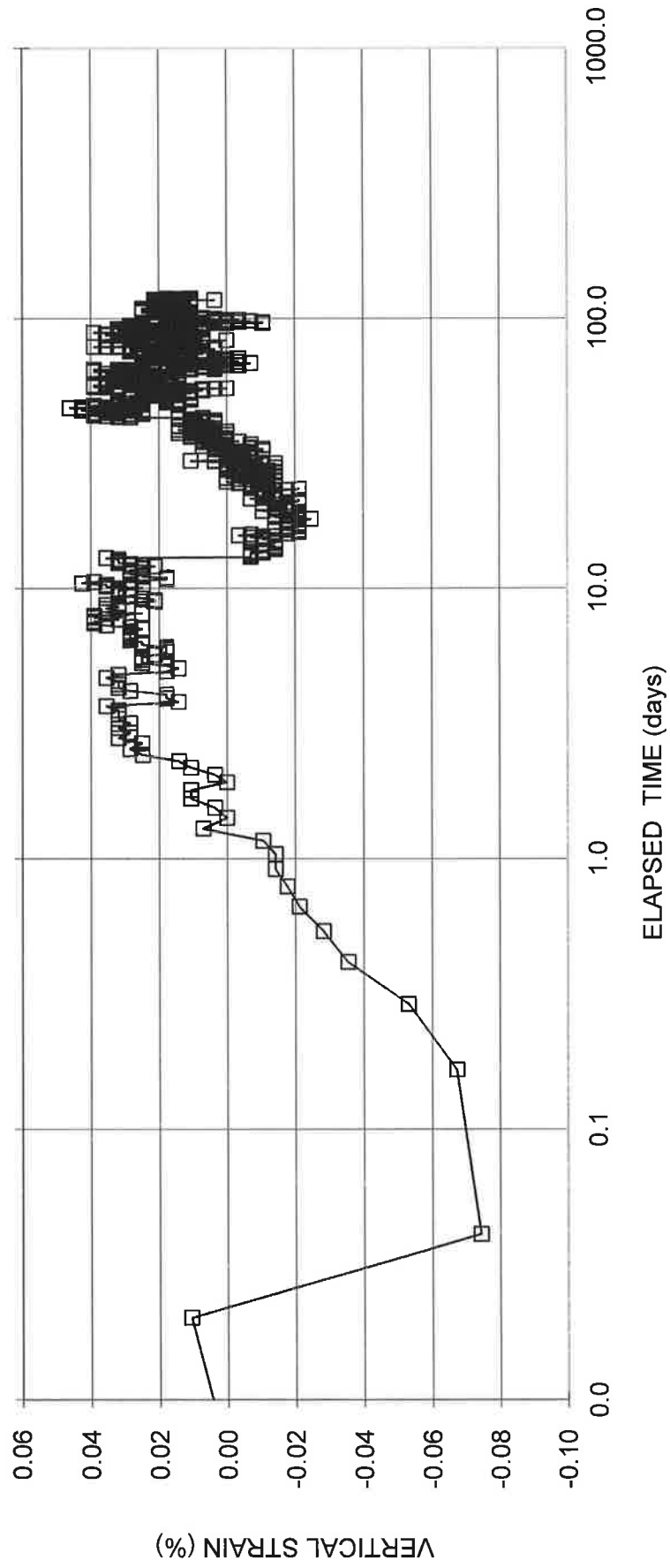
NULL SWELL TEST (Determination of Swelling Stress)

SAMPLE IDENTIFICATION			
PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	11
BOREHOLE NUMBER	3+065	SAMPLE DEPTH, m	105'2"-106'3"
TEST CONDITIONS			
CELL NUMBER	2	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	09/13/2012
DIVISION, mm	0.001	DURATION OF TEST, days	119
SUBMERGING WATER	Distilled	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	cylinder	APPLIED SEATING LOAD, kPa	0.9
PHYSICAL PROPERTIES (INITIAL)			
HEIGHT, cm	2.82	WATER CONTENT, (specimen) %	4.10
DIAMETER, cm	6.30	WET DENSITY, g/cm ³	2.64
SAMPLE AREA, cm ²	31.17	DRY DENSITY, g/cm ³	2.53
SAMPLE VOLUME, cm ³	88.00	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	232.01		
DRY WEIGHT, g	222.87		
PHYSICAL PROPERTIES (FINAL)			
HEIGHT, cm	2.82	WATER CONTENT, (specimen) %	4.46
DIAMETER, cm	6.30	WET DENSITY, g/cm ³	2.65
SAMPLE AREA, cm ²	31.17	DRY DENSITY, g/cm ³	2.53
SAMPLE VOLUME, cm ³	87.99	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	232.82		
DRY WEIGHT, g	222.87		
TEST RESULTS			
		SWELLING STRAIN, %	0.01
		SWELLING STRESS, kPa	115.41

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

NULL SWELL TEST (Determination of Swelling Stress)

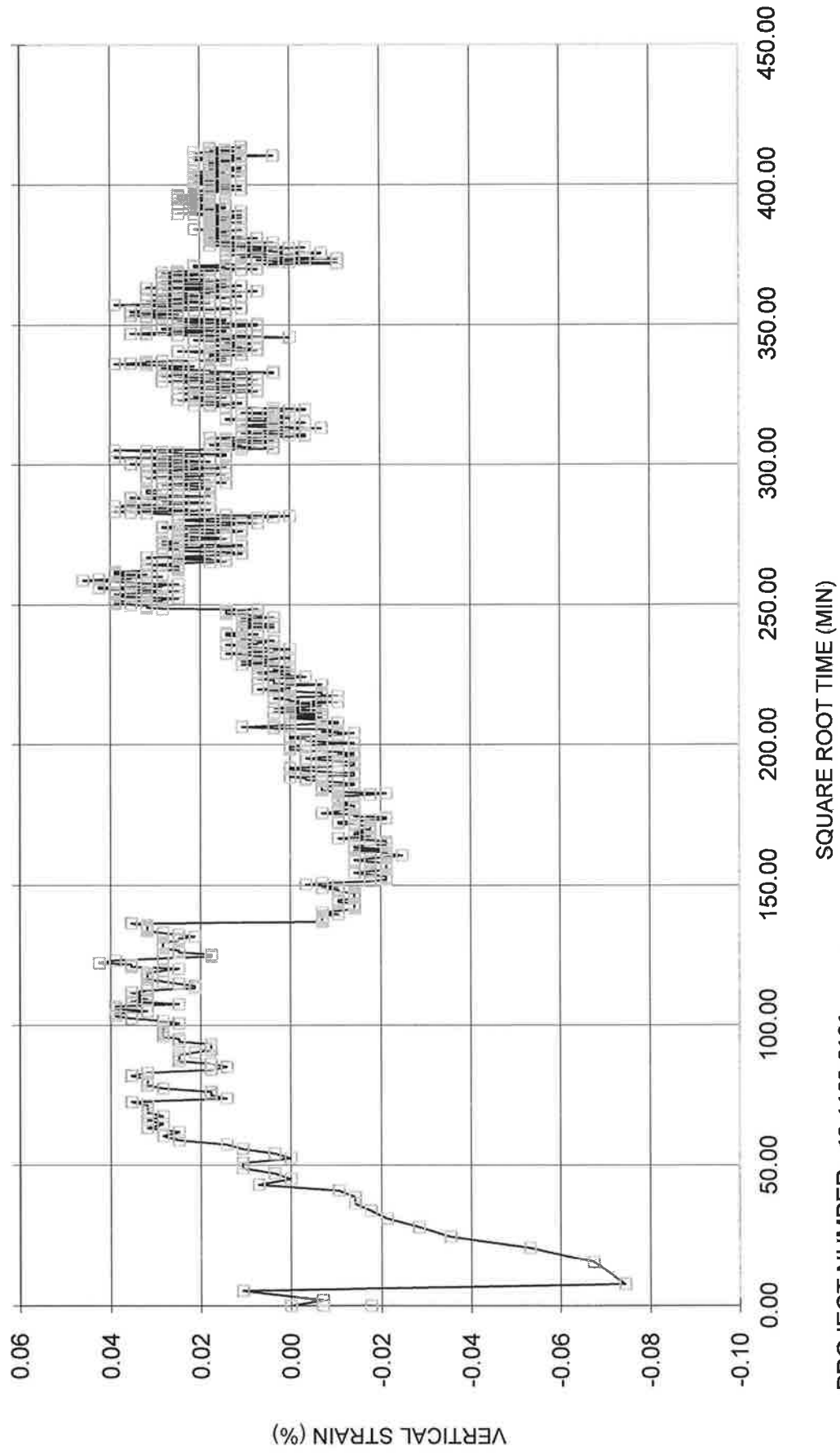
BH 3+065 RUN 11 105'2"-106'3"



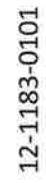
PROJECT NUMBER 12-1183-0101

NULL SWELL TEST (Determination of Swelling Stress)

BH 3+065 RUN 11 105'2"-106'3"



BH 3+065 RUN 11 105'2"-106'3"



PROJECT NUMBER

FREE SWELL TEST

SAMPLE IDENTIFICATION

PROJECT NUMBER	12-1183-0101	SAMPLE NUMBER	RUN 18
BOREHOLE NUMBER	4+990	SAMPLE DEPTH, ft	184'6"-185'10"

TEST CONDITIONS

CELL NUMBER	3	DATE OF SAMPLING	-
MEASURING DEVICE	Linear Transducer	DATE TEST STARTED	15/01/13
RESOLUTION, mm	0.001	DURATION OF TEST, days	72
SUBMERGING LIQUID	Distilled Water	BEDDING PLANES ORIENTATION	Horizontal
GEOMETRY OF SPECIMEN	Cube		

PHYSICAL PROPERTIES (INITIAL)

HEIGHT, cm	4.74	DRY WEIGHT, g	288.65
WIDTH A, cm	4.86	WATER CONTENT, (specimen) %	3.49
WIDTH B, cm	5.02	WET DENSITY, g/cm ³	2.58
SAMPLE AREA, cm ²	24.40	DRY DENSITY, g/cm ³	2.50
SAMPLE VOLUME, cm ³	115.64	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	298.72		

PHYSICAL PROPERTIES (FINAL)

HEIGHT, cm	4.79	DRY WEIGHT, g	288.65
WIDTH A, cm	4.86	WATER CONTENT, (specimen) %	4.00
WIDTH B, cm	5.03	WET DENSITY, g/cm ³	2.56
SAMPLE AREA, cm ²	24.47	DRY DENSITY, g/cm ³	2.46
SAMPLE VOLUME, cm ³	117.25	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	300.21		

TEST RESULTS

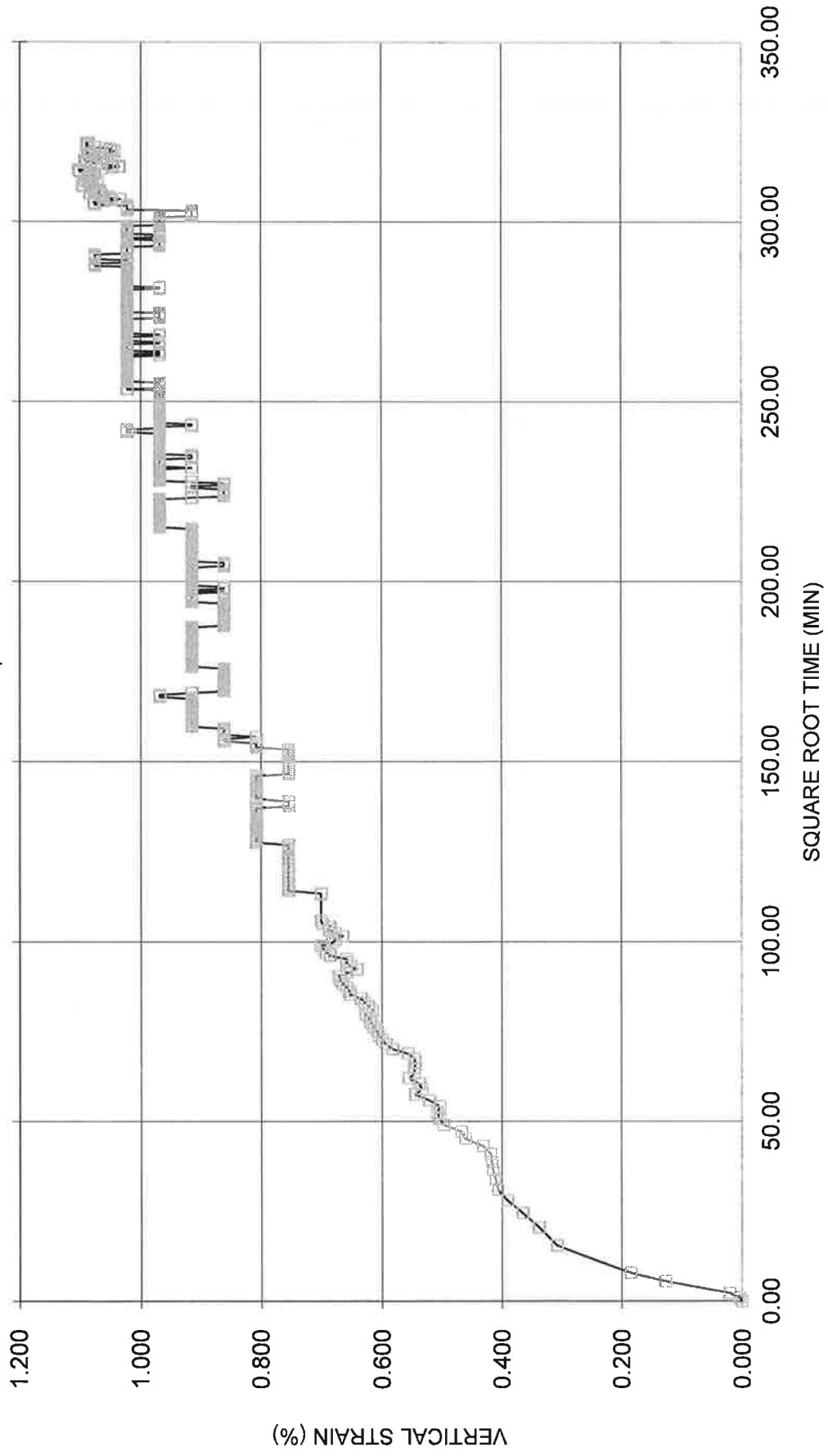
VERTICAL STRAIN, %	1.09
HORIZONTAL STRAIN A, %	0.09
HORIZONTAL STRAIN B, %	0.21

REMARKS: Test performed following:
 "Suggested methods for laboratory testing of swelling rocks" by F.T. Madsen/
 International Journal of Rock Mechanics and Mining Sciences 36 (1999) 291-307
 and
 "Time-dependent deformation of shaly rocks in southern Ontario" by K. Y. Lo and R. S. C. Wai

RW

FREE SWELL
Vertical Strain

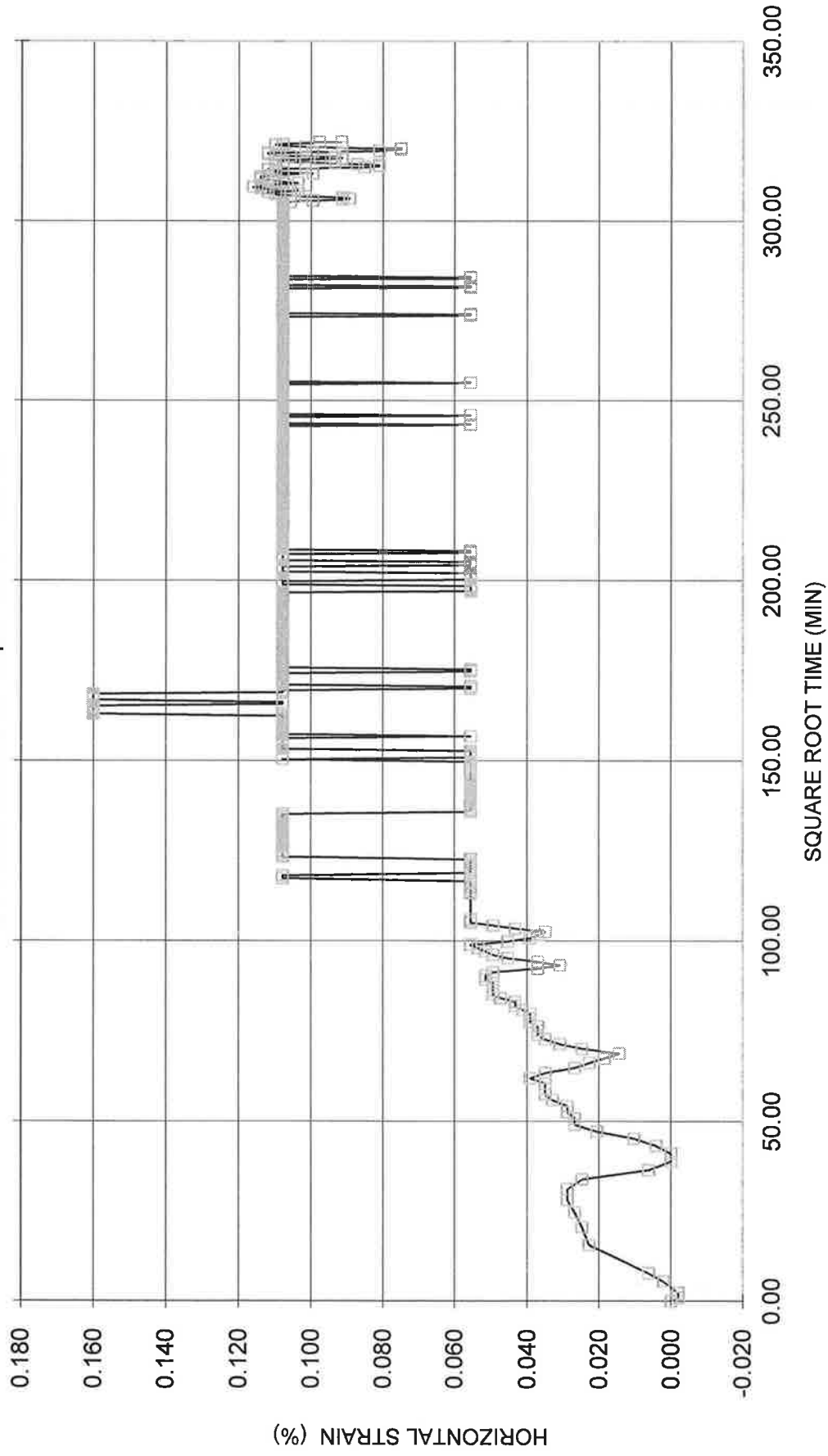
BH 4+990 SA Run 18 Depth 184'6" - 185'10"



PROJECT NUMBER 12-1183-0101

FREE SWELL
Horizontal Strain A

BH 4+990 SA Run 18 Depth 184'6" - 185'10"



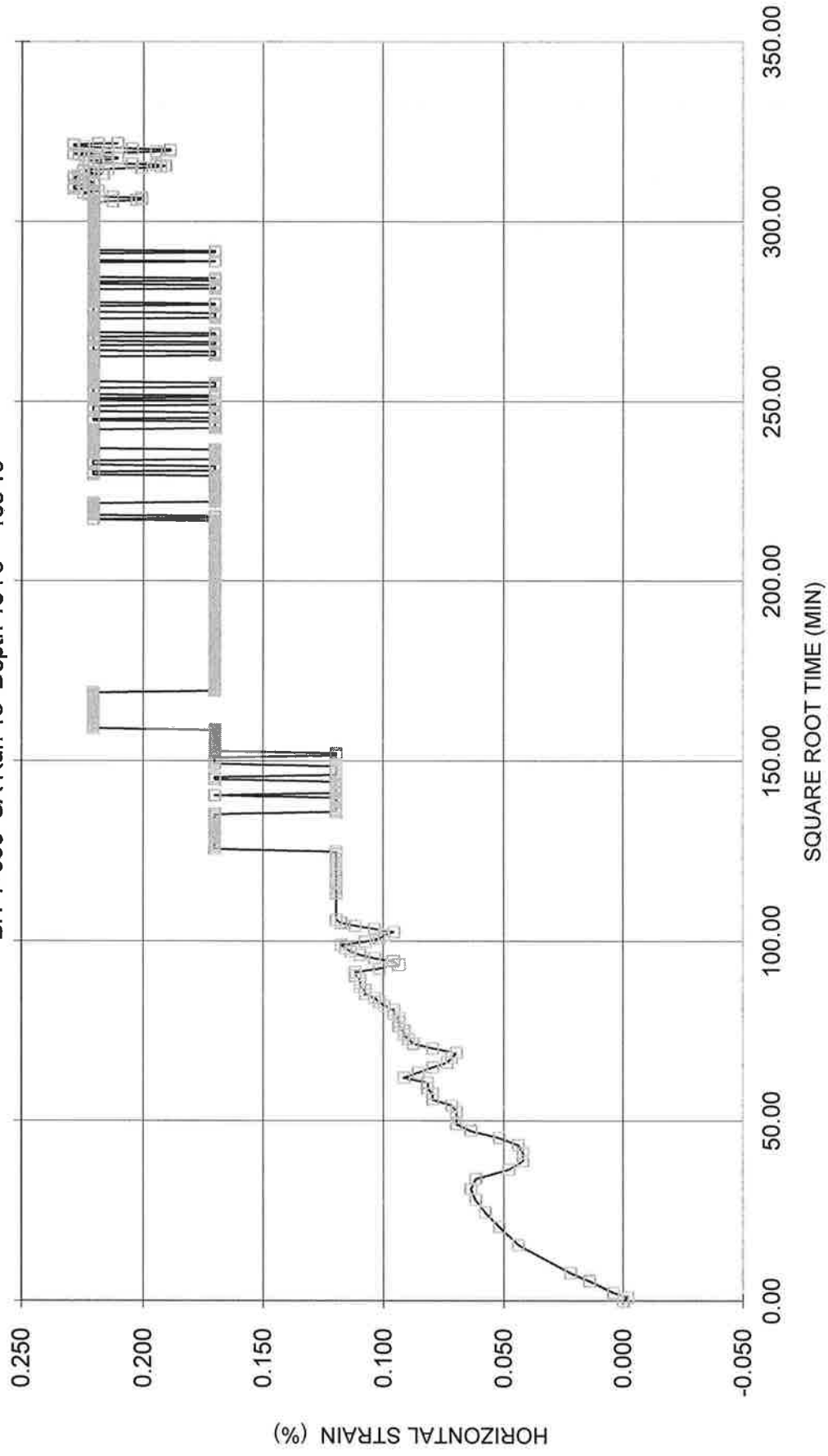
PROJECT NUMBER 12-1183-0101

RD

FREE SWELL

Horizontal Strain B

BH 4+990 SA Run 18 Depth 184'6" - 185'10"

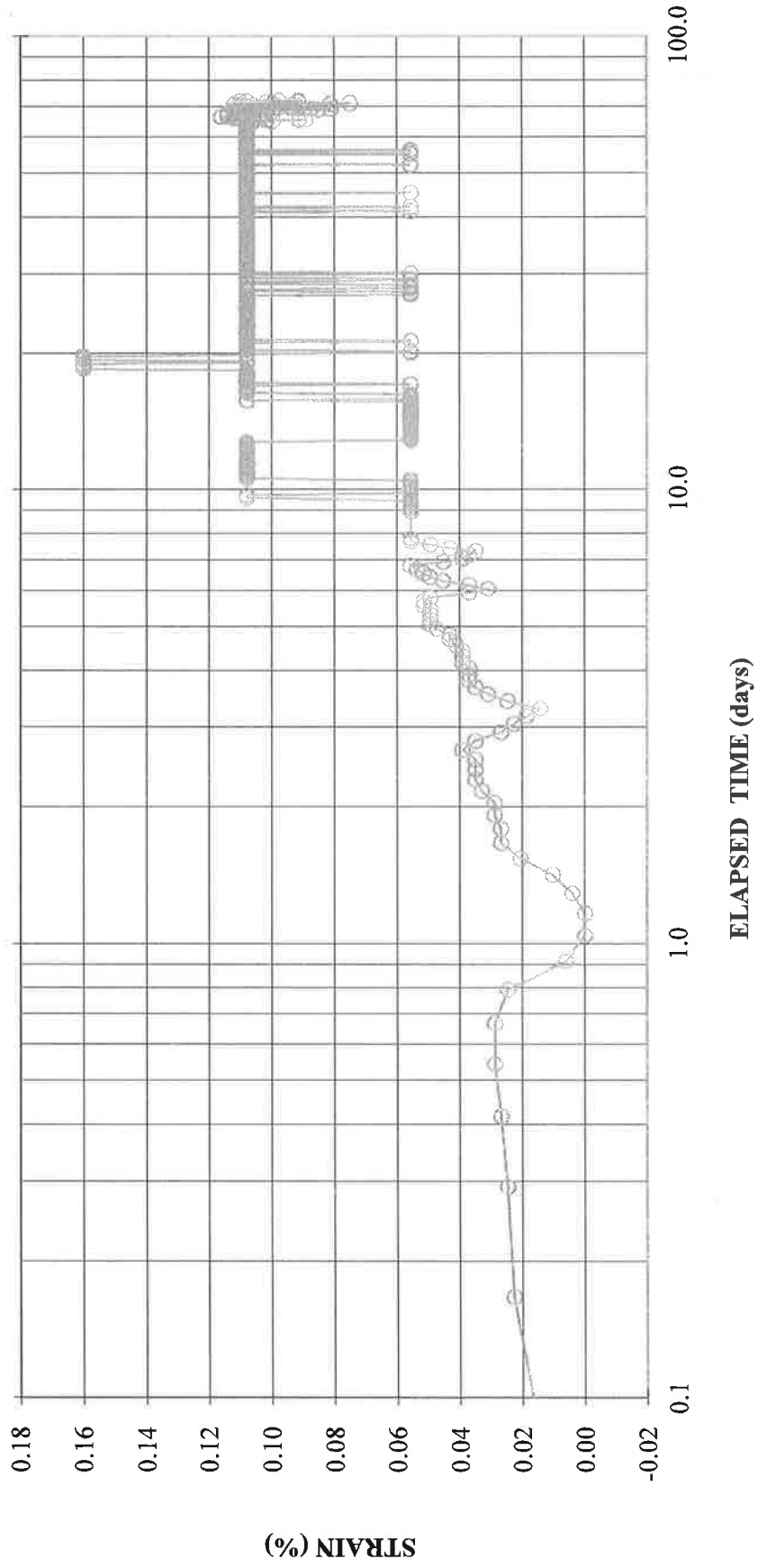


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain A

BH 4+990 SA Run 18 Depth 184'6" - 185'10"



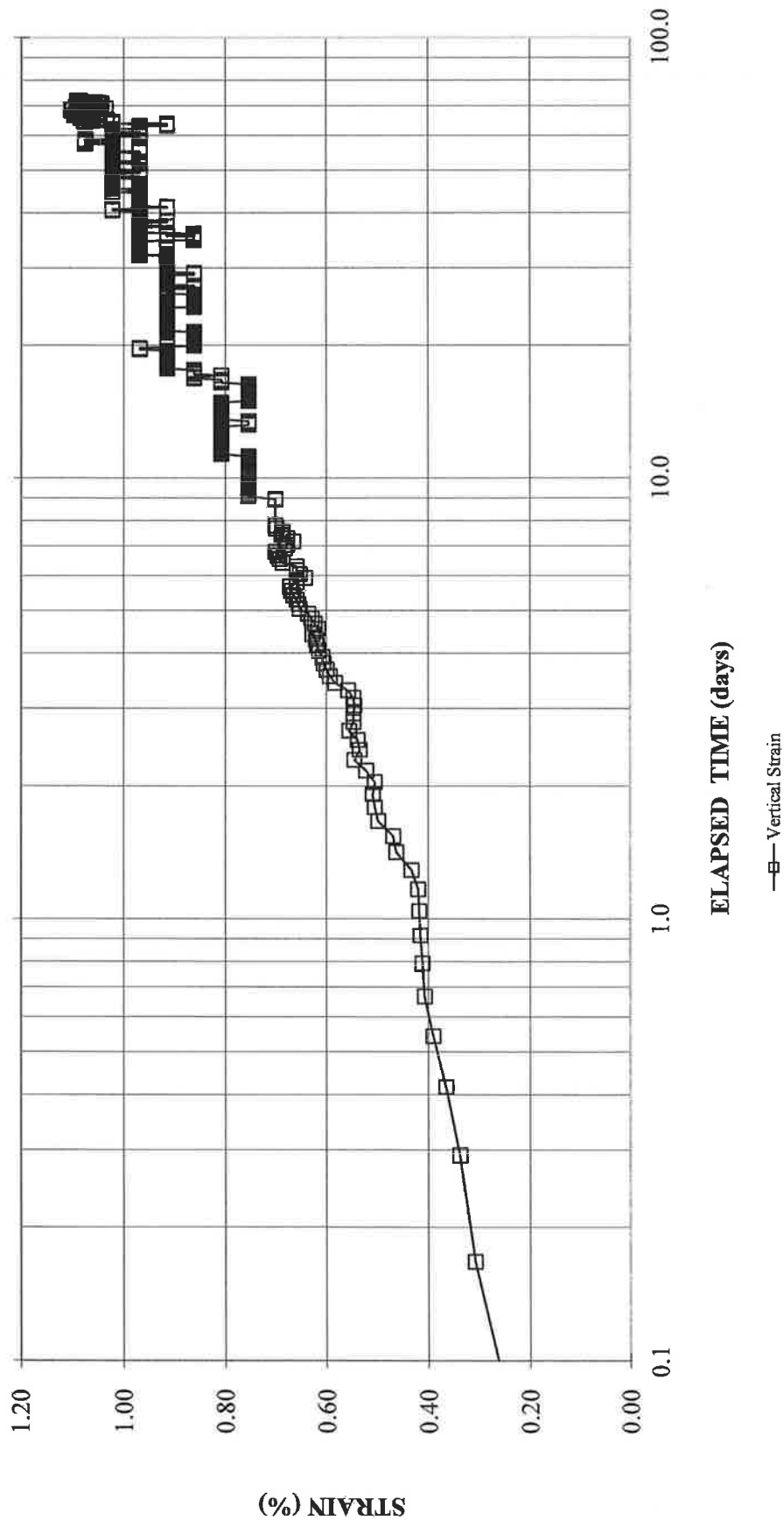
Horizontal Strain A

PROJECT NUMBER 12-1183-0101

FREE SWELL

Vertical Strain

BH 4+990 SA Run 18 Depth 184'6" - 185'10"

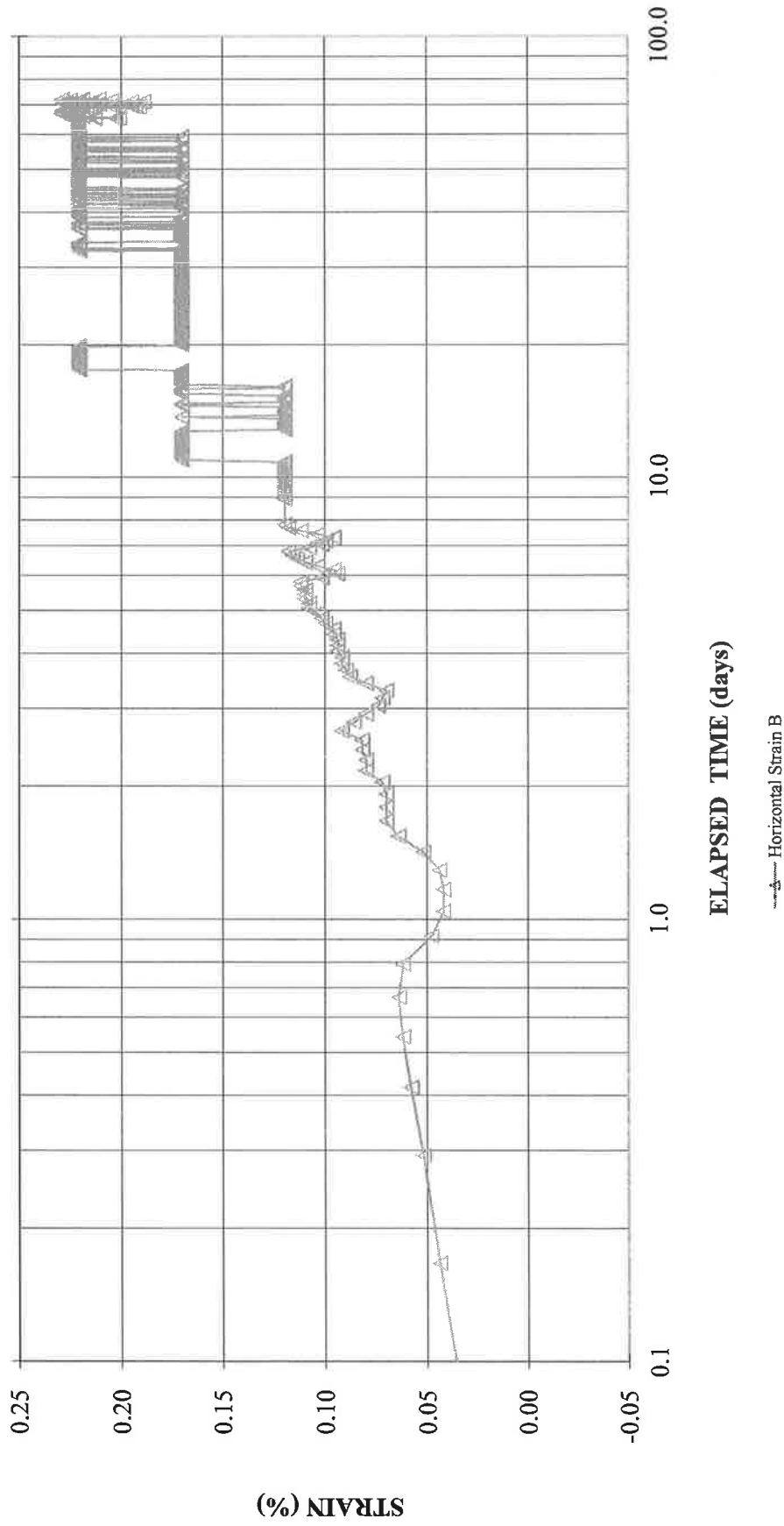


PROJECT NUMBER 12-1183-0101

FREE SWELL

Horizontal Strain B

BH 4+990 SA Run 18 Depth 184'6" - 185'10"

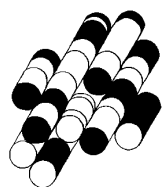


PROJECT NUMBER 12-1183-0101

fe

APPENDIX F

TERRAPROBE INC.



Borehole	Well Type	Water Level in Well		
		Depth, m	Elevation, m	Date
BH 1+200	deep well	5.3	86.9	9/20/2012
BH 1+200	deep well	5.2	87.0	10/3/2012
BH 1+200	deep well	5.2	87.0	10/10/2012
BH 1+200	deep well	5.1	87.0	10/19/2012
BH 1+200	deep well	4.8	87.3	11/2/2012
BH 1+200	deep well	5.9	86.2	1/7/2013
BH 1+200	deep well	5.1	87.1	2/12/2013
BH 1+200	shallow	dry	n/a	9/20/2012
BH 1+200	shallow	dry	n/a	10/3/2012
BH 1+200	shallow	dry	n/a	10/10/2012
BH 1+200	shallow	3.5	88.6	11/2/2012
BH 1+200	shallow	3.6	88.5	1/7/2013
BH 1+200	shallow	3.9	88.2	2/12/2013
BH 2+425	deep well	9.9	93.8	10/3/2012
BH 2+425	deep well	6.5	97.2	10/10/2012
BH 2+425	deep well	5.6	98.1	10/19/2012
BH 2+425	deep well	6.0	97.7	11/2/2012
BH 2+425	deep well	6.3	97.5	1/7/2013
BH 2+425	deep well	5.3	98.4	2/12/2013
BH 2+425	shallow	3.3	100.4	9/20/2012
BH 2+425	shallow	3.5	100.3	10/3/2012
BH 2+425	shallow	3.5	100.2	10/10/2012
BH 2+425	shallow	2.8	100.9	11/2/2012
BH 2+425	shallow	4.1	99.6	1/7/2013
BH 2+425	shallow	3.2	100.6	2/12/2013
BH 2+640	single well	4.4	101.2	9/20/2012
BH 2+640	single well	18.4	87.3	10/3/2012
BH 2+640	single well	17.5	88.1	10/10/2012
BH 2+640	single well	15.2	90.4	11/2/2012
BH 2+640	single well	11.7	94.0	1/7/2013
BH 2+640	single well	8.8	96.8	2/12/2013
BH 3+065	deep well	13.7	98.9	10/3/2012
BH 3+065	deep well	11.5	101.0	10/10/2012

Borehole	Well Type	Water Level in Well		
		Depth, m	Elevation, m	Date
BH 3+065	deep well	9.8	102.8	10/19/2012
BH 3+065	deep well	9.7	102.9	11/2/2012
BH 3+065	deep well	9.1	103.5	1/7/2013
BH 3+065	deep well	6.8	105.8	2/12/2013
BH 3+065	shallow	2.6	110.0	9/20/2012
BH 3+065	shallow	2.6	110.0	10/3/2012
BH 3+065	shallow	2.6	110.0	10/10/2012
BH 3+065	shallow	2.4	110.2	11/2/2012
BH 3+065	shallow	3.4	109.2	1/7/2013
BH 3+065	shallow	2.2	110.4	2/12/2013
BH 4+495	deep well	36.3	95.1	11/2/2012
BH 4+495	deep well	24.2	107.3	2/12/2013
BH 4+495	shallow	3.2	128.3	10/10/2012
BH 4+495	shallow	1.6	129.8	11/2/2012
BH 4+495	shallow	2.0	129.4	2/12/2013
BH 5+060	deep well	47.4	90.7	7/29/2013
BH 5+060	deep well	48.2	89.9	8/9/2013
BH 5+060	shallow	2.9	135.2	7/29/2013
BH 5+060	shallow	3.1	135.0	8/9/2013
BH 7+145	deep well	27.9	104.9	10/10/2012
BH 7+145	deep well	30.7	102.0	10/19/2012
BH 7+145	deep well	31.9	100.9	11/2/2012
BH 7+145	deep well	15.0	117.7	1/7/2013
BH 7+145	shallow	4.5	128.3	9/21/2012
BH 7+145	shallow	dry	n/a	10/10/2012
BH 7+145	shallow	4.4	128.3	11/2/2012
BH 7+145	shallow	4.3	128.4	1/7/2013
BH 7+270	deep well	37.0	95.8	2/28/2013
BH 7+270	deep well	37.6	95.2	3/13/2013
BH 7+270	shallow	8.5	124.3	2/13/2013
BH 7+270	shallow	8.5	124.3	2/19/2013
BH 7+270	shallow	8.5	124.3	2/28/2013
BH 7+270	shallow	8.4	124.4	3/13/2013



Borehole	Well Type	Water Level in Well		
		Depth, m	Elevation, m	Date
COF-1	single well	5.2	110.1	2/16/2012
COF-1	single well	6.8	108.5	2/13/2013
COF-2	single well	3.5	113.0	2/16/2012
COF-2	single well	3.1	113.4	2/13/2013
COF-6	single well	4.6	108.0	2/16/2012
COF-6	single well	4.3	108.4	2/13/2013
COF-BC-1	single well	45.7	98.8	6/1/2010
COF-BC-1	single well	45.0	99.5	6/10/2010
COF-BC-1	single well	43.5	101.0	6/22/2010
COF-BC-1	single well	43.1	101.4	6/25/2010
COF-BC-1	single well	42.3	102.2	6/30/2010
COF-BC-1	single well	42.1	102.4	7/2/2010
COF-BC-1	single well	42.2	102.3	7/7/2010
COF-BC-1	single well	41.2	103.3	7/9/2010
COF-BC-1	single well	40.6	103.9	7/14/2010
COF-BC-1	single well	40.2	104.3	7/16/2010
COF-BC-1	single well	39.5	105.0	7/23/2010
COF-BC-1	single well	26.7	117.8	4/5/2011
COF-BC-2	single well	39.5	102.9	6/1/2010
COF-BC-2	single well	33.1	109.3	6/10/2010
COF-BC-2	single well	25.9	116.5	6/22/2010
COF-BC-2	single well	25.0	117.4	6/25/2010
COF-BC-2	single well	23.4	119.0	6/30/2010
COF-BC-2	single well	22.9	119.5	7/2/2010
COF-BC-2	single well	21.8	120.6	7/7/2010
COF-BC-2	single well	21.4	121.0	7/9/2010
COF-BC-2	single well	20.6	121.8	7/14/2010
COF-BC-2	single well	20.2	122.2	7/16/2010
COF-BC-2	single well	19.5	122.9	7/23/2010
COF-BC-3	single well	38.7	99.9	6/22/2010
COF-BC-3	single well	38.5	100.1	6/25/2010
COF-BC-3	single well	37.5	101.1	6/30/2010
COF-BC-3	single well	37.1	101.5	7/2/2010

Borehole	Well Type	Water Level in Well		
		Depth, m	Elevation, m	Date
COF-BC-3	single well	35.8	102.8	7/7/2010
COF-BC-3	single well	35.4	103.2	7/9/2010
COF-BC-3	single well	34.2	104.4	7/14/2010
COF-BC-3	single well	33.9	104.7	7/16/2010
COF-BC-3	single well	32.4	106.2	7/23/2010
COF-BC-3	single well	17.6	121.0	4/5/2011
COF-BC-4	single well	33.5	105.6	6/22/2010
COF-BC-4	single well	32.2	106.9	6/25/2010
COF-BC-4	single well	30.4	108.7	06/30/10
COF-BC-4	single well	29.9	109.2	07/02/10
COF-BC-4	single well	28.7	110.4	07/07/10
COF-BC-4	single well	28.1	111.0	07/09/10
COF-BC-4	single well	26.7	112.4	07/14/10
COF-BC-4	single well	26.3	112.8	07/16/10
COF-BC-4	single well	24.7	114.4	7/23/2010
COF-BC-4	single well	13.9	125.2	4/5/2011
GC-A	deep well	2.7	87.2	10/27/2004
GC-A	deep well	3.0	86.9	10/28/2004
GC-A	deep well	3.2	86.7	10/29/2004
GC-A	deep well	3.3	86.6	11/1/2004
GC-A	deep well	3.5	86.4	11/2/2004
GC-A	deep well	3.4	86.5	11/3/2004
GC-A	deep well	3.6	86.3	11/5/2004
GC-A	deep well	3.6	86.3	11/8/2004
GC-A	deep well	3.6	86.3	11/10/2004
GC-A	deep well	3.8	86.1	11/17/2004
GC-A	deep well	21.6	68.3	11/23/2004
GC-A	deep well	22.1	67.8	11/29/2004
GC-A	shallow	1.5	88.4	10/27/2004
GC-A	shallow	1.5	88.4	10/28/2004
GC-A	shallow	1.6	88.3	10/29/2004
GC-A	shallow	1.6	88.3	11/1/2004
GC-A	shallow	1.6	88.3	11/2/2004



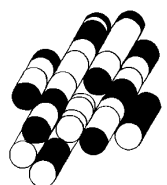
Borehole	Well Type	Water Level in Well		
		Depth, m	Elevation, m	Date
GC-A	shallow	1.6	88.3	11/3/2004
GC-A	shallow	1.7	88.2	11/5/2004
GC-A	shallow	1.7	88.2	11/8/2004
GC-A	shallow	1.7	88.2	11/10/2004
GC-A	shallow	1.7	88.2	11/17/2004
GC-A	shallow	1.8	88.1	11/23/2004
GC-A	shallow	1.8	88.1	11/26/2004
GC-A	shallow	1.8	88.1	11/29/2004
GC-A	shallow	1.8	88.1	12/2/2004
GC-B	single well	4.6	86.4	11/17/2004
GC-B	single well	23.8	67.2	11/23/2004
GC-B	single well	23.5	67.5	11/26/2004
GC-B	single well	23.5	67.5	11/29/2004
GC-B	single well	23.6	67.4	12/2/2004
GC-C	single well	3.5	85.8	11/2/2004
GC-C	single well	3.5	85.8	11/3/2004

Borehole	Well Type	Water Level in Well		
		Depth, m	Elevation, m	Date
GC-C	single well	3.6	85.7	11/5/2004
GC-C	single well	3.6	85.7	11/8/2004
GC-C	single well	3.7	85.6	11/10/2004
GC-C	single well	3.9	85.4	11/17/2004
GC-C	single well	4.5	84.8	11/23/2004
GC-C	single well	3.5	85.8	11/26/2004
GC-C	single well	3.4	85.9	11/29/2004
OCON-18	single well	1.7	143.3	5/5/2004
OCON-19	single well	1.7	143.3	5/5/2004
THU-UC1	single well	2.1	116.8	12/14/2006
THU-WM1	single well	1.2	105.7	12/6/2005
THU-WM3	single well	1.6	108.6	12/6/2005
THU-WM5	single well	4.3	111.8	12/6/2005
THU-WM7	single well	1.6	116.7	12/6/2005
THU-WM9	single well	4.4	117.4	12/06/05
TRW-77	single well	3.4	89.2	09/06/00



APPENDIX G

TERRAPROBE INC.



CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T647836

SOIL ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab
Supervisor

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Analyst

DATE REPORTED: Oct 04, 2012

PAGES (INCLUDING COVER): 12

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDS corrected on January 9, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.

**AGAT** Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2012-10-01

DATE REPORTED: 2012-10-04

		SAMPLE DESCRIPTION:		0+940 SS2
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		9/28/2012
Parameter	Unit	G / S	RDL	3769399
Antimony	µg/g	1.3	0.8	<0.8
Arsenic	µg/g	18	1	6
Barium	µg/g	220	2	157
Beryllium	µg/g	2.5	0.5	0.9
Boron	µg/g	36	5	13
Boron (Hot Water Soluble)	µg/g		0.10	0.38
Cadmium	µg/g	1.2	0.5	2.8
Chromium	µg/g	70	2	24
Cobalt	µg/g	21	0.5	12.8
Copper	µg/g	92	1	13
Lead	µg/g	120	1	54
Molybdenum	µg/g	2	0.5	1.0
Nickel	µg/g	82	1	29
Selenium	µg/g	1.5	0.4	0.4
Silver	µg/g	0.5	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	2.5	0.5	2.1
Vanadium	µg/g	86	1	33
Zinc	µg/g	290	5	1030
Chromium VI	µg/g	0.66	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.370
Sodium Adsorption Ratio	NA	2.4	NA	1.07
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.16

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3769399 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)				
DATE RECEIVED: 2012-10-01			DATE REPORTED: 2012-10-04	
SAMPLE DESCRIPTION: 0+940 SS2 PAH				
SAMPLE TYPE: Soil				
DATE SAMPLED: 9/28/2012				
Parameter	Unit	G / S	RDL	3769400
Naphthalene	µg/g	0.09	0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05
Moisture Content	%		0.1	15.5
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140	61	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3769400 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-10-01			DATE REPORTED: 2012-10-04	
		SAMPLE DESCRIPTION: 0+940 SS3		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/28/2012		
Parameter	Unit	G / S	RDL	3769401
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-10-01			DATE REPORTED: 2012-10-04	
		SAMPLE DESCRIPTION: 0+940 SS3		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/28/2012		
Parameter	Unit	G / S	RDL	3769401
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Moisture Content	%		0.1	14.8
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		127
4-Bromofluorobenzene	% Recovery	50-140		83

Comments: 3769401 RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed.
Results are based on the dry weight of the soil.

Certified By:



Guideline Violation

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
3769399	0+940 SS2	T1(ALL) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cadmium	1.2	2.8
3769399	0+940 SS2	T1(ALL) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil)	Zinc	290	1030

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

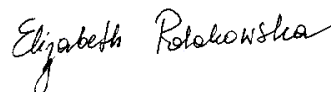
ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Oct 04, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		< 0.8	< 0.8	0.0%	< 0.8	123%	70%	130%	85%	80%	120%	86%	70%	130%
Arsenic	1		3	3	0.0%	< 1	110%	70%	130%	113%	80%	120%	109%	70%	130%
Barium	1		102	99	3.0%	< 2	99%	70%	130%	101%	80%	120%	101%	70%	130%
Beryllium	1		0.5	0.5	0.0%	< 0.5	91%	70%	130%	112%	80%	120%	98%	70%	130%
Boron	1		< 5	< 5	0.0%	< 5	92%	70%	130%	119%	80%	120%	100%	70%	130%
Boron (Hot Water Soluble)	1		0.62	0.70	11.2%	< 0.10	101%	60%	140%	103%	70%	130%	102%	60%	140%
Cadmium	1		< 0.5	< 0.5	0.0%	< 0.5	94%	70%	130%	103%	80%	120%	101%	70%	130%
Chromium	1		21	20	4.9%	< 2	100%	70%	130%	109%	80%	120%	102%	70%	130%
Cobalt	1		6.6	6.1	7.9%	< 0.5	100%	70%	130%	102%	80%	120%	97%	70%	130%
Copper	1		14	13	7.4%	< 1	99%	70%	130%	108%	80%	120%	88%	70%	130%
Lead	1		11	11	0.0%	< 1	102%	70%	130%	106%	80%	120%	101%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	102%	70%	130%	101%	80%	120%	108%	70%	130%
Nickel	1		13	13	0.0%	< 1	103%	70%	130%	108%	80%	120%	93%	70%	130%
Selenium	1		< 0.4	< 0.4	0.0%	< 0.4	93%	70%	130%	103%	80%	120%	98%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	84%	70%	130%	105%	80%	120%	103%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	98%	70%	130%	108%	80%	120%	102%	70%	130%
Uranium	1		0.5	< 0.5	NA	< 0.5	90%	70%	130%	94%	80%	120%	94%	70%	130%
Vanadium	1		33	31	6.3%	< 1	98%	70%	130%	107%	80%	120%	97%	70%	130%
Zinc	1		64	58	9.8%	< 5	100%	70%	130%	119%	80%	120%	94%	70%	130%
Chromium VI	1		< 0.2	< 0.2	0.0%	< 0.2	95%	70%	130%	96%	80%	120%	111%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	99%	70%	130%	92%	80%	120%	105%	70%	130%
Mercury	1		< 0.10	< 0.10	0.0%	< 0.10	100%	70%	130%	102%	80%	120%	103%	70%	130%
Electrical Conductivity (2:1)	1		0.132	0.133	0.8%	< 0.005	98%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		0.400	0.397	0.8%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	1		7.16	7.16	0.0%	NA	100%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.

RPD Qualifier (U): As the average value for the sample and a duplicate is less than 5X RDL, lab's RPD acceptance criteria is not applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Oct 04, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	75%	50%	140%	81%	50%	140%	102%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	79%	50%	140%	96%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	84%	50%	140%	103%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	78%	50%	140%	98%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	76%	50%	140%	95%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	83%	50%	140%	101%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	89%	50%	140%	77%	50%	140%	97%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	91%	50%	140%	78%	50%	140%	102%	50%	140%
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	73%	50%	140%	77%	50%	140%	83%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	85%	50%	140%	104%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	101%	50%	140%	92%	50%	140%	85%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	129%	50%	140%	80%	50%	140%	100%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	126%	50%	140%	78%	50%	140%	92%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	126%	50%	140%	83%	50%	140%	97%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	120%	50%	140%	82%	50%	140%	98%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	121%	50%	140%	80%	50%	140%	98%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	77%	50%	140%	93%	50%	140%
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	122%	50%	140%	97%	50%	140%	100%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	127%	50%	140%	97%	50%	140%	95%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	93%	50%	140%	89%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	91%	50%	140%	97%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	109%	50%	140%	92%	50%	140%	120%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	94%	60%	130%	105%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	92%	60%	130%	85%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	92%	60%	130%	98%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	90%	60%	130%	100%	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	120%	50%	140%	93%	60%	130%	105%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	103%	50%	140%	96%	50%	140%	106%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	108%	50%	140%	93%	60%	130%	104%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	119%	50%	140%	91%	60%	130%	101%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	117%	50%	140%	94%	60%	130%	105%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	119%	50%	140%	94%	60%	130%	97%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	118%	50%	140%	95%	60%	130%	97%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	117%	50%	140%	91%	60%	130%	103%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	117%	50%	140%	95%	60%	130%	105%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	116%	50%	140%	92%	60%	130%	100%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	113%	50%	140%	94%	60%	130%	103%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Oct 04, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	119%	50%	140%	104%	50%	140%	108%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	116%	50%	140%	98%	60%	130%	108%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	97%	60%	130%	106%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	102%	60%	130%	105%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	115%	50%	140%	104%	60%	130%	109%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	98%	60%	130%	96%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	107%	60%	130%	102%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	100%	60%	130%	107%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	113%	50%	140%	99%	60%	130%	103%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	100%	60%	130%	107%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	107%	60%	130%	94%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	106%	60%	130%	104%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	105%	60%	130%	99%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	100%	60%	130%	106%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	99%	60%	130%	101%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	98%	60%	130%	103%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	112%	50%	140%	100%	60%	130%	108%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	100%	60%	130%	106%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	109%	50%	140%	94%	60%	130%	102%	50%	140%
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	102%	60%	130%	97%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T647836

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T630297

SOIL ANALYSIS REVIEWED BY: Mike Muneswar, BSc (Chem), Senior Inorganic Analyst

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Organic Laboratory Supervisor

DATE REPORTED: Aug 20, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDs corrected on January 14, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2012-08-14

DATE REPORTED: 2012-08-20

		SAMPLE DESCRIPTION:		2+020 SS2	1+720 SS2
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		8/13/2012	8/13/2012
Parameter	Unit	G / S	RDL	3609737	3609741
Antimony	µg/g	1.3	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	6	7
Barium	µg/g	220	2	82	111
Beryllium	µg/g	2.5	0.5	0.7	0.6
Boron	µg/g	36	5	16	8
Boron (Hot Water Soluble)	µg/g		0.10	0.10	0.39
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	70	2	27	38
Cobalt	µg/g	21	0.5	14.4	12.1
Copper	µg/g	92	1	12	15
Lead	µg/g	120	1	10	16
Molybdenum	µg/g	2	0.5	1.2	1.3
Nickel	µg/g	82	1	33	25
Selenium	µg/g	1.5	0.4	<0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4
Uranium	µg/g	2.5	0.5	0.5	0.7
Vanadium	µg/g	86	1	25	25
Zinc	µg/g	290	5	69	74
Chromium VI	µg/g	0.66	0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.176	0.264
Sodium Adsorption Ratio	NA	2.4	NA	0.264	0.323
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.61	7.16

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3609737-3609741 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)					
DATE RECEIVED: 2012-08-14			DATE REPORTED: 2012-08-20		
		SAMPLE DESCRIPTION:		2+020 SS3a	1+720 SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		8/13/2012	8/13/2012
Parameter	Unit	G / S	RDL	3609739	3609742
Naphthalene	µg/g	0.09	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05	<0.05
Moisture Content	%		0.1	15.1	15.2
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140	60	60	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3609739-3609742 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)					
DATE RECEIVED: 2012-08-14			DATE REPORTED: 2012-08-20		
		SAMPLE DESCRIPTION: 2+020 SS3a+b		1+720 SS3b	
		SAMPLE TYPE: Soil		Soil	
		DATE SAMPLED: 8/13/2012		8/13/2012	
		G / S		3609740	
		RDL		3609743	
Parameter	Unit	G / S	RDL	3609740	3609743
Dichlorodifluoromethane	ug/g	0.05	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05	<0.05
m & p-Xylene	ug/g	0.05	0.05	<0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)					
DATE RECEIVED: 2012-08-14				DATE REPORTED: 2012-08-20	
		SAMPLE DESCRIPTION:		2+020 SS3a+b	1+720 SS3b
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		8/13/2012	8/13/2012
Parameter	Unit	G / S	RDL	3609740	3609743
Styrene	ug/g	0.05	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05	<0.05
Moisture Content	%		0.1	18.2	9.3
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		106	83
4-Bromofluorobenzene	% Recovery	50-140		101	104

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3609740-3609743 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Aug 20, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		< 0.8	< 0.8	0.0%	< 0.8	119%	70%	130%	97%	80%	120%	97%	70%	130%
Arsenic	1		1	1	0.0%	< 1	119%	70%	130%	112%	80%	120%	114%	70%	130%
Barium	1		8	8	0.0%	< 2	101%	70%	130%	109%	80%	120%	105%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	84%	70%	130%	105%	80%	120%	71%	70%	130%
Boron	1		< 5	< 5	0.0%	< 5	90%	70%	130%	99%	80%	120%	74%	70%	130%
Boron (Hot Water Soluble)	1		<0.10	<0.10	0.0%	< 0.10	87%	60%	140%	96%	70%	130%	105%	60%	140%
Cadmium	1		< 0.5	< 0.5	0.0%	< 0.5	104%	70%	130%	114%	80%	120%	103%	70%	130%
Chromium	1		9	7	25.0%	< 2	98%	70%	130%	106%	80%	120%	105%	70%	130%
Cobalt	1		1.7	1.5	12.5%	< 0.5	103%	70%	130%	98%	80%	120%	97%	70%	130%
Copper	1		3	3	0.0%	< 1	96%	70%	130%	103%	80%	120%	112%	70%	130%
Lead	1		3	3	0.0%	< 1	105%	70%	130%	110%	80%	120%	105%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	106%	70%	130%	103%	80%	120%	111%	70%	130%
Nickel	1		4	3	28.6%	< 1	96%	70%	130%	102%	80%	120%	95%	70%	130%
Selenium	1		< 0.4	< 0.4	0.0%	< 0.4	92%	70%	130%	102%	80%	120%	95%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	82%	70%	130%	96%	80%	120%	100%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	116%	70%	130%	96%	80%	120%	93%	70%	130%
Uranium	1		0.6	0.5	18.2%	< 0.5	107%	70%	130%	112%	80%	120%	99%	70%	130%
Vanadium	1		17	13	26.7%	< 1	89%	70%	130%	95%	80%	120%	71%	70%	130%
Zinc	1		10	9	10.5%	< 5	99%	70%	130%	109%	80%	120%	113%	70%	130%
Chromium VI	1		< 0.2	< 0.2	0.0%	< 0.2	96%	70%	130%	94%	80%	120%	102%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	99%	70%	130%	100%	80%	120%	101%	70%	130%
Mercury	1		< 0.10	< 0.10	0.0%	< 0.10	102%	70%	130%	100%	80%	120%	93%	70%	130%
Electrical Conductivity (2:1)	1		0.104	0.105	1.0%	< 0.005	96%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		0.317	0.293	8.1%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	1		7.82	7.80	0.3%	NA	100%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis																
RPT Date: Aug 20, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits		
								Lower	Upper		Lower	Upper		Lower	Upper	
O. Reg. 153(511) - PAHs (Soil)																
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	99%	50%	140%	74%	50%	140%	
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	95%	50%	140%	70%	50%	140%	
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	83%	50%	140%	97%	50%	140%	71%	50%	140%	
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	78%	50%	140%	90%	50%	140%	69%	50%	140%	
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	77%	50%	140%	90%	50%	140%	74%	50%	140%	
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	95%	50%	140%	77%	50%	140%	
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	80%	50%	140%	96%	50%	140%	81%	50%	140%	
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	80%	50%	140%	93%	50%	140%	80%	50%	140%	
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	75%	50%	140%	92%	50%	140%	86%	50%	140%	
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	81%	50%	140%	91%	50%	140%	78%	50%	140%	
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	85%	50%	140%	92%	50%	140%	
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	91%	50%	140%	83%	50%	140%	77%	50%	140%	
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	93%	50%	140%	91%	50%	140%	
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	76%	50%	140%	76%	50%	140%	71%	50%	140%	
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	71%	50%	140%	89%	50%	140%	80%	50%	140%	
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	78%	50%	140%	80%	50%	140%	79%	50%	140%	
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	92%	50%	140%	71%	50%	140%	
O. Reg. 153(511) - VOCs (Soil)																
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	115%	50%	140%	79%	50%	140%	
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	129%	50%	140%	110%	50%	140%	91%	50%	140%	
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	88%	50%	140%	78%	50%	140%	
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	101%	50%	140%	103%	50%	140%	82%	50%	140%	
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	108%	50%	140%	80%	50%	140%	90%	50%	140%	
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	112%	50%	140%	103%	60%	130%	84%	50%	140%	
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	98%	60%	130%	95%	50%	140%	
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	111%	60%	130%	88%	50%	140%	
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	NA	60%	130%	NA	50%	140%	
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	94%	50%	140%	102%	60%	130%	84%	50%	140%	
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	105%	50%	140%	90%	50%	140%	79%	50%	140%	
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	101%	50%	140%	95%	60%	130%	80%	50%	140%	
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	109%	50%	140%	108%	60%	130%	93%	50%	140%	
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	100%	50%	140%	89%	60%	130%	83%	50%	140%	
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	105%	60%	130%	83%	50%	140%	
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	107%	60%	130%	85%	50%	140%	
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	108%	50%	140%	106%	60%	130%	92%	50%	140%	
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	112%	50%	140%	91%	60%	130%	89%	50%	140%	
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	108%	50%	140%	110%	60%	130%	102%	50%	140%	
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	95%	60%	130%	85%	50%	140%	

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Auz

Trace Organics Analysis (Continued)

RPT Date: Aug 20, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	118%	50%	140%	90%	50%	140%	94%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	109%	50%	140%	110%	60%	130%	87%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	112%	50%	140%	106%	60%	130%	93%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	92%	60%	130%	96%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	116%	50%	140%	104%	60%	130%	85%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	112%	50%	140%	116%	60%	130%	90%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	105%	60%	130%	103%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	107%	50%	140%	104%	60%	130%	95%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	105%	60%	130%	86%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	108%	60%	130%	98%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	89%	60%	130%	100%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	97%	60%	130%	102%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	106%	60%	130%	103%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	102%	60%	130%	98%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	80%	50%	140%	101%	60%	130%	99%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	109%	60%	130%	99%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	105%	60%	130%	102%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	102%	60%	130%	98%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	91%	50%	140%	98%	60%	130%	78%	50%	140%
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	90%	60%	130%	108%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T630297

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T642173

SOIL ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab Supervisor

TRACE ORGANICS REVIEWED BY: Jacky Takeuchi, BScH (Chem Eng), BSc (Bio), C.Chem, Laboratory Manager

DATE REPORTED: Sep 21, 2012

PAGES (INCLUDING COVER): 12

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDS corrected on January 9, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2012-09-14

DATE REPORTED: 2012-09-21

Parameter	Unit	SAMPLE DESCRIPTION:		2+240, SS2		1+080, SS2	
		SAMPLE TYPE:		Soil		Soil	
		DATE SAMPLED:		9/13/2012		9/13/2012	
		G / S	RDL	3709663		3709678	
Antimony	µg/g	1.3	0.8	<0.8		<0.8	
Arsenic	µg/g	18	1	7		5	
Barium	µg/g	220	2	148		121	
Beryllium	µg/g	2.5	0.5	0.8		0.9	
Boron	µg/g	36	5	19		21	
Boron (Hot Water Soluble)	µg/g		0.10	0.88		1.64	
Cadmium	µg/g	1.2	0.5	<0.5		<0.5	
Chromium	µg/g	70	2	24		83	
Cobalt	µg/g	21	0.5	13.4		11.5	
Copper	µg/g	92	1	10		19	
Lead	µg/g	120	1	14		17	
Molybdenum	µg/g	2	0.5	1.0		1.2	
Nickel	µg/g	82	1	29		25	
Selenium	µg/g	1.5	0.4	<0.4		0.7	
Silver	µg/g	0.5	0.2	<0.2		<0.2	
Thallium	µg/g	1	0.4	<0.4		<0.4	
Uranium	µg/g	2.5	0.5	0.7		1.2	
Vanadium	µg/g	86	1	26		32	
Zinc	µg/g	290	5	73		76	
Chromium VI	µg/g	0.66	0.2	<0.2		<0.2	
Cyanide	µg/g	0.051	0.040	<0.040		<0.040	
Mercury	µg/g	0.27	0.10	<0.10		<0.10	
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.201		0.327	
Sodium Adsorption Ratio	NA	2.4	NA	0.664		0.755	
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.76		7.54	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3709663-3709678 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By:

Elizabeth Polakowska



Certificate of Analysis

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)					
DATE RECEIVED: 2012-09-14			DATE REPORTED: 2012-09-21		
		SAMPLE DESCRIPTION:		2+240, SS3a	1+080, SS3a
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		9/13/2012	9/13/2012
Parameter	Unit	G / S	RDL	3709677	3709681
Naphthalene	µg/g	0.09	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140	86	74	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3709677-3709681 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

Jacky Takewehi



Certificate of Analysis

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)					
DATE RECEIVED: 2012-09-14			DATE REPORTED: 2012-09-21		
SAMPLE DESCRIPTION:		2+240, SS3	1+080, SS3		
SAMPLE TYPE:		Soil	Soil		
DATE SAMPLED:		9/13/2012	9/13/2012		
Parameter	Unit	G / S	RDL	3709675	3709679
Dichlorodifluoromethane	ug/g	0.05	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05	<0.05
m & p-Xylene	ug/g	0.05	0.05	<0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)					
DATE RECEIVED: 2012-09-14			DATE REPORTED: 2012-09-21		
		SAMPLE DESCRIPTION:		2+240, SS3	1+080, SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		9/13/2012	9/13/2012
Parameter	Unit	G / S	RDL	3709675	3709679
Styrene	ug/g	0.05	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05	<0.05
Moisture Content	%		0.1	7.0	14.8
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		100	102
4-Bromofluorobenzene	% Recovery	50-140		101	98

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3709675-3709679 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
3709678	1+080, SS2	T1(ALL) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil)	Chromium	70	83

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T642173

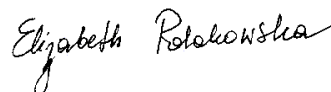
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Sep 21, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		< 0.8	< 0.8	0.0%	< 0.8	102%	70%	130%	103%	80%	120%	101%	70%	130%
Arsenic	1		3	3	0.0%	< 1	112%	70%	130%	107%	80%	120%	108%	70%	130%
Barium	1		138	139	0.7%	< 2	100%	70%	130%	111%	80%	120%	100%	70%	130%
Beryllium	1		0.6	0.7	15.4%	< 0.5	106%	70%	130%	98%	80%	120%	107%	70%	130%
Boron	1		11	12	8.7%	< 5	86%	70%	130%	108%	80%	120%	102%	70%	130%
Boron (Hot Water Soluble)	1		0.26	0.24	8.0%	< 0.10	105%	60%	140%	95%	70%	130%	98%	60%	140%
Cadmium	1		< 0.5	< 0.5	0.0%	< 0.5	101%	70%	130%	120%	80%	120%	99%	70%	130%
Chromium	1		29	30	3.4%	< 2	98%	70%	130%	112%	80%	120%	111%	70%	130%
Cobalt	1		10.6	11.0	3.7%	< 0.5	97%	70%	130%	107%	80%	120%	96%	70%	130%
Copper	1		23	24	4.3%	< 1	101%	70%	130%	112%	80%	120%	101%	70%	130%
Lead	1		10	10	0.0%	< 1	108%	70%	130%	116%	80%	120%	112%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	104%	70%	130%	109%	80%	120%	104%	70%	130%
Nickel	1		22	23	4.4%	< 1	99%	70%	130%	106%	80%	120%	92%	70%	130%
Selenium	1		< 0.4	< 0.4	0.0%	< 0.4	123%	70%	130%	106%	80%	120%	101%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	87%	70%	130%	105%	80%	120%	102%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	92%	70%	130%	102%	80%	120%	95%	70%	130%
Uranium	1		0.9	0.9	0.0%	< 0.5	105%	70%	130%	108%	80%	120%	105%	70%	130%
Vanadium	1		34	34	0.0%	< 1	95%	70%	130%	102%	80%	120%	102%	70%	130%
Zinc	1		51	54	5.7%	< 5	105%	70%	130%	109%	80%	120%	102%	70%	130%
Chromium VI	1	3709678	< 0.2	< 0.2	0.0%	< 0.2	96%	70%	130%	99%	80%	120%	91%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	99%	70%	130%	110%	80%	120%	115%	70%	130%
Mercury	1		< 0.10	< 0.10	0.0%	< 0.10	101%	70%	130%	95%	80%	120%	96%	70%	130%
Electrical Conductivity (2:1)	1	3709663	0.201	0.203	1.0%	< 0.005	96%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1	3709663	0.664	0.646	2.7%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	1		8.05	8.02	0.4%	NA	100%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Sep 21, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	76%	50%	140%	74%	50%	140%	86%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	72%	50%	140%	91%	50%	140%	76%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	81%	50%	140%	76%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	71%	50%	140%	89%	50%	140%	89%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	101%	50%	140%	102%	50%	140%	96%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	81%	50%	140%	99%	60%	130%	95%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	121%	60%	130%	121%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	83%	50%	140%	90%	60%	130%	99%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	90%	50%	140%	96%	60%	130%	95%	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	85%	50%	140%	96%	60%	130%	94%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	73%	50%	140%	87%	50%	140%	87%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	86%	50%	140%	91%	60%	130%	100%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	82%	50%	140%	95%	60%	130%	101%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	85%	50%	140%	97%	60%	130%	92%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	80%	50%	140%	96%	60%	130%	101%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	76%	50%	140%	91%	60%	130%	92%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	80%	50%	140%	93%	60%	130%	96%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	78%	50%	140%	92%	60%	130%	93%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	84%	50%	140%	93%	60%	130%	103%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	93%	60%	130%	96%	50%	140%
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	70%	50%	140%	104%	50%	140%	85%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	98%	50%	140%	112%	60%	130%	113%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	80%	50%	140%	101%	60%	130%	103%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	105%	60%	130%	106%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	91%	50%	140%	105%	60%	130%	101%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	108%	60%	130%	109%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	97%	60%	130%	112%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	83%	50%	140%	99%	60%	130%	104%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	73%	50%	140%	95%	60%	130%	98%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	71%	50%	140%	90%	60%	130%	91%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	107%	60%	130%	112%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	75%	50%	140%	84%	60%	130%	89%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	113%	60%	130%	100%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	71%	50%	140%	89%	60%	130%	93%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	98%	60%	130%	108%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	96%	60%	130%	112%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	83%	60%	130%	107%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	71%	50%	140%	89%	60%	130%	93%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	72%	50%	140%	75%	60%	130%	72%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T642173

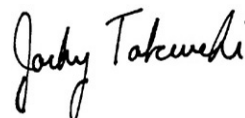
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Sep 21, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	73%	60%	130%	93%	50%	140%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	81%	50%	140%	86%	50%	140%	77%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	80%	50%	140%	71%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	102%	50%	140%	91%	50%	140%	79%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	77%	50%	140%	76%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	76%	50%	140%	68%	50%	140%	68%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	98%	50%	140%	85%	50%	140%	93%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	76%	50%	140%	80%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	79%	50%	140%	81%	50%	140%
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	71%	50%	140%	74%	50%	140%	81%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	105%	50%	140%	91%	50%	140%	85%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	128%	50%	140%	94%	50%	140%	86%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	123%	50%	140%	79%	50%	140%	98%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	130%	50%	140%	74%	50%	140%	81%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	132%	50%	140%	81%	50%	140%	82%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	77%	50%	140%	76%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	128%	50%	140%	85%	50%	140%	91%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	70%	50%	140%	82%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T642173

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T641404

SOIL ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab
Supervisor

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Organic Laboratory Supervisor

DATE REPORTED: Sep 19, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDS corrected on January 9, 2013 as pre client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2012-09-13

DATE REPORTED: 2012-09-19

SAMPLE DESCRIPTION: 1+200, SS2				
SAMPLE TYPE: Soil				
DATE SAMPLED: 9/12/2012				
Parameter	Unit	G / S	RDL	3703971
Antimony	µg/g	1.3	0.8	<0.8
Arsenic	µg/g	18	1	6
Barium	µg/g	220	2	130
Beryllium	µg/g	2.5	0.5	0.8
Boron	µg/g	36	5	10
Boron (Hot Water Soluble)	µg/g		0.10	0.20
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	70	2	26
Cobalt	µg/g	21	0.5	15.2
Copper	µg/g	92	1	27
Lead	µg/g	120	1	14
Molybdenum	µg/g	2	0.5	0.9
Nickel	µg/g	82	1	29
Selenium	µg/g	1.5	0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	2.5	0.5	0.9
Vanadium	µg/g	86	1	32
Zinc	µg/g	290	5	67
Chromium VI	µg/g	0.66	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.168
Sodium Adsorption Ratio	NA	2.4	NA	0.193
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.44

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3703971 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Certified By:

Elizabeth Polakowska



Certificate of Analysis

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2012-09-13

DATE REPORTED: 2012-09-19

		SAMPLE DESCRIPTION: 1+200, SS3a		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/12/2012		
Parameter	Unit	G / S	RDL	3703979
Naphthalene	µg/g	0.09	0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05
Moisture Content	%		0.1	14.6
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140		78

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3703979 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2012-09-13

DATE REPORTED: 2012-09-19

		SAMPLE DESCRIPTION: 1+200, SS3		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/12/2012		
Parameter	Unit	G / S	RDL	3703977
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g	0.05	0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-09-13			DATE REPORTED: 2012-09-19	
		SAMPLE DESCRIPTION: 1+200, SS3		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/12/2012		
Parameter	Unit	G / S	RDL	3703977
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Moisture Content	%		0.1	13.4
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		110
4-Bromofluorobenzene	% Recovery	50-140		103

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3703977 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641404

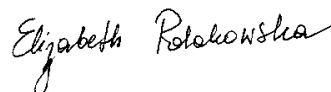
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Sep 19, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		< 0.8	< 0.8	0.0%	< 0.8	127%	70%	130%	84%	80%	120%	89%	70%	130%
Arsenic	1		3	3	0.0%	< 1	110%	70%	130%	111%	80%	120%	116%	70%	130%
Barium	1		18	20	10.5%	< 2	104%	70%	130%	108%	80%	120%	114%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	98%	70%	130%	98%	80%	120%	84%	70%	130%
Boron	1		6	6	0.0%	< 5	79%	70%	130%	102%	80%	120%	88%	70%	130%
Boron (Hot Water Soluble)	1	3703363	< 0.10	< 0.10	0.0%	< 0.10	100%	60%	140%	100%	70%	130%	102%	60%	140%
Cadmium	1		< 0.5	< 0.5	0.0%	< 0.5	102%	70%	130%	102%	80%	120%	107%	70%	130%
Chromium	1		6	6	0.0%	< 2	97%	70%	130%	113%	80%	120%	115%	70%	130%
Cobalt	1		2.9	2.9	0.0%	< 0.5	95%	70%	130%	104%	80%	120%	103%	70%	130%
Copper	1		17	17	0.0%	< 1	104%	70%	130%	114%	80%	120%	103%	70%	130%
Lead	1		17	16	6.1%	< 1	103%	70%	130%	113%	80%	120%	106%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	102%	70%	130%	100%	80%	120%	105%	70%	130%
Nickel	1		5	5	0.0%	< 1	95%	70%	130%	104%	80%	120%	102%	70%	130%
Selenium	1		< 0.4	< 0.4	0.0%	< 0.4	104%	70%	130%	100%	80%	120%	104%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	95%	70%	130%	110%	80%	120%	113%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	95%	70%	130%	96%	80%	120%	92%	70%	130%
Uranium	1		< 0.5	< 0.5	0.0%	< 0.5	103%	70%	130%	102%	80%	120%	100%	70%	130%
Vanadium	1		11	11	0.0%	< 1	96%	70%	130%	101%	80%	120%	106%	70%	130%
Zinc	1		100	98	2.0%	< 5	100%	70%	130%	115%	80%	120%	120%	70%	130%
Chromium VI	1	3703971	< 0.2	< 0.2	0.0%	< 0.2	96%	70%	130%	100%	80%	120%	103%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	99%	70%	130%	97%	80%	120%	89%	70%	130%
Mercury	1		< 0.10	< 0.10	0.0%	< 0.10	102%	70%	130%	103%	80%	120%	100%	70%	130%
Electrical Conductivity (2:1)	1		0.168	0.169	0.6%	< 0.005	95%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		0.915	0.885	3.3%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	1		7.57	7.70	1.7%	NA	100%	90%	110%	NA			NA		

Comments: NA - Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Sep 19, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	77%	50%	140%	110%	50%	140%	102%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	90%	50%	140%	101%	50%	140%	107%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	83%	50%	140%	98%	50%	140%	102%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	73%	50%	140%	114%	50%	140%	88%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	110%	50%	140%	119%	50%	140%	97%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	83%	50%	140%	96%	60%	130%	88%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	110%	60%	130%	106%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	96%	60%	130%	95%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	97%	60%	130%	100%	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	92%	50%	140%	99%	60%	130%	96%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	80%	50%	140%	99%	50%	140%	108%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	77%	50%	140%	96%	60%	130%	100%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	87%	50%	140%	99%	60%	130%	99%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	86%	50%	140%	98%	60%	130%	100%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	99%	60%	130%	101%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	85%	50%	140%	99%	60%	130%	104%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	96%	50%	140%	97%	60%	130%	98%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	87%	50%	140%	95%	60%	130%	100%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	88%	50%	140%	98%	60%	130%	99%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	99%	60%	130%	100%	50%	140%
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	60%	50%	140%	98%	50%	140%	113%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	99%	50%	140%	100%	60%	130%	96%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	102%	50%	140%	100%	60%	130%	100%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	98%	60%	130%	99%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	99%	50%	140%	100%	60%	130%	99%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	99%	60%	130%	100%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	99%	60%	130%	97%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	98%	60%	130%	99%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	100%	60%	130%	99%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	105%	50%	140%	100%	60%	130%	98%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	101%	60%	130%	101%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	89%	50%	140%	98%	60%	130%	96%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	98%	60%	130%	98%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	100%	60%	130%	98%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	98%	60%	130%	97%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	107%	50%	140%	101%	60%	130%	100%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	96%	60%	130%	96%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	100%	60%	130%	98%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	107%	50%	140%	97%	60%	130%	100%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Sep 19, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	110%	60%	130%	91%	50%	140%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	77%	50%	140%	85%	50%	140%	81%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	91%	50%	140%	78%	50%	140%	76%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	88%	50%	140%	81%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	91%	50%	140%	81%	50%	140%	80%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	80%	50%	140%	64%	50%	140%	72%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	84%	50%	140%	89%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	90%	50%	140%	75%	50%	140%	78%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	83%	50%	140%	75%	50%	140%
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	70%	50%	140%	81%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	84%	50%	140%	71%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	91%	50%	140%	69%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	121%	50%	140%	81%	50%	140%	93%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	122%	50%	140%	81%	50%	140%	77%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	68%	50%	140%	75%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	98%	50%	140%	80%	50%	140%	72%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	92%	50%	140%	92%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	78%	50%	140%	78%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641404

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T643518

SOIL ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab
Supervisor

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Organic Laboratory Supervisor

DATE REPORTED: Sep 25, 2012

PAGES (INCLUDING COVER): 12

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDS corrected on January 9, 2013 as pre client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2012-09-19

DATE REPORTED: 2012-09-25

		SAMPLE DESCRIPTION: 2+335 SS2		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/17/2012		
Parameter	Unit	G / S	RDL	3722742
Antimony	µg/g	1.3	0.8	<0.8
Arsenic	µg/g	18	1	6
Barium	µg/g	220	2	246
Beryllium	µg/g	2.5	0.5	0.8
Boron	µg/g	36	5	12
Boron (Hot Water Soluble)	µg/g		0.10	0.25
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	70	2	23
Cobalt	µg/g	21	0.5	11.6
Copper	µg/g	92	1	8
Lead	µg/g	120	1	11
Molybdenum	µg/g	2	0.5	0.8
Nickel	µg/g	82	1	24
Selenium	µg/g	1.5	0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	2.5	0.5	0.6
Vanadium	µg/g	86	1	26
Zinc	µg/g	290	5	45
Chromium VI	µg/g	0.66	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.237
Sodium Adsorption Ratio	NA	2.4	NA	0.290
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.33

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3722742 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By:

Elizabeth Polakowska



Certificate of Analysis

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2012-09-19

DATE REPORTED: 2012-09-25

		SAMPLE DESCRIPTION: 2+335 SS3a		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/17/2012		
Parameter	Unit	G / S	RDL	3722745
Naphthalene	µg/g	0.09	0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05
Moisture Content	%		0.1	8.3
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140		75

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3722745 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2012-09-19

DATE REPORTED: 2012-09-25

SAMPLE DESCRIPTION: 2+335 SS3

SAMPLE TYPE: Soil

DATE SAMPLED: 9/17/2012

Parameter	Unit	G / S	RDL	3722743
Dichlorodifluoromethane	ug/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g	0.05	0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-09-19			DATE REPORTED: 2012-09-25	
		SAMPLE DESCRIPTION: 2+335 SS3		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/17/2012		
Parameter	Unit	G / S	RDL	3722743
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Moisture Content	%		0.1	11.0
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		105
4-Bromofluorobenzene	% Recovery	50-140		89

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3722743 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
3722742	2+335 SS2	T1(ALL) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	220	246

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

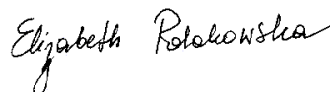
AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Sep 25, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1	3722742	< 0.8	< 0.8	0.0%	< 0.8	118%	70%	130%	87%	80%	120%	85%	70%	130%
Arsenic	1	3722742	6	5	18.2%	< 1	116%	70%	130%	119%	80%	120%	119%	70%	130%
Barium	1	3722742	246	235	4.6%	< 2	103%	70%	130%	110%	80%	120%	113%	70%	130%
Beryllium	1	3722742	0.8	0.7	13.3%	< 0.5	101%	70%	130%	106%	80%	120%	100%	70%	130%
Boron	1	3722742	12	14	15.4%	< 5	80%	70%	130%	116%	80%	120%	105%	70%	130%
Boron (Hot Water Soluble)	1		<0.10	<0.10	0.0%	< 0.10	116%	60%	140%	96%	70%	130%	100%	60%	140%
Cadmium	1	3722742	< 0.5	< 0.5	0.0%	< 0.5	99%	70%	130%	116%	80%	120%	105%	70%	130%
Chromium	1	3722742	23	22	4.4%	< 2	100%	70%	130%	115%	80%	120%	110%	70%	130%
Cobalt	1	3722742	11.6	11.1	4.4%	< 0.5	101%	70%	130%	102%	80%	120%	99%	70%	130%
Copper	1	3722742	8	8	0.0%	< 1	97%	70%	130%	113%	80%	120%	113%	70%	130%
Lead	1	3722742	11	11	0.0%	< 1	109%	70%	130%	114%	80%	120%	111%	70%	130%
Molybdenum	1	3722742	0.8	0.8	0.0%	< 0.5	100%	70%	130%	100%	80%	120%	101%	70%	130%
Nickel	1	3722742	24	23	4.3%	< 1	100%	70%	130%	96%	80%	120%	95%	70%	130%
Selenium	1	3722742	0.4	0.4	0.0%	< 0.4	112%	70%	130%	100%	80%	120%	98%	70%	130%
Silver	1	3722742	< 0.2	< 0.2	0.0%	< 0.2	98%	70%	130%	112%	80%	120%	112%	70%	130%
Thallium	1	3722742	< 0.4	< 0.4	0.0%	< 0.4	99%	70%	130%	99%	80%	120%	101%	70%	130%
Uranium	1	3722742	0.6	0.6	0.0%	< 0.5	103%	70%	130%	99%	80%	120%	103%	70%	130%
Vanadium	1	3722742	26	27	3.8%	< 1	94%	70%	130%	101%	80%	120%	100%	70%	130%
Zinc	1	3722742	45	44	2.2%	< 5	99%	70%	130%	114%	80%	120%	117%	70%	130%
Chromium VI	1		< 0.2	< 0.2	0.0%	< 0.2	100%	70%	130%	95%	80%	120%	96%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	91%	70%	130%	100%	80%	120%	82%	70%	130%
Mercury	1	3722742	< 0.10	< 0.10	0.0%	< 0.10	107%	70%	130%	102%	80%	120%	104%	70%	130%
Electrical Conductivity (2:1)	1		0.383	0.371	3.2%	< 0.005	96%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		32.3	31.0	4.0%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	1	3722742	7.33	7.43	1.4%	NA	100%	90%	110%	NA			NA		

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Sep 25, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	110%	50%	140%	90%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	107%	50%	140%	105%	50%	140%	72%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	112%	50%	140%	75%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	121%	50%	140%	110%	50%	140%	73%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	101%	50%	140%	113%	50%	140%	107%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	111%	60%	130%	80%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	85%	50%	140%	99%	60%	130%	86%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	112%	50%	140%	107%	60%	130%	85%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	89%	50%	140%	90%	60%	130%	88%	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	111%	50%	140%	108%	60%	130%	88%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	93%	50%	140%	107%	50%	140%	93%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	102%	50%	140%	115%	60%	130%	91%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	104%	50%	140%	110%	60%	130%	86%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	105%	50%	140%	110%	60%	130%	96%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	107%	60%	130%	78%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	118%	50%	140%	106%	60%	130%	74%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	99%	50%	140%	102%	60%	130%	87%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	108%	50%	140%	102%	60%	130%	86%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	114%	50%	140%	109%	60%	130%	85%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	104%	60%	130%	87%	50%	140%
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	86%	50%	140%	110%	50%	140%	87%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	98%	50%	140%	104%	60%	130%	85%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	111%	60%	130%	96%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	101%	50%	140%	107%	60%	130%	100%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	98%	50%	140%	103%	60%	130%	101%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	113%	50%	140%	104%	60%	130%	82%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	110%	60%	130%	98%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	107%	50%	140%	103%	60%	130%	84%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	104%	60%	130%	88%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	107%	60%	130%	83%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	107%	50%	140%	112%	60%	130%	94%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	105%	50%	140%	109%	60%	130%	87%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	105%	60%	130%	93%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	101%	60%	130%	86%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	104%	60%	130%	91%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	113%	50%	140%	104%	60%	130%	88%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	115%	60%	130%	98%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	101%	60%	130%	86%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	91%	50%	140%	96%	60%	130%	101%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Sep 25, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	101%	60%	130%	117%	50%	140%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	69%	50%	140%	85%	50%	140%	94%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	81%	50%	140%	88%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	85%	50%	140%	94%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	81%	50%	140%	90%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	72%	50%	140%	76%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	109%	50%	140%	114%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	82%	50%	140%	94%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	84%	50%	140%	96%	50%	140%
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	81%	50%	140%	90%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	102%	50%	140%	108%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	124%	50%	140%	79%	50%	140%	80%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	122%	50%	140%	89%	50%	140%	110%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	123%	50%	140%	83%	50%	140%	86%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	127%	50%	140%	82%	50%	140%	91%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	122%	50%	140%	82%	50%	140%	84%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	120%	50%	140%	91%	50%	140%	89%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	83%	50%	140%	82%	50%	140%	91%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T643518

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T629793

SOIL ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Organic Laboratory Supervisor

DATE REPORTED: Aug 16, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDs corrected on January 14, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2012-08-13

DATE REPORTED: 2012-08-16

SAMPLE DESCRIPTION: 2+425, SS2

SAMPLE TYPE: Soil

DATE SAMPLED: 8/9/2012

Parameter	Unit	G / S	RDL	3603185
Antimony	µg/g	1.3	0.8	<0.8
Arsenic	µg/g	18	1	5
Barium	µg/g	220	2	100
Beryllium	µg/g	2.5	0.5	0.9
Boron	µg/g	36	5	16
Boron (Hot Water Soluble)	µg/g		0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	70	2	25
Cobalt	µg/g	21	0.5	15.1
Copper	µg/g	92	1	9
Lead	µg/g	120	1	10
Molybdenum	µg/g	2	0.5	0.9
Nickel	µg/g	82	1	36
Selenium	µg/g	1.5	0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	2.5	0.5	0.7
Vanadium	µg/g	86	1	34
Zinc	µg/g	290	5	70
Chromium VI	µg/g	0.66	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.140
Sodium Adsorption Ratio	NA	2.4	NA	0.597
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	6.83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3603185 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)				
DATE RECEIVED: 2012-08-13			DATE REPORTED: 2012-08-16	
		SAMPLE DESCRIPTION: 2+425, SS3		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 8/9/2012		
Parameter	Unit	G / S	RDL	3603184
Naphthalene	µg/g	0.09	0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05
Moisture Content	%		0.1	8.2
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140	60	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3603184 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-08-13			DATE REPORTED: 2012-08-16	
		SAMPLE DESCRIPTION: 2+425, SS3b		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 8/9/2012		
Parameter	Unit	G / S	RDL	3603186
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-08-13			DATE REPORTED: 2012-08-16	
		SAMPLE DESCRIPTION: 2+425, SS3b		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 8/9/2012		
Parameter	Unit	G / S	RDL	3603186
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Moisture Content	%		0.1	6.5
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		104
4-Bromofluorobenzene	% Recovery	50-140		95

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3603186 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629793

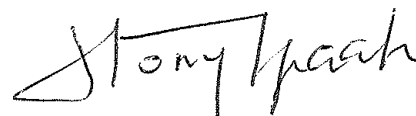
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Aug 16, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		< 0.8	< 0.8	0.0%	< 0.8	111%	70%	130%	85%	80%	120%	86%	70%	130%
Arsenic	1		4	4	0.0%	< 1	108%	70%	130%	113%	80%	120%	112%	70%	130%
Barium	1		89	84	5.8%	< 2	102%	70%	130%	102%	80%	120%	111%	70%	130%
Beryllium	1		0.6	0.5	18.2%	< 0.5	110%	70%	130%	99%	80%	120%	97%	70%	130%
Boron	1		8	7	13.3%	< 5	72%	70%	130%	100%	80%	120%	105%	70%	130%
Boron (Hot Water Soluble)	1		0.40	0.44	9.1%	< 0.10	83%	60%	140%	91%	70%	130%	107%	60%	140%
Cadmium	1		< 0.5	< 0.5	0.0%	< 0.5	99%	70%	130%	110%	80%	120%	117%	70%	130%
Chromium	1		21	20	4.9%	< 2	95%	70%	130%	99%	80%	120%	96%	70%	130%
Cobalt	1		11.3	10.5	7.3%	< 0.5	98%	70%	130%	103%	80%	120%	99%	70%	130%
Copper	1		22	22	0.0%	< 1	99%	70%	130%	99%	80%	120%	93%	70%	130%
Lead	1		9	9	0.0%	< 1	101%	70%	130%	96%	80%	120%	92%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	101%	70%	130%	101%	80%	120%	105%	70%	130%
Nickel	1		22	22	0.0%	< 1	95%	70%	130%	103%	80%	120%	96%	70%	130%
Selenium	1		< 0.4	< 0.4	0.0%	< 0.4	85%	70%	130%	101%	80%	120%	97%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	96%	70%	130%	95%	80%	120%	99%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	102%	70%	130%	101%	80%	120%	96%	70%	130%
Uranium	1		0.6	0.5	18.2%	< 0.5	93%	70%	130%	89%	80%	120%	90%	70%	130%
Vanadium	1		30	29	3.4%	< 1	98%	70%	130%	101%	80%	120%	108%	70%	130%
Zinc	1		61	58	5.0%	< 5	100%	70%	130%	117%	80%	120%	101%	70%	130%
Chromium VI	1		< 0.2	< 0.2	0.0%	< 0.2	97%	70%	130%	92%	80%	120%	98%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	110%	70%	130%	99%	80%	120%	94%	70%	130%
Mercury	1		< 0.10	< 0.10	0.0%	< 0.10	105%	70%	130%	99%	80%	120%	98%	70%	130%
Electrical Conductivity (2:1)	1		0.874	0.868	0.7%	< 0.005	98%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		0.493	0.497	0.8%	NA	NA			NA			NA		

Comments: NA signifies Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis															
RPT Date: Aug 16, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	98%	50%	140%	83%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	96%	50%	140%	80%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	85%	50%	140%	96%	50%	140%	82%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	78%	50%	140%	93%	50%	140%	79%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	95%	50%	140%	82%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	99%	50%	140%	85%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	83%	50%	140%	102%	50%	140%	88%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	85%	50%	140%	99%	50%	140%	86%	50%	140%
Benzo(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	105%	50%	140%	89%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	98%	50%	140%	83%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	95%	50%	140%	83%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	84%	50%	140%	74%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	99%	50%	140%	88%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	73%	50%	140%	81%	50%	140%	75%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	76%	50%	140%	91%	50%	140%	79%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	81%	50%	140%	86%	50%	140%	80%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	92%	50%	140%	79%	50%	140%
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	82%	50%	140%	87%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	95%	50%	140%	91%	50%	140%	85%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	80%	50%	140%	72%	50%	140%	99%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	108%	50%	140%	95%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	107%	50%	140%	91%	50%	140%	91%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	121%	50%	140%	107%	60%	130%	108%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	104%	60%	130%	101%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	114%	60%	130%	111%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	NA	60%	130%	NA	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	117%	50%	140%	110%	60%	130%	101%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	101%	50%	140%	83%	50%	140%	76%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	114%	50%	140%	101%	60%	130%	110%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	121%	50%	140%	104%	60%	130%	96%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	110%	50%	140%	104%	60%	130%	108%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	120%	50%	140%	109%	60%	130%	103%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	106%	60%	130%	97%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	117%	50%	140%	96%	60%	130%	100%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	120%	50%	140%	92%	60%	130%	90%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	111%	50%	140%	90%	60%	130%	108%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	91%	60%	130%	88%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Auz

Trace Organics Analysis (Continued)

RPT Date: Aug 16, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	112%	50%	140%	95%	50%	140%	83%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	117%	50%	140%	94%	60%	130%	110%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	85%	60%	130%	98%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	113%	50%	140%	99%	60%	130%	121%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	111%	50%	140%	95%	60%	130%	83%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	119%	50%	140%	106%	60%	130%	118%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	110%	60%	130%	109%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	82%	60%	130%	96%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	85%	60%	130%	99%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	94%	60%	130%	102%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	118%	50%	140%	94%	60%	130%	100%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	78%	60%	130%	102%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	93%	60%	130%	94%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	94%	60%	130%	111%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	93%	60%	130%	115%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	88%	60%	130%	118%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	89%	60%	130%	112%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	73%	60%	130%	111%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	82%	50%	140%	72%	60%	130%	87%	50%	140%
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	75%	60%	130%	74%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629793

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T629350

SOIL ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab Supervisor

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Organic Laboratory Supervisor

DATE REPORTED: Aug 14, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDs corrected on January 14, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2012-08-09

DATE REPORTED: 2012-08-14

		SAMPLE DESCRIPTION:		3+065 SS2
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		8/7/2012
		G / S		3599674
Parameter	Unit	G / S	RDL	
Antimony	µg/g	1.3	0.8	<0.8
Arsenic	µg/g	18	1	5
Barium	µg/g	220	2	82
Beryllium	µg/g	2.5	0.5	0.6
Boron	µg/g	36	5	17
Boron (Hot Water Soluble)	µg/g		0.10	0.47
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	70	2	24
Cobalt	µg/g	21	0.5	11.7
Copper	µg/g	92	1	8
Lead	µg/g	120	1	9
Molybdenum	µg/g	2	0.5	0.7
Nickel	µg/g	82	1	25
Selenium	µg/g	1.5	0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	2.5	0.5	<0.5
Vanadium	µg/g	86	1	24
Zinc	µg/g	290	5	58
Chromium VI	µg/g	0.66	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.115
Sodium Adsorption Ratio	NA	2.4	NA	0.261
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.70

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3599674 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio.

Certified By:

Elizabeth Polakowska



Certificate of Analysis

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2012-08-09

DATE REPORTED: 2012-08-14

SAMPLE DESCRIPTION: SS3, 5 depth BG

SAMPLE TYPE: Soil

DATE SAMPLED: 8/7/2012

Parameter	Unit	G / S	RDL	3602853
Naphthalene	µg/g	0.09	0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05
Moisture Content	%		0.1	6.1
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140		62

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3602853 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-08-09			DATE REPORTED: 2012-08-14	
SAMPLE DESCRIPTION: SS3, 5 depth BG				
SAMPLE TYPE: Soil				
DATE SAMPLED: 8/7/2012				
Parameter	Unit	G / S	RDL	3602853
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-08-09			DATE REPORTED: 2012-08-14	
SAMPLE DESCRIPTION: SS3, 5 depth BG				
SAMPLE TYPE: Soil				
DATE SAMPLED: 8/7/2012				
Parameter	Unit	G / S	RDL	3602853
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Moisture Content	%		0.1	5.0
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		108
4-Bromofluorobenzene	% Recovery	50-140		85

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3602853 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629350

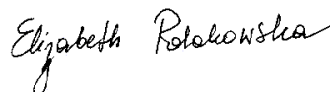
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Aug 14, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		< 0.8	< 0.8	0.0%	< 0.8	99%	70%	130%	82%	80%	120%	84%	70%	130%
Arsenic	1		3	3	0.0%	< 1	104%	70%	130%	107%	80%	120%	108%	70%	130%
Barium	1		36	38	5.4%	< 2	103%	70%	130%	101%	80%	120%	107%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	91%	70%	130%	97%	80%	120%	90%	70%	130%
Boron	1		5	5	0.0%	< 5	72%	70%	130%	99%	80%	120%	98%	70%	130%
Boron (Hot Water Soluble)	1		0.13	0.11	13.1%	< 0.10	93%	60%	140%	101%	70%	130%	101%	60%	140%
Cadmium	1		< 0.5	< 0.5	0.0%	< 0.5	97%	70%	130%	104%	80%	120%	97%	70%	130%
Chromium	1		10	10	0.0%	< 2	91%	70%	130%	98%	80%	120%	102%	70%	130%
Cobalt	1		4.5	4.6	2.2%	< 0.5	94%	70%	130%	95%	80%	120%	95%	70%	130%
Copper	1		13	13	0.0%	< 1	98%	70%	130%	110%	80%	120%	94%	70%	130%
Lead	1		9	9	0.0%	< 1	100%	70%	130%	95%	80%	120%	92%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	101%	70%	130%	98%	80%	120%	104%	70%	130%
Nickel	1		9	8	11.8%	< 1	99%	70%	130%	95%	80%	120%	94%	70%	130%
Selenium	1		< 0.4	< 0.4	0.0%	< 0.4	79%	70%	130%	95%	80%	120%	97%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	86%	70%	130%	93%	80%	120%	93%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	108%	70%	130%	97%	80%	120%	95%	70%	130%
Uranium	1		< 0.5	< 0.5	0.0%	< 0.5	87%	70%	130%	88%	80%	120%	86%	70%	130%
Vanadium	1		14	14	0.0%	< 1	95%	70%	130%	93%	80%	120%	101%	70%	130%
Zinc	1		33	31	6.3%	< 5	100%	70%	130%	108%	80%	120%	103%	70%	130%
Chromium VI	1	3599674	< 0.2	< 0.2	0.0%	< 0.2	91%	70%	130%	95%	80%	120%	97%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	110%	70%	130%	110%	80%	120%	74%	70%	130%
Mercury	1		< 0.10	< 0.10	0.0%	< 0.10	114%	70%	130%	100%	80%	120%	97%	70%	130%
Electrical Conductivity (2:1)	1		0.453	0.466	2.8%	< 0.005	93%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		0.263	0.269	2.5%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	1		8.39	8.36	0.4%	NA	101%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis															
RPT Date: Aug 14, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	91%	50%	140%	83%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	88%	50%	140%	78%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	85%	50%	140%	89%	50%	140%	81%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	81%	50%	140%	85%	50%	140%	78%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	86%	50%	140%	80%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	91%	50%	140%	83%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	81%	50%	140%	88%	50%	140%	87%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	87%	50%	140%	83%	50%	140%
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	83%	50%	140%	90%	50%	140%	81%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	77%	50%	140%	84%	50%	140%	79%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	101%	50%	140%	90%	50%	140%	87%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	89%	50%	140%	77%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	95%	50%	140%	90%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	78%	50%	140%	80%	50%	140%	79%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	86%	50%	140%	83%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	72%	50%	140%	83%	50%	140%	78%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	81%	50%	140%	85%	50%	140%	79%	50%	140%
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	84%	50%	140%	118%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	90%	50%	140%	83%	50%	140%	99%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	89%	50%	140%	91%	50%	140%	72%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	82%	50%	140%	124%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	102%	50%	140%	77%	50%	140%	97%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	87%	60%	130%	111%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	93%	60%	130%	115%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	98%	50%	140%	84%	60%	130%	113%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	NA	60%	130%	NA	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	100%	50%	140%	88%	60%	130%	111%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	105%	50%	140%	92%	50%	140%	96%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	119%	50%	140%	94%	60%	130%	84%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	90%	50%	140%	81%	60%	130%	109%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	100%	50%	140%	88%	60%	130%	111%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	86%	60%	130%	118%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	79%	60%	130%	114%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	94%	50%	140%	88%	60%	130%	97%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	107%	50%	140%	96%	60%	130%	101%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	98%	50%	140%	88%	60%	130%	101%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	73%	60%	130%	109%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Aug 14, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	101%	50%	140%	91%	50%	140%	88%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	102%	50%	140%	76%	60%	130%	105%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	87%	60%	130%	91%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	88%	60%	130%	120%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	91%	50%	140%	85%	60%	130%	90%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	86%	60%	130%	117%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	99%	60%	130%	114%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	89%	50%	140%	84%	60%	130%	97%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	91%	50%	140%	89%	60%	130%	100%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	98%	50%	140%	89%	60%	130%	106%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	82%	60%	130%	97%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	81%	60%	130%	98%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	96%	60%	130%	98%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	101%	60%	130%	105%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	85%	60%	130%	106%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	95%	60%	130%	116%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	86%	60%	130%	109%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	101%	60%	130%	105%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	81%	50%	140%	90%	60%	130%	84%	50%	140%
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	90%	60%	130%	111%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T629350

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T644985

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Analyst

DATE REPORTED: Sep 27, 2012

PAGES (INCLUDING COVER): 8

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDs corrected on January 14, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T644985

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)					
DATE RECEIVED: 2012-09-24			DATE REPORTED: 2012-09-27		
		SAMPLE DESCRIPTION:		7+020, SS1a	7+020, SS3
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		9/21/2012	9/21/2012
Parameter	Unit	G / S	RDL	3738422	3738423
Naphthalene	µg/g	0.09	0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05	<0.05
Moisture Content	%		0.1	4.6	10.0
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140	84	79	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3738422-3738423 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T644985

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-09-24			DATE REPORTED: 2012-09-27	
		SAMPLE DESCRIPTION: 7+020, SS2		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/21/2012		
Parameter	Unit	G / S	RDL	3738417
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T644985

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2012-09-24			DATE REPORTED: 2012-09-27	
		SAMPLE DESCRIPTION: 7+020, SS2		
		SAMPLE TYPE: Soil		
		DATE SAMPLED: 9/21/2012		
Parameter	Unit	G / S	RDL	3738417
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Moisture Content	%		0.1	20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		107
4-Bromofluorobenzene	% Recovery	50-140		92

Comments: 3738417 RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed.
Results are based on the dry weight of the soil.

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644985

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis															
RPT Date: Sep 27, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	102%	50%	140%	78%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	107%	50%	140%	99%	50%	140%	100%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	102%	50%	140%	101%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	118%	50%	140%	100%	50%	140%	87%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	113%	50%	140%	99%	50%	140%	107%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	112%	50%	140%	108%	60%	130%	105%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	103%	60%	130%	78%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	105%	60%	130%	109%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	87%	50%	140%	83%	60%	130%	104%	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	110%	50%	140%	113%	60%	130%	120%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	104%	50%	140%	105%	50%	140%	101%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	100%	50%	140%	103%	60%	130%	110%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	108%	50%	140%	113%	60%	130%	116%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	96%	50%	140%	116%	60%	130%	112%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	110%	60%	130%	104%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	113%	60%	130%	100%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	111%	50%	140%	116%	60%	130%	116%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	97%	50%	140%	110%	60%	130%	112%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	108%	50%	140%	109%	60%	130%	114%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	110%	60%	130%	112%	50%	140%
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	102%	50%	140%	94%	50%	140%	96%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	105%	50%	140%	105%	60%	130%	109%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	107%	60%	130%	118%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	99%	60%	130%	112%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	86%	50%	140%	101%	60%	130%	106%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	114%	50%	140%	104%	60%	130%	107%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	112%	60%	130%	117%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	94%	60%	130%	95%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	99%	60%	130%	102%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	96%	60%	130%	100%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	93%	60%	130%	103%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	99%	60%	130%	105%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	106%	60%	130%	99%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	94%	60%	130%	100%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	101%	60%	130%	110%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	101%	60%	130%	104%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	99%	60%	130%	109%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	95%	60%	130%	100%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	81%	50%	140%	99%	60%	130%	102%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644985

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Sep 27, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	109%	60%	130%	111%	50%	140%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	82%	50%	140%	87%	50%	140%	91%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	80%	50%	140%	82%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	87%	50%	140%	89%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	79%	50%	140%	83%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	90%	50%	140%	80%	50%	140%	81%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	86%	50%	140%	87%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	89%	50%	140%	87%	50%	140%	83%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	86%	50%	140%	86%	50%	140%
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	70%	50%	140%	87%	50%	140%	81%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	111%	50%	140%	94%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	97%	50%	140%	83%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	129%	50%	140%	83%	50%	140%	92%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	123%	50%	140%	79%	50%	140%	89%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	121%	50%	140%	82%	50%	140%	82%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	83%	50%	140%	82%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	121%	50%	140%	86%	50%	140%	82%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	85%	50%	140%	78%	50%	140%	83%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644985

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644985

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T641042

SOIL ANALYSIS REVIEWED BY: Inesa Alizarchyk, Inorganic Lab Supervisor

TRACE ORGANICS REVIEWED BY: Jacky Takeuchi, BScH (Chem Eng), BSc (Bio), C.Chem, Laboratory Manager

DATE REPORTED: Sep 18, 2012

PAGES (INCLUDING COVER): 12

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDS corrected on January 9, 2013 as pre client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2012-09-12

DATE REPORTED: 2012-09-18

		SAMPLE DESCRIPTION:		7+165x,S1	7+250x,S1	7+145,S1
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		9/5/2012	9/5/2012	9/6/2012
Parameter	Unit	G / S	RDL	3700787	3700795	3700802
Antimony	µg/g	1.3	0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	7	7	5
Barium	µg/g	220	2	132	132	77
Beryllium	µg/g	2.5	0.5	0.8	0.7	0.7
Boron	µg/g	36	5	20	11	5
Boron (Hot Water Soluble)	µg/g		0.10	1.30	0.19	0.38
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5
Chromium	µg/g	70	2	22	22	20
Cobalt	µg/g	21	0.5	13.6	12.7	10.0
Copper	µg/g	92	1	19	56	21
Lead	µg/g	120	1	21	17	22
Molybdenum	µg/g	2	0.5	0.9	0.6	0.6
Nickel	µg/g	82	1	28	27	20
Selenium	µg/g	1.5	0.4	<0.4	<0.4	0.4
Silver	µg/g	0.5	0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4
Uranium	µg/g	2.5	0.5	0.7	0.8	0.6
Vanadium	µg/g	86	1	30	32	32
Zinc	µg/g	290	5	102	85	96
Chromium VI	µg/g	0.66	0.2	<0.2	<0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.909	0.287	0.781
Sodium Adsorption Ratio	NA	2.4	NA	6.23	2.17	7.67
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.68	7.72	7.09

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
3700787-3700802 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)						
DATE RECEIVED: 2012-09-12			DATE REPORTED: 2012-09-18			
Parameter	Unit	SAMPLE DESCRIPTION:		7+165x,SS2a	7+250x,SS2a	7+145,SS2a
		SAMPLE TYPE:		PAH	PAH	PAH
		DATE SAMPLED:		Soil	Soil	Soil
		G / S	RDL	9/5/2012	9/5/2012	9/6/2012
				3700794	3700799	3700809
Naphthalene	µg/g	0.09	0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05	<0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	10.8	1.0	13.2
Surrogate	Unit	Acceptable Limits				
Chrysene-d12	%	50-140		68	63	66

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3700794-3700809 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:

Jacky Takewicki



Certificate of Analysis

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)						
DATE RECEIVED: 2012-09-12				DATE REPORTED: 2012-09-18		
SAMPLE DESCRIPTION:		7+165x,SS2a	7+250x,SS2a	7+145,SS2		
SAMPLE TYPE:		Soil	Soil	Soil		
DATE SAMPLED:		9/5/2012	9/5/2012	9/6/2012		
Parameter	Unit	G / S	RDL	3700793	3700796	3700807
Dichlorodifluoromethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05	<0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03	<0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05	<0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04	<0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
m & p-Xylene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05	<0.05	<0.05

Certified By:

Jacky Takewicki



Certificate of Analysis

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)						
DATE RECEIVED: 2012-09-12				DATE REPORTED: 2012-09-18		
		SAMPLE DESCRIPTION: 7+165x,SS2a 7+250x,SS2a 7+145,SS2				
		SAMPLE TYPE: Soil Soil Soil				
		DATE SAMPLED: 9/5/2012 9/5/2012 9/6/2012				
Parameter	Unit	G / S	RDL	3700793	3700796	3700807
Styrene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05	<0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	12.8	11.0	12.0
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	50-140		108	108	110
4-Bromofluorobenzene	% Recovery	50-140		97	94	98

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

3700793-3700807 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
3700787	7+165x,S1	T1(ALL) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	0.57	0.909
3700787	7+165x,S1	T1(ALL) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	2.4	6.23
3700802	7+145,S1	T1(ALL) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil)	Electrical Conductivity (2:1)	0.57	0.781
3700802	7+145,S1	T1(ALL) - Current	O. Reg. 153(511) - Metals & Inorganics (Soil)	Sodium Adsorption Ratio	2.4	7.67

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Sep 18, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		0.8	0.9	11.8%	< 0.8	115%	70%	130%	88%	80%	120%	80%	70%	130%
Arsenic	1		10	10	0.0%	< 1	110%	70%	130%	113%	80%	120%	110%	70%	130%
Barium	1		75	78	3.9%	< 2	104%	70%	130%	106%	80%	120%	107%	70%	130%
Beryllium	1		0.7	0.6	15.4%	< 0.5	95%	70%	130%	103%	80%	120%	105%	70%	130%
Boron	1		7	7	0.0%	< 5	73%	70%	130%	112%	80%	120%	97%	70%	130%
Boron (Hot Water Soluble)	1		<0.10	<0.10	0.0%	< 0.10	98%	60%	140%	104%	70%	130%	104%	60%	140%
Cadmium	1		0.7	0.7	0.0%	< 0.5	105%	70%	130%	110%	80%	120%	99%	70%	130%
Chromium	1		23	24	4.3%	< 2	101%	70%	130%	102%	80%	120%	106%	70%	130%
Cobalt	1		11.6	12.3	5.9%	< 0.5	99%	70%	130%	108%	80%	120%	104%	70%	130%
Copper	1		44	57	25.7%	< 1	96%	70%	130%	116%	80%	120%	111%	70%	130%
Lead	1		50	57	13.1%	< 1	101%	70%	130%	111%	80%	120%	106%	70%	130%
Molybdenum	1		1.3	1.2	8.0%	< 0.5	107%	70%	130%	106%	80%	120%	105%	70%	130%
Nickel	1		31	32	3.2%	< 1	100%	70%	130%	103%	80%	120%	105%	70%	130%
Selenium	1		0.7	0.5	NA	< 0.4	107%	70%	130%	105%	80%	120%	104%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	91%	70%	130%	113%	80%	120%	108%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	100%	70%	130%	102%	80%	120%	100%	70%	130%
Uranium	1		0.9	1.0	10.5%	< 0.5	107%	70%	130%	106%	80%	120%	106%	70%	130%
Vanadium	1		33	35	5.9%	< 1	99%	70%	130%	104%	80%	120%	104%	70%	130%
Zinc	1		171	158	7.9%	< 5	101%	70%	130%	111%	80%	120%	108%	70%	130%
Chromium VI	1		< 0.2	< 0.2	0.0%	< 0.2	94%	70%	130%	103%	80%	120%	95%	70%	130%
Cyanide	1	3700787	< 0.040	< 0.040	0.0%	< 0.040	99%	70%	130%	100%	80%	120%	107%	70%	130%
Mercury	1		0.114	0.129	12.3%	< 0.10	100%	70%	130%	103%	80%	120%	98%	70%	130%
Electrical Conductivity (2:1)	1		0.150	0.148	1.3%	< 0.005	100%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		0.071	0.060	16.8%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	1		7.90	7.90	0.0%	NA	100%	90%	110%	NA			NA		

Comments: NA - Not Applicable.

RPD Qualifier (Se): NA signifies Not Applicable. As the average value for the sample and a duplicate is less than 5X RDL, lab's RPD acceptance criteria is not applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Sep 18, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	87%	50%	140%	81%	50%	140%	90%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	89%	50%	140%	96%	50%	140%	95%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	113%	50%	140%	119%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	107%	50%	140%	119%	50%	140%	121%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	109%	50%	140%	113%	50%	140%	113%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	125%	50%	140%	114%	60%	130%	112%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	118%	50%	140%	110%	60%	130%	126%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	117%	50%	140%	114%	60%	130%	112%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	72%	50%	140%	73%	60%	130%	79%	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	88%	50%	140%	80%	60%	130%	112%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	74%	50%	140%	92%	50%	140%	90%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	72%	50%	140%	69%	60%	130%	75%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	89%	50%	140%	83%	60%	130%	82%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	76%	50%	140%	71%	60%	130%	104%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	75%	50%	140%	72%	60%	130%	108%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	79%	60%	130%	90%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	72%	50%	140%	71%	60%	130%	80%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	75%	50%	140%	71%	60%	130%	95%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	78%	50%	140%	72%	60%	130%	105%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	85%	50%	140%	82%	60%	130%	81%	50%	140%
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	81%	50%	140%	98%	50%	140%	91%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	121%	50%	140%	118%	60%	130%	115%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	102%	50%	140%	102%	60%	130%	98%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	120%	50%	140%	117%	60%	130%	114%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	105%	50%	140%	104%	60%	130%	97%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	103%	60%	130%	98%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	116%	60%	130%	114%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	109%	60%	130%	107%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	99%	60%	130%	96%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	97%	60%	130%	94%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	119%	50%	140%	118%	60%	130%	114%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	90%	60%	130%	88%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	126%	60%	130%	120%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	91%	60%	130%	88%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	91%	60%	130%	89%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	101%	60%	130%	98%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	101%	50%	140%	99%	60%	130%	96%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	94%	60%	130%	91%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	67%	50%	140%	116%	60%	130%	85%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641042

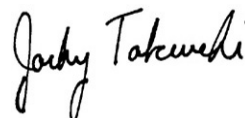
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Sep 18, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	84%	60%	130%	85%	50%	140%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.03	< 0.03	0.0%	< 0.05	90%	50%	140%	96%	50%	140%	96%	50%	140%
Acenaphthylene	1		< 0.02	< 0.02	0.0%	< 0.05	92%	50%	140%	83%	50%	140%	79%	50%	140%
Acenaphthene	1		< 0.03	< 0.03	0.0%	< 0.05	94%	50%	140%	89%	50%	140%	84%	50%	140%
Fluorene	1		< 0.02	< 0.02	0.0%	< 0.05	94%	50%	140%	79%	50%	140%	81%	50%	140%
Phenanthrene	1		< 0.02	< 0.02	0.0%	< 0.05	94%	50%	140%	84%	50%	140%	81%	50%	140%
Anthracene	1		< 0.02	< 0.02	0.0%	< 0.05	100%	50%	140%	89%	50%	140%	82%	50%	140%
Fluoranthene	1		< 0.02	< 0.02	0.0%	< 0.05	94%	50%	140%	85%	50%	140%	91%	50%	140%
Pyrene	1		< 0.02	< 0.02	0.0%	< 0.05	94%	50%	140%	78%	50%	140%	91%	50%	140%
Benz(a)anthracene	1		< 0.02	< 0.02	0.0%	< 0.05	98%	50%	140%	87%	50%	140%	84%	50%	140%
Chrysene	1		< 0.02	< 0.02	0.0%	< 0.05	95%	50%	140%	81%	50%	140%	89%	50%	140%
Benzo(b)fluoranthene	1		< 0.02	< 0.02	0.0%	< 0.05	96%	50%	140%	89%	50%	140%	85%	50%	140%
Benzo(k)fluoranthene	1		< 0.02	< 0.02	0.0%	< 0.05	98%	50%	140%	74%	50%	140%	88%	50%	140%
Benzo(a)pyrene	1		< 0.02	< 0.02	0.0%	< 0.05	95%	50%	140%	86%	50%	140%	94%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.02	< 0.02	0.0%	< 0.05	97%	50%	140%	82%	50%	140%	79%	50%	140%
Dibenz(a,h)anthracene	1		< 0.02	< 0.02	0.0%	< 0.05	93%	50%	140%	91%	50%	140%	87%	50%	140%
Benzo(g,h,i)perylene	1		< 0.02	< 0.02	0.0%	< 0.05	94%	50%	140%	98%	50%	140%	86%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	88%	50%	140%	97%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T641042

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 13T687665

SOIL ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

TRACE ORGANICS REVIEWED BY: Jacky Takeuchi, BScH (Chem Eng), BSc (Bio), C.Chem, Laboratory Manager

DATE REPORTED: Feb 15, 2013

PAGES (INCLUDING COVER): 11

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 2: Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 13T687665

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2013-02-12

DATE REPORTED: 2013-02-15

SAMPLE DESCRIPTION: BH 7+270, SS2

SAMPLE TYPE: Soil

DATE SAMPLED: 2/5/2013

G / S RDL 4127370

Parameter	Unit	G / S	RDL	4127370
Antimony	µg/g	1.3	0.8	<0.8
Arsenic	µg/g	18	1	6
Barium	µg/g	220	2	79
Beryllium	µg/g	2.5	0.5	0.9
Boron	µg/g	36	5	11
Boron (Hot Water Soluble)	µg/g		0.10	<0.10
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	70	2	23
Cobalt	µg/g	21	0.5	12.9
Copper	µg/g	92	1	31
Lead	µg/g	120	1	16
Molybdenum	µg/g	2	0.5	<0.5
Nickel	µg/g	82	1	28
Selenium	µg/g	1.5	0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	2.5	0.5	0.6
Vanadium	µg/g	86	1	30
Zinc	µg/g	290	5	65
Chromium VI	µg/g	0.66	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.138
Sodium Adsorption Ratio	NA	2.4	NA	0.142
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.86

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
4127370 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 13T687665

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2013-02-12

DATE REPORTED: 2013-02-15

SAMPLE DESCRIPTION: BH 7+270, SS3

SAMPLE TYPE: Soil

DATE SAMPLED: 2/5/2013

Parameter	Unit	G / S	RDL	4127372
Naphthalene	µg/g	0.09	0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05
Moisture Content	%		0.1	12.9
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140		67

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

4127372 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 13T687665

PROJECT NO: 11-12-2073

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2013-02-12

DATE REPORTED: 2013-02-15

SAMPLE DESCRIPTION: BH 7+270, SS11

SAMPLE TYPE: Soil

DATE SAMPLED: 2/5/2013

G / S RDL 4127373

Parameter	Unit	G / S	RDL	4127373
Dichlorodifluoromethane	ug/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g	0.05	0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T687665

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2013-02-12			DATE REPORTED: 2013-02-15	
SAMPLE DESCRIPTION: BH 7+270, SS11				
SAMPLE TYPE: Soil				
DATE SAMPLED: 2/5/2013				
Parameter	Unit	G / S	RDL	4127373
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Moisture Content	%		0.1	11.1
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		106
4-Bromofluorobenzene	% Recovery	50-140		100

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
4127373 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

Jacky Takewicki

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687665

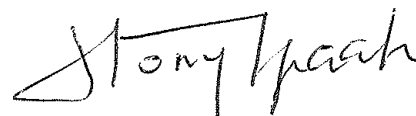
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Feb 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		< 0.8	< 0.8	0.0%	< 0.8	101%	70%	130%	99%	80%	120%	97%	70%	130%
Arsenic	1		4	4	0.0%	< 1	115%	70%	130%	103%	80%	120%	106%	70%	130%
Barium	1		19	19	0.0%	< 2	103%	70%	130%	103%	80%	120%	99%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	114%	70%	130%	108%	80%	120%	121%	70%	130%
Boron	1		< 5	< 5	0.0%	< 5	90%	70%	130%	111%	80%	120%	126%	70%	130%
Boron (Hot Water Soluble)	1		0.44	0.41	7.1%	< 0.10	118%	60%	140%	103%	70%	130%	103%	60%	140%
Cadmium	1		< 0.5	< 0.5	0.0%	< 0.5	99%	70%	130%	117%	80%	120%	101%	70%	130%
Chromium	1		9	9	0.0%	< 2	100%	70%	130%	102%	80%	120%	100%	70%	130%
Cobalt	1		5.6	5.9	5.2%	< 0.5	100%	70%	130%	99%	80%	120%	97%	70%	130%
Copper	1		25	26	3.9%	< 1	100%	70%	130%	102%	80%	120%	97%	70%	130%
Lead	1		8	8	0.0%	< 1	107%	70%	130%	105%	80%	120%	103%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	111%	70%	130%	101%	80%	120%	104%	70%	130%
Nickel	1		11	12	8.7%	< 1	101%	70%	130%	102%	80%	120%	104%	70%	130%
Selenium	1		< 0.4	< 0.4	0.0%	< 0.4	119%	70%	130%	98%	80%	120%	101%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	72%	70%	130%	105%	80%	120%	107%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	103%	70%	130%	102%	80%	120%	103%	70%	130%
Uranium	1		< 0.5	< 0.5	0.0%	< 0.5	109%	70%	130%	105%	80%	120%	107%	70%	130%
Vanadium	1		18	18	0.0%	< 1	101%	70%	130%	95%	80%	120%	99%	70%	130%
Zinc	1		39	41	5.0%	< 5	107%	70%	130%	106%	80%	120%	101%	70%	130%
Chromium VI	1		< 0.2	< 0.2	0.0%	< 0.2	96%	70%	130%	95%	80%	120%	100%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	94%	70%	130%	108%	80%	120%	107%	70%	130%
Mercury	1		< 0.10	< 0.10	0.0%	< 0.10	111%	70%	130%	104%	80%	120%	128%	70%	130%
Electrical Conductivity (2:1)	1		0.700	0.742	5.8%	< 0.005	95%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		2.10	2.12	0.9%	NA	NA			NA			NA		

Comments: NA signifies Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687665

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Feb 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	80%	50%	140%	69%	50%	140%	70%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	102%	50%	140%	73%	50%	140%	82%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	81%	50%	140%	91%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	98%	50%	140%	70%	50%	140%	78%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	73%	50%	140%	76%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	76%	50%	140%	81%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	101%	50%	140%	76%	50%	140%	83%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	80%	50%	140%	88%	50%	140%
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	66%	50%	140%	66%	50%	140%	77%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	122%	50%	140%	92%	50%	140%	100%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	72%	50%	140%	77%	50%	140%	91%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	119%	50%	140%	106%	50%	140%	95%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	67%	50%	140%	71%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	84%	50%	140%	64%	50%	140%	75%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	72%	50%	140%	72%	50%	140%	77%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	84%	50%	140%	99%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	69%	50%	140%	76%	50%	140%
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	96%	50%	140%	87%	50%	140%	85%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	109%	50%	140%	95%	50%	140%	89%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	93%	50%	140%	82%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	85%	50%	140%	86%	50%	140%	90%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	96%	50%	140%	94%	50%	140%	112%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	94%	50%	140%	86%	60%	130%	85%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	101%	60%	130%	93%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	93%	60%	130%	97%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	86%	60%	130%	85%	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	104%	50%	140%	99%	60%	130%	95%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	70%	50%	140%	84%	50%	140%	93%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	99%	50%	140%	97%	60%	130%	93%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	101%	50%	140%	96%	60%	130%	94%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	97%	50%	140%	104%	60%	130%	96%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	91%	50%	140%	88%	60%	130%	88%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	77%	50%	140%	76%	60%	130%	79%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	95%	50%	140%	93%	60%	130%	90%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	94%	50%	140%	97%	60%	130%	95%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	88%	50%	140%	88%	60%	130%	87%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	93%	60%	130%	92%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687665

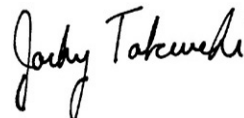
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Feb 15, 2013			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	99%	50%	140%	104%	50%	140%	110%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	119%	50%	140%	115%	60%	130%	116%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	112%	50%	140%	118%	60%	130%	111%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	111%	60%	130%	104%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	110%	50%	140%	115%	60%	130%	112%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	110%	60%	130%	107%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	NA	50%	140%	114%	60%	130%	112%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	111%	50%	140%	115%	60%	130%	111%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	105%	50%	140%	109%	60%	130%	104%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	104%	50%	140%	109%	60%	130%	104%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	109%	60%	130%	102%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	87%	50%	140%	98%	60%	130%	93%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	105%	60%	130%	104%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	110%	60%	130%	105%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	105%	60%	130%	100%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	104%	60%	130%	104%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	88%	50%	140%	95%	60%	130%	94%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	110%	60%	130%	105%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	106%	50%	140%	106%	60%	130%	102%	50%	140%
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	110%	60%	130%	104%	50%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687665

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl2 Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687665

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687665

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE



Certificate of Analysis

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2013-07-19

DATE REPORTED: 2013-07-26

SAMPLE DESCRIPTION: BH 5+060, SS1

SAMPLE TYPE: Soil

DATE SAMPLED: 7/19/2013

Parameter	Unit	G / S	RDL	4569523
Antimony	µg/g	1.3	0.8	<0.8
Arsenic	µg/g	18	1	6
Barium	µg/g	220	2	110
Beryllium	µg/g	2.5	0.5	0.7
Boron	µg/g	36	5	10
Boron (Hot Water Soluble)	µg/g	NA	0.10	0.18
Cadmium	µg/g	1.2	0.5	<0.5
Chromium	µg/g	70	2	22
Cobalt	µg/g	21	0.5	11.9
Copper	µg/g	92	1	19
Lead	µg/g	120	1	16
Molybdenum	µg/g	2	0.5	0.6
Nickel	µg/g	82	1	29
Selenium	µg/g	1.5	0.4	<0.4
Silver	µg/g	0.5	0.2	<0.2
Thallium	µg/g	1	0.4	<0.4
Uranium	µg/g	2.5	0.5	0.5
Vanadium	µg/g	86	1	28
Zinc	µg/g	290	5	61
Chromium VI	µg/g	0.66	0.2	<0.2
Cyanide	µg/g	0.051	0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	0.005	0.139
Sodium Adsorption Ratio	NA	2.4	NA	0.362
pH, 2:1 CaCl ₂ Extraction	pH Units		NA	7.62

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
4569523 EC & SAR were determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl₂ extract prepared at 2:1 ratio.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Soil)				
DATE RECEIVED: 2013-07-19			DATE REPORTED: 2013-07-26	
SAMPLE DESCRIPTION: BH 5+060, SS2				
SAMPLE TYPE: Soil				
DATE SAMPLED: 7/19/2013				
Parameter	Unit	G / S	RDL	4569533
Naphthalene	µg/g	0.09	0.05	<0.05
Acenaphthylene	µg/g	0.093	0.05	<0.05
Acenaphthene	µg/g	0.072	0.05	<0.05
Fluorene	µg/g	0.12	0.05	<0.05
Phenanthrene	µg/g	0.69	0.05	<0.05
Anthracene	µg/g	0.16	0.05	<0.05
Fluoranthene	µg/g	0.56	0.05	<0.05
Pyrene	µg/g	1	0.05	<0.05
Benz(a)anthracene	µg/g	0.36	0.05	<0.05
Chrysene	µg/g	2.8	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.05	<0.05
2-and 1-methyl Naphthalene	µg/g	0.59	0.05	<0.05
Moisture Content	%		0.1	10.0
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140	70	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

4569533 Results are based on the dry weight of the soil.

Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&(j)Fluoranthene isomers because the isomers co-elute on the GC column.

Certified By:



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AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PHCs F1 - F4 (Soil)

DATE RECEIVED: 2013-07-19

DATE REPORTED: 2013-07-26

SAMPLE DESCRIPTION: BH 5+060, SS3				
SAMPLE TYPE: Soil				
DATE SAMPLED: 7/19/2013				
Parameter	Unit	G / S	RDL	4569525
Benzene	µg/g	0.02	0.02	<0.02
Toluene	µg/g	0.2	0.08	<0.08
Ethylbenzene	µg/g	0.05	0.05	<0.05
Xylene Mixture	µg/g	0.05	0.05	<0.05
F1 (C6 to C10)	µg/g		5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	5	<5
F2 (C10 to C16)	µg/g	10	10	<10
F3 (C16 to C34)	µg/g	240	50	<50
F4 (C34 to C50)	µg/g	120	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	120	50	NA
Moisture Content	%		0.1	7.9
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140		97

Comments: 4569525 RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current

Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

Total C6 - C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Quality Control Data is available upon request.

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AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2013-07-19

DATE REPORTED: 2013-07-26

SAMPLE DESCRIPTION: BH 5+060, SS5

SAMPLE TYPE: Soil

DATE SAMPLED: 7/19/2013

Parameter	Unit	G / S	RDL	4569510
Dichlorodifluoromethane	µg/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g	0.05	0.05	<0.05
Bromoform	ug/g	0.05	0.05	<0.05

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

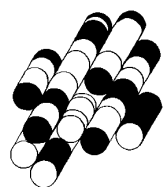
O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2013-07-19			DATE REPORTED: 2013-07-26	
SAMPLE DESCRIPTION: BH 5+060, SS5				
SAMPLE TYPE: Soil				
DATE SAMPLED: 7/19/2013				
Parameter	Unit	G / S	RDL	4569510
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Moisture Content	%		0.1	15.5
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		108
4-Bromofluorobenzene	% Recovery	50-140		95

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL) - Current
4569510 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

APPENDIX H

TERRAPROBE INC.



Your Project #: 11-12-2073
Site Location: HALTON WATERMAIN
Your C.O.C. #: 36878201, 368782-01-01

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/25

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2D3998

Received: 2012/08/31, 12:50

Sample Matrix: Soil
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Hot Water Extractable Boron	1	2012/09/04	2012/09/04	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	1	N/A	2012/09/05	CAM SOP-00226	EPA 8260
Free (WAD) Cyanide	1	N/A	2012/09/04	CAM SOP-00457	Ontario MOE CN-E3015
Conductivity	1	N/A	2012/09/04	CAM SOP-00414	APHA 2510
Hexavalent Chromium in Soil by IC (1)	1	2012/09/05	2012/09/05	CAM SOP-00436	EPA SW846-3060/7199
Acid Extr. Metals (aqua regia) by ICPMS	1	2012/09/04	2012/09/05	CAM SOP-00447	EPA 6020
Moisture	1	N/A	2012/08/31	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM)	1	2012/08/31	2012/08/31	CAM SOP - 00318	EPA 8270
pH CaCl2 EXTRACT	1	2012/09/05	2012/09/05	CAM SOP-00413	SM 4500H+ B
Sodium Adsorption Ratio (SAR)	1	2012/08/31	2012/09/05	CAM SOP-00102	EPA 6010
Volatile Organic Compounds in Soil	1	2012/08/31	2012/09/04	CAM SOP-00226	EPA 8260 modified

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Your Project #: 11-12-2073
Site Location: HALTON WATERMAIN
Your C.O.C. #: 36878201, 368782-01-01

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/25

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Renata Spina, Project Manager
Email: RSpina@maxxam.ca
Phone# (905) 817-5700 Ext:5818

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B2D3998
Report Date: 2013/02/25

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

O'REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		OR7006		
Sampling Date		2012/08/29		
COC Number		368782-01-01		
	Units	BH4+495, R3 11.9-12.1M	RDL	QC Batch

Calculated Parameters				
Sodium Adsorption Ratio	N/A	6.1		2956510
Inorganics				
Chromium (VI)	ug/g	<0.2	0.2	2959437
Conductivity	mS/cm	0.39	0.002	2958419
Free Cyanide	ug/g	<0.01	0.01	2957272
Moisture	%	1.5	1.0	2957219
Available (CaCl2) pH	pH	8.45		2959456
Metals				
Hot Water Ext. Boron (B)	ug/g	7.6	0.050	2958671
Acid Extractable Antimony (Sb)	ug/g	0.26	0.20	2958527
Acid Extractable Arsenic (As)	ug/g	3.1	1.0	2958527
Acid Extractable Barium (Ba)	ug/g	150	0.50	2958527
Acid Extractable Beryllium (Be)	ug/g	0.51	0.20	2958527
Acid Extractable Boron (B)	ug/g	24	5.0	2958527
Acid Extractable Cadmium (Cd)	ug/g	0.11	0.10	2958527
Acid Extractable Chromium (Cr)	ug/g	21	1.0	2958527
Acid Extractable Cobalt (Co)	ug/g	10	0.10	2958527
Acid Extractable Copper (Cu)	ug/g	5.9	0.50	2958527
Acid Extractable Lead (Pb)	ug/g	9.4	1.0	2958527
Acid Extractable Molybdenum (Mo)	ug/g	1.3	0.50	2958527
Acid Extractable Nickel (Ni)	ug/g	22	0.50	2958527
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	2958527
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	2958527
Acid Extractable Thallium (Tl)	ug/g	0.25	0.050	2958527
Acid Extractable Uranium (U)	ug/g	0.51	0.050	2958527
Acid Extractable Vanadium (V)	ug/g	21	5.0	2958527
Acid Extractable Zinc (Zn)	ug/g	46	5.0	2958527
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	2958527
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2D3998
Report Date: 2013/02/25

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

O'REG 153 PAHS (SOIL)

Maxxam ID		OR7006		
Sampling Date		2012/08/29		
COC Number		368782-01-01		
	Units	BH4+495, R3 11.9-12.1M	RDL	QC Batch

Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	2957366
Acenaphthylene	ug/g	<0.0050	0.0050	2957366
Anthracene	ug/g	<0.0050	0.0050	2957366
Benzo(a)anthracene	ug/g	<0.0050	0.0050	2957366
Benzo(a)pyrene	ug/g	<0.0050	0.0050	2957366
Benzo(b/j)fluoranthene	ug/g	<0.0050	0.0050	2957366
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	2957366
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	2957366
Chrysene	ug/g	<0.0050	0.0050	2957366
Dibenz(a,h)anthracene	ug/g	<0.0050	0.0050	2957366
Fluoranthene	ug/g	<0.0050	0.0050	2957366
Fluorene	ug/g	<0.0050	0.0050	2957366
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	2957366
1-Methylnaphthalene	ug/g	<0.0050	0.0050	2957366
2-Methylnaphthalene	ug/g	<0.0050	0.0050	2957366
Naphthalene	ug/g	<0.0050	0.0050	2957366
Phenanthrene	ug/g	<0.0050	0.0050	2957366
Pyrene	ug/g	<0.0050	0.0050	2957366
Surrogate Recovery (%)				
D10-Anthracene	%	86		2957366
D14-Terphenyl (FS)	%	95		2957366
D8-Acenaphthylene	%	98		2957366
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2D3998
Report Date: 2013/02/25

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

O'REG 153 VOLATILE ORGANICS (SOIL)

Maxxam ID		OR7006		
Sampling Date		2012/08/29		
COC Number		368782-01-01		
	Units	BH4+495, R3 11.9-12.1M	RDL	QC Batch

Calculated Parameters				
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	0.050	2956534
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	2955401
Benzene	ug/g	<0.020	0.020	2955401
Bromodichloromethane	ug/g	<0.050	0.050	2955401
Bromoform	ug/g	<0.050	0.050	2955401
Bromomethane	ug/g	<0.050	0.050	2955401
Carbon Tetrachloride	ug/g	<0.050	0.050	2955401
Chlorobenzene	ug/g	<0.050	0.050	2955401
Chloroform	ug/g	<0.050	0.050	2955401
Dibromochloromethane	ug/g	<0.050	0.050	2955401
1,2-Dichlorobenzene	ug/g	<0.050	0.050	2955401
1,3-Dichlorobenzene	ug/g	<0.050	0.050	2955401
1,4-Dichlorobenzene	ug/g	<0.050	0.050	2955401
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	2955401
1,1-Dichloroethane	ug/g	<0.050	0.050	2955401
1,2-Dichloroethane	ug/g	<0.050	0.050	2955401
1,1-Dichloroethylene	ug/g	<0.050	0.050	2955401
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	2955401
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	2955401
1,2-Dichloropropane	ug/g	<0.050	0.050	2955401
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	2955401
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	2955401
Ethylbenzene	ug/g	<0.020	0.020	2955401
Ethylene Dibromide	ug/g	<0.050	0.050	2955401
Hexane	ug/g	<0.050	0.050	2955401
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	2955401
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	2955401
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	2955401
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	2955401
Styrene	ug/g	<0.050	0.050	2955401
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	2955401
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2D3998
Report Date: 2013/02/25

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

O'REG 153 VOLATILE ORGANICS (SOIL)

Maxxam ID		OR7006		
Sampling Date		2012/08/29		
COC Number		368782-01-01		
	Units	BH4+495, R3	RDL	QC Batch
		11.9-12.1M		
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	2955401
Tetrachloroethylene	ug/g	<0.050	0.050	2955401
Toluene	ug/g	<0.020	0.020	2955401
1,1,1-Trichloroethane	ug/g	<0.050	0.050	2955401
1,1,2-Trichloroethane	ug/g	<0.050	0.050	2955401
Trichloroethylene	ug/g	<0.050	0.050	2955401
Vinyl Chloride	ug/g	<0.020	0.020	2955401
p+m-Xylene	ug/g	<0.020	0.020	2955401
o-Xylene	ug/g	<0.020	0.020	2955401
Xylene (Total)	ug/g	<0.020	0.020	2955401
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	2955401
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	101		2955401
D10-o-Xylene	%	100		2955401
D4-1,2-Dichloroethane	%	97		2955401
D8-Toluene	%	98		2955401
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2D3998
Report Date: 2013/02/25

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Test Summary

Maxxam ID OR7006
Sample ID BH4+495, R3 11.9-12.1M
Matrix Soil

Collected 2012/08/29
Shipped
Received 2012/08/31

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2958671	2012/09/04	2012/09/04	Azita Fazaeli
1,3-Dichloropropene Sum	CALC	2956534	N/A	2012/09/05	Automated Statchk
Free (WAD) Cyanide	TECH	2957272	N/A	2012/09/04	Louise Harding
Conductivity	COND	2958419	N/A	2012/09/04	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2959437	2012/09/05	2012/09/05	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2958527	2012/09/04	2012/09/05	Viviana Canzonieri
Moisture	BAL	2957219	N/A	2012/08/31	Chamika Deeyagaha
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2957366	2012/08/31	2012/08/31	Darryl Tiller
pH CaCl2 EXTRACT		2959456	2012/09/05	2012/09/05	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2956510	2012/09/05	2012/09/05	Terry Obal
Volatile Organic Compounds in Soil	P&T/MS	2955401	2012/08/31	2012/09/04	Ajay Rana

Maxxam Job #: B2D3998
Report Date: 2013/02/25

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Package 1	9.0°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

Revised Report: Comment added 2012/09/13 AW.

Samples on this submission were received as solid rock cores. Prior to any analytical processing, all samples were crushed to a consistent grain size of approximately <2mm using a Vibratory Ring Pulverizer (Model TM/STLX). Aliquots of the crushed rock were processed in accordance to the preparation and analysis requirements for a soil matrix, for the analyses requested.

As per clients request. Sample ID's have been revised. 2013/02/20

Results relate only to the items tested.

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report

Maxxam Job Number: MB2D3998

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2955401 A_J	Matrix Spike	4-Bromofluorobenzene	2012/08/31		100	%	60 - 140
		D10-o-Xylene	2012/08/31		105	%	60 - 130
		D4-1,2-Dichloroethane	2012/08/31		94	%	60 - 140
		D8-Toluene	2012/08/31		101	%	60 - 140
		Acetone (2-Propanone)	2012/08/31		93	%	60 - 140
		Benzene	2012/08/31		104	%	60 - 140
		Bromodichloromethane	2012/08/31		100	%	60 - 140
		Bromoform	2012/08/31		99	%	60 - 140
		Bromomethane	2012/08/31		85	%	60 - 140
		Carbon Tetrachloride	2012/08/31		107	%	60 - 140
		Chlorobenzene	2012/08/31		104	%	60 - 140
		Chloroform	2012/08/31		106	%	60 - 140
		Dibromochloromethane	2012/08/31		104	%	60 - 140
		1,2-Dichlorobenzene	2012/08/31		112	%	60 - 140
		1,3-Dichlorobenzene	2012/08/31		120	%	60 - 140
		1,4-Dichlorobenzene	2012/08/31		120	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/08/31		136	%	60 - 140
		1,1-Dichloroethane	2012/08/31		88	%	60 - 140
		1,2-Dichloroethane	2012/08/31		96	%	60 - 140
		1,1-Dichloroethylene	2012/08/31		104	%	60 - 140
		cis-1,2-Dichloroethylene	2012/08/31		98	%	60 - 140
		trans-1,2-Dichloroethylene	2012/08/31		106	%	60 - 140
		1,2-Dichloropropane	2012/08/31		99	%	60 - 140
		cis-1,3-Dichloropropene	2012/08/31		103	%	60 - 140
		trans-1,3-Dichloropropene	2012/08/31		105	%	60 - 140
		Ethylbenzene	2012/08/31		116	%	60 - 140
		Ethylene Dibromide	2012/08/31		100	%	60 - 140
		Hexane	2012/08/31		141 (1)	%	60 - 140
		Methylene Chloride(Dichloromethane)	2012/08/31		92	%	60 - 140
		Methyl Isobutyl Ketone	2012/08/31		93	%	60 - 140
		Methyl Ethyl Ketone (2-Butanone)	2012/08/31		93	%	60 - 140
		Methyl t-butyl ether (MTBE)	2012/08/31		97	%	60 - 140
		Styrene	2012/08/31		108	%	60 - 140
		1,1,1,2-Tetrachloroethane	2012/08/31		102	%	60 - 140
		1,1,2,2-Tetrachloroethane	2012/08/31		91	%	60 - 140
		Tetrachloroethylene	2012/08/31		121	%	60 - 140
		Toluene	2012/08/31		107	%	60 - 140
		1,1,1-Trichloroethane	2012/08/31		96	%	60 - 140
		1,1,2-Trichloroethane	2012/08/31		99	%	60 - 140
		Trichloroethylene	2012/08/31		110	%	60 - 140
		Vinyl Chloride	2012/08/31		110	%	60 - 140
		p+m-Xylene	2012/08/31		120	%	60 - 140
		o-Xylene	2012/08/31		116	%	60 - 140
		Trichlorofluoromethane (FREON 11)	2012/08/31		111	%	60 - 140
	Spiked Blank	4-Bromofluorobenzene	2012/08/31		100	%	60 - 140
		D10-o-Xylene	2012/08/31		99	%	60 - 130
		D4-1,2-Dichloroethane	2012/08/31		96	%	60 - 140
		D8-Toluene	2012/08/31		99	%	60 - 140
		Acetone (2-Propanone)	2012/08/31		90	%	60 - 140
		Benzene	2012/08/31		100	%	60 - 130
		Bromodichloromethane	2012/08/31		101	%	60 - 130
		Bromoform	2012/08/31		102	%	60 - 130
		Bromomethane	2012/08/31		90	%	60 - 140
		Carbon Tetrachloride	2012/08/31		96	%	60 - 130
		Chlorobenzene	2012/08/31		96	%	60 - 130

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2D3998

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2955401 A_J	Spiked Blank	Chloroform	2012/08/31		104	%	60 - 130
		Dibromochloromethane	2012/08/31		106	%	60 - 130
		1,2-Dichlorobenzene	2012/08/31		99	%	60 - 130
		1,3-Dichlorobenzene	2012/08/31		98	%	60 - 130
		1,4-Dichlorobenzene	2012/08/31		99	%	60 - 130
		Dichlorodifluoromethane (FREON 12)	2012/08/31		107	%	60 - 140
		1,1-Dichloroethane	2012/08/31		85	%	60 - 130
		1,2-Dichloroethane	2012/08/31		98	%	60 - 130
		1,1-Dichloroethylene	2012/08/31		96	%	60 - 130
		cis-1,2-Dichloroethylene	2012/08/31		95	%	60 - 130
		trans-1,2-Dichloroethylene	2012/08/31		97	%	60 - 130
		1,2-Dichloropropane	2012/08/31		99	%	60 - 130
		cis-1,3-Dichloropropene	2012/08/31		102	%	60 - 130
		trans-1,3-Dichloropropene	2012/08/31		103	%	60 - 130
		Ethylbenzene	2012/08/31		101	%	60 - 130
		Ethylene Dibromide	2012/08/31		101	%	60 - 130
		Hexane	2012/08/31		88	%	60 - 130
		Methylene Chloride(Dichloromethane)	2012/08/31		92	%	60 - 130
		Methyl Isobutyl Ketone	2012/08/31		99	%	60 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/08/31		96	%	60 - 140
		Methyl t-butyl ether (MTBE)	2012/08/31		102	%	60 - 130
		Styrene	2012/08/31		98	%	60 - 130
		1,1,1,2-Tetrachloroethane	2012/08/31		100	%	60 - 130
		1,1,2,2-Tetrachloroethane	2012/08/31		94	%	60 - 130
		Tetrachloroethylene	2012/08/31		95	%	60 - 130
		Toluene	2012/08/31		98	%	60 - 130
		1,1,1-Trichloroethane	2012/08/31		91	%	60 - 130
		1,1,2-Trichloroethane	2012/08/31		101	%	60 - 130
		Trichloroethylene	2012/08/31		98	%	60 - 130
		Vinyl Chloride	2012/08/31		103	%	60 - 130
		p+m-Xylene	2012/08/31		103	%	60 - 130
		o-Xylene	2012/08/31		105	%	60 - 130
		Trichlorofluoromethane (FREON 11)	2012/08/31		95	%	60 - 130
	Method Blank	4-Bromofluorobenzene	2012/08/31		98	%	60 - 140
		D10-o-Xylene	2012/08/31		98	%	60 - 130
		D4-1,2-Dichloroethane	2012/08/31		95	%	60 - 140
		D8-Toluene	2012/08/31		99	%	60 - 140
		Acetone (2-Propanone)	2012/08/31	<0.50		ug/g	
		Benzene	2012/08/31	<0.020		ug/g	
		Bromodichloromethane	2012/08/31	<0.050		ug/g	
		Bromoform	2012/08/31	<0.050		ug/g	
		Bromomethane	2012/08/31	<0.050		ug/g	
		Carbon Tetrachloride	2012/08/31	<0.050		ug/g	
		Chlorobenzene	2012/08/31	<0.050		ug/g	
		Chloroform	2012/08/31	<0.050		ug/g	
		Dibromochloromethane	2012/08/31	<0.050		ug/g	
		1,2-Dichlorobenzene	2012/08/31	<0.050		ug/g	
		1,3-Dichlorobenzene	2012/08/31	<0.050		ug/g	
		1,4-Dichlorobenzene	2012/08/31	<0.050		ug/g	
		Dichlorodifluoromethane (FREON 12)	2012/08/31	<0.050		ug/g	
		1,1-Dichloroethane	2012/08/31	<0.050		ug/g	
		1,2-Dichloroethane	2012/08/31	<0.050		ug/g	
		1,1-Dichloroethylene	2012/08/31	<0.050		ug/g	
		cis-1,2-Dichloroethylene	2012/08/31	<0.050		ug/g	
		trans-1,2-Dichloroethylene	2012/08/31	<0.050		ug/g	

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2D3998

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2955401 A_J	Method Blank	1,2-Dichloropropane	2012/08/31	<0.050		ug/g	
		cis-1,3-Dichloropropene	2012/08/31	<0.030		ug/g	
		trans-1,3-Dichloropropene	2012/08/31	<0.040		ug/g	
		Ethylbenzene	2012/08/31	<0.020		ug/g	
		Ethylene Dibromide	2012/08/31	<0.050		ug/g	
		Hexane	2012/08/31	<0.050		ug/g	
		Methylene Chloride(Dichloromethane)	2012/08/31	<0.050		ug/g	
		Methyl Isobutyl Ketone	2012/08/31	<0.50		ug/g	
		Methyl Ethyl Ketone (2-Butanone)	2012/08/31	<0.50		ug/g	
		Methyl t-butyl ether (MTBE)	2012/08/31	<0.050		ug/g	
		Styrene	2012/08/31	<0.050		ug/g	
		1,1,1,2-Tetrachloroethane	2012/08/31	<0.050		ug/g	
		1,1,2,2-Tetrachloroethane	2012/08/31	<0.050		ug/g	
		Tetrachloroethylene	2012/08/31	<0.050		ug/g	
		Toluene	2012/08/31	<0.020		ug/g	
		1,1,1-Trichloroethane	2012/08/31	<0.050		ug/g	
		1,1,2-Trichloroethane	2012/08/31	<0.050		ug/g	
		Trichloroethylene	2012/08/31	<0.050		ug/g	
		Vinyl Chloride	2012/08/31	<0.020		ug/g	
		p+m-Xylene	2012/08/31	<0.020		ug/g	
		o-Xylene	2012/08/31	<0.020		ug/g	
		Xylene (Total)	2012/08/31	<0.020		ug/g	
	RPD	Trichlorofluoromethane (FREON 11)	2012/08/31	<0.050		ug/g	
		Acetone (2-Propanone)	2012/08/31	NC		%	50
		Benzene	2012/08/31	NC		%	50
		Bromodichloromethane	2012/08/31	NC		%	50
		Bromoform	2012/08/31	NC		%	50
		Bromomethane	2012/08/31	NC		%	50
		Carbon Tetrachloride	2012/08/31	NC		%	50
		Chlorobenzene	2012/08/31	NC		%	50
		Chloroform	2012/08/31	NC		%	50
		Dibromochloromethane	2012/08/31	NC		%	50
		1,2-Dichlorobenzene	2012/08/31	NC		%	50
		1,3-Dichlorobenzene	2012/08/31	NC		%	50
		1,4-Dichlorobenzene	2012/08/31	NC		%	50
		Dichlorodifluoromethane (FREON 12)	2012/08/31	NC		%	50
		1,1-Dichloroethane	2012/08/31	NC		%	50
		1,2-Dichloroethane	2012/08/31	NC		%	50
		1,1-Dichloroethylene	2012/08/31	NC		%	50
		cis-1,2-Dichloroethylene	2012/08/31	NC		%	50
		trans-1,2-Dichloroethylene	2012/08/31	NC		%	50
		1,2-Dichloropropane	2012/08/31	NC		%	50
		cis-1,3-Dichloropropene	2012/08/31	NC		%	50
		trans-1,3-Dichloropropene	2012/08/31	NC		%	50
		Ethylbenzene	2012/08/31	NC		%	50
		Ethylene Dibromide	2012/08/31	NC		%	50
		Hexane	2012/08/31	NC		%	50
		Methylene Chloride(Dichloromethane)	2012/08/31	NC		%	50
		Methyl Isobutyl Ketone	2012/08/31	NC		%	50
		Methyl Ethyl Ketone (2-Butanone)	2012/08/31	NC		%	50
		Methyl t-butyl ether (MTBE)	2012/08/31	NC		%	50
		Styrene	2012/08/31	NC		%	50
		1,1,1,2-Tetrachloroethane	2012/08/31	NC		%	50
		1,1,2,2-Tetrachloroethane	2012/08/31	NC		%	50
		Tetrachloroethylene	2012/08/31	NC		%	50

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2D3998

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2955401 A_J	RPD	Toluene	2012/08/31	NC		%	50
		1,1,1-Trichloroethane	2012/08/31	NC		%	50
		1,1,2-Trichloroethane	2012/08/31	NC		%	50
		Trichloroethylene	2012/08/31	NC		%	50
		Vinyl Chloride	2012/08/31	NC		%	50
		p+m-Xylene	2012/08/31	NC		%	50
		o-Xylene	2012/08/31	NC		%	50
		Xylene (Total)	2012/08/31	NC		%	50
		Trichlorofluoromethane (FREON 11)	2012/08/31	NC		%	50
2956534 ASC	RPD	1,3-Dichloropropene (cis+trans)	2012/09/04	NC		%	N/A
2957219 DIP	RPD	Moisture	2012/08/31	NC		%	20
2957272 LHA	Matrix Spike	Free Cyanide	2012/09/04		100	%	75 - 125
	Spiked Blank	Free Cyanide	2012/09/04		105	%	80 - 120
	Method Blank	Free Cyanide	2012/09/04	<0.01		ug/g	
	RPD	Free Cyanide	2012/09/04	NC		%	35
2957366 DTI	Matrix Spike	D10-Anthracene	2012/08/31		88	%	50 - 130
		D14-Terphenyl (FS)	2012/08/31		97	%	50 - 130
		D8-Acenaphthylene	2012/08/31		93	%	50 - 130
		Acenaphthene	2012/08/31		92	%	50 - 130
		Acenaphthylene	2012/08/31		89	%	50 - 130
		Anthracene	2012/08/31		92	%	50 - 130
		Benzo(a)anthracene	2012/08/31		94	%	50 - 130
		Benzo(a)pyrene	2012/08/31		95	%	50 - 130
		Benzo(b/j)fluoranthene	2012/08/31		88	%	50 - 130
		Benzo(g,h,i)perylene	2012/08/31		95	%	50 - 130
		Benzo(k)fluoranthene	2012/08/31		93	%	50 - 130
		Chrysene	2012/08/31		94	%	50 - 130
		Dibenz(a,h)anthracene	2012/08/31		103	%	50 - 130
		Fluoranthene	2012/08/31		96	%	50 - 130
		Fluorene	2012/08/31		101	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2012/08/31		98	%	50 - 130
		1-Methylnaphthalene	2012/08/31		88	%	50 - 130
		2-Methylnaphthalene	2012/08/31		86	%	50 - 130
		Naphthalene	2012/08/31		84	%	50 - 130
		Phenanthrene	2012/08/31		92	%	50 - 130
		Pyrene	2012/08/31		98	%	50 - 130
	Spiked Blank	D10-Anthracene	2012/08/31		88	%	50 - 130
		D14-Terphenyl (FS)	2012/08/31		93	%	50 - 130
		D8-Acenaphthylene	2012/08/31		100	%	50 - 130
		Acenaphthene	2012/08/31		93	%	50 - 130
		Acenaphthylene	2012/08/31		89	%	50 - 130
		Anthracene	2012/08/31		91	%	50 - 130
		Benzo(a)anthracene	2012/08/31		92	%	50 - 130
		Benzo(a)pyrene	2012/08/31		96	%	50 - 130
		Benzo(b/j)fluoranthene	2012/08/31		91	%	50 - 130
		Benzo(g,h,i)perylene	2012/08/31		97	%	50 - 130
		Benzo(k)fluoranthene	2012/08/31		95	%	50 - 130
		Chrysene	2012/08/31		94	%	50 - 130
		Dibenz(a,h)anthracene	2012/08/31		103	%	50 - 130
		Fluoranthene	2012/08/31		95	%	50 - 130
		Fluorene	2012/08/31		101	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2012/08/31		97	%	50 - 130
		1-Methylnaphthalene	2012/08/31		87	%	50 - 130
		2-Methylnaphthalene	2012/08/31		86	%	50 - 130
		Naphthalene	2012/08/31		86	%	50 - 130

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2D3998

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2957366 DTI	Spiked Blank	Phenanthrene	2012/08/31		93	%	50 - 130
		Pyrene	2012/08/31		97	%	50 - 130
	Method Blank	D10-Anthracene	2012/08/31		89	%	50 - 130
		D14-Terphenyl (FS)	2012/08/31		96	%	50 - 130
		D8-Acenaphthylene	2012/08/31		98	%	50 - 130
		Acenaphthene	2012/08/31	<0.0050		ug/g	
		Acenaphthylene	2012/08/31	<0.0050		ug/g	
		Anthracene	2012/08/31	<0.0050		ug/g	
		Benzo(a)anthracene	2012/08/31	<0.0050		ug/g	
		Benzo(a)pyrene	2012/08/31	<0.0050		ug/g	
		Benzo(b/j)fluoranthene	2012/08/31	<0.0050		ug/g	
		Benzo(g,h,i)perylene	2012/08/31	<0.0050		ug/g	
		Benzo(k)fluoranthene	2012/08/31	<0.0050		ug/g	
		Chrysene	2012/08/31	<0.0050		ug/g	
		Dibenz(a,h)anthracene	2012/08/31	<0.0050		ug/g	
		Fluoranthene	2012/08/31	<0.0050		ug/g	
		Fluorene	2012/08/31	<0.0050		ug/g	
		Indeno(1,2,3-cd)pyrene	2012/08/31	<0.0050		ug/g	
		1-Methylnaphthalene	2012/08/31	<0.0050		ug/g	
		2-Methylnaphthalene	2012/08/31	<0.0050		ug/g	
		Naphthalene	2012/08/31	<0.0050		ug/g	
		Phenanthrene	2012/08/31	<0.0050		ug/g	
		Pyrene	2012/08/31	<0.0050		ug/g	
	RPD	Acenaphthene	2012/08/31	NC		%	40
		Acenaphthylene	2012/08/31	NC		%	40
		Anthracene	2012/08/31	NC		%	40
		Fluoranthene	2012/08/31	NC		%	40
		Fluorene	2012/08/31	NC		%	40
		1-Methylnaphthalene	2012/08/31	NC		%	40
		2-Methylnaphthalene	2012/08/31	NC		%	40
		Naphthalene	2012/08/31	NC		%	40
		Phenanthrene	2012/08/31	NC		%	40
		Conductivity	2012/09/04		99	%	90 - 110
		Conductivity	2012/09/04	<0.002		mS/cm	
		Conductivity	2012/09/04	0.9		%	10
2958419 NYS	QC Standard						
	Method Blank						
	RPD						
2958527 VIV	Matrix Spike	Acid Extractable Antimony (Sb)	2012/09/05		105	%	75 - 125
		Acid Extractable Arsenic (As)	2012/09/05		101	%	75 - 125
		Acid Extractable Barium (Ba)	2012/09/05		NC	%	75 - 125
		Acid Extractable Beryllium (Be)	2012/09/05		101	%	75 - 125
		Acid Extractable Boron (B)	2012/09/05		101	%	75 - 125
		Acid Extractable Cadmium (Cd)	2012/09/05		103	%	75 - 125
		Acid Extractable Chromium (Cr)	2012/09/05		104	%	75 - 125
		Acid Extractable Cobalt (Co)	2012/09/05		103	%	75 - 125
		Acid Extractable Copper (Cu)	2012/09/05		97	%	75 - 125
		Acid Extractable Lead (Pb)	2012/09/05		100	%	75 - 125
		Acid Extractable Molybdenum (Mo)	2012/09/05		105	%	75 - 125
		Acid Extractable Nickel (Ni)	2012/09/05		100	%	75 - 125
		Acid Extractable Selenium (Se)	2012/09/05		100	%	75 - 125
		Acid Extractable Silver (Ag)	2012/09/05		102	%	75 - 125
		Acid Extractable Thallium (Tl)	2012/09/05		98	%	75 - 125
		Acid Extractable Uranium (U)	2012/09/05		101	%	75 - 125
		Acid Extractable Vanadium (V)	2012/09/05		105	%	75 - 125
		Acid Extractable Zinc (Zn)	2012/09/05		NC	%	75 - 125
		Acid Extractable Mercury (Hg)	2012/09/05		103	%	75 - 125
		Spiked Blank					
		Acid Extractable Antimony (Sb)	2012/09/05		114	%	80 - 120

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2D3998

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2958527 VIV	Spiked Blank	Acid Extractable Arsenic (As)	2012/09/05		106	%	80 - 120
		Acid Extractable Barium (Ba)	2012/09/05		112	%	80 - 120
		Acid Extractable Beryllium (Be)	2012/09/05		104	%	80 - 120
		Acid Extractable Boron (B)	2012/09/05		104	%	80 - 120
		Acid Extractable Cadmium (Cd)	2012/09/05		111	%	80 - 120
		Acid Extractable Chromium (Cr)	2012/09/05		110	%	80 - 120
		Acid Extractable Cobalt (Co)	2012/09/05		111	%	80 - 120
		Acid Extractable Copper (Cu)	2012/09/05		108	%	80 - 120
		Acid Extractable Lead (Pb)	2012/09/05		113	%	80 - 120
		Acid Extractable Molybdenum (Mo)	2012/09/05		111	%	80 - 120
		Acid Extractable Nickel (Ni)	2012/09/05		109	%	80 - 120
		Acid Extractable Selenium (Se)	2012/09/05		109	%	80 - 120
		Acid Extractable Silver (Ag)	2012/09/05		111	%	80 - 120
		Acid Extractable Thallium (Tl)	2012/09/05		108	%	80 - 120
		Acid Extractable Uranium (U)	2012/09/05		111	%	80 - 120
		Acid Extractable Vanadium (V)	2012/09/05		109	%	80 - 120
		Acid Extractable Zinc (Zn)	2012/09/05		111	%	80 - 120
		Acid Extractable Mercury (Hg)	2012/09/05		106	%	80 - 120
	Method Blank	Acid Extractable Antimony (Sb)	2012/09/05	<0.20		ug/g	
		Acid Extractable Arsenic (As)	2012/09/05	<1.0		ug/g	
		Acid Extractable Barium (Ba)	2012/09/05	<0.50		ug/g	
		Acid Extractable Beryllium (Be)	2012/09/05	<0.20		ug/g	
		Acid Extractable Boron (B)	2012/09/05	<5.0		ug/g	
		Acid Extractable Cadmium (Cd)	2012/09/05	<0.10		ug/g	
		Acid Extractable Chromium (Cr)	2012/09/05	<1.0		ug/g	
		Acid Extractable Cobalt (Co)	2012/09/05	<0.10		ug/g	
		Acid Extractable Copper (Cu)	2012/09/05	<0.50		ug/g	
		Acid Extractable Lead (Pb)	2012/09/05	<1.0		ug/g	
		Acid Extractable Molybdenum (Mo)	2012/09/05	<0.50		ug/g	
		Acid Extractable Nickel (Ni)	2012/09/05	<0.50		ug/g	
		Acid Extractable Selenium (Se)	2012/09/05	<0.50		ug/g	
		Acid Extractable Silver (Ag)	2012/09/05	<0.20		ug/g	
		Acid Extractable Thallium (Tl)	2012/09/05	<0.050		ug/g	
		Acid Extractable Uranium (U)	2012/09/05	<0.050		ug/g	
		Acid Extractable Vanadium (V)	2012/09/05	<5.0		ug/g	
		Acid Extractable Zinc (Zn)	2012/09/05	<5.0		ug/g	
		Acid Extractable Mercury (Hg)	2012/09/05	<0.050		ug/g	
2958671 AFZ	Spiked Blank	Hot Water Ext. Boron (B)	2012/09/04		94	%	75 - 125
	Method Blank	Hot Water Ext. Boron (B)	2012/09/04	<0.050		ug/g	
2959437 SAC	Matrix Spike	Chromium (VI)	2012/09/05		97	%	75 - 125
	QC Standard	Chromium (VI)	2012/09/05		112	%	75 - 125
	Spiked Blank	Chromium (VI)	2012/09/05		103	%	80 - 120
	Method Blank	Chromium (VI)	2012/09/05	<0.2		ug/g	
	RPD	Chromium (VI)	2012/09/05	NC		%	35

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2D3998

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) The recovery was above the upper control limit. This may represent a high bias in some results for this specific analyte. For results that were not detected (ND), this potential bias has no impact.

Validation Signature Page

Maxxam Job #: B2D3998

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



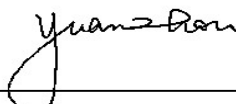
Brad Newman, Scientific Specialist



Cristina Carriere, Scientific Services




Terry Obal, Ph.D., C. Chem, Manager, Scientific Services



Yuan Zhou, gc/ms Technician

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 11-12-2073
Site Location: HALTON WATERMAIN
Your C.O.C. #: 29778108, 297781-08-01

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/20

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2D8357

Received: 2012/09/10, 12:35

Sample Matrix: Soil
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Hot Water Extractable Boron	7	2012/09/13	2012/09/14	CAM SOP-00408	R153 Ana. Prot. 2011
Free (WAD) Cyanide	7	N/A	2012/09/17	CAM SOP-00457	Ontario MOE CN-E3015
Conductivity	7	N/A	2012/09/14	CAM SOP-00414	APHA 2510
Hexavalent Chromium in Soil by IC (1)	7	2012/09/13	2012/09/14	CAM SOP-00436	EPA SW846-3060/7199
Acid Extr. Metals (aqua regia) by ICPMS	7	2012/09/13	2012/09/14	CAM SOP-00447	EPA 6020
Moisture	7	N/A	2012/09/13	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM)	7	2012/09/12	2012/09/13	CAM SOP - 00318	EPA 8270
pH CaCl2 EXTRACT	7	2012/09/14	2012/09/14	CAM SOP-00413	SM 4500H+ B
Sodium Adsorption Ratio (SAR)	7	2012/09/10	2012/09/14	CAM SOP-00102	EPA 6010
Volatile Organic Compounds in Soil	7	2012/09/12	2012/09/13	CAM SOP-00226	EPA 8260 modified

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is

Your Project #: 11-12-2073
Site Location: HALTON WATERMAIN
Your C.O.C. #: 29778108, 297781-08-01

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/20

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Renata Spina, Project Manager
Email: RSpina@maxxam.ca
Phone# (905) 817-5700 Ext:5818

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

O'REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		OT9359		OT9360		OT9361		
Sampling Date								
COC Number		297781-08-01		297781-08-01		297781-08-01		
	Units	BH 4+495, 34.2M BG	RDL	BH 4+495 53.8M BG	QC Batch	BH 3+065, 18.3M BG	RDL	QC Batch

Calculated Parameters								
Sodium Adsorption Ratio	N/A	6.8		NC	2964515	NC		2964515
Inorganics								
Chromium (VI)	ug/g	<0.2	0.2	<0.2	2969053	<0.2	0.2	2969053
Conductivity	mS/cm	3.7	0.002	3.0	2970175	2.8	0.002	2970175
Free Cyanide	ug/g	<0.01	0.01	<0.01	2968825	<0.01	0.01	2968825
Moisture	%	2.4	1.0	1.7	2968971	2.0	1.0	2968971
Available (CaCl ₂) pH	pH	8.58		8.57	2970158	8.39		2970158
Metals								
Hot Water Ext. Boron (B)	ug/g	6.8	0.50	5.5	2969193	7.5	0.050	2969193
Acid Extractable Antimony (Sb)	ug/g	0.39	0.20	0.47	2969179	0.53	0.20	2969022
Acid Extractable Arsenic (As)	ug/g	4.6	1.0	6.2	2969179	5.8	1.0	2969022
Acid Extractable Barium (Ba)	ug/g	240	0.50	100	2969179	150	0.50	2969022
Acid Extractable Beryllium (Be)	ug/g	0.70	0.20	0.67	2969179	0.65	0.20	2969022
Acid Extractable Boron (B)	ug/g	25	5.0	22	2969179	30	5.0	2969022
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	<0.10	2969179	<0.10	0.10	2969022
Acid Extractable Chromium (Cr)	ug/g	28	1.0	29	2969179	27	1.0	2969022
Acid Extractable Cobalt (Co)	ug/g	14	0.10	13	2969179	12	0.10	2969022
Acid Extractable Copper (Cu)	ug/g	7.3	0.50	9.5	2969179	7.0	0.50	2969022
Acid Extractable Lead (Pb)	ug/g	8.8	1.0	8.9	2969179	10	1.0	2969022
Acid Extractable Molybdenum (Mo)	ug/g	1.9	0.50	2.2	2969179	2.0	0.50	2969022
Acid Extractable Nickel (Ni)	ug/g	30	0.50	31	2969179	28	0.50	2969022
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	<0.50	2969179	<0.50	0.50	2969022
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	<0.20	2969179	<0.20	0.20	2969022
Acid Extractable Thallium (Tl)	ug/g	0.082	0.050	0.058	2969179	0.067	0.050	2969022
Acid Extractable Uranium (U)	ug/g	0.81	0.050	1.1	2969179	0.83	0.050	2969022
Acid Extractable Vanadium (V)	ug/g	30	5.0	31	2969179	26	5.0	2969022
Acid Extractable Zinc (Zn)	ug/g	62	5.0	61	2969179	52	5.0	2969022
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	<0.050	2969179	<0.050	0.050	2969022

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

O'REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		OT9362	OT9362			OT9363	OT9364		
Sampling Date									
COC Number		297781-08-01	297781-08-01			297781-08-01	297781-08-01		
	Units	BH 3+065, 10.8M BG	BH 3+065, 10.8M BG Lab-Dup	RDL	QC Batch	BH 2+425, 7.0M BG	BH 2+425, 20.6M BG	RDL	QC Batch

Calculated Parameters									
Sodium Adsorption Ratio	N/A	31			2964515	1.6	0.25		2964515
Inorganics									
Chromium (VI)	ug/g	<0.2		0.2	2969053	<0.2	<0.2	0.2	2969053
Conductivity	mS/cm	3.3		0.002	2970175	0.32	1.3	0.002	2970175
Free Cyanide	ug/g	<0.01	<0.01	0.01	2968825	<0.01	<0.01	0.01	2968825
Moisture	%	1.7		1.0	2968971	2.3	2.4	1.0	2968971
Available (CaCl2) pH	pH	8.21			2970158	8.24	8.63		2970158
Metals									
Hot Water Ext. Boron (B)	ug/g	6.9		0.50	2969193	5.2	7.0	0.050	2969193
Acid Extractable Antimony (Sb)	ug/g	0.35		0.20	2969022	0.36	0.36	0.20	2969179
Acid Extractable Arsenic (As)	ug/g	5.4		1.0	2969022	3.3	4.9	1.0	2969179
Acid Extractable Barium (Ba)	ug/g	390		0.50	2969022	170	240	0.50	2969179
Acid Extractable Beryllium (Be)	ug/g	0.47		0.20	2969022	0.62	0.66	0.20	2969179
Acid Extractable Boron (B)	ug/g	21		5.0	2969022	21	28	5.0	2969179
Acid Extractable Cadmium (Cd)	ug/g	<0.10		0.10	2969022	<0.10	<0.10	0.10	2969179
Acid Extractable Chromium (Cr)	ug/g	22		1.0	2969022	24	27	1.0	2969179
Acid Extractable Cobalt (Co)	ug/g	10		0.10	2969022	11	13	0.10	2969179
Acid Extractable Copper (Cu)	ug/g	5.1		0.50	2969022	6.7	8.3	0.50	2969179
Acid Extractable Lead (Pb)	ug/g	9.6		1.0	2969022	7.7	9.7	1.0	2969179
Acid Extractable Molybdenum (Mo)	ug/g	1.7		0.50	2969022	1.6	1.8	0.50	2969179
Acid Extractable Nickel (Ni)	ug/g	21		0.50	2969022	24	31	0.50	2969179
Acid Extractable Selenium (Se)	ug/g	<0.50		0.50	2969022	<0.50	<0.50	0.50	2969179
Acid Extractable Silver (Ag)	ug/g	<0.20		0.20	2969022	<0.20	<0.20	0.20	2969179
Acid Extractable Thallium (Tl)	ug/g	<0.050		0.050	2969022	0.052	0.070	0.050	2969179
Acid Extractable Uranium (U)	ug/g	0.70		0.050	2969022	0.60	0.71	0.050	2969179
Acid Extractable Vanadium (V)	ug/g	22		5.0	2969022	23	29	5.0	2969179
Acid Extractable Zinc (Zn)	ug/g	44		5.0	2969022	49	57	5.0	2969179
Acid Extractable Mercury (Hg)	ug/g	<0.050		0.050	2969022	<0.050	<0.050	0.050	2969179

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

O'REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		OT9365		
Sampling Date				
COC Number		297781-08-01		
	Units	BH 2+425, 28.9M BG	RDL	QC Batch

Calculated Parameters				
Sodium Adsorption Ratio	N/A	13		2964515
Inorganics				
Chromium (VI)	ug/g	<0.2	0.2	2969053
Conductivity	mS/cm	3.6	0.002	2970175
Free Cyanide	ug/g	<0.01	0.01	2968825
Moisture	%	3.0	1.0	2968971
Available (CaCl ₂) pH	pH	8.61		2970158
Metals				
Hot Water Ext. Boron (B)	ug/g	7.7	0.050	2969193
Acid Extractable Antimony (Sb)	ug/g	0.34	0.20	2969179
Acid Extractable Arsenic (As)	ug/g	4.4	1.0	2969179
Acid Extractable Barium (Ba)	ug/g	440	0.50	2969179
Acid Extractable Beryllium (Be)	ug/g	0.74	0.20	2969179
Acid Extractable Boron (B)	ug/g	26	5.0	2969179
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	2969179
Acid Extractable Chromium (Cr)	ug/g	29	1.0	2969179
Acid Extractable Cobalt (Co)	ug/g	15	0.10	2969179
Acid Extractable Copper (Cu)	ug/g	27	0.50	2969179
Acid Extractable Lead (Pb)	ug/g	7.7	1.0	2969179
Acid Extractable Molybdenum (Mo)	ug/g	2.0	0.50	2969179
Acid Extractable Nickel (Ni)	ug/g	34	0.50	2969179
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	2969179
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	2969179
Acid Extractable Thallium (Tl)	ug/g	0.074	0.050	2969179
Acid Extractable Uranium (U)	ug/g	1.1	0.050	2969179
Acid Extractable Vanadium (V)	ug/g	32	5.0	2969179
Acid Extractable Zinc (Zn)	ug/g	67	5.0	2969179
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	2969179
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		OT9359	OT9360	OT9361	OT9362	OT9363		
Sampling Date								
COC Number		297781-08-01	297781-08-01	297781-08-01	297781-08-01	297781-08-01		
	Units	BH 4+495, 34.2M BG	BH 4+495 53.8M BG	BH 3+065, 18.3M BG	BH 3+065, 10.8M BG	BH 2+425, 7.0M BG	RDL	QC Batch

Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0050	2968441
Surrogate Recovery (%)								
D10-Anthracene	%	85	78	84	80	81		2968441
D14-Terphenyl (FS)	%	84	74	80	79	82		2968441
D8-Acenaphthylene	%	80	73	79	76	78		2968441

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		OT9364	OT9365		
Sampling Date					
COC Number		297781-08-01	297781-08-01		
	Units	BH 2+425, 20.6M BG	BH 2+425, 28.9M BG	RDL	QC Batch

Polyaromatic Hydrocarbons					
Acenaphthene	ug/g	<0.0050	<0.0050	0.0050	2968441
Acenaphthylene	ug/g	<0.0050	<0.0050	0.0050	2968441
Anthracene	ug/g	<0.0050	<0.0050	0.0050	2968441
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	0.0050	2968441
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	0.0050	2968441
Benzo(b,j)fluoranthene	ug/g	<0.0050	<0.0050	0.0050	2968441
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	0.0050	2968441
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	0.0050	2968441
Chrysene	ug/g	<0.0050	<0.0050	0.0050	2968441
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	0.0050	2968441
Fluoranthene	ug/g	<0.0050	<0.0050	0.0050	2968441
Fluorene	ug/g	<0.0050	<0.0050	0.0050	2968441
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	0.0050	2968441
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0050	2968441
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	0.0050	2968441
Naphthalene	ug/g	<0.0050	<0.0050	0.0050	2968441
Phenanthrene	ug/g	<0.0050	<0.0050	0.0050	2968441
Pyrene	ug/g	<0.0050	<0.0050	0.0050	2968441
Surrogate Recovery (%)					
D10-Anthracene	%	77	78		2968441
D14-Terphenyl (FS)	%	76	75		2968441
D8-Acenaphthylene	%	72	73		2968441
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		OT9359	OT9360	OT9361	OT9362	OT9363		
Sampling Date								
COC Number		297781-08-01	297781-08-01	297781-08-01	297781-08-01	297781-08-01		
	Units	BH 4+495, 34.2M BG	BH 4+495 53.8M BG	BH 3+065, 18.3M BG	BH 3+065, 10.8M BG	BH 2+425, 7.0M BG	RDL	QC Batch

Volatile Organics								
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	2965471
Benzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	2965471
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Bromoform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Bromomethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Chloroform	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	<0.030	<0.030	0.030	2965471
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	<0.040	<0.040	0.040	2965471
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	2965471
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Hexane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	2965471
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	2965471
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Styrene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		OT9359	OT9360	OT9361	OT9362	OT9363		
Sampling Date								
COC Number		297781-08-01	297781-08-01	297781-08-01	297781-08-01	297781-08-01		
	Units	BH 4+495, 34.2M BG	BH 4+495 53.8M BG	BH 3+065, 18.3M BG	BH 3+065, 10.8M BG	BH 2+425, 7.0M BG	RDL	QC Batch
Toluene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	2965471
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	2965471
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	2965471
o-Xylene	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	2965471
Xylene (Total)	ug/g	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	2965471
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	2965471
Surrogate Recovery (%)								
4-Bromofluorobenzene	%	102	101	101	100	101		2965471
D10-o-Xylene	%	99	98	99	102	106		2965471
D4-1,2-Dichloroethane	%	105	105	106	104	104		2965471
D8-Toluene	%	98	98	97	98	98		2965471
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		OT9364	OT9365		
Sampling Date					
COC Number		297781-08-01	297781-08-01		
	Units	BH 2+425, 20.6M BG	BH 2+425, 28.9M BG	RDL	QC Batch

Volatile Organics					
Acetone (2-Propanone)	ug/g	<0.50	<0.50	0.50	2965471
Benzene	ug/g	<0.020	<0.020	0.020	2965471
Bromodichloromethane	ug/g	<0.050	<0.050	0.050	2965471
Bromoform	ug/g	<0.050	<0.050	0.050	2965471
Bromomethane	ug/g	<0.050	<0.050	0.050	2965471
Carbon Tetrachloride	ug/g	<0.050	<0.050	0.050	2965471
Chlorobenzene	ug/g	<0.050	<0.050	0.050	2965471
Chloroform	ug/g	<0.050	<0.050	0.050	2965471
Dibromochloromethane	ug/g	<0.050	<0.050	0.050	2965471
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	2965471
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	2965471
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	0.050	2965471
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	0.050	2965471
1,1-Dichloroethane	ug/g	<0.050	<0.050	0.050	2965471
1,2-Dichloroethane	ug/g	<0.050	<0.050	0.050	2965471
1,1-Dichloroethylene	ug/g	<0.050	<0.050	0.050	2965471
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	0.050	2965471
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	0.050	2965471
1,2-Dichloropropane	ug/g	<0.050	<0.050	0.050	2965471
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	0.030	2965471
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	0.040	2965471
Ethylbenzene	ug/g	<0.020	<0.020	0.020	2965471
Ethylene Dibromide	ug/g	<0.050	<0.050	0.050	2965471
Hexane	ug/g	<0.050	<0.050	0.050	2965471
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	0.050	2965471
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	0.50	2965471
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	0.50	2965471
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	0.050	2965471
Styrene	ug/g	<0.050	<0.050	0.050	2965471
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	0.050	2965471
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	0.050	2965471
Tetrachloroethylene	ug/g	<0.050	<0.050	0.050	2965471
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		OT9364	OT9365		
Sampling Date					
COC Number		297781-08-01	297781-08-01		
	Units	BH 2+425, 20.6M BG	BH 2+425, 28.9M BG	RDL	QC Batch
Toluene	ug/g	<0.020	<0.020	0.020	2965471
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	0.050	2965471
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	0.050	2965471
Trichloroethylene	ug/g	<0.050	<0.050	0.050	2965471
Vinyl Chloride	ug/g	<0.020	<0.020	0.020	2965471
p+m-Xylene	ug/g	<0.020	<0.020	0.020	2965471
o-Xylene	ug/g	<0.020	<0.020	0.020	2965471
Xylene (Total)	ug/g	<0.020	<0.020	0.020	2965471
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	0.050	2965471
Surrogate Recovery (%)					
4-Bromofluorobenzene	%	101	100		2965471
D10-o-Xylene	%	99	98		2965471
D4-1,2-Dichloroethane	%	107	103		2965471
D8-Toluene	%	98	98		2965471
RDL = Reportable Detection Limit QC Batch = Quality Control Batch					

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Test Summary

Maxxam ID OT9359
Sample ID BH 4+495, 34.2M BG
Matrix Soil

Collected
Shipped
Received 2012/09/10

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2969193	2012/09/13	2012/09/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	2968825	N/A	2012/09/17	Louise Harding
Conductivity	COND	2970175	N/A	2012/09/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2969053	2012/09/13	2012/09/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2969179	2012/09/13	2012/09/14	Viviana Canzonieri
Moisture	BAL	2968971	N/A	2012/09/13	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2968441	2012/09/12	2012/09/13	Lingyun Feng
pH CaCl2 EXTRACT		2970158	2012/09/14	2012/09/14	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2964515	2012/09/14	2012/09/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	2965471	2012/09/12	2012/09/13	Daniel Kim

Maxxam ID OT9360
Sample ID BH 4+495 53.8M BG
Matrix Soil

Collected
Shipped
Received 2012/09/10

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2969193	2012/09/13	2012/09/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	2968825	N/A	2012/09/17	Louise Harding
Conductivity	COND	2970175	N/A	2012/09/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2969053	2012/09/13	2012/09/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2969179	2012/09/13	2012/09/14	Viviana Canzonieri
Moisture	BAL	2968971	N/A	2012/09/13	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2968441	2012/09/12	2012/09/13	Lingyun Feng
pH CaCl2 EXTRACT		2970158	2012/09/14	2012/09/14	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2964515	2012/09/14	2012/09/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	2965471	2012/09/12	2012/09/13	Daniel Kim

Maxxam ID OT9361
Sample ID BH 3+065, 18.3M BG
Matrix Soil

Collected
Shipped
Received 2012/09/10

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2969193	2012/09/13	2012/09/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	2968825	N/A	2012/09/17	Louise Harding
Conductivity	COND	2970175	N/A	2012/09/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2969053	2012/09/13	2012/09/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2969022	2012/09/13	2012/09/14	Viviana Canzonieri
Moisture	BAL	2968971	N/A	2012/09/13	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2968441	2012/09/12	2012/09/13	Lingyun Feng
pH CaCl2 EXTRACT		2970158	2012/09/14	2012/09/14	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2964515	2012/09/14	2012/09/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	2965471	2012/09/12	2012/09/13	Daniel Kim

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Test Summary

Maxxam ID OT9362
Sample ID BH 3+065, 10.8M BG
Matrix Soil

Collected
Shipped
Received 2012/09/10

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2969193	2012/09/13	2012/09/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	2968825	N/A	2012/09/17	Louise Harding
Conductivity	COND	2970175	N/A	2012/09/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2969053	2012/09/13	2012/09/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2969022	2012/09/13	2012/09/14	Viviana Canzonieri
Moisture	BAL	2968971	N/A	2012/09/13	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2968441	2012/09/12	2012/09/13	Lingyun Feng
pH CaCl ₂ EXTRACT		2970158	2012/09/14	2012/09/14	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2964515	2012/09/14	2012/09/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	2965471	2012/09/12	2012/09/13	Daniel Kim

Maxxam ID OT9362 Dup
Sample ID BH 3+065, 10.8M BG
Matrix Soil

Collected
Shipped
Received 2012/09/10

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Free (WAD) Cyanide	TECH	2968825	N/A	2012/09/17	Louise Harding

Maxxam ID OT9363
Sample ID BH 2+425, 7.0M BG
Matrix Soil

Collected
Shipped
Received 2012/09/10

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2969193	2012/09/13	2012/09/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	2968825	N/A	2012/09/17	Louise Harding
Conductivity	COND	2970175	N/A	2012/09/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2969053	2012/09/13	2012/09/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2969179	2012/09/13	2012/09/14	Viviana Canzonieri
Moisture	BAL	2968971	N/A	2012/09/13	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2968441	2012/09/12	2012/09/13	Lingyun Feng
pH CaCl ₂ EXTRACT		2970158	2012/09/14	2012/09/14	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2964515	2012/09/14	2012/09/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	2965471	2012/09/12	2012/09/13	Daniel Kim

Maxxam ID OT9364
Sample ID BH 2+425, 20.6M BG
Matrix Soil

Collected
Shipped
Received 2012/09/10

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2969193	2012/09/13	2012/09/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	2968825	N/A	2012/09/17	Louise Harding
Conductivity	COND	2970175	N/A	2012/09/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2969053	2012/09/13	2012/09/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2969179	2012/09/13	2012/09/14	Viviana Canzonieri
Moisture	BAL	2968971	N/A	2012/09/13	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2968441	2012/09/12	2012/09/13	Lingyun Feng
pH CaCl ₂ EXTRACT		2970158	2012/09/14	2012/09/14	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2964515	2012/09/14	2012/09/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	2965471	2012/09/12	2012/09/13	Daniel Kim

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Test Summary

Maxxam ID OT9365
Sample ID BH 2+425, 28.9M BG
Matrix Soil

Collected
Shipped
Received 2012/09/10

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2969193	2012/09/13	2012/09/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	2968825	N/A	2012/09/17	Louise Harding
Conductivity	COND	2970175	N/A	2012/09/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2969053	2012/09/13	2012/09/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2969179	2012/09/13	2012/09/14	Viviana Canzonieri
Moisture	BAL	2968971	N/A	2012/09/13	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2968441	2012/09/12	2012/09/13	Lingyun Feng
pH CaCl ₂ EXTRACT		2970158	2012/09/14	2012/09/14	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2964515	2012/09/14	2012/09/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	2965471	2012/09/12	2012/09/13	Daniel Kim

Maxxam Job #: B2D8357
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Package 1	9.0°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

"Samples on this submission were received as solid rock cores. Prior to any analytical processing, all samples were crushed to a consistent grain size of approximately <2mm using a Vibratory Ring Pulverizer (Model TM/STLX). Aliquots of the crushed rock were processed in accordance to the preparation and analysis requirements for a soil matrix, for the analyses requested."

As per client request sample ID's have been revised. 2013/01/08

As per client request sample ID's have been revised. 2013/02/20

Sample OT9359-01: Soluble Boron Analysis: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample OT9360-01: SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio. SAR Analysis: NC = Not Calculable as Calcium and Magnesium were not detected.

Sample OT9361-01: SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio. SAR Analysis: NC = Not Calculable as Calcium and Magnesium were not detected.

Sample OT9362-01: Soluble Boron Analysis: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Sample OT9364-01: SAR Analysis: Sodium was not detected. To report SAR the sodium detection limit was used in the calculation. This value represents a maximum ratio.

Results relate only to the items tested.

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report
Maxxam Job Number: MB2D8357

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2965471	RSC	Matrix Spike					
		4-Bromofluorobenzene	2012/09/13		101	%	60 - 140
		D10-o-Xylene	2012/09/13		110	%	60 - 130
		D4-1,2-Dichloroethane	2012/09/13		96	%	60 - 140
		D8-Toluene	2012/09/13		100	%	60 - 140
		Acetone (2-Propanone)	2012/09/13		120	%	60 - 140
		Benzene	2012/09/13		100	%	60 - 140
		Bromodichloromethane	2012/09/13		103	%	60 - 140
		Bromoform	2012/09/13		105	%	60 - 140
		Bromomethane	2012/09/13		94	%	60 - 140
		Carbon Tetrachloride	2012/09/13		103	%	60 - 140
		Chlorobenzene	2012/09/13		100	%	60 - 140
		Chloroform	2012/09/13		103	%	60 - 140
		Dibromochloromethane	2012/09/13		108	%	60 - 140
		1,2-Dichlorobenzene	2012/09/13		104	%	60 - 140
		1,3-Dichlorobenzene	2012/09/13		105	%	60 - 140
		1,4-Dichlorobenzene	2012/09/13		104	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/09/13		104	%	60 - 140
		1,1-Dichloroethane	2012/09/13		86	%	60 - 140
		1,2-Dichloroethane	2012/09/13		97	%	60 - 140
		1,1-Dichloroethylene	2012/09/13		99	%	60 - 140
		cis-1,2-Dichloroethylene	2012/09/13		97	%	60 - 140
		trans-1,2-Dichloroethylene	2012/09/13		102	%	60 - 140
		1,2-Dichloropropane	2012/09/13		95	%	60 - 140
		cis-1,3-Dichloropropene	2012/09/13		101	%	60 - 140
		trans-1,3-Dichloropropene	2012/09/13		101	%	60 - 140
		Ethylbenzene	2012/09/13		104	%	60 - 140
		Ethylene Dibromide	2012/09/13		101	%	60 - 140
		Hexane	2012/09/13		93	%	60 - 140
		Methylene Chloride(Dichloromethane)	2012/09/13		93	%	60 - 140
		Methyl Isobutyl Ketone	2012/09/13		97	%	60 - 140
		Methyl Ethyl Ketone (2-Butanone)	2012/09/13		110	%	60 - 140
		Methyl t-butyl ether (MTBE)	2012/09/13		99	%	60 - 140
		Styrene	2012/09/13		102	%	60 - 140
		1,1,1,2-Tetrachloroethane	2012/09/13		102	%	60 - 140
		1,1,2,2-Tetrachloroethane	2012/09/13		93	%	60 - 140
		Tetrachloroethylene	2012/09/13		103	%	60 - 140
		Toluene	2012/09/13		102	%	60 - 140
		1,1,1-Trichloroethane	2012/09/13		95	%	60 - 140
		1,1,2-Trichloroethane	2012/09/13		101	%	60 - 140
		Trichloroethylene	2012/09/13		102	%	60 - 140
		Vinyl Chloride	2012/09/13		101	%	60 - 140
		p+m-Xylene	2012/09/13		111	%	60 - 140
		o-Xylene	2012/09/13		112	%	60 - 140
		Trichlorofluoromethane (FREON 11)	2012/09/13		99	%	60 - 140
	Spiked Blank	4-Bromofluorobenzene	2012/09/13		101	%	60 - 140
		D10-o-Xylene	2012/09/13		99	%	60 - 130
		D4-1,2-Dichloroethane	2012/09/13		101	%	60 - 140
		D8-Toluene	2012/09/13		99	%	60 - 140
		Acetone (2-Propanone)	2012/09/13		117	%	60 - 140
		Benzene	2012/09/13		97	%	60 - 130
		Bromodichloromethane	2012/09/13		103	%	60 - 130
		Bromoform	2012/09/13		103	%	60 - 130
		Bromomethane	2012/09/13		90	%	60 - 140
		Carbon Tetrachloride	2012/09/13		99	%	60 - 130
		Chlorobenzene	2012/09/13		95	%	60 - 130

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2D8357

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2965471 RSC	Spiked Blank	Chloroform	2012/09/13		102	%	60 - 130
		Dibromochloromethane	2012/09/13		105	%	60 - 130
		1,2-Dichlorobenzene	2012/09/13		99	%	60 - 130
		1,3-Dichlorobenzene	2012/09/13		98	%	60 - 130
		1,4-Dichlorobenzene	2012/09/13		99	%	60 - 130
		Dichlorodifluoromethane (FREON 12)	2012/09/13		103	%	60 - 140
		1,1-Dichloroethane	2012/09/13		84	%	60 - 130
		1,2-Dichloroethane	2012/09/13		99	%	60 - 130
		1,1-Dichloroethylene	2012/09/13		95	%	60 - 130
		cis-1,2-Dichloroethylene	2012/09/13		96	%	60 - 130
		trans-1,2-Dichloroethylene	2012/09/13		99	%	60 - 130
		1,2-Dichloropropane	2012/09/13		95	%	60 - 130
		cis-1,3-Dichloropropene	2012/09/13		101	%	60 - 130
		trans-1,3-Dichloropropene	2012/09/13		99	%	60 - 130
		Ethylbenzene	2012/09/13		98	%	60 - 130
		Ethylene Dibromide	2012/09/13		99	%	60 - 130
		Hexane	2012/09/13		91	%	60 - 130
		Methylene Chloride(Dichloromethane)	2012/09/13		93	%	60 - 130
		Methyl Isobutyl Ketone	2012/09/13		102	%	60 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/09/13		111	%	60 - 140
		Methyl t-butyl ether (MTBE)	2012/09/13		102	%	60 - 130
		Styrene	2012/09/13		97	%	60 - 130
		1,1,1,2-Tetrachloroethane	2012/09/13		99	%	60 - 130
		1,1,2,2-Tetrachloroethane	2012/09/13		86	%	60 - 130
		Tetrachloroethylene	2012/09/13		95	%	60 - 130
		Toluene	2012/09/13		96	%	60 - 130
		1,1,1-Trichloroethane	2012/09/13		91	%	60 - 130
		1,1,2-Trichloroethane	2012/09/13		99	%	60 - 130
		Trichloroethylene	2012/09/13		100	%	60 - 130
		Vinyl Chloride	2012/09/13		97	%	60 - 130
		p+m-Xylene	2012/09/13		105	%	60 - 130
		o-Xylene	2012/09/13		105	%	60 - 130
		Trichlorofluoromethane (FREON 11)	2012/09/13		100	%	60 - 130
	Method Blank	4-Bromofluorobenzene	2012/09/13		100	%	60 - 140
		D10-o-Xylene	2012/09/13		103	%	60 - 130
		D4-1,2-Dichloroethane	2012/09/13		97	%	60 - 140
		D8-Toluene	2012/09/13		101	%	60 - 140
		Acetone (2-Propanone)	2012/09/13	<0.50		ug/g	
		Benzene	2012/09/13	<0.020		ug/g	
		Bromodichloromethane	2012/09/13	<0.050		ug/g	
		Bromoform	2012/09/13	<0.050		ug/g	
		Bromomethane	2012/09/13	<0.050		ug/g	
		Carbon Tetrachloride	2012/09/13	<0.050		ug/g	
		Chlorobenzene	2012/09/13	<0.050		ug/g	
		Chloroform	2012/09/13	<0.050		ug/g	
		Dibromochloromethane	2012/09/13	<0.050		ug/g	
		1,2-Dichlorobenzene	2012/09/13	<0.050		ug/g	
		1,3-Dichlorobenzene	2012/09/13	<0.050		ug/g	
		1,4-Dichlorobenzene	2012/09/13	<0.050		ug/g	
		Dichlorodifluoromethane (FREON 12)	2012/09/13	<0.050		ug/g	
		1,1-Dichloroethane	2012/09/13	<0.050		ug/g	
		1,2-Dichloroethane	2012/09/13	<0.050		ug/g	
		1,1-Dichloroethylene	2012/09/13	<0.050		ug/g	
		cis-1,2-Dichloroethylene	2012/09/13	<0.050		ug/g	
		trans-1,2-Dichloroethylene	2012/09/13	<0.050		ug/g	

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2D8357

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2965471	RSC	Method Blank					
		1,2-Dichloropropane	2012/09/13	<0.050		ug/g	
		cis-1,3-Dichloropropene	2012/09/13	<0.030		ug/g	
		trans-1,3-Dichloropropene	2012/09/13	<0.040		ug/g	
		Ethylbenzene	2012/09/13	<0.020		ug/g	
		Ethylene Dibromide	2012/09/13	<0.050		ug/g	
		Hexane	2012/09/13	<0.050		ug/g	
		Methylene Chloride(Dichloromethane)	2012/09/13	<0.050		ug/g	
		Methyl Isobutyl Ketone	2012/09/13	<0.50		ug/g	
		Methyl Ethyl Ketone (2-Butanone)	2012/09/13	<0.50		ug/g	
		Methyl t-butyl ether (MTBE)	2012/09/13	<0.050		ug/g	
		Styrene	2012/09/13	<0.050		ug/g	
		1,1,1,2-Tetrachloroethane	2012/09/13	<0.050		ug/g	
		1,1,2,2-Tetrachloroethane	2012/09/13	<0.050		ug/g	
		Tetrachloroethylene	2012/09/13	<0.050		ug/g	
		Toluene	2012/09/13	<0.020		ug/g	
		1,1,1-Trichloroethane	2012/09/13	<0.050		ug/g	
		1,1,2-Trichloroethane	2012/09/13	<0.050		ug/g	
		Trichloroethylene	2012/09/13	<0.050		ug/g	
		Vinyl Chloride	2012/09/13	<0.020		ug/g	
		p+m-Xylene	2012/09/13	<0.020		ug/g	
		o-Xylene	2012/09/13	<0.020		ug/g	
		Xylene (Total)	2012/09/13	<0.020		ug/g	
		Trichlorofluoromethane (FREON 11)	2012/09/13	<0.050		ug/g	
	RPD	Dichlorodifluoromethane (FREON 12)	2012/09/13	NC		%	50
		1,1-Dichloroethane	2012/09/13	NC		%	50
		1,2-Dichloroethane	2012/09/13	NC		%	50
		1,1-Dichloroethylene	2012/09/13	NC		%	50
		cis-1,2-Dichloroethylene	2012/09/13	NC		%	50
		trans-1,2-Dichloroethylene	2012/09/13	NC		%	50
		Ethylene Dibromide	2012/09/13	NC		%	50
		Hexane	2012/09/13	NC		%	50
		Methyl t-butyl ether (MTBE)	2012/09/13	NC		%	50
		Tetrachloroethylene	2012/09/13	NC		%	50
		1,1,1-Trichloroethane	2012/09/13	NC		%	50
		1,1,2-Trichloroethane	2012/09/13	NC		%	50
		Trichloroethylene	2012/09/13	NC		%	50
		Vinyl Chloride	2012/09/13	NC		%	50
		Trichlorofluoromethane (FREON 11)	2012/09/13	NC		%	50
2968441	LFE	Matrix Spike					
		D10-Anthracene	2012/09/13		89	%	50 - 130
		D14-Terphenyl (FS)	2012/09/13		88	%	50 - 130
		D8-Acenaphthylene	2012/09/13		85	%	50 - 130
		Acenaphthene	2012/09/13		85	%	50 - 130
		Acenaphthylene	2012/09/13		83	%	50 - 130
		Anthracene	2012/09/13		85	%	50 - 130
		Benzo(a)anthracene	2012/09/13		93	%	50 - 130
		Benzo(a)pyrene	2012/09/13		95	%	50 - 130
		Benzo(b/j)fluoranthene	2012/09/13		90	%	50 - 130
		Benzo(g,h,i)perylene	2012/09/13		84	%	50 - 130
		Benzo(k)fluoranthene	2012/09/13		96	%	50 - 130
		Chrysene	2012/09/13		89	%	50 - 130
		Dibenz(a,h)anthracene	2012/09/13		92	%	50 - 130
		Fluoranthene	2012/09/13		88	%	50 - 130
		Fluorene	2012/09/13		86	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2012/09/13		90	%	50 - 130
		1-Methylnaphthalene	2012/09/13		85	%	50 - 130

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2968441 LFE	Matrix Spike	2-Methylnaphthalene	2012/09/13		83	%	50 - 130
		Naphthalene	2012/09/13		82	%	50 - 130
		Phenanthrene	2012/09/13		85	%	50 - 130
		Pyrene	2012/09/13		90	%	50 - 130
	Spiked Blank	D10-Anthracene	2012/09/13		91	%	50 - 130
		D14-Terphenyl (FS)	2012/09/13		88	%	50 - 130
		D8-Acenaphthylene	2012/09/13		87	%	50 - 130
		Acenaphthene	2012/09/13		86	%	50 - 130
		Acenaphthylene	2012/09/13		84	%	50 - 130
		Anthracene	2012/09/13		87	%	50 - 130
		Benzo(a)anthracene	2012/09/13		94	%	50 - 130
		Benzo(a)pyrene	2012/09/13		96	%	50 - 130
		Benzo(b,j)fluoranthene	2012/09/13		92	%	50 - 130
		Benzo(g,h,i)perylene	2012/09/13		83	%	50 - 130
		Benzo(k)fluoranthene	2012/09/13		98	%	50 - 130
		Chrysene	2012/09/13		90	%	50 - 130
		Dibenz(a,h)anthracene	2012/09/13		92	%	50 - 130
		Fluoranthene	2012/09/13		90	%	50 - 130
		Fluorene	2012/09/13		87	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2012/09/13		89	%	50 - 130
		1-Methylnaphthalene	2012/09/13		86	%	50 - 130
		2-Methylnaphthalene	2012/09/13		84	%	50 - 130
		Naphthalene	2012/09/13		83	%	50 - 130
		Phenanthrene	2012/09/13		87	%	50 - 130
		Pyrene	2012/09/13		92	%	50 - 130
	Method Blank	D10-Anthracene	2012/09/13		97	%	50 - 130
		D14-Terphenyl (FS)	2012/09/13		92	%	50 - 130
		D8-Acenaphthylene	2012/09/13		92	%	50 - 130
		Acenaphthene	2012/09/13	<0.0050		ug/g	
		Acenaphthylene	2012/09/13	<0.0050		ug/g	
		Anthracene	2012/09/13	<0.0050		ug/g	
		Benzo(a)anthracene	2012/09/13	<0.0050		ug/g	
		Benzo(a)pyrene	2012/09/13	<0.0050		ug/g	
		Benzo(b,j)fluoranthene	2012/09/13	<0.0050		ug/g	
		Benzo(g,h,i)perylene	2012/09/13	<0.0050		ug/g	
		Benzo(k)fluoranthene	2012/09/13	<0.0050		ug/g	
		Chrysene	2012/09/13	<0.0050		ug/g	
		Dibenz(a,h)anthracene	2012/09/13	<0.0050		ug/g	
		Fluoranthene	2012/09/13	<0.0050		ug/g	
		Fluorene	2012/09/13	<0.0050		ug/g	
		Indeno(1,2,3-cd)pyrene	2012/09/13	<0.0050		ug/g	
		1-Methylnaphthalene	2012/09/13	<0.0050		ug/g	
		2-Methylnaphthalene	2012/09/13	<0.0050		ug/g	
		Naphthalene	2012/09/13	<0.0050		ug/g	
		Phenanthrene	2012/09/13	<0.0050		ug/g	
		Pyrene	2012/09/13	<0.0050		ug/g	
	RPD	Acenaphthene	2012/09/13	NC		%	40
		Acenaphthylene	2012/09/13	NC		%	40
		Anthracene	2012/09/13	NC		%	40
		Benzo(a)anthracene	2012/09/13	NC		%	40
		Benzo(a)pyrene	2012/09/13	NC		%	40
		Benzo(b,j)fluoranthene	2012/09/13	NC		%	40
		Benzo(g,h,i)perylene	2012/09/13	NC		%	40
		Benzo(k)fluoranthene	2012/09/13	NC		%	40
		Chrysene	2012/09/13	NC		%	40

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2968441 LFE	RPD	Dibenz(a,h)anthracene	2012/09/13	NC		%	40
		Fluoranthene	2012/09/13	NC		%	40
		Fluorene	2012/09/13	NC		%	40
		Indeno(1,2,3-cd)pyrene	2012/09/13	NC		%	40
		1-Methylnaphthalene	2012/09/13	NC		%	40
		2-Methylnaphthalene	2012/09/13	NC		%	40
		Naphthalene	2012/09/13	NC		%	40
		Phenanthrene	2012/09/13	NC		%	40
		Pyrene	2012/09/13	NC		%	40
2968825 LHA	Matrix Spike						
	[OT9362-01]	Free Cyanide	2012/09/17		97	%	75 - 125
	Spiked Blank	Free Cyanide	2012/09/17		97	%	80 - 120
	Method Blank	Free Cyanide	2012/09/17	<0.01		ug/g	
	RPD [OT9362-01]	Free Cyanide	2012/09/17	NC		%	35
2968971 GKL	RPD	Moisture	2012/09/13	5.1		%	20
2969022 VIV	Matrix Spike	Acid Extractable Antimony (Sb)	2012/09/14		102	%	75 - 125
		Acid Extractable Arsenic (As)	2012/09/14		96	%	75 - 125
		Acid Extractable Barium (Ba)	2012/09/14		NC	%	75 - 125
		Acid Extractable Beryllium (Be)	2012/09/14		110	%	75 - 125
		Acid Extractable Boron (B)	2012/09/14		117	%	75 - 125
		Acid Extractable Cadmium (Cd)	2012/09/14		103	%	75 - 125
		Acid Extractable Chromium (Cr)	2012/09/14		101	%	75 - 125
		Acid Extractable Cobalt (Co)	2012/09/14		92	%	75 - 125
		Acid Extractable Copper (Cu)	2012/09/14		89	%	75 - 125
		Acid Extractable Lead (Pb)	2012/09/14		116	%	75 - 125
		Acid Extractable Molybdenum (Mo)	2012/09/14		103	%	75 - 125
		Acid Extractable Nickel (Ni)	2012/09/14		93	%	75 - 125
		Acid Extractable Selenium (Se)	2012/09/14		92	%	75 - 125
		Acid Extractable Silver (Ag)	2012/09/14		106	%	75 - 125
		Acid Extractable Thallium (Tl)	2012/09/14		112	%	75 - 125
		Acid Extractable Uranium (U)	2012/09/14		123	%	75 - 125
		Acid Extractable Vanadium (V)	2012/09/14		98	%	75 - 125
		Acid Extractable Zinc (Zn)	2012/09/14		NC	%	75 - 125
		Acid Extractable Mercury (Hg)	2012/09/14		110	%	75 - 125
	Spiked Blank	Acid Extractable Antimony (Sb)	2012/09/14		101	%	80 - 120
		Acid Extractable Arsenic (As)	2012/09/14		97	%	80 - 120
		Acid Extractable Barium (Ba)	2012/09/14		95	%	80 - 120
		Acid Extractable Beryllium (Be)	2012/09/14		105	%	80 - 120
		Acid Extractable Boron (B)	2012/09/14		112	%	80 - 120
		Acid Extractable Cadmium (Cd)	2012/09/14		100	%	80 - 120
		Acid Extractable Chromium (Cr)	2012/09/14		101	%	80 - 120
		Acid Extractable Cobalt (Co)	2012/09/14		94	%	80 - 120
		Acid Extractable Copper (Cu)	2012/09/14		95	%	80 - 120
		Acid Extractable Lead (Pb)	2012/09/14		109	%	80 - 120
		Acid Extractable Molybdenum (Mo)	2012/09/14		100	%	80 - 120
		Acid Extractable Nickel (Ni)	2012/09/14		94	%	80 - 120
		Acid Extractable Selenium (Se)	2012/09/14		94	%	80 - 120
		Acid Extractable Silver (Ag)	2012/09/14		104	%	80 - 120
		Acid Extractable Thallium (Tl)	2012/09/14		108	%	80 - 120
		Acid Extractable Uranium (U)	2012/09/14		117	%	80 - 120
		Acid Extractable Vanadium (V)	2012/09/14		98	%	80 - 120
		Acid Extractable Zinc (Zn)	2012/09/14		96	%	80 - 120
		Acid Extractable Mercury (Hg)	2012/09/14		101	%	80 - 120
	Method Blank	Acid Extractable Antimony (Sb)	2012/09/14	<0.20		ug/g	
		Acid Extractable Arsenic (As)	2012/09/14	<1.0		ug/g	

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2969022 VIV	Method Blank	Acid Extractable Barium (Ba)	2012/09/14	<0.50		ug/g	
		Acid Extractable Beryllium (Be)	2012/09/14	<0.20		ug/g	
		Acid Extractable Boron (B)	2012/09/14	<5.0		ug/g	
		Acid Extractable Cadmium (Cd)	2012/09/14	<0.10		ug/g	
		Acid Extractable Chromium (Cr)	2012/09/14	<1.0		ug/g	
		Acid Extractable Cobalt (Co)	2012/09/14	<0.10		ug/g	
		Acid Extractable Copper (Cu)	2012/09/14	<0.50		ug/g	
		Acid Extractable Lead (Pb)	2012/09/14	<1.0		ug/g	
		Acid Extractable Molybdenum (Mo)	2012/09/14	<0.50		ug/g	
		Acid Extractable Nickel (Ni)	2012/09/14	<0.50		ug/g	
		Acid Extractable Selenium (Se)	2012/09/14	<0.50		ug/g	
		Acid Extractable Silver (Ag)	2012/09/14	<0.20		ug/g	
		Acid Extractable Thallium (Tl)	2012/09/14	<0.050		ug/g	
		Acid Extractable Uranium (U)	2012/09/14	<0.050		ug/g	
		Acid Extractable Vanadium (V)	2012/09/14	<5.0		ug/g	
		Acid Extractable Zinc (Zn)	2012/09/14	<5.0		ug/g	
	RPD	Acid Extractable Mercury (Hg)	2012/09/14	<0.050		ug/g	
		Acid Extractable Antimony (Sb)	2012/09/14	NC		%	30
		Acid Extractable Arsenic (As)	2012/09/14	NC		%	30
		Acid Extractable Barium (Ba)	2012/09/14	2.1		%	30
		Acid Extractable Beryllium (Be)	2012/09/14	NC		%	30
		Acid Extractable Boron (B)	2012/09/14	NC		%	30
		Acid Extractable Cadmium (Cd)	2012/09/14	NC		%	30
		Acid Extractable Chromium (Cr)	2012/09/14	11.1		%	30
		Acid Extractable Cobalt (Co)	2012/09/14	2.2		%	30
		Acid Extractable Copper (Cu)	2012/09/14	1.5		%	30
		Acid Extractable Lead (Pb)	2012/09/14	34.2 (1)		%	30
		Acid Extractable Molybdenum (Mo)	2012/09/14	NC		%	30
		Acid Extractable Nickel (Ni)	2012/09/14	4.2		%	30
		Acid Extractable Selenium (Se)	2012/09/14	NC		%	30
		Acid Extractable Silver (Ag)	2012/09/14	NC		%	30
		Acid Extractable Thallium (Tl)	2012/09/14	NC		%	30
		Acid Extractable Uranium (U)	2012/09/14	0.2		%	30
		Acid Extractable Vanadium (V)	2012/09/14	NC		%	30
		Acid Extractable Zinc (Zn)	2012/09/14	0.4		%	30
		Acid Extractable Mercury (Hg)	2012/09/14	NC		%	30
2969053 SAC	Matrix Spike	Chromium (VI)	2012/09/14		36 (2)	%	75 - 125
	QC Standard	Chromium (VI)	2012/09/14		98	%	75 - 125
	Spiked Blank	Chromium (VI)	2012/09/14		90	%	80 - 120
	Method Blank	Chromium (VI)	2012/09/14	<0.2		ug/g	
	RPD	Chromium (VI)	2012/09/14	NC		%	35
2969179 VIV	Matrix Spike	Acid Extractable Antimony (Sb)	2012/09/14		105	%	75 - 125
		Acid Extractable Arsenic (As)	2012/09/14		105	%	75 - 125
		Acid Extractable Barium (Ba)	2012/09/14		NC	%	75 - 125
		Acid Extractable Beryllium (Be)	2012/09/14		110	%	75 - 125
		Acid Extractable Boron (B)	2012/09/14		107	%	75 - 125
		Acid Extractable Cadmium (Cd)	2012/09/14		107	%	75 - 125
		Acid Extractable Chromium (Cr)	2012/09/14		113	%	75 - 125
		Acid Extractable Cobalt (Co)	2012/09/14		106	%	75 - 125
		Acid Extractable Copper (Cu)	2012/09/14		102	%	75 - 125
		Acid Extractable Lead (Pb)	2012/09/14		99	%	75 - 125
		Acid Extractable Molybdenum (Mo)	2012/09/14		108	%	75 - 125
		Acid Extractable Nickel (Ni)	2012/09/14		106	%	75 - 125
		Acid Extractable Selenium (Se)	2012/09/14		105	%	75 - 125
		Acid Extractable Silver (Ag)	2012/09/14		110	%	75 - 125

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QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2969179 VIV	Matrix Spike	Acid Extractable Thallium (Tl)	2012/09/14		106	%	75 - 125
		Acid Extractable Uranium (U)	2012/09/14		111	%	75 - 125
		Acid Extractable Vanadium (V)	2012/09/14		110	%	75 - 125
		Acid Extractable Zinc (Zn)	2012/09/14		NC	%	75 - 125
	Spiked Blank	Acid Extractable Mercury (Hg)	2012/09/14		107	%	75 - 125
		Acid Extractable Antimony (Sb)	2012/09/14		105	%	80 - 120
		Acid Extractable Arsenic (As)	2012/09/14		103	%	80 - 120
		Acid Extractable Barium (Ba)	2012/09/14		104	%	80 - 120
		Acid Extractable Beryllium (Be)	2012/09/14		104	%	80 - 120
		Acid Extractable Boron (B)	2012/09/14		107	%	80 - 120
		Acid Extractable Cadmium (Cd)	2012/09/14		105	%	80 - 120
		Acid Extractable Chromium (Cr)	2012/09/14		108	%	80 - 120
		Acid Extractable Cobalt (Co)	2012/09/14		105	%	80 - 120
		Acid Extractable Copper (Cu)	2012/09/14		102	%	80 - 120
		Acid Extractable Lead (Pb)	2012/09/14		107	%	80 - 120
		Acid Extractable Molybdenum (Mo)	2012/09/14		104	%	80 - 120
		Acid Extractable Nickel (Ni)	2012/09/14		104	%	80 - 120
		Acid Extractable Selenium (Se)	2012/09/14		102	%	80 - 120
		Acid Extractable Silver (Ag)	2012/09/14		108	%	80 - 120
		Acid Extractable Thallium (Tl)	2012/09/14		106	%	80 - 120
		Acid Extractable Uranium (U)	2012/09/14		108	%	80 - 120
		Acid Extractable Vanadium (V)	2012/09/14		103	%	80 - 120
		Acid Extractable Zinc (Zn)	2012/09/14		104	%	80 - 120
	Method Blank	Acid Extractable Mercury (Hg)	2012/09/14		108	%	80 - 120
		Acid Extractable Antimony (Sb)	2012/09/14	<0.20		ug/g	
		Acid Extractable Arsenic (As)	2012/09/14	<1.0		ug/g	
		Acid Extractable Barium (Ba)	2012/09/14	<0.50		ug/g	
		Acid Extractable Beryllium (Be)	2012/09/14	<0.20		ug/g	
		Acid Extractable Boron (B)	2012/09/14	<5.0		ug/g	
		Acid Extractable Cadmium (Cd)	2012/09/14	<0.10		ug/g	
		Acid Extractable Chromium (Cr)	2012/09/14	<1.0		ug/g	
		Acid Extractable Cobalt (Co)	2012/09/14	<0.10		ug/g	
		Acid Extractable Copper (Cu)	2012/09/14	<0.50		ug/g	
		Acid Extractable Lead (Pb)	2012/09/14	<1.0		ug/g	
		Acid Extractable Molybdenum (Mo)	2012/09/14	<0.50		ug/g	
		Acid Extractable Nickel (Ni)	2012/09/14	<0.50		ug/g	
		Acid Extractable Selenium (Se)	2012/09/14	<0.50		ug/g	
		Acid Extractable Silver (Ag)	2012/09/14	<0.20		ug/g	
		Acid Extractable Thallium (Tl)	2012/09/14	<0.050		ug/g	
		Acid Extractable Uranium (U)	2012/09/14	<0.050		ug/g	
		Acid Extractable Vanadium (V)	2012/09/14	<5.0		ug/g	
		Acid Extractable Zinc (Zn)	2012/09/14	<5.0		ug/g	
	RPD	Acid Extractable Mercury (Hg)	2012/09/14	<0.050		ug/g	
		Acid Extractable Antimony (Sb)	2012/09/14	NC		%	30
		Acid Extractable Arsenic (As)	2012/09/14	NC		%	30
		Acid Extractable Barium (Ba)	2012/09/14	2.9		%	30
		Acid Extractable Beryllium (Be)	2012/09/14	NC		%	30
		Acid Extractable Boron (B)	2012/09/14	NC		%	30
		Acid Extractable Cadmium (Cd)	2012/09/14	NC		%	30
		Acid Extractable Chromium (Cr)	2012/09/14	0.3		%	30
		Acid Extractable Cobalt (Co)	2012/09/14	0.6		%	30
		Acid Extractable Copper (Cu)	2012/09/14	16.0		%	30
		Acid Extractable Lead (Pb)	2012/09/14	22.3		%	30
		Acid Extractable Molybdenum (Mo)	2012/09/14	NC		%	30
		Acid Extractable Nickel (Ni)	2012/09/14	3.6		%	30

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2969179 VIV	RPD	Acid Extractable Selenium (Se)	2012/09/14	NC		%	30
		Acid Extractable Silver (Ag)	2012/09/14	NC		%	30
		Acid Extractable Thallium (Tl)	2012/09/14	NC		%	30
		Acid Extractable Uranium (U)	2012/09/14	5.1		%	30
		Acid Extractable Vanadium (V)	2012/09/14	NC		%	30
		Acid Extractable Zinc (Zn)	2012/09/14	3.8		%	30
		Acid Extractable Mercury (Hg)	2012/09/14	NC		%	30
2969193 AFZ	Spiked Blank	Hot Water Ext. Boron (B)	2012/09/14		95	%	75 - 125
	Method Blank	Hot Water Ext. Boron (B)	2012/09/14	<0.050		ug/g	
2970175 NYS	QC Standard	Conductivity	2012/09/14		99	%	90 - 110
	Method Blank	Conductivity	2012/09/14	<0.002		mS/cm	
	RPD	Conductivity	2012/09/14	3.2		%	10

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample.

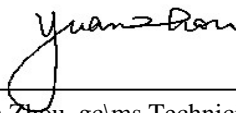
Validation Signature Page

Maxxam Job #: B2D8357

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Cristina Carriere, Scientific Services



Yuan Zhou, gc/ms Technician

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 11-12-2073
Site Location: HALTON ZONE 1 WATERMAIN
Your C.O.C. #: 297781111, 297781-11-01

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/20

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2E3528

Received: 2012/09/18, 12:40

Sample Matrix: SOLID
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Hot Water Extractable Boron	1	2012/09/24	2012/09/24	CAM SOP-00408	R153 Ana. Prot. 2011
Free (WAD) Cyanide	1	N/A	2012/09/24	CAM SOP-00457	Ontario MOE CN-E3015
Conductivity	1	N/A	2012/09/24	CAM SOP-00414	APHA 2510
Hexavalent Chromium in Soil by IC (1)	1	2012/09/21	2012/09/24	CAM SOP-00436	EPA SW846-3060/7199
Acid Extr. Metals (aqua regia) by ICPMS	1	2012/09/24	2012/09/24	CAM SOP-00447	EPA 6020
Moisture	1	N/A	2012/09/21	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM)	1	2012/09/21	2012/09/22	CAM SOP - 00318	EPA 8270
pH CaCl2 EXTRACT	1	2012/09/24	2012/09/24	CAM SOP-00413	SM 4500H+ B
Sodium Adsorption Ratio (SAR)	1	2012/09/18	2012/09/24	CAM SOP-00102	EPA 6010
Volatile Organic Compounds in Soil	1	2012/09/21	2012/09/21	CAM SOP-00226	EPA 8260 modified

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is

Your Project #: 11-12-2073
Site Location: HALTON ZONE 1 WATERMAIN
Your C.O.C. #: 29778111, 297781-11-01

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/20

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Renata Spena, Project Manager
Email: RSpena@maxxam.ca
Phone# (905) 817-5700 Ext:5818

=====

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Total cover pages: 2

Maxxam Job #: B2E3528
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON ZONE 1 WATERMAIN
Sampler Initials: MD

O'REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		OW4979		
Sampling Date		2012/09/14		
COC Number		297781-11-01		
	Units	BH3+065, 39.2-39.5M BG	RDL	QC Batch

Calculated Parameters				
Sodium Adsorption Ratio	N/A	18		2973476
Inorganics				
Chromium (VI)	ug/g	<0.2	0.2	2978157
Conductivity	mS/cm	2.4	0.002	2979408
Free Cyanide	ug/g	<0.01	0.01	2977608
Moisture	%	1.3	1.0	2978734
Available (CaCl2) pH	pH	8.50		2979586
Metals				
Hot Water Ext. Boron (B)	ug/g	5.6	0.050	2979382
Acid Extractable Antimony (Sb)	ug/g	0.35	0.20	2979375
Acid Extractable Arsenic (As)	ug/g	4.8	1.0	2979375
Acid Extractable Barium (Ba)	ug/g	150	0.50	2979375
Acid Extractable Beryllium (Be)	ug/g	0.67	0.20	2979375
Acid Extractable Boron (B)	ug/g	24	5.0	2979375
Acid Extractable Cadmium (Cd)	ug/g	<0.10	0.10	2979375
Acid Extractable Chromium (Cr)	ug/g	28	1.0	2979375
Acid Extractable Cobalt (Co)	ug/g	15	0.10	2979375
Acid Extractable Copper (Cu)	ug/g	66	0.50	2979375
Acid Extractable Lead (Pb)	ug/g	7.4	1.0	2979375
Acid Extractable Molybdenum (Mo)	ug/g	1.8	0.50	2979375
Acid Extractable Nickel (Ni)	ug/g	32	0.50	2979375
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	2979375
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	2979375
Acid Extractable Thallium (Tl)	ug/g	0.096	0.050	2979375
Acid Extractable Uranium (U)	ug/g	0.87	0.050	2979375
Acid Extractable Vanadium (V)	ug/g	30	5.0	2979375
Acid Extractable Zinc (Zn)	ug/g	65	5.0	2979375
Acid Extractable Mercury (Hg)	ug/g	<0.050	0.050	2979375
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2E3528
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON ZONE 1 WATERMAIN
Sampler Initials: MD

SEMI-VOLATILE ORGANICS BY GC-MS (SOLID)

Maxxam ID		OW4979		
Sampling Date		2012/09/14		
COC Number		297781-11-01		
	Units	BH3+065, 39.2-39.5M BG	RDL	QC Batch

Polyaromatic Hydrocarbons				
Acenaphthene	ug/g	<0.0050	0.0050	2977917
Acenaphthylene	ug/g	<0.0050	0.0050	2977917
Anthracene	ug/g	<0.0050	0.0050	2977917
Benzo(a)anthracene	ug/g	<0.0050	0.0050	2977917
Benzo(a)pyrene	ug/g	<0.0050	0.0050	2977917
Benzo(b,j)fluoranthene	ug/g	<0.0050	0.0050	2977917
Benzo(g,h,i)perylene	ug/g	<0.0050	0.0050	2977917
Benzo(k)fluoranthene	ug/g	<0.0050	0.0050	2977917
Chrysene	ug/g	<0.0050	0.0050	2977917
Dibenz(a,h)anthracene	ug/g	<0.0050	0.0050	2977917
Fluoranthene	ug/g	<0.0050	0.0050	2977917
Fluorene	ug/g	<0.0050	0.0050	2977917
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	0.0050	2977917
1-Methylnaphthalene	ug/g	<0.0050	0.0050	2977917
2-Methylnaphthalene	ug/g	<0.0050	0.0050	2977917
Naphthalene	ug/g	<0.0050	0.0050	2977917
Phenanthrene	ug/g	<0.0050	0.0050	2977917
Pyrene	ug/g	<0.0050	0.0050	2977917
Surrogate Recovery (%)				
D10-Anthracene	%	87		2977917
D14-Terphenyl (FS)	%	83		2977917
D8-Acenaphthylene	%	82		2977917
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2E3528
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON ZONE 1 WATERMAIN
Sampler Initials: MD

VOLATILE ORGANICS BY GC/MS (SOLID)

Maxxam ID		OW4979		
Sampling Date		2012/09/14		
COC Number		297781-11-01		
	Units	BH3+065, 39.2-39.5M BG	RDL	QC Batch

Volatiles Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	2977536
Benzene	ug/g	<0.020	0.020	2977536
Bromodichloromethane	ug/g	<0.050	0.050	2977536
Bromoform	ug/g	<0.050	0.050	2977536
Bromomethane	ug/g	<0.050	0.050	2977536
Carbon Tetrachloride	ug/g	<0.050	0.050	2977536
Chlorobenzene	ug/g	<0.050	0.050	2977536
Chloroform	ug/g	<0.050	0.050	2977536
Dibromochloromethane	ug/g	<0.050	0.050	2977536
1,2-Dichlorobenzene	ug/g	<0.050	0.050	2977536
1,3-Dichlorobenzene	ug/g	<0.050	0.050	2977536
1,4-Dichlorobenzene	ug/g	<0.050	0.050	2977536
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	2977536
1,1-Dichloroethane	ug/g	<0.050	0.050	2977536
1,2-Dichloroethane	ug/g	<0.050	0.050	2977536
1,1-Dichloroethylene	ug/g	<0.050	0.050	2977536
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	2977536
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	2977536
1,2-Dichloropropane	ug/g	<0.050	0.050	2977536
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	2977536
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	2977536
Ethylbenzene	ug/g	<0.020	0.020	2977536
Ethylene Dibromide	ug/g	<0.050	0.050	2977536
Hexane	ug/g	<0.050	0.050	2977536
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	2977536
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	2977536
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	2977536
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	2977536
Styrene	ug/g	<0.050	0.050	2977536
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	2977536
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	2977536
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2E3528
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON ZONE 1 WATERMAIN
Sampler Initials: MD

VOLATILE ORGANICS BY GC/MS (SOLID)

Maxxam ID		OW4979		
Sampling Date		2012/09/14		
COC Number		297781-11-01		
	Units	BH3+065, 39.2-39.5M BG	RDL	QC Batch
Tetrachloroethylene	ug/g	<0.050	0.050	2977536
Toluene	ug/g	<0.020	0.020	2977536
1,1,1-Trichloroethane	ug/g	<0.050	0.050	2977536
1,1,2-Trichloroethane	ug/g	<0.050	0.050	2977536
Trichloroethylene	ug/g	<0.050	0.050	2977536
Vinyl Chloride	ug/g	<0.020	0.020	2977536
p+m-Xylene	ug/g	<0.020	0.020	2977536
o-Xylene	ug/g	<0.020	0.020	2977536
Xylene (Total)	ug/g	<0.020	0.020	2977536
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	2977536
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	98		2977536
D10-o-Xylene	%	100		2977536
D4-1,2-Dichloroethane	%	103		2977536
D8-Toluene	%	100		2977536
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B2E3528
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON ZONE 1 WATERMAIN
Sampler Initials: MD

Test Summary

Maxxam ID OW4979
Sample ID BH3+065, 39.2-39.5M BG
Matrix SOLID

Collected 2012/09/14
Shipped
Received 2012/09/18

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	2979382	2012/09/24	2012/09/24	Azita Fazaeli
Free (WAD) Cyanide	TECH	2977608	N/A	2012/09/24	Louise Harding
Conductivity	COND	2979408	N/A	2012/09/24	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	2978157	2012/09/21	2012/09/24	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	2979375	2012/09/24	2012/09/24	Hua Ren
Moisture	BAL	2978734	N/A	2012/09/21	Bonali Patel
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	2977917	2012/09/21	2012/09/22	Darryl Tiller
pH CaCl ₂ EXTRACT		2979586	2012/09/24	2012/09/24	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	2973476	2012/09/24	2012/09/24	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	2977536	2012/09/21	2012/09/21	James Zou

Maxxam Job #: B2E3528
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON ZONE 1 WATERMAIN
Sampler Initials: MD

Package 1	8.3°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

"Samples on this submission were received as solid rock cores. Prior to any analytical processing, all samples were crushed to a consistent grain size of approximately <2mm using a Vibratory Ring Pulverizer (Model TM/STLX). Aliquots of the crushed rock were processed in accordance to the preparation and analysis requirements for a soil matrix, for the analyses requested."

As per client's request. Sample ID's have been revised. 2013/01/09

As per client's request. Sample ID's have been revised. 2013/02/20

Results relate only to the items tested.

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON ZONE 1 WATERMAIN

Quality Assurance Report

Maxxam Job Number: MB2E3528

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2977536 JZO	Matrix Spike	4-Bromofluorobenzene	2012/09/21		99	%	60 - 140
		D10-o-Xylene	2012/09/21		108	%	60 - 130
		D4-1,2-Dichloroethane	2012/09/21		100	%	60 - 140
		D8-Toluene	2012/09/21		98	%	60 - 140
		Acetone (2-Propanone)	2012/09/21		91	%	60 - 140
		Benzene	2012/09/21		97	%	60 - 140
		Bromodichloromethane	2012/09/21		108	%	60 - 140
		Bromoform	2012/09/21		86	%	60 - 140
		Bromomethane	2012/09/21		110	%	60 - 140
		Carbon Tetrachloride	2012/09/21		109	%	60 - 140
		Chlorobenzene	2012/09/21		94	%	60 - 140
		Chloroform	2012/09/21		106	%	60 - 140
		Dibromochloromethane	2012/09/21		114	%	60 - 140
		1,2-Dichlorobenzene	2012/09/21		97	%	60 - 140
		1,3-Dichlorobenzene	2012/09/21		96	%	60 - 140
		1,4-Dichlorobenzene	2012/09/21		97	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/09/21		110	%	60 - 140
		1,1-Dichloroethane	2012/09/21		86	%	60 - 140
		1,2-Dichloroethane	2012/09/21		100	%	60 - 140
		1,1-Dichloroethylene	2012/09/21		99	%	60 - 140
		cis-1,2-Dichloroethylene	2012/09/21		95	%	60 - 140
		trans-1,2-Dichloroethylene	2012/09/21		99	%	60 - 140
		1,2-Dichloropropane	2012/09/21		98	%	60 - 140
		cis-1,3-Dichloropropene	2012/09/21		105	%	60 - 140
		trans-1,3-Dichloropropene	2012/09/21		107	%	60 - 140
		Ethylbenzene	2012/09/21		95	%	60 - 140
		Ethylene Dibromide	2012/09/21		104	%	60 - 140
		Hexane	2012/09/21		102	%	60 - 140
		Methylene Chloride(Dichloromethane)	2012/09/21		96	%	60 - 140
		Methyl Isobutyl Ketone	2012/09/21		101	%	60 - 140
		Methyl Ethyl Ketone (2-Butanone)	2012/09/21		98	%	60 - 140
		Methyl t-butyl ether (MTBE)	2012/09/21		102	%	60 - 140
		Styrene	2012/09/21		93	%	60 - 140
		1,1,1,2-Tetrachloroethane	2012/09/21		107	%	60 - 140
		1,1,2,2-Tetrachloroethane	2012/09/21		91	%	60 - 140
		Tetrachloroethylene	2012/09/21		94	%	60 - 140
		Toluene	2012/09/21		96	%	60 - 140
		1,1,1-Trichloroethane	2012/09/21		95	%	60 - 140
		1,1,2-Trichloroethane	2012/09/21		98	%	60 - 140
		Trichloroethylene	2012/09/21		98	%	60 - 140
		Vinyl Chloride	2012/09/21		103	%	60 - 140
		p+m-Xylene	2012/09/21		98	%	60 - 140
		o-Xylene	2012/09/21		101	%	60 - 140
		Trichlorofluoromethane (FREON 11)	2012/09/21		102	%	60 - 140
Spiked Blank	4-Bromofluorobenzene	2012/09/21		99	%	60 - 140	
	D10-o-Xylene	2012/09/21		101	%	60 - 130	
	D4-1,2-Dichloroethane	2012/09/21		100	%	60 - 140	
	D8-Toluene	2012/09/21		99	%	60 - 140	
	Acetone (2-Propanone)	2012/09/21		87	%	60 - 140	
	Benzene	2012/09/21		100	%	60 - 130	
	Bromodichloromethane	2012/09/21		108	%	60 - 130	
	Bromoform	2012/09/21		84	%	60 - 130	
	Bromomethane	2012/09/21		76	%	60 - 140	
	Carbon Tetrachloride	2012/09/21		110	%	60 - 130	
	Chlorobenzene	2012/09/21		96	%	60 - 130	

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON ZONE 1 WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2E3528

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2977536 JZO	Spiked Blank	Chloroform	2012/09/21		108	%	60 - 130
		Dibromochloromethane	2012/09/21		113	%	60 - 130
		1,2-Dichlorobenzene	2012/09/21		96	%	60 - 130
		1,3-Dichlorobenzene	2012/09/21		96	%	60 - 130
		1,4-Dichlorobenzene	2012/09/21		95	%	60 - 130
		Dichlorodifluoromethane (FREON 12)	2012/09/21		114	%	60 - 140
		1,1-Dichloroethane	2012/09/21		88	%	60 - 130
		1,2-Dichloroethane	2012/09/21		101	%	60 - 130
		1,1-Dichloroethylene	2012/09/21		102	%	60 - 130
		cis-1,2-Dichloroethylene	2012/09/21		98	%	60 - 130
		trans-1,2-Dichloroethylene	2012/09/21		102	%	60 - 130
		1,2-Dichloropropane	2012/09/21		98	%	60 - 130
		cis-1,3-Dichloropropene	2012/09/21		105	%	60 - 130
		trans-1,3-Dichloropropene	2012/09/21		106	%	60 - 130
		Ethylbenzene	2012/09/21		98	%	60 - 130
		Ethylene Dibromide	2012/09/21		102	%	60 - 130
		Hexane	2012/09/21		97	%	60 - 130
		Methylene Chloride(Dichloromethane)	2012/09/21		98	%	60 - 130
		Methyl Isobutyl Ketone	2012/09/21		95	%	60 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/09/21		96	%	60 - 140
		Methyl t-butyl ether (MTBE)	2012/09/21		100	%	60 - 130
		Styrene	2012/09/21		94	%	60 - 130
		1,1,1,2-Tetrachloroethane	2012/09/21		109	%	60 - 130
		1,1,2,2-Tetrachloroethane	2012/09/21		89	%	60 - 130
		Tetrachloroethylene	2012/09/21		96	%	60 - 130
		Toluene	2012/09/21		99	%	60 - 130
		1,1,1-Trichloroethane	2012/09/21		96	%	60 - 130
		1,1,2-Trichloroethane	2012/09/21		97	%	60 - 130
		Trichloroethylene	2012/09/21		100	%	60 - 130
		Vinyl Chloride	2012/09/21		107	%	60 - 130
		p+m-Xylene	2012/09/21		101	%	60 - 130
		o-Xylene	2012/09/21		102	%	60 - 130
		Trichlorofluoromethane (FREON 11)	2012/09/21		104	%	60 - 130
	Method Blank	4-Bromofluorobenzene	2012/09/21		110	%	60 - 140
		D10-o-Xylene	2012/09/21		118	%	60 - 130
		D4-1,2-Dichloroethane	2012/09/21		88	%	60 - 140
		D8-Toluene	2012/09/21		95	%	60 - 140
		Acetone (2-Propanone)	2012/09/21	<0.50		ug/g	
		Benzene	2012/09/21	<0.020		ug/g	
		Bromodichloromethane	2012/09/21	<0.050		ug/g	
		Bromoform	2012/09/21	<0.050		ug/g	
		Bromomethane	2012/09/21	<0.050		ug/g	
		Carbon Tetrachloride	2012/09/21	<0.050		ug/g	
		Chlorobenzene	2012/09/21	<0.050		ug/g	
		Chloroform	2012/09/21	<0.050		ug/g	
		Dibromochloromethane	2012/09/21	<0.050		ug/g	
		1,2-Dichlorobenzene	2012/09/21	<0.050		ug/g	
		1,3-Dichlorobenzene	2012/09/21	<0.050		ug/g	
		1,4-Dichlorobenzene	2012/09/21	<0.050		ug/g	
		Dichlorodifluoromethane (FREON 12)	2012/09/21	<0.050		ug/g	
		1,1-Dichloroethane	2012/09/21	<0.050		ug/g	
		1,2-Dichloroethane	2012/09/21	<0.050		ug/g	
		1,1-Dichloroethylene	2012/09/21	<0.050		ug/g	
		cis-1,2-Dichloroethylene	2012/09/21	<0.050		ug/g	
		trans-1,2-Dichloroethylene	2012/09/21	<0.050		ug/g	

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON ZONE 1 WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2E3528

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2977536 JZO	Method Blank	1,2-Dichloropropane	2012/09/21	<0.050		ug/g	
		cis-1,3-Dichloropropene	2012/09/21	<0.030		ug/g	
		trans-1,3-Dichloropropene	2012/09/21	<0.040		ug/g	
		Ethylbenzene	2012/09/21	<0.020		ug/g	
		Ethylene Dibromide	2012/09/21	<0.050		ug/g	
		Hexane	2012/09/21	<0.050		ug/g	
		Methylene Chloride(Dichloromethane)	2012/09/21	<0.050		ug/g	
		Methyl Isobutyl Ketone	2012/09/21	<0.50		ug/g	
		Methyl Ethyl Ketone (2-Butanone)	2012/09/21	<0.50		ug/g	
		Methyl t-butyl ether (MTBE)	2012/09/21	<0.050		ug/g	
		Styrene	2012/09/21	<0.050		ug/g	
		1,1,1,2-Tetrachloroethane	2012/09/21	<0.050		ug/g	
		1,1,2,2-Tetrachloroethane	2012/09/21	<0.050		ug/g	
		Tetrachloroethylene	2012/09/21	<0.050		ug/g	
		Toluene	2012/09/21	<0.020		ug/g	
		1,1,1-Trichloroethane	2012/09/21	<0.050		ug/g	
		1,1,2-Trichloroethane	2012/09/21	<0.050		ug/g	
		Trichloroethylene	2012/09/21	<0.050		ug/g	
		Vinyl Chloride	2012/09/21	<0.020		ug/g	
		p+m-Xylene	2012/09/21	<0.020		ug/g	
		o-Xylene	2012/09/21	<0.020		ug/g	
		Xylene (Total)	2012/09/21	<0.020		ug/g	
		Trichlorofluoromethane (FREON 11)	2012/09/21	<0.050		ug/g	
	RPD	Acetone (2-Propanone)	2012/09/21	NC		%	50
		Benzene	2012/09/21	NC		%	50
		Bromodichloromethane	2012/09/21	NC		%	50
		Bromoform	2012/09/21	NC		%	50
		Bromomethane	2012/09/21	NC		%	50
		Carbon Tetrachloride	2012/09/21	NC		%	50
		Chlorobenzene	2012/09/21	NC		%	50
		Chloroform	2012/09/21	NC		%	50
		Dibromochloromethane	2012/09/21	NC		%	50
		1,2-Dichlorobenzene	2012/09/21	NC		%	50
		1,3-Dichlorobenzene	2012/09/21	NC		%	50
		1,4-Dichlorobenzene	2012/09/21	NC		%	50
		Dichlorodifluoromethane (FREON 12)	2012/09/21	NC		%	50
		1,1-Dichloroethane	2012/09/21	NC		%	50
		1,2-Dichloroethane	2012/09/21	NC		%	50
		1,1-Dichloroethylene	2012/09/21	NC		%	50
		cis-1,2-Dichloroethylene	2012/09/21	NC		%	50
		trans-1,2-Dichloroethylene	2012/09/21	NC		%	50
		1,2-Dichloropropane	2012/09/21	NC		%	50
		cis-1,3-Dichloropropene	2012/09/21	NC		%	50
		trans-1,3-Dichloropropene	2012/09/21	NC		%	50
		Ethylbenzene	2012/09/21	NC		%	50
		Ethylene Dibromide	2012/09/21	NC		%	50
		Hexane	2012/09/21	NC		%	50
		Methylene Chloride(Dichloromethane)	2012/09/21	NC		%	50
		Methyl Isobutyl Ketone	2012/09/21	NC		%	50
		Methyl Ethyl Ketone (2-Butanone)	2012/09/21	NC		%	50
		Methyl t-butyl ether (MTBE)	2012/09/21	NC		%	50
		Styrene	2012/09/21	NC		%	50
		1,1,1,2-Tetrachloroethane	2012/09/21	NC		%	50
		1,1,2,2-Tetrachloroethane	2012/09/21	NC		%	50
		Tetrachloroethylene	2012/09/21	NC		%	50

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON ZONE 1 WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2E3528

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2977536 JZO	RPD	Toluene	2012/09/21	NC		%	50
		1,1,1-Trichloroethane	2012/09/21	NC		%	50
		1,1,2-Trichloroethane	2012/09/21	NC		%	50
		Trichloroethylene	2012/09/21	NC		%	50
		Vinyl Chloride	2012/09/21	NC		%	50
		p+m-Xylene	2012/09/21	NC		%	50
		o-Xylene	2012/09/21	NC		%	50
		Xylene (Total)	2012/09/21	NC		%	50
		Trichlorofluoromethane (FREON 11)	2012/09/21	NC		%	50
2977608 LHA	Matrix Spike	Free Cyanide	2012/09/24		87	%	75 - 125
	Spiked Blank	Free Cyanide	2012/09/24		95	%	80 - 120
	Method Blank	Free Cyanide	2012/09/24	<0.01		ug/g	
	RPD	Free Cyanide	2012/09/24	NC		%	35
2977917 DTI	Matrix Spike	D10-Anthracene	2012/09/21		83	%	50 - 130
		D14-Terphenyl (FS)	2012/09/21		86	%	50 - 130
		D8-Acenaphthylene	2012/09/21		84	%	50 - 130
		Acenaphthene	2012/09/21		90	%	50 - 130
		Acenaphthylene	2012/09/21		95	%	50 - 130
		Anthracene	2012/09/21		90	%	50 - 130
		Benzo(a)anthracene	2012/09/21		102	%	50 - 130
		Benzo(a)pyrene	2012/09/21		77	%	50 - 130
		Benzo(b,j)fluoranthene	2012/09/21		90	%	50 - 130
		Benzo(g,h,i)perylene	2012/09/21		83	%	50 - 130
		Benzo(k)fluoranthene	2012/09/21		94	%	50 - 130
		Chrysene	2012/09/21		97	%	50 - 130
		Dibenz(a,h)anthracene	2012/09/21		94	%	50 - 130
		Fluoranthene	2012/09/21		94	%	50 - 130
		Fluorene	2012/09/21		96	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2012/09/21		86	%	50 - 130
		1-Methylnaphthalene	2012/09/21		87	%	50 - 130
		2-Methylnaphthalene	2012/09/21		101	%	50 - 130
		Naphthalene	2012/09/21		86	%	50 - 130
		Phenanthrene	2012/09/21		91	%	50 - 130
		Pyrene	2012/09/21		98	%	50 - 130
	Spiked Blank	D10-Anthracene	2012/09/21		84	%	50 - 130
		D14-Terphenyl (FS)	2012/09/21		87	%	50 - 130
		D8-Acenaphthylene	2012/09/21		77	%	50 - 130
		Acenaphthene	2012/09/21		104	%	50 - 130
		Acenaphthylene	2012/09/21		89	%	50 - 130
		Anthracene	2012/09/21		91	%	50 - 130
		Benzo(a)anthracene	2012/09/21		105	%	50 - 130
		Benzo(a)pyrene	2012/09/21		91	%	50 - 130
		Benzo(b,j)fluoranthene	2012/09/21		110	%	50 - 130
		Benzo(g,h,i)perylene	2012/09/21		112	%	50 - 130
		Benzo(k)fluoranthene	2012/09/21		112	%	50 - 130
		Chrysene	2012/09/21		103	%	50 - 130
		Dibenz(a,h)anthracene	2012/09/21		117	%	50 - 130
		Fluoranthene	2012/09/21		94	%	50 - 130
		Fluorene	2012/09/21		95	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2012/09/21		112	%	50 - 130
		1-Methylnaphthalene	2012/09/21		88	%	50 - 130
		2-Methylnaphthalene	2012/09/21		102	%	50 - 130
		Naphthalene	2012/09/21		89	%	50 - 130
		Phenanthrene	2012/09/21		93	%	50 - 130
		Pyrene	2012/09/21		98	%	50 - 130

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON ZONE 1 WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2E3528

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2977917 DTI	Method Blank	D10-Anthracene	2012/09/21		84	%	50 - 130
		D14-Terphenyl (FS)	2012/09/21		82	%	50 - 130
		D8-Acenaphthylene	2012/09/21		69	%	50 - 130
		Acenaphthene	2012/09/21	<0.0050		ug/g	
		Acenaphthylene	2012/09/21	<0.0050		ug/g	
		Anthracene	2012/09/21	<0.0050		ug/g	
		Benzo(a)anthracene	2012/09/21	<0.0050		ug/g	
		Benzo(a)pyrene	2012/09/21	<0.0050		ug/g	
		Benzo(b/j)fluoranthene	2012/09/21	<0.0050		ug/g	
		Benzo(g,h,i)perylene	2012/09/21	<0.0050		ug/g	
		Benzo(k)fluoranthene	2012/09/21	<0.0050		ug/g	
		Chrysene	2012/09/21	<0.0050		ug/g	
		Dibenz(a,h)anthracene	2012/09/21	<0.0050		ug/g	
		Fluoranthene	2012/09/21	<0.0050		ug/g	
		Fluorene	2012/09/21	<0.0050		ug/g	
	RPD	Indeno(1,2,3-cd)pyrene	2012/09/21	<0.0050		ug/g	
		1-Methylnaphthalene	2012/09/21	<0.0050		ug/g	
		2-Methylnaphthalene	2012/09/21	<0.0050		ug/g	
		Naphthalene	2012/09/21	<0.0050		ug/g	
		Phenanthrene	2012/09/21	<0.0050		ug/g	
		Pyrene	2012/09/21	<0.0050		ug/g	
		Acenaphthene	2012/09/21	NC		%	40
		Acenaphthylene	2012/09/21	NC		%	40
		Anthracene	2012/09/21	NC		%	40
		Benzo(a)anthracene	2012/09/21	NC		%	40
		Benzo(a)pyrene	2012/09/21	NC		%	40
		Benzo(b/j)fluoranthene	2012/09/21	NC		%	40
		Benzo(g,h,i)perylene	2012/09/21	NC		%	40
		Benzo(k)fluoranthene	2012/09/21	NC		%	40
		Chrysene	2012/09/21	NC		%	40
		Dibenz(a,h)anthracene	2012/09/21	NC		%	40
		Fluoranthene	2012/09/21	NC		%	40
		Fluorene	2012/09/21	NC		%	40
		Indeno(1,2,3-cd)pyrene	2012/09/21	NC		%	40
		1-Methylnaphthalene	2012/09/21	NC		%	40
		2-Methylnaphthalene	2012/09/21	NC		%	40
		Naphthalene	2012/09/21	NC		%	40
		Phenanthrene	2012/09/21	NC		%	40
		Pyrene	2012/09/21	NC		%	40
2978157 SAC	Matrix Spike	Chromium (VI)	2012/09/24		92	%	75 - 125
	QC Standard	Chromium (VI)	2012/09/24		96	%	75 - 125
	Spiked Blank	Chromium (VI)	2012/09/24		94	%	80 - 120
	Method Blank	Chromium (VI)	2012/09/24	<0.2		ug/g	
	RPD	Chromium (VI)	2012/09/24	NC		%	35
2978734 THT	RPD	Moisture	2012/09/21	0		%	20
2979375 HRE	Matrix Spike	Acid Extractable Antimony (Sb)	2012/09/24		92	%	75 - 125
		Acid Extractable Arsenic (As)	2012/09/24		96	%	75 - 125
		Acid Extractable Barium (Ba)	2012/09/24		NC (1)	%	75 - 125
		Acid Extractable Beryllium (Be)	2012/09/24		99	%	75 - 125
		Acid Extractable Boron (B)	2012/09/24		90	%	75 - 125
		Acid Extractable Cadmium (Cd)	2012/09/24		98	%	75 - 125
		Acid Extractable Chromium (Cr)	2012/09/24		96	%	75 - 125
		Acid Extractable Cobalt (Co)	2012/09/24		95	%	75 - 125
		Acid Extractable Copper (Cu)	2012/09/24		91	%	75 - 125
		Acid Extractable Lead (Pb)	2012/09/24		94	%	75 - 125

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON ZONE 1 WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2E3528

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2979375 HRE	Matrix Spike	Acid Extractable Molybdenum (Mo)	2012/09/24		96	%	75 - 125
		Acid Extractable Nickel (Ni)	2012/09/24		94	%	75 - 125
		Acid Extractable Selenium (Se)	2012/09/24		94	%	75 - 125
		Acid Extractable Silver (Ag)	2012/09/24		97	%	75 - 125
		Acid Extractable Thallium (Tl)	2012/09/24		86	%	75 - 125
		Acid Extractable Uranium (U)	2012/09/24		97	%	75 - 125
		Acid Extractable Vanadium (V)	2012/09/24		NC (1)	%	75 - 125
	Spiked Blank	Acid Extractable Zinc (Zn)	2012/09/24		NC (1)	%	75 - 125
		Acid Extractable Mercury (Hg)	2012/09/24		104	%	75 - 125
		Acid Extractable Antimony (Sb)	2012/09/24		98	%	80 - 120
		Acid Extractable Arsenic (As)	2012/09/24		98	%	80 - 120
		Acid Extractable Barium (Ba)	2012/09/24		101	%	80 - 120
		Acid Extractable Beryllium (Be)	2012/09/24		101	%	80 - 120
		Acid Extractable Boron (B)	2012/09/24		100	%	80 - 120
		Acid Extractable Cadmium (Cd)	2012/09/24		101	%	80 - 120
		Acid Extractable Chromium (Cr)	2012/09/24		99	%	80 - 120
		Acid Extractable Cobalt (Co)	2012/09/24		100	%	80 - 120
		Acid Extractable Copper (Cu)	2012/09/24		99	%	80 - 120
		Acid Extractable Lead (Pb)	2012/09/24		101	%	80 - 120
		Acid Extractable Molybdenum (Mo)	2012/09/24		100	%	80 - 120
		Acid Extractable Nickel (Ni)	2012/09/24		101	%	80 - 120
		Acid Extractable Selenium (Se)	2012/09/24		99	%	80 - 120
		Acid Extractable Silver (Ag)	2012/09/24		101	%	80 - 120
		Acid Extractable Thallium (Tl)	2012/09/24		89	%	80 - 120
		Acid Extractable Uranium (U)	2012/09/24		102	%	80 - 120
		Acid Extractable Vanadium (V)	2012/09/24		99	%	80 - 120
		Acid Extractable Zinc (Zn)	2012/09/24		102	%	80 - 120
	Method Blank	Acid Extractable Mercury (Hg)	2012/09/24		100	%	80 - 120
		Acid Extractable Antimony (Sb)	2012/09/24	<0.20		ug/g	
		Acid Extractable Arsenic (As)	2012/09/24	<1.0		ug/g	
		Acid Extractable Barium (Ba)	2012/09/24	<0.50		ug/g	
		Acid Extractable Beryllium (Be)	2012/09/24	<0.20		ug/g	
		Acid Extractable Boron (B)	2012/09/24	<5.0		ug/g	
		Acid Extractable Cadmium (Cd)	2012/09/24	<0.10		ug/g	
		Acid Extractable Chromium (Cr)	2012/09/24	<1.0		ug/g	
		Acid Extractable Cobalt (Co)	2012/09/24	<0.10		ug/g	
		Acid Extractable Copper (Cu)	2012/09/24	<0.50		ug/g	
		Acid Extractable Lead (Pb)	2012/09/24	<1.0		ug/g	
		Acid Extractable Molybdenum (Mo)	2012/09/24	<0.50		ug/g	
		Acid Extractable Nickel (Ni)	2012/09/24	<0.50		ug/g	
		Acid Extractable Selenium (Se)	2012/09/24	<0.50		ug/g	
		Acid Extractable Silver (Ag)	2012/09/24	<0.20		ug/g	
		Acid Extractable Thallium (Tl)	2012/09/24	<0.050		ug/g	
		Acid Extractable Uranium (U)	2012/09/24	<0.050		ug/g	
		Acid Extractable Vanadium (V)	2012/09/24	<5.0		ug/g	
		Acid Extractable Zinc (Zn)	2012/09/24	<5.0		ug/g	
	RPD	Acid Extractable Mercury (Hg)	2012/09/24	<0.050		ug/g	
		Acid Extractable Antimony (Sb)	2012/09/24	NC		%	30
		Acid Extractable Arsenic (As)	2012/09/24	NC		%	30
		Acid Extractable Barium (Ba)	2012/09/24	1.9		%	30
		Acid Extractable Beryllium (Be)	2012/09/24	NC		%	30
		Acid Extractable Boron (B)	2012/09/24	NC		%	30
		Acid Extractable Cadmium (Cd)	2012/09/24	NC		%	30
		Acid Extractable Chromium (Cr)	2012/09/24	2.5		%	30
		Acid Extractable Cobalt (Co)	2012/09/24	0.4		%	30

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON ZONE 1 WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB2E3528

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
2979375 HRE	RPD	Acid Extractable Copper (Cu)	2012/09/24	3.6		%	30
		Acid Extractable Lead (Pb)	2012/09/24	0.8		%	30
		Acid Extractable Molybdenum (Mo)	2012/09/24	NC		%	30
		Acid Extractable Nickel (Ni)	2012/09/24	0.04		%	30
		Acid Extractable Selenium (Se)	2012/09/24	NC		%	30
		Acid Extractable Silver (Ag)	2012/09/24	NC		%	30
		Acid Extractable Thallium (Tl)	2012/09/24	NC		%	30
		Acid Extractable Uranium (U)	2012/09/24	1.3		%	30
		Acid Extractable Vanadium (V)	2012/09/24	0.9		%	30
		Acid Extractable Zinc (Zn)	2012/09/24	5.9		%	30
2979382 AFZ	Spiked Blank	Hot Water Ext. Boron (B)	2012/09/24		96	%	75 - 125
	Method Blank	Hot Water Ext. Boron (B)	2012/09/24	<0.050		ug/g	
2979408 NYS	QC Standard	Conductivity	2012/09/24		98	%	90 - 110
	Method Blank	Conductivity	2012/09/24	<0.002		mS/cm	
	RPD	Conductivity	2012/09/24	4.4		%	10

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.


NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) Metal analysis: The recovery in the matrix spike was not calculated (NC). Spiked concentration was less than 2x that native to the sample.

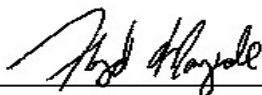
Validation Signature Page

Maxxam Job #: B2E3528

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist



Floyd Mayede, Senior Analyst

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 11-12-2073
Site Location: OAKVILLE
Your C.O.C. #: 47081

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/20

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B2F9521

Received: 2012/10/15, 11:25

Sample Matrix: SOLID
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Hot Water Extractable Boron	3	2012/10/18	2012/10/19	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	3	N/A	2012/10/19	CAM SOP-00226	EPA 8260
Free (WAD) Cyanide	3	N/A	2012/10/18	CAM SOP-00457	Ontario MOE CN-E3015
Conductivity	3	N/A	2012/10/19	CAM SOP-00414	APHA 2510
Hexavalent Chromium in Soil by IC (1)	3	2012/10/17	2012/10/18	CAM SOP-00436	EPA SW846-3060/7199
Acid Extr. Metals (aqua regia) by ICPMS	1	2012/10/18	2012/10/18	CAM SOP-00447	EPA 6020
Acid Extr. Metals (aqua regia) by ICPMS	2	2012/10/18	2012/10/19	CAM SOP-00447	EPA 6020
Moisture	3	N/A	2012/10/17	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM)	3	2012/10/16	2012/10/17	CAM SOP - 00318	EPA 8270
pH CaCl2 EXTRACT	3	2012/10/19	2012/10/19	CAM SOP-00413	SM 4500H+ B
Sodium Adsorption Ratio (SAR)	3	2012/10/15	2012/10/21	CAM SOP-00102	EPA 6010
Volatile Organic Compounds in Soil	2	2012/10/17	2012/10/18	CAM SOP-00226	EPA 8260 modified
Volatile Organic Compounds in Soil	1	2012/10/17	2012/10/19	CAM SOP-00226	EPA 8260 modified

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is

Your Project #: 11-12-2073
Site Location: OAKVILLE
Your C.O.C. #: 47081

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/20

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

considered to be the date sampled.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Renata Spina, Project Manager
Email: RSpina@maxxam.ca
Phone# (905) 817-5700 Ext:5818

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

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Maxxam Job #: B2F9521
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: OAKVILLE

O'REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		PE9708		PE9709		PE9710		
Sampling Date		2012/10/14		2012/10/14		2012/10/14		
COC Number		47081		47081		47081		
	Units	BH 1+200 (5.4-5.7M)	QC Batch	BH 1+200 (12.1-12.4M)	QC Batch	BH 1+200 (18.4-18.7M)	RDL	QC Batch

Calculated Parameters								
Sodium Adsorption Ratio	N/A	0.91	3001477	6.7	3001477	18		3001477
Inorganics								
Chromium (VI)	ug/g	<0.2	3004907	<0.2	3004907	<0.2	0.2	3004907
Conductivity	mS/cm	0.18	3007079	0.37	3007079	1.6	0.002	3007079
Free Cyanide	ug/g	<0.01	3005732	<0.01	3005732	<0.01	0.01	3005732
Moisture	%	<1.0	3005489	<1.0	3005489	<1.0	1.0	3005489
Available (CaCl2) pH	pH	7.88	3007120	8.11	3007120	8.29		3007120
Metals								
Hot Water Ext. Boron (B)	ug/g	2.5	3006242	4.6	3006242	5.8	0.050	3006242
Acid Extractable Antimony (Sb)	ug/g	0.24	3005938	0.41	3006224	0.38	0.20	3005938
Acid Extractable Arsenic (As)	ug/g	4.0	3005938	7.1	3006224	5.3	1.0	3005938
Acid Extractable Barium (Ba)	ug/g	120	3005938	170	3006224	63	0.50	3005938
Acid Extractable Beryllium (Be)	ug/g	0.59	3005938	0.56	3006224	0.72	0.20	3005938
Acid Extractable Boron (B)	ug/g	15	3005938	21	3006224	25	5.0	3005938
Acid Extractable Cadmium (Cd)	ug/g	<0.10	3005938	<0.10	3006224	<0.10	0.10	3005938
Acid Extractable Chromium (Cr)	ug/g	23	3005938	24	3006224	28	1.0	3005938
Acid Extractable Cobalt (Co)	ug/g	13	3005938	12	3006224	14	0.10	3005938
Acid Extractable Copper (Cu)	ug/g	28	3005938	11	3006224	30	0.50	3005938
Acid Extractable Lead (Pb)	ug/g	6.5	3005938	8.8	3006224	9.1	1.0	3005938
Acid Extractable Molybdenum (Mo)	ug/g	1.4	3005938	1.7	3006224	1.8	0.50	3005938
Acid Extractable Nickel (Ni)	ug/g	27	3005938	27	3006224	30	0.50	3005938
Acid Extractable Selenium (Se)	ug/g	<0.50	3005938	<0.50	3006224	<0.50	0.50	3005938
Acid Extractable Silver (Ag)	ug/g	<0.20	3005938	<0.20	3006224	<0.20	0.20	3005938
Acid Extractable Thallium (Tl)	ug/g	0.065	3005938	0.066	3006224	0.068	0.050	3005938
Acid Extractable Uranium (U)	ug/g	1.3	3005938	0.85	3006224	0.86	0.050	3005938
Acid Extractable Vanadium (V)	ug/g	28	3005938	31	3006224	35	5.0	3005938
Acid Extractable Zinc (Zn)	ug/g	54	3005938	54	3006224	62	5.0	3005938
Acid Extractable Mercury (Hg)	ug/g	<0.050	3005938	<0.050	3006224	<0.050	0.050	3005938

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B2F9521
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: OAKVILLE

SEMI-VOLATILE ORGANICS BY GC-MS (SOLID)

Maxxam ID		PE9708	PE9709	PE9710		
Sampling Date		2012/10/14	2012/10/14	2012/10/14		
COC Number		47081	47081	47081		
	Units	BH 1+200 (5.4-5.7M)	BH 1+200 (12.1-12.4M)	BH 1+200 (18.4-18.7M)	RDL	QC Batch

Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3003946
Surrogate Recovery (%)						
D10-Anthracene	%	99	86	96		3003946
D14-Terphenyl (FS)	%	95	98	102		3003946
D8-Acenaphthylene	%	78	81	79		3003946
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B2F9521
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: OAKVILLE

VOLATILE ORGANICS BY GC/MS (SOLID)

Maxxam ID		PE9708	PE9709	PE9710		
Sampling Date		2012/10/14	2012/10/14	2012/10/14		
COC Number		47081	47081	47081		
	Units	BH 1+200 (5.4-5.7M)	BH 1+200 (12.1-12.4M)	BH 1+200 (18.4-18.7M)	RDL	QC Batch

Calculated Parameters						
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	<0.050	<0.050	0.050	3001425
Volatile Organics						
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	0.50	3004176
Benzene	ug/g	<0.020	<0.020	<0.020	0.020	3004176
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Bromoform	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Bromomethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Chloroform	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	0.030	3004176
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	0.040	3004176
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	0.020	3004176
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Hexane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	0.50	3004176
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	0.50	3004176
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Styrene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B2F9521
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: OAKVILLE

VOLATILE ORGANICS BY GC/MS (SOLID)

Maxxam ID		PE9708	PE9709	PE9710		
Sampling Date		2012/10/14	2012/10/14	2012/10/14		
COC Number		47081	47081	47081		
	Units	BH 1+200 (5.4-5.7M)	BH 1+200 (12.1-12.4M)	BH 1+200 (18.4-18.7M)	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Toluene	ug/g	<0.020	<0.020	<0.020	0.020	3004176
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	0.020	3004176
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	3004176
o-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	3004176
Xylene (Total)	ug/g	<0.020	<0.020	<0.020	0.020	3004176
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	0.050	3004176
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	107	105	105		3004176
D10-o-Xylene	%	96	96	93		3004176
D4-1,2-Dichloroethane	%	95	95	93		3004176
D8-Toluene	%	101	100	102		3004176
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B2F9521
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: OAKVILLE

Test Summary

Maxxam ID PE9708
Sample ID BH 1+200 (5.4-5.7M)
Matrix SOLID

Collected 2012/10/14
Shipped
Received 2012/10/15

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	3006242	2012/10/18	2012/10/19	Azita Fazaeli
1,3-Dichloropropene Sum	CALC	3001425	N/A	2012/10/19	Automated Statchk
Free (WAD) Cyanide	TECH	3005732	N/A	2012/10/18	Louise Harding
Conductivity	COND	3007079	N/A	2012/10/19	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	3004907	2012/10/17	2012/10/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3005938	2012/10/18	2012/10/19	John Bowman
Moisture	BAL	3005489	N/A	2012/10/17	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3003946	2012/10/16	2012/10/17	Lingyun Feng
pH CaCl ₂ EXTRACT		3007120	2012/10/19	2012/10/19	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	3001477	2012/10/21	2012/10/21	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3004176	2012/10/17	2012/10/18	Rebecca Schultz

Maxxam ID PE9709
Sample ID BH 1+200 (12.1-12.4M)
Matrix SOLID

Collected 2012/10/14
Shipped
Received 2012/10/15

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	3006242	2012/10/18	2012/10/19	Azita Fazaeli
1,3-Dichloropropene Sum	CALC	3001425	N/A	2012/10/19	Automated Statchk
Free (WAD) Cyanide	TECH	3005732	N/A	2012/10/18	Louise Harding
Conductivity	COND	3007079	N/A	2012/10/19	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	3004907	2012/10/17	2012/10/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3006224	2012/10/18	2012/10/18	John Bowman
Moisture	BAL	3005489	N/A	2012/10/17	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3003946	2012/10/16	2012/10/17	Lingyun Feng
pH CaCl ₂ EXTRACT		3007120	2012/10/19	2012/10/19	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	3001477	2012/10/21	2012/10/21	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3004176	2012/10/17	2012/10/18	Rebecca Schultz

Maxxam ID PE9710
Sample ID BH 1+200 (18.4-18.7M)
Matrix SOLID

Collected 2012/10/14
Shipped
Received 2012/10/15

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	3006242	2012/10/18	2012/10/19	Azita Fazaeli
1,3-Dichloropropene Sum	CALC	3001425	N/A	2012/10/19	Automated Statchk
Free (WAD) Cyanide	TECH	3005732	N/A	2012/10/18	Louise Harding
Conductivity	COND	3007079	N/A	2012/10/19	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	3004907	2012/10/17	2012/10/18	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3005938	2012/10/18	2012/10/19	John Bowman
Moisture	BAL	3005489	N/A	2012/10/17	Valentina Kaftani
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3003946	2012/10/16	2012/10/17	Lingyun Feng
pH CaCl ₂ EXTRACT		3007120	2012/10/19	2012/10/19	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	3001477	2012/10/21	2012/10/21	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3004176	2012/10/17	2012/10/19	Rebecca Schultz

Maxxam Job #: B2F9521
Report Date: 2013/02/20

Terraprobe
Client Project #: 11-12-2073
Site Location: OAKVILLE

Package 1	11.0°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

"Samples on this submission were received as solid rock cores. Prior to any analytical processing, all samples were crushed to a consistent grain size of approximately <2mm using a Vibratory Ring Pulverizer (Model TM/STLX). Aliquots of the crushed rock were processed in accordance to the preparation and analysis requirements for a soil matrix, for the analyses requested."

As per clients request. Sample ID's have been revised. 2013/01/08

As per clients request. Sample ID's have been revised. 2013/02/20

Results relate only to the items tested.

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: OAKVILLE

Quality Assurance Report
Maxxam Job Number: MB2F9521

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3003946 LFE	Matrix Spike	D10-Anthracene	2012/10/17		79	%	50 - 130
		D14-Terphenyl (FS)	2012/10/17		83	%	50 - 130
		D8-Acenaphthylene	2012/10/17		72	%	50 - 130
		Acenaphthene	2012/10/17		83	%	50 - 130
		Acenaphthylene	2012/10/17		68	%	50 - 130
		Anthracene	2012/10/17		83	%	50 - 130
		Benzo(a)anthracene	2012/10/17		104	%	50 - 130
		Benzo(a)pyrene	2012/10/17		91	%	50 - 130
		Benzo(b/j)fluoranthene	2012/10/17		87	%	50 - 130
		Benzo(g,h,i)perylene	2012/10/17		95	%	50 - 130
		Benzo(k)fluoranthene	2012/10/17		98	%	50 - 130
		Chrysene	2012/10/17		98	%	50 - 130
		Dibenz(a,h)anthracene	2012/10/17		111	%	50 - 130
		Fluoranthene	2012/10/17		87	%	50 - 130
		Fluorene	2012/10/17		86	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2012/10/17		94	%	50 - 130
		1-Methylnaphthalene	2012/10/17		105	%	50 - 130
		2-Methylnaphthalene	2012/10/17		79	%	50 - 130
		Naphthalene	2012/10/17		70	%	50 - 130
		Phenanthrene	2012/10/17		113	%	50 - 130
		Pyrene	2012/10/17		91	%	50 - 130
	Spiked Blank	D10-Anthracene	2012/10/17		86	%	50 - 130
		D14-Terphenyl (FS)	2012/10/17		89	%	50 - 130
		D8-Acenaphthylene	2012/10/17		80	%	50 - 130
		Acenaphthene	2012/10/17		86	%	50 - 130
		Acenaphthylene	2012/10/17		80	%	50 - 130
		Anthracene	2012/10/17		82	%	50 - 130
		Benzo(a)anthracene	2012/10/17		100	%	50 - 130
		Benzo(a)pyrene	2012/10/17		93	%	50 - 130
		Benzo(b/j)fluoranthene	2012/10/17		91	%	50 - 130
		Benzo(g,h,i)perylene	2012/10/17		99	%	50 - 130
		Benzo(k)fluoranthene	2012/10/17		104	%	50 - 130
		Chrysene	2012/10/17		96	%	50 - 130
		Dibenz(a,h)anthracene	2012/10/17		105	%	50 - 130
		Fluoranthene	2012/10/17		87	%	50 - 130
		Fluorene	2012/10/17		93	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2012/10/17		98	%	50 - 130
		1-Methylnaphthalene	2012/10/17		88	%	50 - 130
		2-Methylnaphthalene	2012/10/17		87	%	50 - 130
		Naphthalene	2012/10/17		79	%	50 - 130
		Phenanthrene	2012/10/17		85	%	50 - 130
		Pyrene	2012/10/17		90	%	50 - 130
	Method Blank	D10-Anthracene	2012/10/17		97	%	50 - 130
		D14-Terphenyl (FS)	2012/10/17		97	%	50 - 130
		D8-Acenaphthylene	2012/10/17		84	%	50 - 130
		Acenaphthene	2012/10/17	<0.0050		ug/g	
		Acenaphthylene	2012/10/17	<0.0050		ug/g	
		Anthracene	2012/10/17	<0.0050		ug/g	
		Benzo(a)anthracene	2012/10/17	<0.0050		ug/g	
		Benzo(a)pyrene	2012/10/17	<0.0050		ug/g	
		Benzo(b/j)fluoranthene	2012/10/17	<0.0050		ug/g	
		Benzo(g,h,i)perylene	2012/10/17	<0.0050		ug/g	
		Benzo(k)fluoranthene	2012/10/17	<0.0050		ug/g	
		Chrysene	2012/10/17	<0.0050		ug/g	
		Dibenz(a,h)anthracene	2012/10/17	<0.0050		ug/g	

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3003946 LFE	Method Blank	Fluoranthene	2012/10/17	<0.0050		ug/g	
		Fluorene	2012/10/17	<0.0050		ug/g	
		Indeno(1,2,3-cd)pyrene	2012/10/17	<0.0050		ug/g	
		1-Methylnaphthalene	2012/10/17	<0.0050		ug/g	
		2-Methylnaphthalene	2012/10/17	<0.0050		ug/g	
		Naphthalene	2012/10/17	<0.0050		ug/g	
		Phenanthrene	2012/10/17	<0.0050		ug/g	
		Pyrene	2012/10/17	<0.0050		ug/g	
	RPD	Acenaphthene	2012/10/19	19.4		%	40
		Acenaphthylene	2012/10/19	NC		%	40
		Anthracene	2012/10/19	NC		%	40
		Benzo(a)anthracene	2012/10/19	NC		%	40
		Benzo(a)pyrene	2012/10/19	NC		%	40
		Benzo(b/j)fluoranthene	2012/10/19	NC		%	40
		Benzo(g,h,i)perylene	2012/10/19	NC		%	40
		Benzo(k)fluoranthene	2012/10/19	NC		%	40
		Chrysene	2012/10/19	NC		%	40
		Dibenz(a,h)anthracene	2012/10/19	NC		%	40
		Fluoranthene	2012/10/19	NC		%	40
		Fluorene	2012/10/19	NC		%	40
		Indeno(1,2,3-cd)pyrene	2012/10/19	NC		%	40
		1-Methylnaphthalene	2012/10/19	35.0		%	40
		2-Methylnaphthalene	2012/10/19	NC (1)		%	40
		Naphthalene	2012/10/19	NC (1)		%	40
		Phenanthrene	2012/10/19	32.6		%	40
		Pyrene	2012/10/19	NC		%	40
3004176 RSC	Matrix Spike	4-Bromofluorobenzene	2012/10/18		104	%	60 - 140
		D10-o-Xylene	2012/10/18		102	%	60 - 130
		D4-1,2-Dichloroethane	2012/10/18		90	%	60 - 140
		D8-Toluene	2012/10/18		104	%	60 - 140
		Acetone (2-Propanone)	2012/10/18		97	%	60 - 140
		Benzene	2012/10/18		96	%	60 - 140
		Bromodichloromethane	2012/10/18		93	%	60 - 140
		Bromoform	2012/10/18		97	%	60 - 140
		Bromomethane	2012/10/18		107	%	60 - 140
		Carbon Tetrachloride	2012/10/18		101	%	60 - 140
		Chlorobenzene	2012/10/18		97	%	60 - 140
		Chloroform	2012/10/18		99	%	60 - 140
		Dibromochloromethane	2012/10/18		99	%	60 - 140
		1,2-Dichlorobenzene	2012/10/18		105	%	60 - 140
		1,3-Dichlorobenzene	2012/10/18		107	%	60 - 140
		1,4-Dichlorobenzene	2012/10/18		106	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2012/10/18		93	%	60 - 140
		1,1-Dichloroethane	2012/10/18		80	%	60 - 140
		1,2-Dichloroethane	2012/10/18		88	%	60 - 140
		1,1-Dichloroethylene	2012/10/18		95	%	60 - 140
		cis-1,2-Dichloroethylene	2012/10/18		92	%	60 - 140
		trans-1,2-Dichloroethylene	2012/10/18		102	%	60 - 140
		1,2-Dichloropropane	2012/10/18		88	%	60 - 140
		cis-1,3-Dichloropropene	2012/10/18		88	%	60 - 140
		trans-1,3-Dichloropropene	2012/10/18		86	%	60 - 140
		Ethylbenzene	2012/10/18		96	%	60 - 140
		Ethylene Dibromide	2012/10/18		92	%	60 - 140
		Hexane	2012/10/18		92	%	60 - 140
		Methylene Chloride(Dichloromethane)	2012/10/18		94	%	60 - 140

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3004176 RSC	Matrix Spike	Methyl Isobutyl Ketone	2012/10/18		74	%	60 - 140
		Methyl Ethyl Ketone (2-Butanone)	2012/10/18		82	%	60 - 140
		Methyl t-butyl ether (MTBE)	2012/10/18		83	%	60 - 140
		Styrene	2012/10/18		93	%	60 - 140
		1,1,1,2-Tetrachloroethane	2012/10/18		96	%	60 - 140
		1,1,2,2-Tetrachloroethane	2012/10/18		79	%	60 - 140
		Tetrachloroethylene	2012/10/18		106	%	60 - 140
		Toluene	2012/10/18		98	%	60 - 140
		1,1,1-Trichloroethane	2012/10/18		92	%	60 - 140
		1,1,2-Trichloroethane	2012/10/18		91	%	60 - 140
		Trichloroethylene	2012/10/18		105	%	60 - 140
		Vinyl Chloride	2012/10/18		95	%	60 - 140
		p+m-Xylene	2012/10/18		101	%	60 - 140
		o-Xylene	2012/10/18		100	%	60 - 140
		Trichlorofluoromethane (FREON 11)	2012/10/18		103	%	60 - 140
	Spiked Blank	4-Bromofluorobenzene	2012/10/18		108	%	60 - 140
		D10-o-Xylene	2012/10/18		102	%	60 - 130
		D4-1,2-Dichloroethane	2012/10/18		96	%	60 - 140
		D8-Toluene	2012/10/18		101	%	60 - 140
		Acetone (2-Propanone)	2012/10/18		88	%	60 - 140
		Benzene	2012/10/18		98	%	60 - 130
		Bromodichloromethane	2012/10/18		99	%	60 - 130
		Bromoform	2012/10/18		106	%	60 - 130
		Bromomethane	2012/10/18		106	%	60 - 140
		Carbon Tetrachloride	2012/10/18		102	%	60 - 130
		Chlorobenzene	2012/10/18		100	%	60 - 130
		Chloroform	2012/10/18		103	%	60 - 130
		Dibromochloromethane	2012/10/18		106	%	60 - 130
		1,2-Dichlorobenzene	2012/10/18		105	%	60 - 130
		1,3-Dichlorobenzene	2012/10/18		106	%	60 - 130
		1,4-Dichlorobenzene	2012/10/18		104	%	60 - 130
		Dichlorodifluoromethane (FREON 12)	2012/10/18		94	%	60 - 140
		1,1-Dichloroethane	2012/10/18		82	%	60 - 130
		1,2-Dichloroethane	2012/10/18		95	%	60 - 130
		1,1-Dichloroethylene	2012/10/18		95	%	60 - 130
		cis-1,2-Dichloroethylene	2012/10/18		96	%	60 - 130
		trans-1,2-Dichloroethylene	2012/10/18		102	%	60 - 130
		1,2-Dichloropropane	2012/10/18		92	%	60 - 130
		cis-1,3-Dichloropropene	2012/10/18		93	%	60 - 130
		trans-1,3-Dichloropropene	2012/10/18		92	%	60 - 130
		Ethylbenzene	2012/10/18		96	%	60 - 130
		Ethylene Dibromide	2012/10/18		99	%	60 - 130
		Hexane	2012/10/18		88	%	60 - 130
		Methylene Chloride(Dichloromethane)	2012/10/18		98	%	60 - 130
		Methyl Isobutyl Ketone	2012/10/18		85	%	60 - 130
		Methyl Ethyl Ketone (2-Butanone)	2012/10/18		85	%	60 - 140
		Methyl t-butyl ether (MTBE)	2012/10/18		94	%	60 - 130
		Styrene	2012/10/18		96	%	60 - 130
		1,1,1,2-Tetrachloroethane	2012/10/18		100	%	60 - 130
		1,1,2,2-Tetrachloroethane	2012/10/18		88	%	60 - 130
		Tetrachloroethylene	2012/10/18		104	%	60 - 130
		Toluene	2012/10/18		99	%	60 - 130
		1,1,1-Trichloroethane	2012/10/18		94	%	60 - 130
		1,1,2-Trichloroethane	2012/10/18		97	%	60 - 130
		Trichloroethylene	2012/10/18		106	%	60 - 130

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3004176 RSC	Spiked Blank	Vinyl Chloride	2012/10/18		95	%	60 - 130
		p+m-Xylene	2012/10/18		101	%	60 - 130
		o-Xylene	2012/10/18		102	%	60 - 130
	Method Blank	Trichlorofluoromethane (FREON 11)	2012/10/18		103	%	60 - 130
		4-Bromofluorobenzene	2012/10/18		104	%	60 - 140
		D10-o-Xylene	2012/10/18		104	%	60 - 130
		D4-1,2-Dichloroethane	2012/10/18		93	%	60 - 140
		D8-Toluene	2012/10/18		102	%	60 - 140
		Acetone (2-Propanone)	2012/10/18	<0.50		ug/g	
		Benzene	2012/10/18	<0.020		ug/g	
		Bromodichloromethane	2012/10/18	<0.050		ug/g	
		Bromoform	2012/10/18	<0.050		ug/g	
		Bromomethane	2012/10/18	<0.050		ug/g	
		Carbon Tetrachloride	2012/10/18	<0.050		ug/g	
		Chlorobenzene	2012/10/18	<0.050		ug/g	
		Chloroform	2012/10/18	<0.050		ug/g	
		Dibromochloromethane	2012/10/18	<0.050		ug/g	
		1,2-Dichlorobenzene	2012/10/18	<0.050		ug/g	
		1,3-Dichlorobenzene	2012/10/18	<0.050		ug/g	
		1,4-Dichlorobenzene	2012/10/18	<0.050		ug/g	
		Dichlorodifluoromethane (FREON 12)	2012/10/18	<0.050		ug/g	
		1,1-Dichloroethane	2012/10/18	<0.050		ug/g	
		1,2-Dichloroethane	2012/10/18	<0.050		ug/g	
		1,1-Dichloroethylene	2012/10/18	<0.050		ug/g	
		cis-1,2-Dichloroethylene	2012/10/18	<0.050		ug/g	
		trans-1,2-Dichloroethylene	2012/10/18	<0.050		ug/g	
		1,2-Dichloropropane	2012/10/18	<0.050		ug/g	
		cis-1,3-Dichloropropene	2012/10/18	<0.030		ug/g	
		trans-1,3-Dichloropropene	2012/10/18	<0.040		ug/g	
		Ethylbenzene	2012/10/18	<0.020		ug/g	
		Ethylene Dibromide	2012/10/18	<0.050		ug/g	
		Hexane	2012/10/18	<0.050		ug/g	
		Methylene Chloride(Dichloromethane)	2012/10/18	<0.050		ug/g	
		Methyl Isobutyl Ketone	2012/10/18	<0.50		ug/g	
		Methyl Ethyl Ketone (2-Butanone)	2012/10/18	<0.50		ug/g	
		Methyl t-butyl ether (MTBE)	2012/10/18	<0.050		ug/g	
		Styrene	2012/10/18	<0.050		ug/g	
		1,1,1,2-Tetrachloroethane	2012/10/18	<0.050		ug/g	
		1,1,2,2-Tetrachloroethane	2012/10/18	<0.050		ug/g	
		Tetrachloroethylene	2012/10/18	<0.050		ug/g	
		Toluene	2012/10/18	<0.020		ug/g	
		1,1,1-Trichloroethane	2012/10/18	<0.050		ug/g	
		1,1,2-Trichloroethane	2012/10/18	<0.050		ug/g	
		Trichloroethylene	2012/10/18	<0.050		ug/g	
		Vinyl Chloride	2012/10/18	<0.020		ug/g	
		p+m-Xylene	2012/10/18	<0.020		ug/g	
		o-Xylene	2012/10/18	<0.020		ug/g	
		Xylene (Total)	2012/10/18	<0.020		ug/g	
		Trichlorofluoromethane (FREON 11)	2012/10/18	<0.050		ug/g	
	RPD	Acetone (2-Propanone)	2012/10/18	NC		%	50
		Benzene	2012/10/18	NC		%	50
		Bromodichloromethane	2012/10/18	NC		%	50
		Bromoform	2012/10/18	NC		%	50
		Bromomethane	2012/10/18	NC		%	50
		Carbon Tetrachloride	2012/10/18	NC		%	50

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3004176 RSC	RPD	Chlorobenzene	2012/10/18	NC		%	50
		Chloroform	2012/10/18	NC		%	50
		Dibromochloromethane	2012/10/18	NC		%	50
		1,2-Dichlorobenzene	2012/10/18	NC		%	50
		1,3-Dichlorobenzene	2012/10/18	NC		%	50
		1,4-Dichlorobenzene	2012/10/18	NC		%	50
		Dichlorodifluoromethane (FREON 12)	2012/10/18	NC		%	50
		1,1-Dichloroethane	2012/10/18	NC		%	50
		1,2-Dichloroethane	2012/10/18	NC		%	50
		1,1-Dichloroethylene	2012/10/18	NC		%	50
		cis-1,2-Dichloroethylene	2012/10/18	NC		%	50
		trans-1,2-Dichloroethylene	2012/10/18	NC		%	50
		1,2-Dichloropropane	2012/10/18	NC		%	50
		cis-1,3-Dichloropropene	2012/10/18	NC		%	50
		trans-1,3-Dichloropropene	2012/10/18	NC		%	50
		Ethylbenzene	2012/10/18	NC		%	50
		Ethylene Dibromide	2012/10/18	NC		%	50
		Hexane	2012/10/18	NC		%	50
		Methylene Chloride(Dichloromethane)	2012/10/18	NC		%	50
		Methyl Isobutyl Ketone	2012/10/18	NC		%	50
		Methyl Ethyl Ketone (2-Butanone)	2012/10/18	NC		%	50
		Methyl t-butyl ether (MTBE)	2012/10/18	NC		%	50
		Styrene	2012/10/18	NC		%	50
		1,1,1,2-Tetrachloroethane	2012/10/18	NC		%	50
		1,1,2,2-Tetrachloroethane	2012/10/18	NC		%	50
		Tetrachloroethylene	2012/10/18	NC		%	50
		Toluene	2012/10/18	NC		%	50
		1,1,1-Trichloroethane	2012/10/18	NC		%	50
		1,1,2-Trichloroethane	2012/10/18	NC		%	50
		Trichloroethylene	2012/10/18	NC		%	50
		Vinyl Chloride	2012/10/18	NC		%	50
		p+m-Xylene	2012/10/18	NC		%	50
		o-Xylene	2012/10/18	NC		%	50
		Xylene (Total)	2012/10/18	NC		%	50
		Trichlorofluoromethane (FREON 11)	2012/10/18	NC		%	50
3004907 SAC	Matrix Spike	Chromium (VI)	2012/10/18		6.8 (2)	%	75 - 125
	QC Standard	Chromium (VI)	2012/10/18		98	%	75 - 125
	Spiked Blank	Chromium (VI)	2012/10/18		100	%	80 - 120
	Method Blank	Chromium (VI)	2012/10/18	<0.2		ug/g	
	RPD	Chromium (VI)	2012/10/18	NC		%	35
3005489 THT	RPD	Moisture	2012/10/17	0.9		%	20
3005732 LHA	Matrix Spike	Free Cyanide	2012/10/18		95	%	75 - 125
	Spiked Blank	Free Cyanide	2012/10/18		104	%	80 - 120
	Method Blank	Free Cyanide	2012/10/18	<0.01		ug/g	
	RPD	Free Cyanide	2012/10/18	NC		%	35
3005938 JBW	Matrix Spike	Acid Extractable Antimony (Sb)	2012/10/19		89	%	75 - 125
		Acid Extractable Arsenic (As)	2012/10/19		102	%	75 - 125
		Acid Extractable Barium (Ba)	2012/10/19		NC	%	75 - 125
		Acid Extractable Beryllium (Be)	2012/10/19		97	%	75 - 125
		Acid Extractable Boron (B)	2012/10/19		88	%	75 - 125
		Acid Extractable Cadmium (Cd)	2012/10/19		101	%	75 - 125
		Acid Extractable Chromium (Cr)	2012/10/19		NC	%	75 - 125
		Acid Extractable Cobalt (Co)	2012/10/19		103	%	75 - 125
		Acid Extractable Copper (Cu)	2012/10/19		NC	%	75 - 125
		Acid Extractable Lead (Pb)	2012/10/19		NC	%	75 - 125

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3005938 JBW	Matrix Spike	Acid Extractable Molybdenum (Mo)	2012/10/19		105	%	75 - 125
		Acid Extractable Nickel (Ni)	2012/10/19		NC	%	75 - 125
		Acid Extractable Selenium (Se)	2012/10/19		97	%	75 - 125
		Acid Extractable Silver (Ag)	2012/10/19		100	%	75 - 125
		Acid Extractable Thallium (Tl)	2012/10/19		88	%	75 - 125
		Acid Extractable Uranium (U)	2012/10/19		109	%	75 - 125
		Acid Extractable Vanadium (V)	2012/10/19		NC	%	75 - 125
	Spiked Blank	Acid Extractable Zinc (Zn)	2012/10/19		NC	%	75 - 125
		Acid Extractable Mercury (Hg)	2012/10/19		NC	%	75 - 125
		Acid Extractable Antimony (Sb)	2012/10/19		101	%	80 - 120
		Acid Extractable Arsenic (As)	2012/10/19		101	%	80 - 120
		Acid Extractable Barium (Ba)	2012/10/19		101	%	80 - 120
		Acid Extractable Beryllium (Be)	2012/10/19		97	%	80 - 120
		Acid Extractable Boron (B)	2012/10/19		96	%	80 - 120
		Acid Extractable Cadmium (Cd)	2012/10/19		100	%	80 - 120
		Acid Extractable Chromium (Cr)	2012/10/19		103	%	80 - 120
		Acid Extractable Cobalt (Co)	2012/10/19		103	%	80 - 120
		Acid Extractable Copper (Cu)	2012/10/19		101	%	80 - 120
		Acid Extractable Lead (Pb)	2012/10/19		103	%	80 - 120
		Acid Extractable Molybdenum (Mo)	2012/10/19		102	%	80 - 120
		Acid Extractable Nickel (Ni)	2012/10/19		102	%	80 - 120
		Acid Extractable Selenium (Se)	2012/10/19		101	%	80 - 120
		Acid Extractable Silver (Ag)	2012/10/19		100	%	80 - 120
		Acid Extractable Thallium (Tl)	2012/10/19		91	%	80 - 120
		Acid Extractable Uranium (U)	2012/10/19		106	%	80 - 120
		Acid Extractable Vanadium (V)	2012/10/19		110	%	80 - 120
		Acid Extractable Zinc (Zn)	2012/10/19		105	%	80 - 120
	Method Blank	Acid Extractable Mercury (Hg)	2012/10/19		100	%	80 - 120
		Acid Extractable Antimony (Sb)	2012/10/19	0.27, RDL=0.20		ug/g	
		Acid Extractable Arsenic (As)	2012/10/19	<1.0		ug/g	
		Acid Extractable Barium (Ba)	2012/10/19	<0.50		ug/g	
		Acid Extractable Beryllium (Be)	2012/10/19	<0.20		ug/g	
		Acid Extractable Boron (B)	2012/10/19	<5.0		ug/g	
		Acid Extractable Cadmium (Cd)	2012/10/19	<0.10		ug/g	
		Acid Extractable Chromium (Cr)	2012/10/19	<1.0		ug/g	
		Acid Extractable Cobalt (Co)	2012/10/19	<0.10		ug/g	
		Acid Extractable Copper (Cu)	2012/10/19	<0.50		ug/g	
		Acid Extractable Lead (Pb)	2012/10/19	<1.0		ug/g	
		Acid Extractable Molybdenum (Mo)	2012/10/19	<0.50		ug/g	
		Acid Extractable Nickel (Ni)	2012/10/19	<0.50		ug/g	
		Acid Extractable Selenium (Se)	2012/10/19	<0.50		ug/g	
		Acid Extractable Silver (Ag)	2012/10/19	<0.20		ug/g	
		Acid Extractable Thallium (Tl)	2012/10/19	<0.050		ug/g	
		Acid Extractable Uranium (U)	2012/10/19	<0.050		ug/g	
		Acid Extractable Vanadium (V)	2012/10/19	<5.0		ug/g	
		Acid Extractable Zinc (Zn)	2012/10/19	<5.0		ug/g	
	RPD	Acid Extractable Mercury (Hg)	2012/10/19	<0.050		ug/g	
		Acid Extractable Antimony (Sb)	2012/10/19	7.0		%	30
		Acid Extractable Arsenic (As)	2012/10/19	6.2		%	30
		Acid Extractable Barium (Ba)	2012/10/19	7.1		%	30
		Acid Extractable Beryllium (Be)	2012/10/19	NC		%	30
		Acid Extractable Boron (B)	2012/10/19	NC		%	30
		Acid Extractable Cadmium (Cd)	2012/10/19	21.5		%	30
		Acid Extractable Chromium (Cr)	2012/10/19	8.8		%	30
		Acid Extractable Cobalt (Co)	2012/10/19	7.4		%	30

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: OAKVILLE

Quality Assurance Report (Continued)

Maxxam Job Number: MB2F9521

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3005938 JBW	RPD	Acid Extractable Copper (Cu)	2012/10/19	0.5		%	30
		Acid Extractable Lead (Pb)	2012/10/19	7.4		%	30
		Acid Extractable Molybdenum (Mo)	2012/10/19	12.0		%	30
		Acid Extractable Nickel (Ni)	2012/10/19	12.5		%	30
		Acid Extractable Selenium (Se)	2012/10/19	13.5		%	30
		Acid Extractable Silver (Ag)	2012/10/19	NC		%	30
		Acid Extractable Thallium (Tl)	2012/10/19	12.5		%	30
		Acid Extractable Uranium (U)	2012/10/19	8.8		%	30
		Acid Extractable Vanadium (V)	2012/10/19	11.7		%	30
		Acid Extractable Zinc (Zn)	2012/10/19	8.8		%	30
3006224 JBW	Matrix Spike	Acid Extractable Antimony (Sb)	2012/10/18		98	%	75 - 125
		Acid Extractable Arsenic (As)	2012/10/18		99	%	75 - 125
		Acid Extractable Barium (Ba)	2012/10/18		NC	%	75 - 125
		Acid Extractable Beryllium (Be)	2012/10/18		94	%	75 - 125
		Acid Extractable Boron (B)	2012/10/18		88	%	75 - 125
		Acid Extractable Cadmium (Cd)	2012/10/18		97	%	75 - 125
		Acid Extractable Chromium (Cr)	2012/10/18		97	%	75 - 125
		Acid Extractable Cobalt (Co)	2012/10/18		94	%	75 - 125
		Acid Extractable Copper (Cu)	2012/10/18		115	%	75 - 125
		Acid Extractable Lead (Pb)	2012/10/18		98	%	75 - 125
	Spiked Blank	Acid Extractable Molybdenum (Mo)	2012/10/18		102	%	75 - 125
		Acid Extractable Nickel (Ni)	2012/10/18		94	%	75 - 125
		Acid Extractable Selenium (Se)	2012/10/18		94	%	75 - 125
		Acid Extractable Silver (Ag)	2012/10/18		96	%	75 - 125
		Acid Extractable Thallium (Tl)	2012/10/18		88	%	75 - 125
		Acid Extractable Uranium (U)	2012/10/18		104	%	75 - 125
		Acid Extractable Vanadium (V)	2012/10/18		103	%	75 - 125
		Acid Extractable Zinc (Zn)	2012/10/18		96	%	75 - 125
		Acid Extractable Mercury (Hg)	2012/10/18		103	%	75 - 125
		Acid Extractable Antimony (Sb)	2012/10/18		99	%	80 - 120
	Method Blank	Acid Extractable Arsenic (As)	2012/10/18		101	%	80 - 120
		Acid Extractable Barium (Ba)	2012/10/18		98	%	80 - 120
		Acid Extractable Beryllium (Be)	2012/10/18		97	%	80 - 120
		Acid Extractable Boron (B)	2012/10/18		91	%	80 - 120
		Acid Extractable Cadmium (Cd)	2012/10/18		100	%	80 - 120
		Acid Extractable Chromium (Cr)	2012/10/18		97	%	80 - 120
		Acid Extractable Cobalt (Co)	2012/10/18		97	%	80 - 120
		Acid Extractable Copper (Cu)	2012/10/18		94	%	80 - 120
		Acid Extractable Lead (Pb)	2012/10/18		103	%	80 - 120
		Acid Extractable Molybdenum (Mo)	2012/10/18		101	%	80 - 120
		Acid Extractable Nickel (Ni)	2012/10/18		98	%	80 - 120
		Acid Extractable Selenium (Se)	2012/10/18		96	%	80 - 120
		Acid Extractable Silver (Ag)	2012/10/18		98	%	80 - 120
		Acid Extractable Thallium (Tl)	2012/10/18		91	%	80 - 120
		Acid Extractable Uranium (U)	2012/10/18		107	%	80 - 120
		Acid Extractable Vanadium (V)	2012/10/18		100	%	80 - 120
		Acid Extractable Zinc (Zn)	2012/10/18		100	%	80 - 120
		Acid Extractable Mercury (Hg)	2012/10/18		103	%	80 - 120
		Acid Extractable Antimony (Sb)	2012/10/18	<0.20		ug/g	
		Acid Extractable Arsenic (As)	2012/10/18	<1.0		ug/g	
		Acid Extractable Barium (Ba)	2012/10/18	<0.50		ug/g	
		Acid Extractable Beryllium (Be)	2012/10/18	<0.20		ug/g	
		Acid Extractable Boron (B)	2012/10/18	<5.0		ug/g	
		Acid Extractable Cadmium (Cd)	2012/10/18	<0.10		ug/g	
		Acid Extractable Chromium (Cr)	2012/10/18	<1.0		ug/g	

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: OAKVILLE

Quality Assurance Report (Continued)

Maxxam Job Number: MB2F9521

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3006224 JBW	Method Blank	Acid Extractable Cobalt (Co)	2012/10/18	<0.10		ug/g	
		Acid Extractable Copper (Cu)	2012/10/18	<0.50		ug/g	
		Acid Extractable Lead (Pb)	2012/10/18	<1.0		ug/g	
		Acid Extractable Molybdenum (Mo)	2012/10/18	<0.50		ug/g	
		Acid Extractable Nickel (Ni)	2012/10/18	<0.50		ug/g	
		Acid Extractable Selenium (Se)	2012/10/18	<0.50		ug/g	
		Acid Extractable Silver (Ag)	2012/10/18	<0.20		ug/g	
		Acid Extractable Thallium (Tl)	2012/10/18	<0.050		ug/g	
		Acid Extractable Uranium (U)	2012/10/18	<0.050		ug/g	
		Acid Extractable Vanadium (V)	2012/10/18	<5.0		ug/g	
	RPD	Acid Extractable Zinc (Zn)	2012/10/18	<5.0		ug/g	
		Acid Extractable Mercury (Hg)	2012/10/18	<0.050		ug/g	
		Acid Extractable Antimony (Sb)	2012/10/19	NC		%	30
		Acid Extractable Arsenic (As)	2012/10/19	NC		%	30
		Acid Extractable Barium (Ba)	2012/10/19	2.0		%	30
		Acid Extractable Beryllium (Be)	2012/10/19	NC		%	30
		Acid Extractable Boron (B)	2012/10/19	NC		%	30
		Acid Extractable Cadmium (Cd)	2012/10/19	NC		%	30
		Acid Extractable Chromium (Cr)	2012/10/19	2.8		%	30
		Acid Extractable Cobalt (Co)	2012/10/19	5.1		%	30
		Acid Extractable Copper (Cu)	2012/10/19	6.8		%	30
		Acid Extractable Lead (Pb)	2012/10/19	NC		%	30
		Acid Extractable Molybdenum (Mo)	2012/10/19	NC		%	30
		Acid Extractable Nickel (Ni)	2012/10/19	0.2		%	30
		Acid Extractable Selenium (Se)	2012/10/19	NC		%	30
		Acid Extractable Silver (Ag)	2012/10/19	NC		%	30
		Acid Extractable Thallium (Tl)	2012/10/19	NC		%	30
		Acid Extractable Uranium (U)	2012/10/19	7.9		%	30
		Acid Extractable Vanadium (V)	2012/10/19	NC		%	30
		Acid Extractable Zinc (Zn)	2012/10/19	NC		%	30
		Acid Extractable Mercury (Hg)	2012/10/19	NC		%	30
3006242 AFZ	Spiked Blank	Hot Water Ext. Boron (B)	2012/10/18		98	%	75 - 125
	Method Blank	Hot Water Ext. Boron (B)	2012/10/18	<0.050		ug/g	
3007079 NYS	QC Standard	Conductivity	2012/10/19		99	%	90 - 110
	Method Blank	Conductivity	2012/10/19	<0.002		mS/cm	
	RPD	Conductivity	2012/10/19	0.4		%	10

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) Detection Limit was raised due to matrix interferences.

(2) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample.

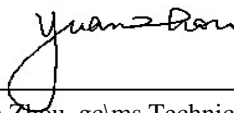
Validation Signature Page

Maxxam Job #: B2F9521

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Cristina Carriere, Scientific Services



Yuan Zhou, gc/ms Technician

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 11-12-2073
 Site Location: HALTON WATERMAIN
 Your C.O.C. #: 29778126, 297781-26-01

Attention: Michael Diez D'Aux

Terraprobe
 11 Indell Lane
 Brampton, ON
 L6T 3Y3

Report Date: 2013/02/19

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B319879

Received: 2013/02/08, 13:45

Sample Matrix: Soil
 # Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Hot Water Extractable Boron	3	2013/02/14	2013/02/14	CAM SOP-00408	R153 Ana. Prot. 2011
Free (WAD) Cyanide	3	N/A	2013/02/14	CAM SOP-00457	Ontario MOE CN-E3015
Conductivity	3	N/A	2013/02/14	CAM SOP-00414	APHA 2510
Hexavalent Chromium in Soil by IC (1)	3	2013/02/13	2013/02/14	CAM SOP-00436	EPA SW846-3060/7199
Acid Extr. Metals (aqua regia) by ICPMS	3	2013/02/14	2013/02/14	CAM SOP-00447	EPA 6020
Moisture	3	N/A	2013/02/13	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM)	3	2013/02/12	2013/02/13	CAM SOP - 00318	EPA 8270
pH CaCl2 EXTRACT	3	2013/02/13	2013/02/13	CAM SOP-00413	SM 4500H+ B
Sodium Adsorption Ratio (SAR)	3	2013/02/11	2013/02/14	CAM SOP-00102	EPA 6010
Volatile Organic Compounds in Soil	3	2013/02/13	2013/02/14	CAM SOP-00226	EPA 8260 modified

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is

Your Project #: 11-12-2073
Site Location: HALTON WATERMAIN
Your C.O.C. #: 29778126, 297781-26-01

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/02/19

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Renata Spena, Project Manager
Email: RSpenna@maxxam.ca
Phone# (905) 817-5700 Ext:5818

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

O'REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		QM6930	QM6931	QM6931	QM6932		
Sampling Date							
COC Number		297781-26-01	297781-26-01	297781-26-01	297781-26-01		
	Units	BH 7+270 12.1M-12.4M 39 '9"-40 '9"	BH 7+270 81"6"-82'4", 24.8M-25.1M	BH 7+270 81"6"-82'4", 24.8M-25.1M Lab-Dup	BH 7+270 140'-140'10",42.7M-42.9M	RDL	QC Batch

Calculated Parameters							
Sodium Adsorption Ratio	N/A	2.6	9.6		11		3119751
Inorganics							
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	<0.2	0.2	3122446
Conductivity	mS/cm	0.22	0.64		2.2	0.002	3123623
Free Cyanide	ug/g	<0.01	<0.01	<0.01	<0.01	0.01	3122198
Moisture	%	4.1	2.9		3.8	1.0	3123370
Available (CaCl2) pH	pH	8.27	8.60		8.68		3122271
Metals							
Hot Water Ext. Boron (B)	ug/g	3.2	4.3		5.2	0.050	3123759
Acid Extractable Antimony (Sb)	ug/g	0.56	0.50		0.52	0.20	3123620
Acid Extractable Arsenic (As)	ug/g	4.8	5.4		6.8	1.0	3123620
Acid Extractable Barium (Ba)	ug/g	13	220		78	0.50	3123620
Acid Extractable Beryllium (Be)	ug/g	0.67	0.64		0.91	0.20	3123620
Acid Extractable Boron (B)	ug/g	24	27		30	5.0	3123620
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10		<0.10	0.10	3123620
Acid Extractable Chromium (Cr)	ug/g	24	23		27	1.0	3123620
Acid Extractable Cobalt (Co)	ug/g	13	12		15	0.10	3123620
Acid Extractable Copper (Cu)	ug/g	7.1	6.3		25	0.50	3123620
Acid Extractable Lead (Pb)	ug/g	11	8.8		9.5	1.0	3123620
Acid Extractable Molybdenum (Mo)	ug/g	1.5	1.5		2.2	0.50	3123620
Acid Extractable Nickel (Ni)	ug/g	31	28		36	0.50	3123620
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50		<0.50	0.50	3123620
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20		<0.20	0.20	3123620
Acid Extractable Thallium (Tl)	ug/g	0.070	0.066		0.071	0.050	3123620
Acid Extractable Uranium (U)	ug/g	0.65	0.65		1.1	0.050	3123620
Acid Extractable Vanadium (V)	ug/g	30	28		34	5.0	3123620
Acid Extractable Zinc (Zn)	ug/g	62	56		70	5.0	3123620
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050		<0.050	0.050	3123620
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

SEMI-VOLATILE ORGANICS BY GC-MS (SOIL)

Maxxam ID		QM6930	QM6931	QM6932		
Sampling Date						
COC Number		297781-26-01	297781-26-01	297781-26-01		
	Units	BH 7+270 12.1M-12.4M 39 '9"-40 '9"	BH 7+270 81"6"-82'4", 24.8M-25.1M	BH 7+270 140'-140'10",42.7M-42.9M	RDL	QC Batch

Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Benzo(b,j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3122038
Surrogate Recovery (%)						
D10-Anthracene	%	79	85	87		3122038
D14-Terphenyl (FS)	%	84	88	87		3122038
D8-Acenaphthylene	%	78	78	78		3122038

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		QM6930	QM6931	QM6932		
Sampling Date						
COC Number		297781-26-01	297781-26-01	297781-26-01		
	Units	BH 7+270 12.1M-12.4M 39 '9"-40 '9"	BH 7+270 81"6"-82'4", 24.8M-25.1M	BH 7+270 140'-140'10",42.7M-42.9M	RDL	QC Batch

Volatiles Organics						
Acetone (2-Propanone)	ug/g	<0.50	<0.50	<0.50	0.50	3121045
Benzene	ug/g	<0.020	<0.020	<0.020	0.020	3121045
Bromodichloromethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Bromoform	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Bromomethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Carbon Tetrachloride	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Chlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Chloroform	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Dibromochloromethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,2-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,3-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,4-Dichlorobenzene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,1-Dichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,2-Dichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,1-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
cis-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
trans-1,2-Dichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,2-Dichloropropane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
cis-1,3-Dichloropropene	ug/g	<0.030	<0.030	<0.030	0.030	3121045
trans-1,3-Dichloropropene	ug/g	<0.040	<0.040	<0.040	0.040	3121045
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	0.020	3121045
Ethylene Dibromide	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Hexane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Methylene Chloride(Dichloromethane)	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Methyl Isobutyl Ketone	ug/g	<0.50	<0.50	<0.50	0.50	3121045
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	<0.50	<0.50	0.50	3121045
Methyl t-butyl ether (MTBE)	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Styrene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,1,1,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,1,1,2,2-Tetrachloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		QM6930	QM6931	QM6932		
Sampling Date						
COC Number		297781-26-01	297781-26-01	297781-26-01		
	Units	BH 7+270 12.1M-12.4M 39 '9"-40 '9"	BH 7+270 81"6"-82'4", 24.8M-25.1M	BH 7+270 140'-140'10",42.7M-42.9M	RDL	QC Batch
Tetrachloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Toluene	ug/g	<0.020	<0.020	<0.020	0.020	3121045
1,1,1-Trichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
1,1,2-Trichloroethane	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Trichloroethylene	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Vinyl Chloride	ug/g	<0.020	<0.020	<0.020	0.020	3121045
p+m-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	3121045
o-Xylene	ug/g	<0.020	<0.020	<0.020	0.020	3121045
Xylene (Total)	ug/g	<0.020	<0.020	<0.020	0.020	3121045
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	<0.050	<0.050	0.050	3121045
Surrogate Recovery (%)						
4-Bromofluorobenzene	%	100	99	100		3121045
D10-o-Xylene	%	107	98	94		3121045
D4-1,2-Dichloroethane	%	98	99	99		3121045
D8-Toluene	%	99	100	100		3121045
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		QM6932		
Sampling Date				
COC Number		297781-26-01		
	Units	BH 7+270 140'-140'10", 42.7M-42.9M Lab-Dup	RDL	QC Batch
Volatile Organics				
Acetone (2-Propanone)	ug/g	<0.50	0.50	3121045
Benzene	ug/g	<0.020	0.020	3121045
Bromodichloromethane	ug/g	<0.050	0.050	3121045
Bromoform	ug/g	<0.050	0.050	3121045
Bromomethane	ug/g	<0.050	0.050	3121045
Carbon Tetrachloride	ug/g	<0.050	0.050	3121045
Chlorobenzene	ug/g	<0.050	0.050	3121045
Chloroform	ug/g	<0.050	0.050	3121045
Dibromochloromethane	ug/g	<0.050	0.050	3121045
1,2-Dichlorobenzene	ug/g	<0.050	0.050	3121045
1,3-Dichlorobenzene	ug/g	<0.050	0.050	3121045
1,4-Dichlorobenzene	ug/g	<0.050	0.050	3121045
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	0.050	3121045
1,1-Dichloroethane	ug/g	<0.050	0.050	3121045
1,2-Dichloroethane	ug/g	<0.050	0.050	3121045
1,1-Dichloroethylene	ug/g	<0.050	0.050	3121045
cis-1,2-Dichloroethylene	ug/g	<0.050	0.050	3121045
trans-1,2-Dichloroethylene	ug/g	<0.050	0.050	3121045
1,2-Dichloropropane	ug/g	<0.050	0.050	3121045
cis-1,3-Dichloropropene	ug/g	<0.030	0.030	3121045
trans-1,3-Dichloropropene	ug/g	<0.040	0.040	3121045
Ethylbenzene	ug/g	<0.020	0.020	3121045
Ethylene Dibromide	ug/g	<0.050	0.050	3121045
Hexane	ug/g	<0.050	0.050	3121045
Methylene Chloride(Dichloromethane)	ug/g	<0.050	0.050	3121045
Methyl Isobutyl Ketone	ug/g	<0.50	0.50	3121045
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	0.50	3121045
Methyl t-butyl ether (MTBE)	ug/g	<0.050	0.050	3121045
Styrene	ug/g	<0.050	0.050	3121045
1,1,1,2-Tetrachloroethane	ug/g	<0.050	0.050	3121045
1,1,2,2-Tetrachloroethane	ug/g	<0.050	0.050	3121045
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

VOLATILE ORGANICS BY GC/MS (SOIL)

Maxxam ID		QM6932		
Sampling Date				
COC Number		297781-26-01		
	Units	BH 7+270 140'-140'10", 42.7M-42.9M Lab-Dup	RDL	QC Batch
Tetrachloroethylene	ug/g	<0.050	0.050	3121045
Toluene	ug/g	<0.020	0.020	3121045
1,1,1-Trichloroethane	ug/g	<0.050	0.050	3121045
1,1,2-Trichloroethane	ug/g	<0.050	0.050	3121045
Trichloroethylene	ug/g	<0.050	0.050	3121045
Vinyl Chloride	ug/g	<0.020	0.020	3121045
p+m-Xylene	ug/g	<0.020	0.020	3121045
o-Xylene	ug/g	<0.020	0.020	3121045
Xylene (Total)	ug/g	<0.020	0.020	3121045
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	0.050	3121045
Surrogate Recovery (%)				
4-Bromofluorobenzene	%	100		3121045
D10-o-Xylene	%	97		3121045
D4-1,2-Dichloroethane	%	98		3121045
D8-Toluene	%	101		3121045
RDL = Reportable Detection Limit QC Batch = Quality Control Batch				

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Test Summary

Maxxam ID QM6930
Sample ID BH 7+270 12.1M-12.4M 39 '9"-40 '9"
Matrix Soil

Collected
Shipped
Received 2013/02/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	3123759	2013/02/14	2013/02/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	3122198	N/A	2013/02/14	Louise Harding
Conductivity	COND	3123623	N/A	2013/02/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	3122446	2013/02/13	2013/02/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3123620	2013/02/14	2013/02/14	Viviana Canzonieri
Moisture	BAL	3123370	N/A	2013/02/13	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3122038	2013/02/12	2013/02/13	Darryl Tiller
pH CaCl ₂ EXTRACT		3122271	2013/02/13	2013/02/13	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	3119751	2013/02/14	2013/02/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3121045	2013/02/13	2013/02/14	Ajay Rana

Maxxam ID QM6931
Sample ID BH 7+270 81"6"-82"4", 24.8M-25.1M
Matrix Soil

Collected
Shipped
Received 2013/02/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	3123759	2013/02/14	2013/02/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	3122198	N/A	2013/02/14	Louise Harding
Conductivity	COND	3123623	N/A	2013/02/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	3122446	2013/02/13	2013/02/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3123620	2013/02/14	2013/02/14	Viviana Canzonieri
Moisture	BAL	3123370	N/A	2013/02/13	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3122038	2013/02/12	2013/02/13	Darryl Tiller
pH CaCl ₂ EXTRACT		3122271	2013/02/13	2013/02/13	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	3119751	2013/02/14	2013/02/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3121045	2013/02/13	2013/02/14	Ajay Rana

Maxxam ID QM6931 Dup
Sample ID BH 7+270 81"6"-82"4", 24.8M-25.1M
Matrix Soil

Collected
Shipped
Received 2013/02/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Free (WAD) Cyanide	TECH	3122198	N/A	2013/02/14	Louise Harding
Hexavalent Chromium in Soil by IC	IC/SPEC	3122446	2013/02/13	2013/02/14	Sally Coughlin

Maxxam ID QM6932
Sample ID BH 7+270 140'-140'10", 42.7M-42.9M
Matrix Soil

Collected
Shipped
Received 2013/02/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Hot Water Extractable Boron	ICP	3123759	2013/02/14	2013/02/14	Azita Fazaeli
Free (WAD) Cyanide	TECH	3122198	N/A	2013/02/14	Louise Harding
Conductivity	COND	3123623	N/A	2013/02/14	Neil Dassanayake
Hexavalent Chromium in Soil by IC	IC/SPEC	3122446	2013/02/13	2013/02/14	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3123620	2013/02/14	2013/02/14	Viviana Canzonieri
Moisture	BAL	3123370	N/A	2013/02/13	Chun Yan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3122038	2013/02/12	2013/02/13	Darryl Tiller
pH CaCl ₂ EXTRACT		3122271	2013/02/13	2013/02/13	Xuanhong Qiu
Sodium Adsorption Ratio (SAR)	CALC/MET	3119751	2013/02/14	2013/02/14	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3121045	2013/02/13	2013/02/14	Ajay Rana

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Test Summary

Maxxam ID QM6932 Dup
Sample ID BH 7+270 140'-140'10",42.7M-42.9M
Matrix Soil

Collected
Shipped
Received 2013/02/08

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Volatile Organic Compounds in Soil	P&T/MS	3121045	2013/02/13	2013/02/14	Ajay Rana

Maxxam Job #: B319879
Report Date: 2013/02/19

Terraprobe
Client Project #: 11-12-2073
Site Location: HALTON WATERMAIN

Package 1	6.0°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

"Samples on this submission were received as solid rock cores. Prior to any analytical processing, all samples were crushed to a consistent grain size of approximately <2mm using a Vibratory Ring Pulverizer (Model TM/STLX). Aliquots of the crushed rock were processed in accordance to the preparation and analysis requirements for a soil matrix, for the analyses requested."

Sample ID's revised as per clients request. 2013/02/19

Results relate only to the items tested.

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report
Maxxam Job Number: MB319879

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3121045 A_J	Matrix Spike [QM6932-01]	4-Bromofluorobenzene	2013/02/14		102	%	60 - 140
		D10-o-Xylene	2013/02/14		100	%	60 - 130
		D4-1,2-Dichloroethane	2013/02/14		98	%	60 - 140
		D8-Toluene	2013/02/14		101	%	60 - 140
		Acetone (2-Propanone)	2013/02/14		77	%	60 - 140
		Benzene	2013/02/14		99	%	60 - 140
		Bromodichloromethane	2013/02/14		93	%	60 - 140
		Bromoform	2013/02/14		103	%	60 - 140
		Bromomethane	2013/02/14		85	%	60 - 140
		Carbon Tetrachloride	2013/02/14		102	%	60 - 140
		Chlorobenzene	2013/02/14		102	%	60 - 140
		Chloroform	2013/02/14		93	%	60 - 140
		Dibromochloromethane	2013/02/14		100	%	60 - 140
		1,2-Dichlorobenzene	2013/02/14		99	%	60 - 140
		1,3-Dichlorobenzene	2013/02/14		102	%	60 - 140
		1,4-Dichlorobenzene	2013/02/14		100	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2013/02/14		71	%	60 - 140
		1,1-Dichloroethane	2013/02/14		86	%	60 - 140
		1,2-Dichloroethane	2013/02/14		93	%	60 - 140
		1,1-Dichloroethylene	2013/02/14		102	%	60 - 140
		cis-1,2-Dichloroethylene	2013/02/14		105	%	60 - 140
		trans-1,2-Dichloroethylene	2013/02/14		100	%	60 - 140
		1,2-Dichloropropane	2013/02/14		100	%	60 - 140
		cis-1,3-Dichloropropene	2013/02/14		104	%	60 - 140
		trans-1,3-Dichloropropene	2013/02/14		105	%	60 - 140
		Ethylbenzene	2013/02/14		104	%	60 - 140
		Ethylene Dibromide	2013/02/14		104	%	60 - 140
		Hexane	2013/02/14		97	%	60 - 140
		Methylene Chloride(Dichloromethane)	2013/02/14		98	%	60 - 140
		Methyl Isobutyl Ketone	2013/02/14		107	%	60 - 140
		Methyl Ethyl Ketone (2-Butanone)	2013/02/14		89	%	60 - 140
		Methyl t-butyl ether (MTBE)	2013/02/14		98	%	60 - 140
		Styrene	2013/02/14		106	%	60 - 140
		1,1,1,2-Tetrachloroethane	2013/02/14		106	%	60 - 140
		1,1,2,2-Tetrachloroethane	2013/02/14		102	%	60 - 140
		Tetrachloroethylene	2013/02/14		100	%	60 - 140
		Toluene	2013/02/14		99	%	60 - 140
		1,1,1-Trichloroethane	2013/02/14		106	%	60 - 140
		1,1,2-Trichloroethane	2013/02/14		100	%	60 - 140
		Trichloroethylene	2013/02/14		103	%	60 - 140
		Vinyl Chloride	2013/02/14		84	%	60 - 140
		p+m-Xylene	2013/02/14		98	%	60 - 140
		o-Xylene	2013/02/14		101	%	60 - 140
		Trichlorofluoromethane (FREON 11)	2013/02/14		92	%	60 - 140
	Spiked Blank	4-Bromofluorobenzene	2013/02/13		102	%	60 - 140
		D10-o-Xylene	2013/02/13		104	%	60 - 130
		D4-1,2-Dichloroethane	2013/02/13		98	%	60 - 140
		D8-Toluene	2013/02/13		101	%	60 - 140
		Acetone (2-Propanone)	2013/02/13		65	%	60 - 140
		Benzene	2013/02/13		98	%	60 - 130
		Bromodichloromethane	2013/02/13		91	%	60 - 130
		Bromoform	2013/02/13		101	%	60 - 130
		Bromomethane	2013/02/13		86	%	60 - 140
		Carbon Tetrachloride	2013/02/13		99	%	60 - 130

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB319879

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3121045 A_J	Spiked Blank	Chlorobenzene	2013/02/13		100	%	60 - 130
		Chloroform	2013/02/13		92	%	60 - 130
		Dibromochloromethane	2013/02/13		98	%	60 - 130
		1,2-Dichlorobenzene	2013/02/13		97	%	60 - 130
		1,3-Dichlorobenzene	2013/02/13		101	%	60 - 130
		1,4-Dichlorobenzene	2013/02/13		100	%	60 - 130
		Dichlorodifluoromethane (FREON 12)	2013/02/13		70	%	60 - 140
		1,1-Dichloroethane	2013/02/13		85	%	60 - 130
		1,2-Dichloroethane	2013/02/13		92	%	60 - 130
		1,1-Dichloroethylene	2013/02/13		101	%	60 - 130
		cis-1,2-Dichloroethylene	2013/02/13		104	%	60 - 130
		trans-1,2-Dichloroethylene	2013/02/13		99	%	60 - 130
		1,2-Dichloropropane	2013/02/13		98	%	60 - 130
		cis-1,3-Dichloropropene	2013/02/13		103	%	60 - 130
		trans-1,3-Dichloropropene	2013/02/13		103	%	60 - 130
		Ethylbenzene	2013/02/13		103	%	60 - 130
		Ethylene Dibromide	2013/02/13		103	%	60 - 130
		Hexane	2013/02/13		97	%	60 - 130
		Methylene Chloride(Dichloromethane)	2013/02/13		97	%	60 - 130
		Methyl Isobutyl Ketone	2013/02/13		105	%	60 - 130
		Methyl Ethyl Ketone (2-Butanone)	2013/02/13		82	%	60 - 140
		Methyl t-butyl ether (MTBE)	2013/02/13		98	%	60 - 130
		Styrene	2013/02/13		105	%	60 - 130
		1,1,1,2-Tetrachloroethane	2013/02/13		104	%	60 - 130
		1,1,2,2-Tetrachloroethane	2013/02/13		102	%	60 - 130
		Tetrachloroethylene	2013/02/13		99	%	60 - 130
		Toluene	2013/02/13		97	%	60 - 130
		1,1,1-Trichloroethane	2013/02/13		104	%	60 - 130
		1,1,2-Trichloroethane	2013/02/13		98	%	60 - 130
		Trichloroethylene	2013/02/13		101	%	60 - 130
		Vinyl Chloride	2013/02/13		84	%	60 - 130
		p+m-Xylene	2013/02/13		97	%	60 - 130
		o-Xylene	2013/02/13		99	%	60 - 130
		Trichlorofluoromethane (FREON 11)	2013/02/13		91	%	60 - 130
	Method Blank	4-Bromofluorobenzene	2013/02/13		98	%	60 - 140
		D10-o-Xylene	2013/02/13		97	%	60 - 130
		D4-1,2-Dichloroethane	2013/02/13		97	%	60 - 140
		D8-Toluene	2013/02/13		99	%	60 - 140
		Acetone (2-Propanone)	2013/02/13	<0.50		ug/g	
		Benzene	2013/02/13	<0.020		ug/g	
		Bromodichloromethane	2013/02/13	<0.050		ug/g	
		Bromoform	2013/02/13	<0.050		ug/g	
		Bromomethane	2013/02/13	<0.050		ug/g	
		Carbon Tetrachloride	2013/02/13	<0.050		ug/g	
		Chlorobenzene	2013/02/13	<0.050		ug/g	
		Chloroform	2013/02/13	<0.050		ug/g	
		Dibromochloromethane	2013/02/13	<0.050		ug/g	
		1,2-Dichlorobenzene	2013/02/13	<0.050		ug/g	
		1,3-Dichlorobenzene	2013/02/13	<0.050		ug/g	
		1,4-Dichlorobenzene	2013/02/13	<0.050		ug/g	
		Dichlorodifluoromethane (FREON 12)	2013/02/13	<0.050		ug/g	
		1,1-Dichloroethane	2013/02/13	<0.050		ug/g	
		1,2-Dichloroethane	2013/02/13	<0.050		ug/g	
		1,1-Dichloroethylene	2013/02/13	<0.050		ug/g	
		cis-1,2-Dichloroethylene	2013/02/13	<0.050		ug/g	

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB319879

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3121045 A_J	Method Blank	trans-1,2-Dichloroethylene	2013/02/13	<0.050		ug/g	
		1,2-Dichloropropane	2013/02/13	<0.050		ug/g	
		cis-1,3-Dichloropropene	2013/02/13	<0.030		ug/g	
		trans-1,3-Dichloropropene	2013/02/13	<0.040		ug/g	
		Ethylbenzene	2013/02/13	<0.020		ug/g	
		Ethylene Dibromide	2013/02/13	<0.050		ug/g	
		Hexane	2013/02/13	<0.050		ug/g	
		Methylene Chloride(Dichloromethane)	2013/02/13	<0.050		ug/g	
		Methyl Isobutyl Ketone	2013/02/13	<0.50		ug/g	
		Methyl Ethyl Ketone (2-Butanone)	2013/02/13	<0.50		ug/g	
		Methyl t-butyl ether (MTBE)	2013/02/13	<0.050		ug/g	
		Styrene	2013/02/13	<0.050		ug/g	
		1,1,1,2-Tetrachloroethane	2013/02/13	<0.050		ug/g	
		1,1,2,2-Tetrachloroethane	2013/02/13	<0.050		ug/g	
		Tetrachloroethylene	2013/02/13	<0.050		ug/g	
		Toluene	2013/02/13	<0.020		ug/g	
		1,1,1-Trichloroethane	2013/02/13	<0.050		ug/g	
		1,1,2-Trichloroethane	2013/02/13	<0.050		ug/g	
		Trichloroethylene	2013/02/13	<0.050		ug/g	
		Vinyl Chloride	2013/02/13	<0.020		ug/g	
		p+m-Xylene	2013/02/13	<0.020		ug/g	
		o-Xylene	2013/02/13	<0.020		ug/g	
		Xylene (Total)	2013/02/13	<0.020		ug/g	
		Trichlorofluoromethane (FREON 11)	2013/02/13	<0.050		ug/g	
	RPD [QM6932-01]	Acetone (2-Propanone)	2013/02/14	NC		%	50
		Benzene	2013/02/14	NC		%	50
		Bromodichloromethane	2013/02/14	NC		%	50
		Bromoform	2013/02/14	NC		%	50
		Bromomethane	2013/02/14	NC		%	50
		Carbon Tetrachloride	2013/02/14	NC		%	50
		Chlorobenzene	2013/02/14	NC		%	50
		Chloroform	2013/02/14	NC		%	50
		Dibromochloromethane	2013/02/14	NC		%	50
		1,2-Dichlorobenzene	2013/02/14	NC		%	50
		1,3-Dichlorobenzene	2013/02/14	NC		%	50
		1,4-Dichlorobenzene	2013/02/14	NC		%	50
		Dichlorodifluoromethane (FREON 12)	2013/02/14	NC		%	50
		1,1-Dichloroethane	2013/02/14	NC		%	50
		1,2-Dichloroethane	2013/02/14	NC		%	50
		1,1-Dichloroethylene	2013/02/14	NC		%	50
		cis-1,2-Dichloroethylene	2013/02/14	NC		%	50
		trans-1,2-Dichloroethylene	2013/02/14	NC		%	50
		1,2-Dichloropropane	2013/02/14	NC		%	50
		cis-1,3-Dichloropropene	2013/02/14	NC		%	50
		trans-1,3-Dichloropropene	2013/02/14	NC		%	50
		Ethylbenzene	2013/02/14	NC		%	50
		Ethylene Dibromide	2013/02/14	NC		%	50
		Hexane	2013/02/14	NC		%	50
		Methylene Chloride(Dichloromethane)	2013/02/14	NC		%	50
		Methyl Isobutyl Ketone	2013/02/14	NC		%	50
		Methyl Ethyl Ketone (2-Butanone)	2013/02/14	NC		%	50
		Methyl t-butyl ether (MTBE)	2013/02/14	NC		%	50
		Styrene	2013/02/14	NC		%	50
		1,1,1,2-Tetrachloroethane	2013/02/14	NC		%	50
		1,1,2,2-Tetrachloroethane	2013/02/14	NC		%	50

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB319879

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3121045 A_J	RPD [QM6932-01]	Tetrachloroethylene	2013/02/14	NC		%	50
		Toluene	2013/02/14	NC		%	50
		1,1,1-Trichloroethane	2013/02/14	NC		%	50
		1,1,2-Trichloroethane	2013/02/14	NC		%	50
		Trichloroethylene	2013/02/14	NC		%	50
		Vinyl Chloride	2013/02/14	NC		%	50
		p+m-Xylene	2013/02/14	NC		%	50
		o-Xylene	2013/02/14	NC		%	50
		Xylene (Total)	2013/02/14	NC		%	50
		Trichlorofluoromethane (FREON 11)	2013/02/14	NC		%	50
3122038 DTI	Matrix Spike	D10-Anthracene	2013/02/13		84	%	50 - 130
		D14-Terphenyl (FS)	2013/02/13		86	%	50 - 130
		D8-Acenaphthylene	2013/02/13		78	%	50 - 130
		Acenaphthene	2013/02/13		88	%	50 - 130
		Acenaphthylene	2013/02/13		85	%	50 - 130
		Anthracene	2013/02/13		76	%	50 - 130
		Benzo(a)anthracene	2013/02/13		94	%	50 - 130
		Benzo(a)pyrene	2013/02/13		92	%	50 - 130
		Benzo(b/j)fluoranthene	2013/02/13		95	%	50 - 130
		Benzo(g,h,i)perylene	2013/02/13		82	%	50 - 130
		Benzo(k)fluoranthene	2013/02/13		94	%	50 - 130
		Chrysene	2013/02/13		97	%	50 - 130
		Dibenz(a,h)anthracene	2013/02/13		92	%	50 - 130
		Fluoranthene	2013/02/13		92	%	50 - 130
		Fluorene	2013/02/13		87	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2013/02/13		84	%	50 - 130
		1-Methylnaphthalene	2013/02/13		84	%	50 - 130
		2-Methylnaphthalene	2013/02/13		82	%	50 - 130
		Naphthalene	2013/02/13		93	%	50 - 130
		Phenanthrene	2013/02/13		89	%	50 - 130
	Spiked Blank	Pyrene	2013/02/13		92	%	50 - 130
		D10-Anthracene	2013/02/13		88	%	50 - 130
		D14-Terphenyl (FS)	2013/02/13		88	%	50 - 130
		D8-Acenaphthylene	2013/02/13		83	%	50 - 130
		Acenaphthene	2013/02/13		93	%	50 - 130
		Acenaphthylene	2013/02/13		91	%	50 - 130
		Anthracene	2013/02/13		82	%	50 - 130
		Benzo(a)anthracene	2013/02/13		100	%	50 - 130
		Benzo(a)pyrene	2013/02/13		97	%	50 - 130
		Benzo(b/j)fluoranthene	2013/02/13		100	%	50 - 130
		Benzo(g,h,i)perylene	2013/02/13		89	%	50 - 130
		Benzo(k)fluoranthene	2013/02/13		99	%	50 - 130
		Chrysene	2013/02/13		103	%	50 - 130
		Dibenz(a,h)anthracene	2013/02/13		100	%	50 - 130
		Fluoranthene	2013/02/13		97	%	50 - 130
		Fluorene	2013/02/13		94	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2013/02/13		91	%	50 - 130
		1-Methylnaphthalene	2013/02/13		91	%	50 - 130
		2-Methylnaphthalene	2013/02/13		88	%	50 - 130
	Method Blank	Naphthalene	2013/02/13		101	%	50 - 130
		Phenanthrene	2013/02/13		95	%	50 - 130
		Pyrene	2013/02/13		97	%	50 - 130
		D10-Anthracene	2013/02/13		90	%	50 - 130
		D14-Terphenyl (FS)	2013/02/13		87	%	50 - 130
		D8-Acenaphthylene	2013/02/13		85	%	50 - 130

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB319879

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3122038 DTI	Method Blank	Acenaphthene	2013/02/13	<0.0050		ug/g	
		Acenaphthylene	2013/02/13	<0.0050		ug/g	
		Anthracene	2013/02/13	<0.0050		ug/g	
		Benzo(a)anthracene	2013/02/13	<0.0050		ug/g	
		Benzo(a)pyrene	2013/02/13	<0.0050		ug/g	
		Benzo(b/j)fluoranthene	2013/02/13	<0.0050		ug/g	
		Benzo(g,h,i)perylene	2013/02/13	<0.0050		ug/g	
		Benzo(k)fluoranthene	2013/02/13	<0.0050		ug/g	
		Chrysene	2013/02/13	<0.0050		ug/g	
		Dibenz(a,h)anthracene	2013/02/13	<0.0050		ug/g	
		Fluoranthene	2013/02/13	<0.0050		ug/g	
		Fluorene	2013/02/13	<0.0050		ug/g	
		Indeno(1,2,3-cd)pyrene	2013/02/13	<0.0050		ug/g	
		1-Methylnaphthalene	2013/02/13	<0.0050		ug/g	
		2-Methylnaphthalene	2013/02/13	<0.0050		ug/g	
	RPD	Naphthalene	2013/02/13	<0.0050		ug/g	
		Phenanthrene	2013/02/13	<0.0050		ug/g	
		Pyrene	2013/02/13	<0.0050		ug/g	
		Acenaphthene	2013/02/13	NC		%	40
		Acenaphthylene	2013/02/13	NC		%	40
		Anthracene	2013/02/13	NC		%	40
		Benzo(a)anthracene	2013/02/13	NC		%	40
		Benzo(a)pyrene	2013/02/13	NC		%	40
		Benzo(b/j)fluoranthene	2013/02/13	NC		%	40
		Benzo(g,h,i)perylene	2013/02/13	NC		%	40
		Benzo(k)fluoranthene	2013/02/13	NC		%	40
		Chrysene	2013/02/13	NC		%	40
		Dibenz(a,h)anthracene	2013/02/13	NC		%	40
		Fluoranthene	2013/02/13	NC		%	40
		Fluorene	2013/02/13	NC		%	40
		Indeno(1,2,3-cd)pyrene	2013/02/13	NC		%	40
		1-Methylnaphthalene	2013/02/13	NC		%	40
		2-Methylnaphthalene	2013/02/13	NC		%	40
		Naphthalene	2013/02/13	NC		%	40
		Phenanthrene	2013/02/13	NC		%	40
		Pyrene	2013/02/13	NC		%	40
3122198 LHA	Matrix Spike						
	[QM6931-01]	Free Cyanide	2013/02/14		100	%	75 - 125
	Spiked Blank	Free Cyanide	2013/02/14		101	%	80 - 120
	Method Blank	Free Cyanide	2013/02/14	<0.01		ug/g	
3122446 SAC	RPD [QM6931-01]	Free Cyanide	2013/02/14	NC		%	35
	Matrix Spike						
	[QM6931-01]	Chromium (VI)	2013/02/14		89	%	75 - 125
	QC Standard	Chromium (VI)	2013/02/14		111	%	75 - 125
	Spiked Blank	Chromium (VI)	2013/02/14		102	%	80 - 120
	Method Blank	Chromium (VI)	2013/02/14	<0.2		ug/g	
	RPD [QM6931-01]	Chromium (VI)	2013/02/14	NC		%	35
	RPD	Moisture	2013/02/14	0.7		%	20
3123370 VTH							
3123620 VIV	Matrix Spike	Acid Extractable Antimony (Sb)	2013/02/14		99	%	75 - 125
		Acid Extractable Arsenic (As)	2013/02/14		106	%	75 - 125
		Acid Extractable Barium (Ba)	2013/02/14		NC (1)	%	75 - 125
		Acid Extractable Beryllium (Be)	2013/02/14		106	%	75 - 125
		Acid Extractable Boron (B)	2013/02/14		101	%	75 - 125
		Acid Extractable Cadmium (Cd)	2013/02/14		104	%	75 - 125
		Acid Extractable Chromium (Cr)	2013/02/14		105	%	75 - 125

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB319879

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3123620 VIV	Matrix Spike	Acid Extractable Cobalt (Co)	2013/02/14		102	%	75 - 125
		Acid Extractable Copper (Cu)	2013/02/14		NC (1)	%	75 - 125
		Acid Extractable Lead (Pb)	2013/02/14		100	%	75 - 125
		Acid Extractable Molybdenum (Mo)	2013/02/14		104	%	75 - 125
		Acid Extractable Nickel (Ni)	2013/02/14		105	%	75 - 125
		Acid Extractable Selenium (Se)	2013/02/14		105	%	75 - 125
		Acid Extractable Silver (Ag)	2013/02/14		101	%	75 - 125
		Acid Extractable Thallium (Tl)	2013/02/14		90	%	75 - 125
		Acid Extractable Uranium (U)	2013/02/14		104	%	75 - 125
		Acid Extractable Vanadium (V)	2013/02/14		109	%	75 - 125
	Spiked Blank	Acid Extractable Zinc (Zn)	2013/02/14		NC (1)	%	75 - 125
		Acid Extractable Mercury (Hg)	2013/02/14		107	%	75 - 125
		Acid Extractable Antimony (Sb)	2013/02/14		97	%	80 - 120
		Acid Extractable Arsenic (As)	2013/02/14		101	%	80 - 120
		Acid Extractable Barium (Ba)	2013/02/14		102	%	80 - 120
		Acid Extractable Beryllium (Be)	2013/02/14		101	%	80 - 120
		Acid Extractable Boron (B)	2013/02/14		99	%	80 - 120
		Acid Extractable Cadmium (Cd)	2013/02/14		100	%	80 - 120
		Acid Extractable Chromium (Cr)	2013/02/14		99	%	80 - 120
		Acid Extractable Cobalt (Co)	2013/02/14		100	%	80 - 120
	Method Blank	Acid Extractable Copper (Cu)	2013/02/14		98	%	80 - 120
		Acid Extractable Lead (Pb)	2013/02/14		97	%	80 - 120
		Acid Extractable Molybdenum (Mo)	2013/02/14		97	%	80 - 120
		Acid Extractable Nickel (Ni)	2013/02/14		101	%	80 - 120
		Acid Extractable Selenium (Se)	2013/02/14		103	%	80 - 120
		Acid Extractable Silver (Ag)	2013/02/14		97	%	80 - 120
		Acid Extractable Thallium (Tl)	2013/02/14		93	%	80 - 120
		Acid Extractable Uranium (U)	2013/02/14		98	%	80 - 120
		Acid Extractable Vanadium (V)	2013/02/14		102	%	80 - 120
		Acid Extractable Zinc (Zn)	2013/02/14		103	%	80 - 120
	RPD	Acid Extractable Mercury (Hg)	2013/02/14		100	%	80 - 120
		Acid Extractable Antimony (Sb)	2013/02/14	<0.20		ug/g	
		Acid Extractable Arsenic (As)	2013/02/14	<1.0		ug/g	
		Acid Extractable Barium (Ba)	2013/02/14	<0.50		ug/g	
		Acid Extractable Beryllium (Be)	2013/02/14	<0.20		ug/g	
		Acid Extractable Boron (B)	2013/02/14	<5.0		ug/g	
		Acid Extractable Cadmium (Cd)	2013/02/14	<0.10		ug/g	
		Acid Extractable Chromium (Cr)	2013/02/14	<1.0		ug/g	
		Acid Extractable Cobalt (Co)	2013/02/14	<0.10		ug/g	
		Acid Extractable Copper (Cu)	2013/02/14	<0.50		ug/g	
		Acid Extractable Lead (Pb)	2013/02/14	<1.0		ug/g	
		Acid Extractable Molybdenum (Mo)	2013/02/14	<0.50		ug/g	
		Acid Extractable Nickel (Ni)	2013/02/14	<0.50		ug/g	
		Acid Extractable Selenium (Se)	2013/02/14	<0.50		ug/g	
		Acid Extractable Silver (Ag)	2013/02/14	<0.20		ug/g	
		Acid Extractable Thallium (Tl)	2013/02/14	<0.050		ug/g	
		Acid Extractable Uranium (U)	2013/02/14	<0.050		ug/g	
		Acid Extractable Vanadium (V)	2013/02/14	<5.0		ug/g	
		Acid Extractable Zinc (Zn)	2013/02/14	<5.0		ug/g	
		Acid Extractable Mercury (Hg)	2013/02/14	<0.050		ug/g	
		Acid Extractable Antimony (Sb)	2013/02/14	NC		%	30
		Acid Extractable Arsenic (As)	2013/02/14	0.6		%	30
		Acid Extractable Barium (Ba)	2013/02/14	2.2		%	30
		Acid Extractable Beryllium (Be)	2013/02/14	NC		%	30
		Acid Extractable Boron (B)	2013/02/14	NC		%	30

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location: HALTON WATERMAIN

Quality Assurance Report (Continued)

Maxxam Job Number: MB319879

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3123620 VIV	RPD	Acid Extractable Cadmium (Cd)	2013/02/14	NC		%	30
		Acid Extractable Chromium (Cr)	2013/02/14	0.6		%	30
		Acid Extractable Cobalt (Co)	2013/02/14	0.3		%	30
		Acid Extractable Copper (Cu)	2013/02/14	0.2		%	30
		Acid Extractable Lead (Pb)	2013/02/14	3.0		%	30
		Acid Extractable Molybdenum (Mo)	2013/02/14	NC		%	30
		Acid Extractable Nickel (Ni)	2013/02/14	0.9		%	30
		Acid Extractable Selenium (Se)	2013/02/14	NC		%	30
		Acid Extractable Silver (Ag)	2013/02/14	NC		%	30
		Acid Extractable Thallium (Tl)	2013/02/14	NC		%	30
		Acid Extractable Uranium (U)	2013/02/14	4.0		%	30
		Acid Extractable Vanadium (V)	2013/02/14	NC		%	30
		Acid Extractable Zinc (Zn)	2013/02/14	0.3		%	30
3123623 NYS	QC Standard	Conductivity	2013/02/14		101	%	90 - 110
	Spiked Blank	Conductivity	2013/02/14		100	%	90 - 110
	Method Blank	Conductivity	2013/02/14	<0.002		mS/cm	
	RPD	Conductivity	2013/02/14	9.4		%	10
3123759 AFZ	Spiked Blank	Hot Water Ext. Boron (B)	2013/02/14		97	%	75 - 125
	Method Blank	Hot Water Ext. Boron (B)	2013/02/14	<0.050		ug/g	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) The recovery in the matrix spike was not calculated (NC). Spiked concentration was less than 2x that native to the sample.

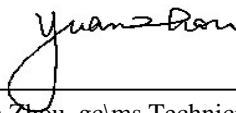
Validation Signature Page

Maxxam Job #: B319879

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Cristina Carriere, Scientific Services



Yuan Zhou, gc/ms Technician

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Your Project #: 11-12-2073

Your C.O.C. #: 84180

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/08/12

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS
MAXXAM JOB #: B3B9270
Received: 2013/07/23, 12:35

Sample Matrix: SOLID
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Methylnaphthalene Sum	3	N/A	2013/07/29	CAM SOP - 00301	EPA 8270
Hot Water Extractable Boron	3	2013/07/26	2013/07/27	CAM SOP-00408	R153 Ana. Prot. 2011
1,3-Dichloropropene Sum	3	N/A	2013/07/29	CAM SOP-00226	EPA 8260
Free (WAD) Cyanide	3	N/A	2013/07/29	CAM SOP-00457	Ontario MOE CN-E3015
Conductivity	3	N/A	2013/07/26	CAM SOP-00414	MOE LSB E3138 v2
Hexavalent Chromium in Soil by IC (1)	3	2013/07/25	2013/07/26	CAM SOP-00436	EPA SW846-3060/7199
Acid Extr. Metals (aqua regia) by ICPMS	3	2013/07/26	2013/07/26	CAM SOP-00447	EPA 6020
Moisture	3	N/A	2013/07/26	CAM SOP-00445	R.Carter,1993
PAH Compounds in Soil by GC/MS (SIM)	3	2013/07/26	2013/07/27	CAM SOP - 00318	EPA 8270
pH CaCl2 EXTRACT	3	2013/07/26	2013/07/26	CAM SOP-00413	SM 4500H+ B
Sodium Adsorption Ratio (SAR)	3	2013/07/23	2013/07/26	CAM SOP-00102	EPA 6010
Volatile Organic Compounds in Soil	3	2013/07/25	2013/07/26	CAM SOP-00226	EPA 8260 modified

Remarks:

Maxxam Analytics has performed all analytical testing herein in accordance with ISO 17025 and the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. All methodologies comply with this document and are validated for use in the laboratory. The methods and techniques employed in this analysis conform to the performance criteria (detection limits, accuracy and precision) as outlined in the Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act. Reporting results to two significant figures at the RDL is to permit statistical evaluation and is not intended to be an indication of analytical precision.

The CWS PHC methods employed by Maxxam conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following the 'Alberta Environment Draft Addenda to the CWS-PHC, Appendix 6, Validation of Alternate Methods'. Documentation is available upon request. Maxxam has made the following improvements to the CWS-PHC reference benchmark method: (i) Headspace for F1; and, (ii) Mechanical extraction for F2-F4. Note: F4G cannot be added to the C6 to C50 hydrocarbons. The extraction date for samples field preserved with methanol for F1 and Volatile Organic Compounds is considered to be the date sampled.

Your Project #: 11-12-2073
Your C.O.C. #: 84180

Attention: Michael Diez D'Aux

Terraprobe
11 Indell Lane
Brampton, ON
L6T 3Y3

Report Date: 2013/08/12

This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

-2-

Maxxam Analytics is accredited for all specific parameters as required by Ontario Regulation 153/04. Maxxam Analytics is limited in liability to the actual cost of analysis unless otherwise agreed in writing. There is no other warranty expressed or implied. Samples will be retained at Maxxam Analytics for three weeks from receipt of data or as per contract.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Soils are reported on a dry weight basis unless otherwise specified.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Maria Contreras, Project Manager
Email: MContreras@maxxam.ca
Phone# (905) 817-5700

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Total cover pages: 2

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Maxxam Job #: B3B9270
Report Date: 2013/08/12

Terraprobe
Client Project #: 11-12-2073

O'REG 153 METALS & INORGANICS PKG (SOIL)

Maxxam ID		SJ2311	SJ2312	SJ2313		
Sampling Date		2013/07/17	2013/07/17	2013/07/22		
COC Number		84180	84180	84180		
	Units	BH 5+060, 9.9-10.2M	BH 5+060, 30.4-30.7M	BH 5+060, 49.7-50M	RDL	QC Batch

Calculated Parameters						
Sodium Adsorption Ratio	N/A	0.67	23	13		3290025
Inorganics						
Chromium (VI)	ug/g	<0.2	<0.2	<0.2	0.2	3293118
Conductivity	mS/cm	0.16	0.70	3.4	0.002	3293806
Free Cyanide	ug/g	<0.01	<0.01	<0.01	0.01	3293671
Available (CaCl2) pH	pH	8.24	8.65	8.73		3293735
Metals						
Hot Water Ext. Boron (B)	ug/g	1.2	4.4	3.8	0.050	3293675
Acid Extractable Antimony (Sb)	ug/g	0.36	0.47	0.47	0.20	3293674
Acid Extractable Arsenic (As)	ug/g	4.8	5.0	5.9	1.0	3293674
Acid Extractable Barium (Ba)	ug/g	200	160	100	0.50	3293674
Acid Extractable Beryllium (Be)	ug/g	0.61	0.69	0.73	0.20	3293674
Acid Extractable Boron (B)	ug/g	22	30	31	5.0	3293674
Acid Extractable Cadmium (Cd)	ug/g	<0.10	<0.10	<0.10	0.10	3293674
Acid Extractable Chromium (Cr)	ug/g	18	20	22	1.0	3293674
Acid Extractable Cobalt (Co)	ug/g	11	13	13	0.10	3293674
Acid Extractable Copper (Cu)	ug/g	6.3	6.3	13	0.50	3293674
Acid Extractable Lead (Pb)	ug/g	12	9.8	14	1.0	3293674
Acid Extractable Molybdenum (Mo)	ug/g	0.97	1.2	1.5	0.50	3293674
Acid Extractable Nickel (Ni)	ug/g	25	28	30	0.50	3293674
Acid Extractable Selenium (Se)	ug/g	<0.50	<0.50	<0.50	0.50	3293674
Acid Extractable Silver (Ag)	ug/g	<0.20	<0.20	<0.20	0.20	3293674
Acid Extractable Thallium (Tl)	ug/g	0.057	0.070	0.066	0.050	3293674
Acid Extractable Uranium (U)	ug/g	0.85	0.71	0.77	0.050	3293674
Acid Extractable Vanadium (V)	ug/g	24	25	30	5.0	3293674
Acid Extractable Zinc (Zn)	ug/g	53	59	66	5.0	3293674
Acid Extractable Mercury (Hg)	ug/g	<0.050	<0.050	<0.050	0.050	3293674
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B3B9270
Report Date: 2013/08/12

Terraprobe
Client Project #: 11-12-2073

RESULTS OF ANALYSES OF SOLID

Maxxam ID		SJ2311	SJ2312	SJ2313		
Sampling Date		2013/07/17	2013/07/17	2013/07/22		
COC Number		84180	84180	84180		
	Units	BH 5+060, 9.9-10.2M	BH 5+060, 30.4-30.7M	BH 5+060, 49.7-50M	RDL	QC Batch

Inorganics						
Moisture	%	2.2	2.1	2.0	1.0	3293852

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Maxxam Job #: B3B9270
Report Date: 2013/08/12

Terraprobe
Client Project #: 11-12-2073

SEMI-VOLATILE ORGANICS BY GC-MS (SOLID)

Maxxam ID		SJ2311	SJ2312	SJ2313		
Sampling Date		2013/07/17	2013/07/17	2013/07/22		
COC Number		84180	84180	84180		
	Units	BH 5+060, 9.9-10.2M	BH 5+060, 30.4-30.7M	BH 5+060, 49.7-50M	RDL	QC Batch

Calculated Parameters						
Methylnaphthalene, 2-(1-)	ug/g	<0.0071	<0.0071	<0.0071	0.0071	3289629
Polyaromatic Hydrocarbons						
Acenaphthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Acenaphthylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Benzo(a)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Benzo(a)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Benzo(b/j)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Benzo(g,h,i)perylene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Benzo(k)fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Chrysene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Dibenz(a,h)anthracene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Fluoranthene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Fluorene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Indeno(1,2,3-cd)pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
1-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
2-Methylnaphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Naphthalene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Phenanthrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Pyrene	ug/g	<0.0050	<0.0050	<0.0050	0.0050	3294387
Surrogate Recovery (%)						
D10-Anthracene	%	81	74	82		3294387
D14-Terphenyl (FS)	%	83	83	82		3294387
D8-Acenaphthylene	%	78	76	75		3294387
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Maxxam Job #: B3B9270
Report Date: 2013/08/12

Terraprobe
Client Project #: 11-12-2073

VOLATILE ORGANICS BY GC/MS (SOLID)

Maxxam ID		SJ2311		SJ2312	SJ2313		
Sampling Date		2013/07/17		2013/07/17	2013/07/22		
COC Number		84180		84180	84180		
	Units	BH 5+060, 9.9-10.2M	QC Batch	BH 5+060, 30.4-30.7M	BH 5+060, 49.7-50M	RDL	QC Batch

Calculated Parameters							
1,3-Dichloropropene (cis+trans)	ug/g	<0.050	3288934	<0.050	<0.050	0.050	3290056
Volatile Organics							
Acetone (2-Propanone)	ug/g	<0.50	3292095	<0.50	<0.50	0.50	3292095
Benzene	ug/g	<0.020	3292095	<0.020	<0.020	0.020	3292095
Bromodichloromethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Bromoform	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Bromomethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Carbon Tetrachloride	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Chlorobenzene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Chloroform	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Dibromochloromethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,2-Dichlorobenzene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,3-Dichlorobenzene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,4-Dichlorobenzene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Dichlorodifluoromethane (FREON 12)	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,1-Dichloroethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,2-Dichloroethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,1-Dichloroethylene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
cis-1,2-Dichloroethylene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
trans-1,2-Dichloroethylene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,2-Dichloropropane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
cis-1,3-Dichloropropene	ug/g	<0.030	3292095	<0.030	<0.030	0.030	3292095
trans-1,3-Dichloropropene	ug/g	<0.040	3292095	<0.040	<0.040	0.040	3292095
Ethylbenzene	ug/g	<0.020	3292095	<0.020	<0.020	0.020	3292095
Ethylene Dibromide	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Hexane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Methylene Chloride(Dichloromethane)	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Methyl Isobutyl Ketone	ug/g	<0.50	3292095	<0.50	<0.50	0.50	3292095
Methyl Ethyl Ketone (2-Butanone)	ug/g	<0.50	3292095	<0.50	<0.50	0.50	3292095
Methyl t-butyl ether (MTBE)	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Styrene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,1,1,2-Tetrachloroethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B3B9270
Report Date: 2013/08/12

Terraprobe
Client Project #: 11-12-2073

VOLATILE ORGANICS BY GC/MS (SOLID)

Maxxam ID		SJ2311		SJ2312	SJ2313		
Sampling Date		2013/07/17		2013/07/17	2013/07/22		
COC Number		84180		84180	84180		
	Units	BH 5+060, 9.9-10.2M	QC Batch	BH 5+060, 30.4-30.7M	BH 5+060, 49.7-50M	RDL	QC Batch
1,1,2,2-Tetrachloroethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Tetrachloroethylene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Toluene	ug/g	<0.020	3292095	<0.020	<0.020	0.020	3292095
1,1,1-Trichloroethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
1,1,2-Trichloroethane	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Trichloroethylene	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Vinyl Chloride	ug/g	<0.020	3292095	<0.020	<0.020	0.020	3292095
p+m-Xylene	ug/g	<0.020	3292095	<0.020	<0.020	0.020	3292095
o-Xylene	ug/g	<0.020	3292095	<0.020	<0.020	0.020	3292095
Xylene (Total)	ug/g	<0.020	3292095	<0.020	<0.020	0.020	3292095
Trichlorofluoromethane (FREON 11)	ug/g	<0.050	3292095	<0.050	<0.050	0.050	3292095
Surrogate Recovery (%)							
4-Bromofluorobenzene	%	96	3292095	97	96		3292095
D10-o-Xylene	%	114	3292095	108	107		3292095
D4-1,2-Dichloroethane	%	108	3292095	107	107		3292095
D8-Toluene	%	100	3292095	100	101		3292095
RDL = Reportable Detection Limit QC Batch = Quality Control Batch							

Maxxam Job #: B3B9270
Report Date: 2013/08/12

Terraprobe
Client Project #: 11-12-2073

Test Summary

Maxxam ID SJ2311
Sample ID BH 5+060, 9.9-10.2M
Matrix SOLID

Collected 2013/07/17
Shipped
Received 2013/07/23

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3289629	N/A	2013/07/29	Automated Statchk
Hot Water Extractable Boron	ICP	3293675	2013/07/26	2013/07/27	Azita Fazaeli
1,3-Dichloropropene Sum	CALC	3288934	N/A	2013/07/29	Automated Statchk
Free (WAD) Cyanide	TECH	3293671	N/A	2013/07/29	Xuanhong Qiu
Conductivity	COND	3293806	N/A	2013/07/26	Lemeneh Addis
Hexavalent Chromium in Soil by IC	IC/SPEC	3293118	2013/07/25	2013/07/26	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3293674	2013/07/26	2013/07/26	Viviana Canzonieri
Moisture	BAL	3293852	N/A	2013/07/26	Thoai Truyen Huynh
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3294387	2013/07/26	2013/07/27	Darryl Tiller
pH CaCl2 EXTRACT		3293735	2013/07/26	2013/07/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	3290025	2013/07/26	2013/07/26	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3292095	2013/07/25	2013/07/26	Rebecca Schultz

Maxxam ID SJ2312
Sample ID BH 5+060, 30.4-30.7M
Matrix SOLID

Collected 2013/07/17
Shipped
Received 2013/07/23

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3289629	N/A	2013/07/29	Automated Statchk
Hot Water Extractable Boron	ICP	3293675	2013/07/26	2013/07/27	Azita Fazaeli
1,3-Dichloropropene Sum	CALC	3290056	N/A	2013/07/29	Automated Statchk
Free (WAD) Cyanide	TECH	3293671	N/A	2013/07/29	Xuanhong Qiu
Conductivity	COND	3293806	N/A	2013/07/26	Lemeneh Addis
Hexavalent Chromium in Soil by IC	IC/SPEC	3293118	2013/07/25	2013/07/26	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3293674	2013/07/26	2013/07/26	Viviana Canzonieri
Moisture	BAL	3293852	N/A	2013/07/26	Thoai Truyen Huynh
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3294387	2013/07/26	2013/07/27	Darryl Tiller
pH CaCl2 EXTRACT		3293735	2013/07/26	2013/07/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	3290025	2013/07/26	2013/07/26	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3292095	2013/07/25	2013/07/26	Rebecca Schultz

Maxxam ID SJ2313
Sample ID BH 5+060, 49.7-50M
Matrix SOLID

Collected 2013/07/22
Shipped
Received 2013/07/23

Test Description	Instrumentation	Batch	Extracted	Analyzed	Analyst
Methylnaphthalene Sum	CALC	3289629	N/A	2013/07/29	Automated Statchk
Hot Water Extractable Boron	ICP	3293675	2013/07/26	2013/07/27	Azita Fazaeli
1,3-Dichloropropene Sum	CALC	3290056	N/A	2013/07/29	Automated Statchk
Free (WAD) Cyanide	TECH	3293671	N/A	2013/07/29	Xuanhong Qiu
Conductivity	COND	3293806	N/A	2013/07/26	Lemeneh Addis
Hexavalent Chromium in Soil by IC	IC/SPEC	3293118	2013/07/25	2013/07/26	Sally Coughlin
Acid Extr. Metals (aqua regia) by ICPMS	ICP/MS	3293674	2013/07/26	2013/07/26	Viviana Canzonieri
Moisture	BAL	3293852	N/A	2013/07/26	Thoai Truyen Huynh
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	3294387	2013/07/26	2013/07/27	Darryl Tiller
pH CaCl2 EXTRACT		3293735	2013/07/26	2013/07/26	Surinder Rai
Sodium Adsorption Ratio (SAR)	CALC/MET	3290025	2013/07/26	2013/07/26	Automated Statchk
Volatile Organic Compounds in Soil	P&T/MS	3292095	2013/07/25	2013/07/26	Rebecca Schultz

Maxxam Job #: B3B9270
Report Date: 2013/08/12

Terraprobe
Client Project #: 11-12-2073

Package 1	9.0°C
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Each temperature is the average of up to three cooler temperatures taken at receipt

GENERAL COMMENTS

"Samples on this submission were received as solid rock cores. Prior to any analytical processing, all samples were crushed to a consistent grain size of approximately <2mm using a Vibratory Ring Pulverizer (Model TM/STLX). Aliquots of the crushed rock were processed in accordance to the preparation and analysis requirements for a soil matrix, for the analyses requested."

VOC Analysis: The sample bags were received with a significant amount of headspace present. This may result in a low bias for the results.

Revised Report (2013/08/12): Client sample IDs changed as per client request.

Results relate only to the items tested.

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location:

Quality Assurance Report
Maxxam Job Number: MB3B9270

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3292095 RSC	Matrix Spike	4-Bromofluorobenzene	2013/07/26		100	%	60 - 140
		D10-o-Xylene	2013/07/26		111	%	60 - 130
		D4-1,2-Dichloroethane	2013/07/26		103	%	60 - 140
		D8-Toluene	2013/07/26		100	%	60 - 140
		Acetone (2-Propanone)	2013/07/26		89	%	60 - 140
		Benzene	2013/07/26		87	%	60 - 140
		Bromodichloromethane	2013/07/26		94	%	60 - 140
		Bromoform	2013/07/26		79	%	60 - 140
		Bromomethane	2013/07/26		86	%	60 - 140
		Carbon Tetrachloride	2013/07/26		91	%	60 - 140
		Chlorobenzene	2013/07/26		91	%	60 - 140
		Chloroform	2013/07/26		85	%	60 - 140
		Dibromochloromethane	2013/07/26		97	%	60 - 140
		1,2-Dichlorobenzene	2013/07/26		94	%	60 - 140
		1,3-Dichlorobenzene	2013/07/26		94	%	60 - 140
		1,4-Dichlorobenzene	2013/07/26		94	%	60 - 140
		Dichlorodifluoromethane (FREON 12)	2013/07/26		71	%	60 - 140
		1,1-Dichloroethane	2013/07/26		91	%	60 - 140
		1,2-Dichloroethane	2013/07/26		89	%	60 - 140
		1,1-Dichloroethylene	2013/07/26		90	%	60 - 140
		cis-1,2-Dichloroethylene	2013/07/26		85	%	60 - 140
		trans-1,2-Dichloroethylene	2013/07/26		84	%	60 - 140
		1,2-Dichloropropane	2013/07/26		90	%	60 - 140
		cis-1,3-Dichloropropene	2013/07/26		88	%	60 - 140
		trans-1,3-Dichloropropene	2013/07/26		95	%	60 - 140
		Ethylbenzene	2013/07/26		91	%	60 - 140
		Ethylene Dibromide	2013/07/26		94	%	60 - 140
		Hexane	2013/07/26		99	%	60 - 140
		Methylene Chloride(Dichloromethane)	2013/07/26		81	%	60 - 140
		Methyl Isobutyl Ketone	2013/07/26		99	%	60 - 140
		Methyl Ethyl Ketone (2-Butanone)	2013/07/26		90	%	60 - 140
		Methyl t-butyl ether (MTBE)	2013/07/26		88	%	60 - 140
		Styrene	2013/07/26		91	%	60 - 140
		1,1,1,2-Tetrachloroethane	2013/07/26		98	%	60 - 140
		1,1,2,2-Tetrachloroethane	2013/07/26		99	%	60 - 140
		Tetrachloroethylene	2013/07/26		89	%	60 - 140
		Toluene	2013/07/26		88	%	60 - 140
		1,1,1-Trichloroethane	2013/07/26		90	%	60 - 140
		1,1,2-Trichloroethane	2013/07/26		91	%	60 - 140
		Trichloroethylene	2013/07/26		85	%	60 - 140
		Vinyl Chloride	2013/07/26		82	%	60 - 140
		p+m-Xylene	2013/07/26		90	%	60 - 140
		o-Xylene	2013/07/26		89	%	60 - 140
		Trichlorofluoromethane (FREON 11)	2013/07/26		83	%	60 - 140
Spiked Blank	4-Bromofluorobenzene	2013/07/26		99	%	60 - 140	
	D10-o-Xylene	2013/07/26		104	%	60 - 130	
	D4-1,2-Dichloroethane	2013/07/26		99	%	60 - 140	
	D8-Toluene	2013/07/26		102	%	60 - 140	
	Acetone (2-Propanone)	2013/07/26		89	%	60 - 140	
	Benzene	2013/07/26		92	%	60 - 130	
	Bromodichloromethane	2013/07/26		96	%	60 - 130	
	Bromoform	2013/07/26		82	%	60 - 130	
	Bromomethane	2013/07/26		90	%	60 - 140	
	Carbon Tetrachloride	2013/07/26		96	%	60 - 130	
	Chlorobenzene	2013/07/26		97	%	60 - 130	

Terraprobe
Attention: Michael Diez D'Aux
Client Project #: 11-12-2073
P.O. #:
Site Location:

Quality Assurance Report (Continued)

Maxxam Job Number: MB3B9270

QA/QC Batch Num Init	QC Type	Parameter	Date Analyzed yyyy/mm/dd	Value	Recovery	Units	QC Limits
3292095 RSC	Spiked Blank	Chloroform	2013/07/26		88	%	60 - 130
		Dibromochloromethane	2013/07/26		101	%	60 - 130
		1,2-Dichlorobenzene	2013/07/26		99	%	60 - 130
		1,3-Dichlorobenzene	2013/07/26		98	%	60 - 130
		1,4-Dichlorobenzene	2013/07/26		97	%	60 - 130
		Dichlorodifluoromethane (FREON 12)	2013/07/26		76	%	60 - 140
		1,1-Dichloroethane	2013/07/26		96	%	60 - 130
		1,2-Dichloroethane	2013/07/26		91	%	60 - 130
		1,1-Dichloroethylene	2013/07/26		97	%	60 - 130
		cis-1,2-Dichloroethylene	2013/07/26		89	%	60 - 130
		trans-1,2-Dichloroethylene	2013/07/26		88	%	60 - 130
		1,2-Dichloropropane	2013/07/26		95	%	60 - 130
		cis-1,3-Dichloropropene	2013/07/26		91	%	60 - 130
		trans-1,3-Dichloropropene	2013/07/26		98	%	60 - 130
		Ethylbenzene	2013/07/26		96	%	60 - 130
		Ethylene Dibromide	2013/07/26		97	%	60 - 130
		Hexane	2013/07/26		101	%	60 - 130
		Methylene Chloride(Dichloromethane)	2013/07/26		85	%	60 - 130
		Methyl Isobutyl Ketone	2013/07/26		99	%	60 - 130
		Methyl Ethyl Ketone (2-Butanone)	2013/07/26		91	%	60 - 140
		Methyl t-butyl ether (MTBE)	2013/07/26		91	%	60 - 130
		Styrene	2013/07/26		85	%	60 - 130
		1,1,1,2-Tetrachloroethane	2013/07/26		102	%	60 - 130
		1,1,2,2-Tetrachloroethane	2013/07/26		101	%	60 - 130
		Tetrachloroethylene	2013/07/26		94	%	60 - 130
		Toluene	2013/07/26		94	%	60 - 130
		1,1,1-Trichloroethane	2013/07/26		95	%	60 - 130
		1,1,2-Trichloroethane	2013/07/26		95	%	60 - 130
		Trichloroethylene	2013/07/26		89	%	60 - 130
		Vinyl Chloride	2013/07/26		88	%	60 - 130
		p+m-Xylene	2013/07/26		95	%	60 - 130
		o-Xylene	2013/07/26		94	%	60 - 130
		Trichlorofluoromethane (FREON 11)	2013/07/26		88	%	60 - 130
	Method Blank	4-Bromofluorobenzene	2013/07/26		97	%	60 - 140
		D10-o-Xylene	2013/07/26		106	%	60 - 130
		D4-1,2-Dichloroethane	2013/07/26		104	%	60 - 140
		D8-Toluene	2013/07/26		101	%	60 - 140
		Acetone (2-Propanone)	2013/07/26	<0.50		ug/g	
		Benzene	2013/07/26	<0.020		ug/g	
		Bromodichloromethane	2013/07/26	<0.050		ug/g	
		Bromoform	2013/07/26	<0.050		ug/g	
		Bromomethane	2013/07/26	<0.050		ug/g	
		Carbon Tetrachloride	2013/07/26	<0.050		ug/g	
		Chlorobenzene	2013/07/26	<0.050		ug/g	
		Chloroform	2013/07/26	<0.050		ug/g	
		Dibromochloromethane	2013/07/26	<0.050		ug/g	
		1,2-Dichlorobenzene	2013/07/26	<0.050		ug/g	
		1,3-Dichlorobenzene	2013/07/26	<0.050		ug/g	
		1,4-Dichlorobenzene	2013/07/26	<0.050		ug/g	
		Dichlorodifluoromethane (FREON 12)	2013/07/26	<0.050		ug/g	
		1,1-Dichloroethane	2013/07/26	<0.050		ug/g	
		1,2-Dichloroethane	2013/07/26	<0.050		ug/g	
		1,1-Dichloroethylene	2013/07/26	<0.050		ug/g	
		cis-1,2-Dichloroethylene	2013/07/26	<0.050		ug/g	
		trans-1,2-Dichloroethylene	2013/07/26	<0.050		ug/g	

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3292095	RSC	Method Blank	2013/07/26	<0.050		ug/g	
		1,2-Dichloropropane	2013/07/26	<0.030		ug/g	
		cis-1,3-Dichloropropene	2013/07/26	<0.040		ug/g	
		trans-1,3-Dichloropropene	2013/07/26	<0.020		ug/g	
		Ethylbenzene	2013/07/26	<0.050		ug/g	
		Ethylene Dibromide	2013/07/26	<0.050		ug/g	
		Hexane	2013/07/26	<0.050		ug/g	
		Methylene Chloride(Dichloromethane)	2013/07/26	<0.50		ug/g	
		Methyl Isobutyl Ketone	2013/07/26	<0.50		ug/g	
		Methyl Ethyl Ketone (2-Butanone)	2013/07/26	<0.050		ug/g	
		Methyl t-butyl ether (MTBE)	2013/07/26	<0.050		ug/g	
		Styrene	2013/07/26	<0.050		ug/g	
		1,1,1,2-Tetrachloroethane	2013/07/26	<0.050		ug/g	
		1,1,2,2-Tetrachloroethane	2013/07/26	<0.050		ug/g	
		Tetrachloroethylene	2013/07/26	<0.020		ug/g	
		Toluene	2013/07/26	<0.050		ug/g	
		1,1,1-Trichloroethane	2013/07/26	<0.050		ug/g	
		1,1,2-Trichloroethane	2013/07/26	<0.050		ug/g	
		Trichloroethylene	2013/07/26	<0.020		ug/g	
		Vinyl Chloride	2013/07/26	<0.020		ug/g	
		p+m-Xylene	2013/07/26	<0.020		ug/g	
		o-Xylene	2013/07/26	<0.020		ug/g	
		Xylene (Total)	2013/07/26	<0.050		ug/g	
		Trichlorofluoromethane (FREON 11)	2013/07/26	NC		%	50
	RPD	Acetone (2-Propanone)	2013/07/26	NC		%	50
		Benzene	2013/07/26	NC		%	50
		Bromodichloromethane	2013/07/26	NC		%	50
		Bromoform	2013/07/26	NC		%	50
		Bromomethane	2013/07/26	NC		%	50
		Carbon Tetrachloride	2013/07/26	NC		%	50
		Chlorobenzene	2013/07/26	NC		%	50
		Chloroform	2013/07/26	NC		%	50
		Dibromochloromethane	2013/07/26	NC		%	50
		1,2-Dichlorobenzene	2013/07/26	NC		%	50
		1,3-Dichlorobenzene	2013/07/26	NC		%	50
		1,4-Dichlorobenzene	2013/07/26	NC		%	50
		Dichlorodifluoromethane (FREON 12)	2013/07/26	NC		%	50
		1,1-Dichloroethane	2013/07/26	NC		%	50
		1,2-Dichloroethane	2013/07/26	NC		%	50
		1,1-Dichloroethylene	2013/07/26	NC		%	50
		cis-1,2-Dichloroethylene	2013/07/26	NC		%	50
		trans-1,2-Dichloroethylene	2013/07/26	NC		%	50
		1,2-Dichloropropane	2013/07/26	NC		%	50
		cis-1,3-Dichloropropene	2013/07/26	NC		%	50
		trans-1,3-Dichloropropene	2013/07/26	NC		%	50
		Ethylbenzene	2013/07/26	NC		%	50
		Ethylene Dibromide	2013/07/26	NC		%	50
		Hexane	2013/07/26	NC		%	50
		Methylene Chloride(Dichloromethane)	2013/07/26	NC		%	50
		Methyl Isobutyl Ketone	2013/07/26	NC		%	50
		Methyl Ethyl Ketone (2-Butanone)	2013/07/26	NC		%	50
		Methyl t-butyl ether (MTBE)	2013/07/26	NC		%	50
		Styrene	2013/07/26	NC		%	50
		1,1,1,2-Tetrachloroethane	2013/07/26	NC		%	50
		1,1,2,2-Tetrachloroethane	2013/07/26	NC		%	50
		Tetrachloroethylene	2013/07/26	NC		%	50

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3292095 RSC	RPD	Toluene	2013/07/26	NC		%	50
		1,1,1-Trichloroethane	2013/07/26	NC		%	50
		1,1,2-Trichloroethane	2013/07/26	NC		%	50
		Trichloroethylene	2013/07/26	NC		%	50
		Vinyl Chloride	2013/07/26	NC		%	50
		p+m-Xylene	2013/07/26	NC		%	50
		o-Xylene	2013/07/26	NC		%	50
		Xylene (Total)	2013/07/26	NC		%	50
		Trichlorofluoromethane (FREON 11)	2013/07/26	NC		%	50
3293118 SAC	Matrix Spike	Chromium (VI)	2013/07/26		67 (1)	%	75 - 125
	QC Standard	Chromium (VI)	2013/07/26		115	%	75 - 125
	Spiked Blank	Chromium (VI)	2013/07/26		102	%	80 - 120
	Method Blank	Chromium (VI)	2013/07/26	<0.2		ug/g	
	RPD	Chromium (VI)	2013/07/26	NC		%	35
3293671 XQI	Matrix Spike	Free Cyanide	2013/07/29		101	%	75 - 125
	Spiked Blank	Free Cyanide	2013/07/29		97	%	80 - 120
	Method Blank	Free Cyanide	2013/07/29	<0.01		ug/g	
	RPD	Free Cyanide	2013/07/29	NC		%	35
3293674 VIV	Matrix Spike	Acid Extractable Antimony (Sb)	2013/07/26		98	%	75 - 125
		Acid Extractable Arsenic (As)	2013/07/26		100	%	75 - 125
		Acid Extractable Barium (Ba)	2013/07/26		NC	%	75 - 125
		Acid Extractable Beryllium (Be)	2013/07/26		105	%	75 - 125
		Acid Extractable Boron (B)	2013/07/26		103	%	75 - 125
		Acid Extractable Cadmium (Cd)	2013/07/26		104	%	75 - 125
		Acid Extractable Chromium (Cr)	2013/07/26		101	%	75 - 125
		Acid Extractable Cobalt (Co)	2013/07/26		100	%	75 - 125
		Acid Extractable Copper (Cu)	2013/07/26		97	%	75 - 125
		Acid Extractable Lead (Pb)	2013/07/26		100	%	75 - 125
		Acid Extractable Molybdenum (Mo)	2013/07/26		97	%	75 - 125
		Acid Extractable Nickel (Ni)	2013/07/26		102	%	75 - 125
		Acid Extractable Selenium (Se)	2013/07/26		102	%	75 - 125
		Acid Extractable Silver (Ag)	2013/07/26		104	%	75 - 125
		Acid Extractable Thallium (Tl)	2013/07/26		92	%	75 - 125
		Acid Extractable Uranium (U)	2013/07/26		104	%	75 - 125
		Acid Extractable Vanadium (V)	2013/07/26		102	%	75 - 125
		Acid Extractable Zinc (Zn)	2013/07/26		NC	%	75 - 125
		Acid Extractable Mercury (Hg)	2013/07/26		103	%	75 - 125
	Spiked Blank	Acid Extractable Antimony (Sb)	2013/07/26		98	%	80 - 120
		Acid Extractable Arsenic (As)	2013/07/26		99	%	80 - 120
		Acid Extractable Barium (Ba)	2013/07/26		97	%	80 - 120
		Acid Extractable Beryllium (Be)	2013/07/26		102	%	80 - 120
		Acid Extractable Boron (B)	2013/07/26		100	%	80 - 120
		Acid Extractable Cadmium (Cd)	2013/07/26		101	%	80 - 120
		Acid Extractable Chromium (Cr)	2013/07/26		99	%	80 - 120
		Acid Extractable Cobalt (Co)	2013/07/26		99	%	80 - 120
		Acid Extractable Copper (Cu)	2013/07/26		97	%	80 - 120
		Acid Extractable Lead (Pb)	2013/07/26		104	%	80 - 120
		Acid Extractable Molybdenum (Mo)	2013/07/26		96	%	80 - 120
		Acid Extractable Nickel (Ni)	2013/07/26		102	%	80 - 120
		Acid Extractable Selenium (Se)	2013/07/26		100	%	80 - 120
		Acid Extractable Silver (Ag)	2013/07/26		102	%	80 - 120
		Acid Extractable Thallium (Tl)	2013/07/26		98	%	80 - 120
		Acid Extractable Uranium (U)	2013/07/26		104	%	80 - 120
		Acid Extractable Vanadium (V)	2013/07/26		96	%	80 - 120
		Acid Extractable Zinc (Zn)	2013/07/26		105	%	80 - 120

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3293674 VIV	Spiked Blank	Acid Extractable Mercury (Hg)	2013/07/26		104	%	80 - 120
		Acid Extractable Antimony (Sb)	2013/07/26	<0.20		ug/g	
	Method Blank	Acid Extractable Arsenic (As)	2013/07/26	<1.0		ug/g	
		Acid Extractable Barium (Ba)	2013/07/26	<0.50		ug/g	
		Acid Extractable Beryllium (Be)	2013/07/26	<0.20		ug/g	
		Acid Extractable Boron (B)	2013/07/26	<5.0		ug/g	
		Acid Extractable Cadmium (Cd)	2013/07/26	<0.10		ug/g	
		Acid Extractable Chromium (Cr)	2013/07/26	<1.0		ug/g	
		Acid Extractable Cobalt (Co)	2013/07/26	<0.10		ug/g	
		Acid Extractable Copper (Cu)	2013/07/26	<0.50		ug/g	
		Acid Extractable Lead (Pb)	2013/07/26	<1.0		ug/g	
		Acid Extractable Molybdenum (Mo)	2013/07/26	<0.50		ug/g	
		Acid Extractable Nickel (Ni)	2013/07/26	0.60, RDL=0.50		ug/g	
		Acid Extractable Selenium (Se)	2013/07/26	<0.50		ug/g	
		Acid Extractable Silver (Ag)	2013/07/26	<0.20		ug/g	
		Acid Extractable Thallium (Tl)	2013/07/26	<0.050		ug/g	
		Acid Extractable Uranium (U)	2013/07/26	<0.050		ug/g	
		Acid Extractable Vanadium (V)	2013/07/26	<5.0		ug/g	
		Acid Extractable Zinc (Zn)	2013/07/26	<5.0		ug/g	
	RPD	Acid Extractable Mercury (Hg)	2013/07/26	<0.050		ug/g	
		Acid Extractable Antimony (Sb)	2013/07/26	NC		%	30
		Acid Extractable Arsenic (As)	2013/07/26	NC		%	30
		Acid Extractable Barium (Ba)	2013/07/26	0.6		%	30
		Acid Extractable Beryllium (Be)	2013/07/26	NC		%	30
		Acid Extractable Boron (B)	2013/07/26	NC		%	30
		Acid Extractable Cadmium (Cd)	2013/07/26	NC		%	30
		Acid Extractable Chromium (Cr)	2013/07/26	0.8		%	30
		Acid Extractable Cobalt (Co)	2013/07/26	2.5		%	30
		Acid Extractable Copper (Cu)	2013/07/26	1.8		%	30
		Acid Extractable Lead (Pb)	2013/07/26	1.7		%	30
		Acid Extractable Molybdenum (Mo)	2013/07/26	NC		%	30
		Acid Extractable Nickel (Ni)	2013/07/26	3.6		%	30
		Acid Extractable Selenium (Se)	2013/07/26	NC		%	30
		Acid Extractable Silver (Ag)	2013/07/26	NC		%	30
		Acid Extractable Thallium (Tl)	2013/07/26	NC		%	30
		Acid Extractable Uranium (U)	2013/07/26	1.2		%	30
		Acid Extractable Vanadium (V)	2013/07/26	NC		%	30
		Acid Extractable Zinc (Zn)	2013/07/26	0.9		%	30
		Acid Extractable Mercury (Hg)	2013/07/26	NC		%	30
3293675 AFZ	Matrix Spike	Hot Water Ext. Boron (B)	2013/07/26		108	%	75 - 125
	Spiked Blank	Hot Water Ext. Boron (B)	2013/07/26		100	%	75 - 125
	Method Blank	Hot Water Ext. Boron (B)	2013/07/26	<0.050		ug/g	
	RPD	Hot Water Ext. Boron (B)	2013/07/26	NC		%	35
3293806 L_A	Spiked Blank	Conductivity	2013/07/26		99	%	90 - 110
	Method Blank	Conductivity	2013/07/26	<0.002		mS/cm	
	RPD	Conductivity	2013/07/26	1.3		%	10
3293852 JV1	RPD	Moisture	2013/07/26	1.9		%	20
3294387 DTI	Matrix Spike	D10-Anthracene	2013/07/26		82	%	50 - 130
		D14-Terphenyl (FS)	2013/07/26		81	%	50 - 130
		D8-Acenaphthylene	2013/07/26		77	%	50 - 130
		Acenaphthene	2013/07/26		85	%	50 - 130
		Acenaphthylene	2013/07/26		84	%	50 - 130
		Anthracene	2013/07/26		86	%	50 - 130
		Benzo(a)anthracene	2013/07/26		95	%	50 - 130
		Benzo(a)pyrene	2013/07/26		77	%	50 - 130

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3294387 DTI	Matrix Spike	Benzo(b/j)fluoranthene	2013/07/26		80	%	50 - 130
		Benzo(g,h,i)perylene	2013/07/26		87	%	50 - 130
		Benzo(k)fluoranthene	2013/07/26		81	%	50 - 130
		Chrysene	2013/07/26		90	%	50 - 130
		Dibenz(a,h)anthracene	2013/07/26		87	%	50 - 130
		Fluoranthene	2013/07/26		91	%	50 - 130
		Fluorene	2013/07/26		85	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2013/07/26		90	%	50 - 130
		1-Methylnaphthalene	2013/07/26		87	%	50 - 130
		2-Methylnaphthalene	2013/07/26		85	%	50 - 130
		Naphthalene	2013/07/26		83	%	50 - 130
		Phenanthrene	2013/07/26		87	%	50 - 130
		Pyrene	2013/07/26		90	%	50 - 130
	Spiked Blank	D10-Anthracene	2013/07/26		83	%	50 - 130
		D14-Terphenyl (FS)	2013/07/26		87	%	50 - 130
		D8-Acenaphthylene	2013/07/26		77	%	50 - 130
		Acenaphthene	2013/07/26		89	%	50 - 130
		Acenaphthylene	2013/07/26		87	%	50 - 130
		Anthracene	2013/07/26		91	%	50 - 130
		Benzo(a)anthracene	2013/07/26		98	%	50 - 130
		Benzo(a)pyrene	2013/07/26		84	%	50 - 130
		Benzo(b/j)fluoranthene	2013/07/26		94	%	50 - 130
		Benzo(g,h,i)perylene	2013/07/26		95	%	50 - 130
		Benzo(k)fluoranthene	2013/07/26		96	%	50 - 130
		Chrysene	2013/07/26		94	%	50 - 130
		Dibenz(a,h)anthracene	2013/07/26		96	%	50 - 130
		Fluoranthene	2013/07/26		92	%	50 - 130
		Fluorene	2013/07/26		88	%	50 - 130
		Indeno(1,2,3-cd)pyrene	2013/07/26		99	%	50 - 130
		1-Methylnaphthalene	2013/07/26		89	%	50 - 130
		2-Methylnaphthalene	2013/07/26		86	%	50 - 130
		Naphthalene	2013/07/26		87	%	50 - 130
	Method Blank	Phenanthrene	2013/07/26		89	%	50 - 130
		Pyrene	2013/07/26		92	%	50 - 130
		D10-Anthracene	2013/07/26		84	%	50 - 130
		D14-Terphenyl (FS)	2013/07/26		87	%	50 - 130
		D8-Acenaphthylene	2013/07/26		76	%	50 - 130
		Acenaphthene	2013/07/26	<0.0050		ug/g	
		Acenaphthylene	2013/07/26	<0.0050		ug/g	
		Anthracene	2013/07/26	<0.0050		ug/g	
		Benzo(a)anthracene	2013/07/26	<0.0050		ug/g	
		Benzo(a)pyrene	2013/07/26	<0.0050		ug/g	
		Benzo(b/j)fluoranthene	2013/07/26	<0.0050		ug/g	
		Benzo(g,h,i)perylene	2013/07/26	<0.0050		ug/g	
		Benzo(k)fluoranthene	2013/07/26	<0.0050		ug/g	
		Chrysene	2013/07/26	<0.0050		ug/g	
		Dibenz(a,h)anthracene	2013/07/26	<0.0050		ug/g	
		Fluoranthene	2013/07/26	<0.0050		ug/g	
		Fluorene	2013/07/26	<0.0050		ug/g	
		Indeno(1,2,3-cd)pyrene	2013/07/26	<0.0050		ug/g	
		1-Methylnaphthalene	2013/07/26	<0.0050		ug/g	
		2-Methylnaphthalene	2013/07/26	<0.0050		ug/g	
		Naphthalene	2013/07/26	<0.0050		ug/g	
		Phenanthrene	2013/07/26	<0.0050		ug/g	
		Pyrene	2013/07/26	<0.0050		ug/g	

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3294387 DTI	RPD	Acenaphthene	2013/07/26	NC		%	40
		Acenaphthylene	2013/07/26	NC		%	40
		Anthracene	2013/07/26	NC		%	40
		Benzo(a)anthracene	2013/07/26	NC		%	40
		Benzo(a)pyrene	2013/07/26	NC		%	40
		Benzo(b/j)fluoranthene	2013/07/26	NC		%	40
		Benzo(g,h,i)perylene	2013/07/26	NC		%	40
		Benzo(k)fluoranthene	2013/07/26	NC		%	40
		Chrysene	2013/07/26	NC		%	40
		Dibenz(a,h)anthracene	2013/07/26	NC		%	40
		Fluoranthene	2013/07/26	NC		%	40
		Fluorene	2013/07/26	NC		%	40
		Indeno(1,2,3-cd)pyrene	2013/07/26	NC		%	40
		1-Methylnaphthalene	2013/07/26	NC		%	40
		2-Methylnaphthalene	2013/07/26	NC		%	40
		Naphthalene	2013/07/26	NC		%	40
		Phenanthrene	2013/07/26	NC		%	40
		Pyrene	2013/07/26	NC		%	40

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

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

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was not sufficiently significant to permit a reliable recovery calculation.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample.

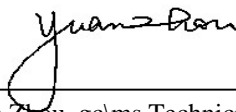
Validation Signature Page

Maxxam Job #: B3B9270

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Ewa Pranjic, M.Sc., C.Chem, Scientific Specialist



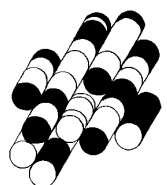
Yuan Zhou, gc/ms Technician

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

APPENDIX I

TERRAPROBE INC.



CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T644982

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Organic Laboratory Supervisor

WATER ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

DATE REPORTED: Sep 28, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDS corrected on January 9, 2013 as pre client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2012-09-24

DATE REPORTED: 2012-09-28

		SAMPLE DESCRIPTION:		1+200
		SAMPLE TYPE:		Water
		DATE SAMPLED:		9/21/2012
Parameter	Unit	G / S	RDL	3738392
Naphthalene	µg/L	7	0.20	<0.20
Acenaphthylene	µg/L	1	0.20	<0.20
Acenaphthene	µg/L	4.1	0.20	<0.20
Fluorene	µg/L	120	0.20	<0.20
Phenanthrene	µg/L	0.1	0.10	<0.10
Anthracene	µg/L	0.1	0.10	<0.10
Fluoranthene	µg/L	0.4	0.20	<0.20
Pyrene	µg/L	0.2	0.20	<0.20
Benz(a)anthracene	µg/L	0.2	0.20	<0.20
Chrysene	µg/L	0.1	0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.1	0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.1	0.10	<0.10
Benzo(a)pyrene	µg/L	0.01	0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.2	0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	2	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140	76	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

3738392 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2012-09-24

DATE REPORTED: 2012-09-28

		SAMPLE DESCRIPTION:		1+200
		SAMPLE TYPE:		Water
		DATE SAMPLED:		9/21/2012
Parameter	Unit	G / S	RDL	3738392
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	1.6
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	<1.0
1,1-Dichloroethylene	µg/L	0.5	0.30	<0.30
Methylene Chloride	µg/L	5	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	0.5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	400	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2	0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.5	0.30	<0.30
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20
Benzene	µg/L	0.5	0.20	<0.20
1,2-Dichloropropane	µg/L	0.5	0.20	<0.20
Trichloroethylene	µg/L	0.5	0.20	<0.20
Bromodichloromethane	µg/L	2	0.20	<0.20
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	0.5	0.20	<0.20
Toluene	µg/L	0.8	0.20	<0.20
Dibromochloromethane	µg/L	2	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	0.5	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	0.5	0.10	<0.10
Ethylbenzene	µg/L	0.5	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20
Bromoform	µg/L	5	0.10	<0.10

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2012-09-24

DATE REPORTED: 2012-09-28

		SAMPLE DESCRIPTION:		1+200
		SAMPLE TYPE:		Water
		DATE SAMPLED:		9/21/2012
Parameter	Unit	G / S	RDL	3738392
Styrene	µg/L	0.5	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.5	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	72	0.20	<0.20
n-Hexane	µg/L	5	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		83
4-Bromofluorobenzene	% Recovery	50-140		97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2012-09-24

DATE REPORTED: 2012-09-28

		SAMPLE DESCRIPTION:		1+200
		SAMPLE TYPE:		Water
		DATE SAMPLED:		9/21/2012
Parameter	Unit	G / S	RDL	3738392
Antimony	µg/L	1.5	0.5	<0.5
Arsenic	µg/L	13	1.0	7.0
Barium	µg/L	610	2.0	203
Beryllium	µg/L	0.5	0.5	<0.5
Boron	µg/L	1700	10.0	3590
Cadmium	µg/L	0.5	0.2	<0.2
Chromium	µg/L	11	2.0	4.2
Cobalt	µg/L	3.8	0.5	2.8
Copper	µg/L	5	1.0	2.9
Lead	µg/L	1.9	0.5	<0.5
Molybdenum	µg/L	23	0.5	8.5
Nickel	µg/L	14	1.0	<1.0
Selenium	µg/L	5	1.0	10.7
Silver	µg/L	0.3	0.2	<0.2
Thallium	µg/L	0.5	0.3	<0.3
Uranium	µg/L	8.9	0.5	2.5
Vanadium	µg/L	3.9	0.4	1.0
Zinc	µg/L	160	5.0	<5.0
Mercury	µg/L	0.1	0.02	<0.02
Chromium VI	µg/L	25	5	<5
Cyanide	µg/L	5	2	<2
Sodium	µg/L	490000	500	883000
Chloride	µg/L	790000	100	1710000
Nitrate as N	µg/L		50	<50
Nitrite as N	µg/L		50	<50
Electrical Conductivity	uS/cm		2	6040
pH	pH Units		NA	7.83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

Certified By:



Guideline Violation

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
3738392	1+200	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Boron	1700	3590
3738392	1+200	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Chloride	790000	1710000
3738392	1+200	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Selenium	5	10.7
3738392	1+200	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Sodium	490000	883000
3738392	1+200	T1(ALL GW) - Current	O. Reg. 153(511) - VOCs (Water)	Vinyl Chloride	0.5	1.6

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Sep 28, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	92%	50%	140%	98%	50%	140%
Vinyl Chloride	1		< 0.17	< 0.17	0.0%	< 0.17	88%	50%	140%	88%	50%	140%	91%	50%	140%
Bromomethane	1		< 0.20	< 0.20	0.0%	< 0.20	108%	50%	140%	85%	50%	140%	97%	50%	140%
Trichlorofluoromethane	1		< 0.40	< 0.40	0.0%	< 0.40	103%	50%	140%	116%	50%	140%	116%	50%	140%
Acetone	1		< 1.0	< 1.0	0.0%	< 1.0	113%	50%	140%	108%	50%	140%	109%	50%	140%
1,1-Dichloroethylene	1		< 0.30	< 0.30	0.0%	< 0.30	111%	50%	140%	104%	60%	130%	108%	50%	140%
Methylene Chloride	1		< 0.30	< 0.30	0.0%	< 0.30	92%	50%	140%	88%	60%	130%	75%	50%	140%
trans- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	116%	50%	140%	91%	60%	130%	97%	50%	140%
Methyl tert-butyl ether	1		< 0.20	< 0.20	0.0%	< 0.20	82%	50%	140%	106%	60%	130%	108%	50%	140%
1,1-Dichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	101%	50%	140%	79%	60%	130%	82%	50%	140%
Methyl Ethyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	85%	50%	140%	79%	50%	140%	85%	50%	140%
cis- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	110%	50%	140%	87%	60%	130%	93%	50%	140%
Chloroform	1		< 0.20	< 0.20	0.0%	< 0.20	122%	50%	140%	111%	60%	130%	113%	50%	140%
1,2-Dichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	97%	50%	140%	124%	60%	130%	117%	50%	140%
1,1,1-Trichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	122%	50%	140%	121%	60%	130%	109%	50%	140%
Carbon Tetrachloride	1		< 0.20	< 0.20	0.0%	< 0.20	124%	50%	140%	119%	60%	130%	118%	50%	140%
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	106%	50%	140%	103%	60%	130%	107%	50%	140%
1,2-Dichloropropane	1		< 0.20	< 0.20	0.0%	< 0.20	125%	50%	140%	118%	60%	130%	120%	50%	140%
Trichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	107%	50%	140%	116%	60%	130%	120%	50%	140%
Bromodichloromethane	1		< 0.20	< 0.20	0.0%	< 0.20	91%	50%	140%	123%	60%	130%	117%	50%	140%
Methyl Isobutyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	68%	50%	140%	81%	50%	140%	81%	50%	140%
1,1,2-Trichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	116%	50%	140%	104%	60%	130%	105%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	105%	50%	140%	92%	60%	130%	96%	50%	140%
Dibromochloromethane	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	97%	60%	130%	101%	50%	140%
Ethylene Dibromide	1		< 0.10	< 0.10	0.0%	< 0.10	110%	50%	140%	95%	60%	130%	100%	50%	140%
Tetrachloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	97%	50%	140%	91%	60%	130%	96%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	97%	60%	130%	101%	50%	140%
Chlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	108%	50%	140%	98%	60%	130%	102%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	105%	50%	140%	95%	60%	130%	98%	50%	140%
m & p-Xylene	1		< 0.20	< 0.20	0.0%	< 0.20	107%	50%	140%	92%	60%	130%	96%	50%	140%
Bromoform	1		< 0.10	< 0.10	0.0%	< 0.10	101%	50%	140%	91%	60%	130%	93%	50%	140%
Styrene	1		< 0.10	< 0.10	0.0%	< 0.10	90%	50%	140%	80%	60%	130%	86%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	113%	50%	140%	92%	60%	130%	99%	50%	140%
o-Xylene	1		< 0.10	< 0.10	0.0%	< 0.10	106%	50%	140%	85%	60%	130%	89%	50%	140%
1,3-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	81%	50%	140%	66%	60%	130%	70%	50%	140%
1,4-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	87%	50%	140%	72%	60%	130%	77%	50%	140%
1,2-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	81%	50%	140%	74%	60%	130%	85%	50%	140%
1,3-Dichloropropene	1		< 0.30	< 0.30	0.0%	< 0.30	105%	50%	140%	90%	60%	130%	91%	50%	140%
Xylene Mixture	1		< 0.20	< 0.20	0.0%	< 0.20	106%	50%	140%	88%	60%	130%	92%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Sep 28, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.20	< 0.20	0.0%	< 0.20	NA	50%	140%	61%	60%	130%	68%	50%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene	1		< 0.20	< 0.20	0.0%	< 0.20	94%	50%	140%	101%	50%	140%	91%	50%	140%
Acenaphthylene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	88%	50%	140%	78%	50%	140%
Acenaphthene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	96%	50%	140%	83%	50%	140%
Fluorene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	99%	50%	140%	89%	50%	140%
Phenanthrene	1		< 0.10	< 0.10	0.0%	< 0.10	94%	50%	140%	92%	50%	140%	79%	50%	140%
Anthracene	1		< 0.10	< 0.10	0.0%	< 0.10	97%	50%	140%	94%	50%	140%	87%	50%	140%
Fluoranthene	1		< 0.20	< 0.20	0.0%	< 0.20	92%	50%	140%	95%	50%	140%	90%	50%	140%
Pyrene	1		< 0.20	< 0.20	0.0%	< 0.20	98%	50%	140%	97%	50%	140%	88%	50%	140%
Benzo(a)anthracene	1		< 0.20	< 0.20	0.0%	< 0.20	97%	50%	140%	86%	50%	140%	86%	50%	140%
Chrysene	1		< 0.10	< 0.10	0.0%	< 0.10	100%	50%	140%	95%	50%	140%	91%	50%	140%
Benzo(b)fluoranthene	1		< 0.10	< 0.10	0.0%	< 0.10	101%	50%	140%	93%	50%	140%	88%	50%	140%
Benzo(k)fluoranthene	1		< 0.10	< 0.10	0.0%	< 0.10	102%	50%	140%	87%	50%	140%	96%	50%	140%
Benzo(a)pyrene	1		< 0.01	< 0.01	0.0%	< 0.01	104%	50%	140%	86%	50%	140%	95%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.20	< 0.20	0.0%	< 0.20	99%	50%	140%	87%	50%	140%	86%	50%	140%
Dibenz(a,h)anthracene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	85%	50%	140%	81%	50%	140%
Benzo(g,h,i)perylene	1		< 0.20	< 0.20	0.0%	< 0.20	104%	50%	140%	89%	50%	140%	91%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.20	< 0.20	0.0%	< 0.20	105%	50%	140%	95%	50%	140%	90%	50%	140%

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644982

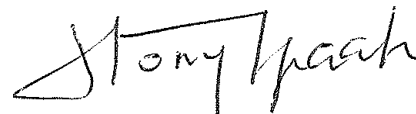
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Water Analysis															
RPT Date: Sep 28, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Antimony	1		2.4	2.0	18.2%	< 0.5	93%	70%	130%	108%	80%	120%	105%	70%	130%
Arsenic	1		23.7	26.6	11.5%	< 1.0	94%	70%	130%	98%	80%	120%	95%	70%	130%
Barium	1		1110	1150	3.5%	< 2.0	94%	70%	130%	102%	80%	120%	105%	70%	130%
Beryllium	1		0.4	0.5	22.2%	< 0.5	94%	70%	130%	95%	80%	120%	98%	70%	130%
Boron	1		672	718	6.6%	< 10.0	103%	70%	130%	109%	80%	120%	91%	70%	130%
Cadmium	1		< 0.2	< 0.2	0.0%	< 0.2	97%	70%	130%	112%	80%	120%	104%	70%	130%
Chromium	1		21.7	21.9	0.9%	< 2.0	99%	70%	130%	95%	80%	120%	100%	70%	130%
Cobalt	1		2.7	2.8	3.6%	< 0.5	97%	70%	130%	102%	80%	120%	98%	70%	130%
Copper	1		1.3	1.4	7.4%	< 1.0	97%	70%	130%	104%	80%	120%	97%	70%	130%
Lead	1		< 0.5	< 0.5	0.0%	< 0.5	96%	70%	130%	102%	80%	120%	97%	70%	130%
Molybdenum	1		1.0	0.9	10.5%	< 0.5	97%	70%	130%	99%	80%	120%	97%	70%	130%
Nickel	1		< 1.0	< 1.0	0.0%	< 1.0	102%	70%	130%	103%	80%	120%	98%	70%	130%
Selenium	1		4.5	4.1	9.3%	< 1.0	97%	70%	130%	102%	80%	120%	102%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	101%	70%	130%	107%	80%	120%	98%	70%	130%
Thallium	1		< 0.3	< 0.3	0.0%	< 0.3	103%	70%	130%	109%	80%	120%	98%	70%	130%
Uranium	1		< 0.5	< 0.5	0.0%	< 0.5	102%	70%	130%	100%	80%	120%	100%	70%	130%
Vanadium	1		2.0	2.6	26.1%	< 0.4	97%	70%	130%	99%	80%	120%	100%	70%	130%
Zinc	1		< 5.0	< 5.0	0.0%	< 5.0	97%	70%	130%	109%	80%	120%	101%	70%	130%
Mercury	1		< 0.02	< 0.02	0.0%	< 0.02	100%	70%	130%	95%	80%	120%	97%	70%	130%
Chromium VI	1		< 5	< 5	0.0%	< 5	99%	70%	130%	102%	80%	120%	99%	70%	130%
Cyanide	1	3738392	< 2	< 2	0.0%	< 2	98%	70%	130%	102%	80%	120%	81%	70%	130%
Sodium	1		1370	1360	0.7%	< 500	96%	70%	130%	96%	80%	120%	86%	70%	130%
Chloride	1		153000	154000	0.7%	< 100	95%	70%	130%	95%	70%	130%	95%	70%	130%
Nitrate as N	1		< 50	< 50	0.0%	< 50	93%	70%	130%	97%	70%	130%	99%	70%	130%
Nitrite as N	1		< 50	< 50	0.0%	< 50	NA	70%	130%	97%	70%	130%	107%	70%	130%
Electrical Conductivity	1	3738392	6040	6000	0.7%	< 2	100%	90%	110%	NA			NA		
pH	1	3738392	7.83	7.90	0.9%	NA	100%	90%	110%	NA			NA		

Comments: NA - Not Applicable.

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T644982

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T649646

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Analyst

WATER ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

DATE REPORTED: Oct 12, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 4

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 4: Project number corrected as per client request.

Sample IDs corrected on January 19, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2012-10-05

DATE REPORTED: 2012-10-12

		SAMPLE DESCRIPTION:		2+425	3+065
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		10/3/2012	10/3/2012
Parameter	Unit	G / S	RDL	3787072	3787076
Naphthalene	µg/L	1400	0.20	<0.20	<0.20
Acenaphthylene	µg/L	1.8	0.20	<0.20	<0.20
Acenaphthene	µg/L	600	0.20	<0.20	<0.20
Fluorene	µg/L	400	0.20	<0.20	<0.20
Phenanthrene	µg/L	580	0.10	<0.10	<0.10
Anthracene	µg/L	2.4	0.10	<0.10	<0.10
Fluoranthene	µg/L	130	0.20	<0.20	<0.20
Pyrene	µg/L	68	0.20	<0.20	<0.20
Benz(a)anthracene	µg/L	4.7	0.20	<0.20	<0.20
Chrysene	µg/L	1	0.10	<0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.75	0.10	<0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.4	0.10	<0.10	<0.10
Benzo(a)pyrene	µg/L	0.81	0.01	<0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.52	0.20	<0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	1800	0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits			
Chrysene-d12	%	50-140	70	74	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(NPGW) - Current
3787072-3787076 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2012-10-05

DATE REPORTED: 2012-10-12

Parameter	Unit	SAMPLE DESCRIPTION:		2+425	3+065
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		10/3/2012	10/3/2012
		G / S	RDL	3787072	3787076
Dichlorodifluoromethane	µg/L	4400	0.20	<0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17	<0.17
Bromomethane	µg/L	5.6	0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	2500	0.40	<0.40	<0.40
Acetone	µg/L	130000	1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30	<0.30
Methylene Chloride	µg/L	610	0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L	190	0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	320	0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	470000	1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Chloroform	µg/L	2.4	0.20	<0.20	<0.20
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	640	0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20	<0.20
Benzene	µg/L	44	0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	16	0.20	<0.20	<0.20
Trichloroethylene	µg/L	1.6	0.20	<0.20	<0.20
Bromodichloromethane	µg/L	85000	0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	140000	1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20	<0.20
Toluene	µg/L	18000	0.20	0.30	0.45
Dibromochloromethane	µg/L	82000	0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.25	0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	1.6	0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	3.3	0.10	<0.10	<0.10
Chlorobenzene	µg/L	630	0.10	<0.10	<0.10
Ethylbenzene	µg/L	2300	0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20	<0.20
Bromoform	µg/L	380	0.10	<0.10	<0.10

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2012-10-05

DATE REPORTED: 2012-10-12

		SAMPLE DESCRIPTION:		2+425	3+065
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		10/3/2012	10/3/2012
Parameter	Unit	G / S	RDL	3787072	3787076
Styrene	µg/L	1300	0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	3.2	0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	9600	0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	8	0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	4600	0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	5.2	0.30	<0.30	<0.30
Xylene Mixture	µg/L	4200	0.20	<0.20	<0.20
n-Hexane	µg/L	51	0.20	<0.20	<0.20
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		103	91
4-Bromofluorobenzene	% Recovery	50-140		101	108

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(NPGW) - Current

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2012-10-05

DATE REPORTED: 2012-10-12

		SAMPLE DESCRIPTION:		2+425		3+065
		SAMPLE TYPE:		Water		Water
		DATE SAMPLED:		10/3/2012		10/3/2012
Parameter	Unit	G / S	RDL	3787072	RDL	3787076
Antimony	µg/L	20000	0.5	0.5	0.5	<0.5
Arsenic	µg/L	1900	1.0	131	1.0	37.7
Barium	µg/L	29000	2.0	1160	2.0	287
Beryllium	µg/L	67	0.5	1.1	0.5	<0.5
Boron	µg/L	45000	10.0	1190	10.0	590
Cadmium	µg/L	2.7	0.2	3.9	0.2	0.3
Chromium	µg/L	810	2.0	19.7	2.0	22.8
Cobalt	µg/L	66	0.5	48.8	0.5	13.3
Copper	µg/L	87	1.0	10.1	1.0	2.4
Lead	µg/L	25	0.5	<0.5	0.5	<0.5
Molybdenum	µg/L	9200	0.5	35.6	0.5	28.2
Nickel	µg/L	490	1.0	25.2	1.0	7.6
Selenium	µg/L	63	1.0	158	1.0	110
Silver	µg/L	1.5	0.2	0.6	0.2	<0.2
Thallium	µg/L	510	0.3	0.6	0.3	<0.3
Uranium	µg/L	420	0.5	37.9	0.5	8.8
Vanadium	µg/L	250	0.4	129	0.4	100
Zinc	µg/L	1100	5.0	87.0	5.0	52.1
Mercury	µg/L	0.29	0.02	<0.02	0.02	<0.02
Chromium VI	µg/L	140	5	<5	5	<5
Cyanide	µg/L	66	2	<2	2	<2
Sodium	µg/L	2300000	500	3460000	500	919000
Chloride	µg/L	2300000	2000	8070000	100	1740000
Nitrate as N	µg/L		1000	1400	50	<50
Nitrite as N	µg/L		1000	<1000	50	<50
Electrical Conductivity	uS/cm		2	20800	2	6490
pH	pH Units		NA	8.12	NA	8.18

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T3(NPGW) - Current

Certified By:



Guideline Violation

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
3787072	2+425	T3(NPGW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Cadmium	2.7	3.9
3787072	2+425	T3(NPGW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Chloride	2300000	8070000
3787072	2+425	T3(NPGW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Selenium	63	158
3787072	2+425	T3(NPGW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Sodium	2300000	3460000
3787076	3+065	T3(NPGW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Selenium	63	110

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Oct 12, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	106%	50%	140%	105%	50%	140%
Vinyl Chloride	1		< 0.17	< 0.17	0.0%	< 0.17	113%	50%	140%	119%	50%	140%	105%	50%	140%
Bromomethane	1		< 0.20	< 0.20	0.0%	< 0.20	107%	50%	140%	110%	50%	140%	99%	50%	140%
Trichlorofluoromethane	1		< 0.40	< 0.40	0.0%	< 0.40	112%	50%	140%	115%	50%	140%	109%	50%	140%
Acetone	1		< 1.0	< 1.0	0.0%	< 1.0	98%	50%	140%	121%	50%	140%	111%	50%	140%
1,1-Dichloroethylene	1		< 0.30	< 0.30	0.0%	< 0.30	117%	50%	140%	116%	60%	130%	108%	50%	140%
Methylene Chloride	1		< 0.30	< 0.30	0.0%	< 0.30	118%	50%	140%	96%	60%	130%	97%	50%	140%
trans- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	119%	60%	130%	95%	50%	140%
Methyl tert-butyl ether	1		< 0.20	< 0.20	0.0%	< 0.20	106%	50%	140%	116%	60%	130%	106%	50%	140%
1,1-Dichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	100%	50%	140%	113%	60%	130%	102%	50%	140%
Methyl Ethyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	95%	50%	140%	107%	50%	140%	93%	50%	140%
cis- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	108%	50%	140%	112%	60%	130%	90%	50%	140%
Chloroform	1		< 0.20	< 0.20	0.0%	< 0.20	105%	50%	140%	114%	60%	130%	106%	50%	140%
1,2-Dichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	119%	50%	140%	116%	60%	130%	102%	50%	140%
1,1,1-Trichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	110%	50%	140%	113%	60%	130%	100%	50%	140%
Carbon Tetrachloride	1		< 0.20	< 0.20	0.0%	< 0.20	119%	50%	140%	109%	60%	130%	105%	50%	140%
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	115%	50%	140%	117%	60%	130%	100%	50%	140%
1,2-Dichloropropane	1		< 0.20	< 0.20	0.0%	< 0.20	118%	50%	140%	114%	60%	130%	94%	50%	140%
Trichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	103%	50%	140%	114%	60%	130%	98%	50%	140%
Bromodichloromethane	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	117%	60%	130%	103%	50%	140%
Methyl Isobutyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	65%	50%	140%	106%	50%	140%	106%	50%	140%
1,1,2-Trichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	107%	50%	140%	114%	60%	130%	104%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	119%	50%	140%	111%	60%	130%	99%	50%	140%
Dibromochloromethane	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	113%	60%	130%	99%	50%	140%
Ethylene Dibromide	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	110%	60%	130%	98%	50%	140%
Tetrachloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	115%	60%	130%	97%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	120%	60%	130%	105%	50%	140%
Chlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	110%	60%	130%	106%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	111%	60%	130%	94%	50%	140%
m & p-Xylene	1		< 0.20	< 0.20	0.0%	< 0.20	129%	50%	140%	116%	60%	130%	100%	50%	140%
Bromoform	1		< 0.10	< 0.10	0.0%	< 0.10	101%	50%	140%	115%	60%	130%	109%	50%	140%
Styrene	1		< 0.10	< 0.10	0.0%	< 0.10	114%	50%	140%	111%	60%	130%	88%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	115%	60%	130%	110%	50%	140%
o-Xylene	1		< 0.10	< 0.10	0.0%	< 0.10	107%	50%	140%	97%	60%	130%	84%	50%	140%
1,3-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	113%	50%	140%	105%	60%	130%	91%	50%	140%
1,4-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	111%	60%	130%	96%	50%	140%
1,2-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	100%	50%	140%	107%	60%	130%	96%	50%	140%
1,3-Dichloropropene	1		< 0.30	< 0.30	0.0%	< 0.30	105%	50%	140%	102%	60%	130%	88%	50%	140%
Xylene Mixture	1		< 0.20	< 0.20	0.0%	< 0.20	118%	50%	140%	107%	60%	130%	92%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Oct 12, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.20	< 0.20	0.0%	< 0.20	NA	50%	140%	89%	60%	130%	70%	50%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphtthalene	1		< 0.20	< 0.20	0.0%	< 0.20	89%	50%	140%	98%	50%	140%	84%	50%	140%
Acenaphthylene	1		< 0.20	< 0.20	0.0%	< 0.20	96%	50%	140%	98%	50%	140%	99%	50%	140%
Acenaphthene	1		< 0.20	< 0.20	0.0%	< 0.20	99%	50%	140%	92%	50%	140%	79%	50%	140%
Fluorene	1		< 0.20	< 0.20	0.0%	< 0.20	99%	50%	140%	86%	50%	140%	87%	50%	140%
Phenanthrene	1		< 0.10	< 0.10	0.0%	< 0.10	103%	50%	140%	90%	50%	140%	83%	50%	140%
Anthracene	1		< 0.10	< 0.10	0.0%	< 0.10	98%	50%	140%	90%	50%	140%	93%	50%	140%
Fluoranthene	1		< 0.20	< 0.20	0.0%	< 0.20	95%	50%	140%	95%	50%	140%	90%	50%	140%
Pyrene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	89%	50%	140%	93%	50%	140%
Benz(a)anthracene	1		< 0.20	< 0.20	0.0%	< 0.20	98%	50%	140%	88%	50%	140%	84%	50%	140%
Chrysene	1		< 0.10	< 0.10	0.0%	< 0.10	94%	50%	140%	94%	50%	140%	89%	50%	140%
Benzo(b)fluoranthene	1		< 0.10	< 0.10	0.0%	< 0.10	95%	50%	140%	88%	50%	140%	94%	50%	140%
Benzo(k)fluoranthene	1		< 0.10	< 0.10	0.0%	< 0.10	98%	50%	140%	90%	50%	140%	86%	50%	140%
Benzo(a)pyrene	1		< 0.01	< 0.01	0.0%	< 0.01	106%	50%	140%	84%	50%	140%	84%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	83%	50%	140%	74%	50%	140%
Dibenz(a,h)anthracene	1		< 0.20	< 0.20	0.0%	< 0.20	98%	50%	140%	87%	50%	140%	77%	50%	140%
Benzo(g,h,i)perylene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	84%	50%	140%	76%	50%	140%
2-and 1-methyl Naphtthalene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	92%	50%	140%	80%	50%	140%

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T649646

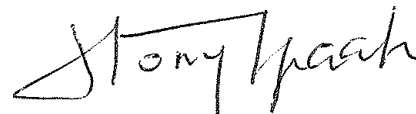
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Water Analysis															
RPT Date: Oct 12, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Antimony	1		< 0.5	< 0.5	0.0%	< 0.5	108%	70%	130%	90%	80%	120%	99%	70%	130%
Arsenic	1		< 1.0	< 1.0	0.0%	< 1.0	95%	70%	130%	95%	80%	120%	107%	70%	130%
Barium	1		29.1	27.9	4.2%	< 2.0	105%	70%	130%	105%	80%	120%	103%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	99%	70%	130%	91%	80%	120%	115%	70%	130%
Boron	1		14.4	15.8	9.3%	< 10.0	95%	70%	130%	96%	80%	120%	106%	70%	130%
Cadmium	1		< 0.2	< 0.2	0.0%	< 0.2	91%	70%	130%	93%	80%	120%	99%	70%	130%
Chromium	1		2.0	2.0	0.0%	< 2.0	102%	70%	130%	100%	80%	120%	96%	70%	130%
Cobalt	1		< 0.5	< 0.5	0.0%	< 0.5	93%	70%	130%	94%	80%	120%	97%	70%	130%
Copper	1		1.11	1.03	7.5%	< 1.0	103%	70%	130%	106%	80%	120%	106%	70%	130%
Lead	1		0.5	0.5	0.0%	< 0.5	98%	70%	130%	100%	80%	120%	98%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	91%	70%	130%	99%	80%	120%	95%	70%	130%
Nickel	1		< 1.0	< 1.0	0.0%	< 1.0	95%	70%	130%	97%	80%	120%	97%	70%	130%
Selenium	1		< 1.0	< 1.0	0.0%	< 1.0	94%	70%	130%	93%	80%	120%	109%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	102%	70%	130%	110%	80%	120%	109%	70%	130%
Thallium	1		< 0.3	< 0.3	0.0%	< 0.3	97%	70%	130%	101%	80%	120%	100%	70%	130%
Uranium	1		< 0.5	< 0.5	0.0%	< 0.5	94%	70%	130%	95%	80%	120%	101%	70%	130%
Vanadium	1		0.8	0.8	0.0%	< 0.4	91%	70%	130%	98%	80%	120%	95%	70%	130%
Zinc	1		< 5.0	< 5.0	0.0%	< 5.0	100%	70%	130%	101%	80%	120%	101%	70%	130%
Mercury	1	3787072	< 0.02	< 0.02	0.0%	< 0.02	100%	70%	130%	99%	80%	120%	97%	70%	130%
Chromium VI	1		< 5	< 5	0.0%	< 5	104%	70%	130%	104%	80%	120%	96%	70%	130%
Cyanide	1		< 2	< 2	0.0%	< 2	95%	70%	130%	95%	80%	120%	90%	70%	130%
Sodium	1		43100	42600	1.2%	< 500	95%	70%	130%	95%	80%	120%	93%	70%	130%
Chloride	1		53100	52900	0.4%	< 100	98%	70%	130%	95%	70%	130%	102%	70%	130%
Nitrate as N	1		60	65	8.0%	< 50	90%	70%	130%	101%	70%	130%	100%	70%	130%
Nitrite as N	1		< 50	< 50	0.0%	< 50	NA	70%	130%	93%	70%	130%	112%	70%	130%
Electrical Conductivity	1	3787076	6490	6620	2.0%	< 2	110%	90%	110%	NA			NA		
pH	1	3787076	8.18	8.01	2.1%	NA	100%	90%	110%	NA			NA		

Comments: NA - Not Applicable.

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T649646

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T659885

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Analyst

WATER ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

DATE REPORTED: Nov 08, 2012

PAGES (INCLUDING COVER): 10

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDs corrected on January 14, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2012-11-05

DATE REPORTED: 2012-11-08

		SAMPLE DESCRIPTION:		4+495
		SAMPLE TYPE:		Water
		DATE SAMPLED:		11/2/2012
Parameter	Unit	G / S	RDL	3892560
Naphthalene	µg/L		0.20	<0.20
Acenaphthylene	µg/L		0.20	<0.20
Acenaphthene	µg/L		0.20	<0.20
Fluorene	µg/L		0.20	<0.20
Phenanthrene	µg/L		0.10	<0.10
Anthracene	µg/L		0.10	<0.10
Fluoranthene	µg/L		0.20	<0.20
Pyrene	µg/L		0.20	<0.20
Benz(a)anthracene	µg/L		0.20	<0.20
Chrysene	µg/L		0.10	<0.10
Benzo(b)fluoranthene	µg/L		0.10	<0.10
Benzo(k)fluoranthene	µg/L		0.10	<0.10
Benzo(a)pyrene	µg/L		0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L		0.20	<0.20
Dibenz(a,h)anthracene	µg/L		0.20	<0.20
Benzo(g,h,i)perylene	µg/L		0.20	<0.20
2-and 1-methyl Naphthalene	µg/L		0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140	89	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

3892560 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2012-11-05

DATE REPORTED: 2012-11-08

		SAMPLE DESCRIPTION:		4+495
		SAMPLE TYPE:		Water
		DATE SAMPLED:		11/2/2012
Parameter	Unit	G / S	RDL	3892560
Dichlorodifluoromethane	µg/L		0.20	<0.20
Vinyl Chloride	µg/L		0.17	<0.17
Bromomethane	µg/L		0.20	<0.20
Trichlorofluoromethane	µg/L		0.40	<0.40
Acetone	µg/L		1.0	<1.0
1,1-Dichloroethylene	µg/L		0.30	<0.30
Methylene Chloride	µg/L		0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L		0.20	<0.20
Methyl tert-butyl ether	µg/L		0.20	<0.20
1,1-Dichloroethane	µg/L		0.30	<0.30
Methyl Ethyl Ketone	µg/L		1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L		0.20	<0.20
Chloroform	µg/L		0.20	0.30
1,2-Dichloroethane	µg/L		0.20	<0.20
1,1,1-Trichloroethane	µg/L		0.30	<0.30
Carbon Tetrachloride	µg/L		0.20	<0.20
Benzene	µg/L		0.20	0.58
1,2-Dichloropropane	µg/L		0.20	<0.20
Trichloroethylene	µg/L		0.20	<0.20
Bromodichloromethane	µg/L		0.20	<0.20
Methyl Isobutyl Ketone	µg/L		1.0	<1.0
1,1,2-Trichloroethane	µg/L		0.20	<0.20
Toluene	µg/L		0.20	0.25
Dibromochloromethane	µg/L		0.10	<0.10
Ethylene Dibromide	µg/L		0.10	<0.10
Tetrachloroethylene	µg/L		0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L		0.10	<0.10
Chlorobenzene	µg/L		0.10	<0.10
Ethylbenzene	µg/L		0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20
Bromoform	µg/L		0.10	<0.10

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2012-11-05

DATE REPORTED: 2012-11-08

		SAMPLE DESCRIPTION:		4+495
		SAMPLE TYPE:		Water
		DATE SAMPLED:		11/2/2012
Parameter	Unit	G / S	RDL	3892560
Styrene	µg/L		0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L		0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L		0.10	<0.10
1,4-Dichlorobenzene	µg/L		0.10	<0.10
1,2-Dichlorobenzene	µg/L		0.10	<0.10
1,3-Dichloropropene	µg/L		0.30	<0.30
Xylene Mixture	µg/L		0.20	<0.20
n-Hexane	µg/L		0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		98
4-Bromofluorobenzene	% Recovery	50-140		114

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2012-11-05

DATE REPORTED: 2012-11-08

		SAMPLE DESCRIPTION:		4+495
		SAMPLE TYPE:		Water
		DATE SAMPLED:		11/2/2012
Parameter	Unit	G / S	RDL	3892560
Antimony	µg/L		0.5	0.7
Arsenic	µg/L		1.0	9.1
Barium	µg/L		2.0	32.0
Beryllium	µg/L		0.5	3.1
Boron	µg/L		10.0	2280
Cadmium	µg/L		0.2	<0.2
Chromium	µg/L		2.0	49.0
Cobalt	µg/L		0.5	11.8
Copper	µg/L		1.0	10.1
Lead	µg/L		0.5	<0.5
Molybdenum	µg/L		0.5	13.9
Nickel	µg/L		1.0	16.5
Selenium	µg/L		1.0	62.5
Silver	µg/L		0.2	0.3
Thallium	µg/L		0.3	<0.3
Uranium	µg/L		0.5	190
Vanadium	µg/L		0.4	14.3
Zinc	µg/L		5.0	17.4
Mercury	µg/L		0.02	<0.02
Chromium VI	µg/L		5	<5
Cyanide	µg/L		2	<2
Sodium	µg/L		500	2620000
Chloride	µg/L		2000	5790000
Nitrate as N	µg/L		1000	<1000
Nitrite as N	µg/L		1000	<1000
Electrical Conductivity	uS/cm		2	15600
pH	pH Units		NA	7.58

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Nov 08, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	1		< 0.20	< 0.20	0.0%	< 0.20	113%	50%	140%	89%	50%	140%	97%	50%	140%
Vinyl Chloride	1		< 0.17	< 0.17	0.0%	< 0.17	116%	50%	140%	103%	50%	140%	84%	50%	140%
Bromomethane	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	109%	50%	140%	88%	50%	140%
Trichlorofluoromethane	1		< 0.40	< 0.40	0.0%	< 0.40	115%	50%	140%	102%	50%	140%	97%	50%	140%
Acetone	1		< 1.0	< 1.0	0.0%	< 1.0	85%	50%	140%	107%	50%	140%	89%	50%	140%
1,1-Dichloroethylene	1		< 0.30	< 0.30	0.0%	< 0.30	81%	50%	140%	105%	60%	130%	86%	50%	140%
Methylene Chloride	1		< 0.30	< 0.30	0.0%	< 0.30	115%	50%	140%	102%	60%	130%	82%	50%	140%
trans- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	122%	50%	140%	106%	60%	130%	85%	50%	140%
Methyl tert-butyl ether	1		< 0.20	< 0.20	0.0%	< 0.20	93%	50%	140%	102%	60%	130%	85%	50%	140%
1,1-Dichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	121%	50%	140%	105%	60%	130%	84%	50%	140%
Methyl Ethyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	92%	50%	140%	106%	50%	140%	89%	50%	140%
cis- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	118%	50%	140%	105%	60%	130%	84%	50%	140%
Chloroform	1		< 0.20	< 0.20	0.0%	< 0.20	119%	50%	140%	105%	60%	130%	84%	50%	140%
1,2-Dichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	114%	50%	140%	104%	60%	130%	84%	50%	140%
1,1,1-Trichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	117%	50%	140%	106%	60%	130%	86%	50%	140%
Carbon Tetrachloride	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	106%	60%	130%	89%	50%	140%
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	114%	50%	140%	106%	60%	130%	89%	50%	140%
1,2-Dichloropropane	1		< 0.20	< 0.20	0.0%	< 0.20	114%	50%	140%	106%	60%	130%	82%	50%	140%
Trichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	121%	50%	140%	105%	60%	130%	85%	50%	140%
Bromodichloromethane	1		< 0.20	< 0.20	0.0%	< 0.20	120%	50%	140%	104%	60%	130%	83%	50%	140%
Methyl Isobutyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	80%	50%	140%	111%	50%	140%	89%	50%	140%
1,1,2-Trichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	110%	50%	140%	105%	60%	130%	83%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	110%	50%	140%	106%	60%	130%	88%	50%	140%
Dibromochloromethane	1		< 0.10	< 0.10	0.0%	< 0.10	114%	50%	140%	105%	60%	130%	84%	50%	140%
Ethylene Dibromide	1		< 0.10	< 0.10	0.0%	< 0.10	110%	50%	140%	107%	60%	130%	85%	50%	140%
Tetrachloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	108%	50%	140%	106%	60%	130%	90%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	106%	60%	130%	85%	50%	140%
Chlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	106%	60%	130%	83%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	108%	50%	140%	108%	60%	130%	86%	50%	140%
m & p-Xylene	1		< 0.20	< 0.20	0.0%	< 0.20	113%	50%	140%	107%	60%	130%	87%	50%	140%
Bromoform	1		< 0.10	< 0.10	0.0%	< 0.10	112%	50%	140%	105%	60%	130%	85%	50%	140%
Styrene	1		< 0.10	< 0.10	0.0%	< 0.10	104%	50%	140%	106%	60%	130%	83%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	106%	60%	130%	86%	50%	140%
o-Xylene	1		< 0.10	< 0.10	0.0%	< 0.10	112%	50%	140%	108%	60%	130%	83%	50%	140%
1,3-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	114%	50%	140%	106%	60%	130%	83%	50%	140%
1,4-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	111%	50%	140%	106%	60%	130%	86%	50%	140%
1,2-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	108%	50%	140%	107%	60%	130%	83%	50%	140%
1,3-Dichloropropene	1		< 0.30	< 0.30	0.0%	< 0.30	99%	50%	140%	105%	60%	130%	87%	50%	140%
Xylene Mixture	1		< 0.20	< 0.20	0.0%	< 0.20	112%	50%	140%	107%	60%	130%	85%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Nov 08, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.20	< 0.20	0.0%	< 0.20	NA	50%	140%	89%	60%	130%	111%	50%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	84%	50%	140%	83%	50%	140%
Acenaphthylene	1		< 0.20	< 0.20	0.0%	< 0.20	99%	50%	140%	89%	50%	140%	85%	50%	140%
Acenaphthene	1		< 0.20	< 0.20	0.0%	< 0.20	95%	50%	140%	87%	50%	140%	84%	50%	140%
Fluorene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	96%	50%	140%	94%	50%	140%
Phenanthrene	1		< 0.10	< 0.10	0.0%	< 0.10	97%	50%	140%	91%	50%	140%	93%	50%	140%
Anthracene	1		< 0.10	< 0.10	0.0%	< 0.10	98%	50%	140%	89%	50%	140%	88%	50%	140%
Fluoranthene	1		< 0.20	< 0.20	0.0%	< 0.20	98%	50%	140%	92%	50%	140%	89%	50%	140%
Pyrene	1		< 0.20	< 0.20	0.0%	< 0.20	103%	50%	140%	91%	50%	140%	94%	50%	140%
Benz(a)anthracene	1		< 0.20	< 0.20	0.0%	< 0.20	95%	50%	140%	91%	50%	140%	91%	50%	140%
Chrysene	1		< 0.10	< 0.10	0.0%	< 0.10	101%	50%	140%	88%	50%	140%	94%	50%	140%
Benzo(b)fluoranthene	1		< 0.10	< 0.10	0.0%	< 0.10	96%	50%	140%	79%	50%	140%	78%	50%	140%
Benzo(k)fluoranthene	1		< 0.10	< 0.10	0.0%	< 0.10	102%	50%	140%	85%	50%	140%	89%	50%	140%
Benzo(a)pyrene	1		< 0.01	< 0.01	0.0%	< 0.01	103%	50%	140%	87%	50%	140%	84%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.20	< 0.20	0.0%	< 0.20	96%	50%	140%	87%	50%	140%	94%	50%	140%
Dibenz(a,h)anthracene	1		< 0.20	< 0.20	0.0%	< 0.20	97%	50%	140%	86%	50%	140%	93%	50%	140%
Benzo(g,h,i)perylene	1		< 0.20	< 0.20	0.0%	< 0.20	104%	50%	140%	94%	50%	140%	96%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	74%	50%	140%	77%	50%	140%

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

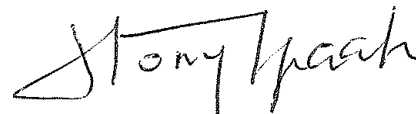
AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Water Analysis															
RPT Date: Nov 08, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Antimony	1		0.9	0.7	25.0%	< 0.5	99%	70%	130%	91%	80%	120%	113%	70%	130%
Arsenic	1		1.38	1.12	20.8%	< 1.0	105%	70%	130%	102%	80%	120%	114%	70%	130%
Barium	1		23.6	24.3	2.9%	< 2.0	99%	70%	130%	97%	80%	120%	106%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	99%	70%	130%	95%	80%	120%	113%	70%	130%
Boron	1		151	153	1.3%	< 10.0	100%	70%	130%	105%	80%	120%	125%	70%	130%
Cadmium	1		< 0.2	< 0.2	0.0%	< 0.2	107%	70%	130%	103%	80%	120%	127%	70%	130%
Chromium	1		4.87	4.19	15.0%	< 2.0	108%	70%	130%	106%	80%	120%	101%	70%	130%
Cobalt	1		1.2	1.2	0.0%	< 0.5	107%	70%	130%	105%	80%	120%	106%	70%	130%
Copper	1		1.20	1.13	6.0%	< 1.0	105%	70%	130%	108%	80%	120%	102%	70%	130%
Lead	1		< 0.5	< 0.5	0.0%	< 0.5	102%	70%	130%	110%	80%	120%	105%	70%	130%
Molybdenum	1		5.65	5.48	3.1%	< 0.5	105%	70%	130%	101%	80%	120%	114%	70%	130%
Nickel	1		2.32	2.58	10.6%	< 1.0	108%	70%	130%	107%	80%	120%	104%	70%	130%
Selenium	1		1.7	1.6	6.1%	< 1.0	100%	70%	130%	99%	80%	120%	111%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	109%	70%	130%	100%	80%	120%	128%	70%	130%
Thallium	1		< 0.3	< 0.3	0.0%	< 0.3	104%	70%	130%	108%	80%	120%	109%	70%	130%
Uranium	1		19.6	19.5	0.5%	< 0.5	104%	70%	130%	105%	80%	120%	105%	70%	130%
Vanadium	1		1.77	1.61	9.5%	< 0.4	104%	70%	130%	101%	80%	120%	104%	70%	130%
Zinc	1		< 5.0	< 5.0	0.0%	< 5.0	101%	70%	130%	108%	80%	120%	107%	70%	130%
Mercury	1		< 0.02	< 0.02	0.0%	< 0.02	103%	70%	130%	102%	80%	120%	102%	70%	130%
Chromium VI	1	3892560	< 5	< 5	0.0%	< 5	104%	70%	130%	103%	80%	120%	111%	70%	130%
Cyanide	1		< 2	< 2	0.0%	< 2	94%	70%	130%	96%	80%	120%	76%	70%	130%
Sodium	1		72800	68100	6.7%	< 500	96%	70%	130%	94%	80%	120%	106%	70%	130%
Chloride	1		877000	877000	0.0%	< 100	94%	70%	130%	98%	70%	130%	95%	70%	130%
Nitrate as N	1		103	107	3.8%	< 50	94%	70%	130%	104%	70%	130%	106%	70%	130%
Nitrite as N	1		< 50	< 50	0.0%	< 50	NA	70%	130%	99%	70%	130%	94%	70%	130%
Electrical Conductivity	4		149	137	8.0%	< 2	103%	90%	110%	NA			NA		
pH	4		9.22	9.22	0.0%	NA	102%	90%	110%	NA			NA		

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T659885

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T651064

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Analyst

WATER ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

DATE REPORTED: Oct 16, 2012

PAGES (INCLUDING COVER): 11

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sampled IDs corrected on January 9, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2012-10-11

DATE REPORTED: 2012-10-16

		SAMPLE DESCRIPTION:		7+145
		SAMPLE TYPE:		Water
		DATE SAMPLED:		10/10/2012
Parameter	Unit	G / S	RDL	3805539
Naphthalene	µg/L	7	0.20	<0.20
Acenaphthylene	µg/L	1	0.20	<0.20
Acenaphthene	µg/L	4.1	0.20	<0.20
Fluorene	µg/L	120	0.20	<0.20
Phenanthrene	µg/L	0.1	0.10	<0.10
Anthracene	µg/L	0.1	0.10	<0.10
Fluoranthene	µg/L	0.4	0.20	<0.20
Pyrene	µg/L	0.2	0.20	<0.20
Benz(a)anthracene	µg/L	0.2	0.20	<0.20
Chrysene	µg/L	0.1	0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.1	0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.1	0.10	<0.10
Benzo(a)pyrene	µg/L	0.01	0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.2	0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	2	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140	76	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

3805539 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2012-10-11

DATE REPORTED: 2012-10-16

		SAMPLE DESCRIPTION:		7+145
		SAMPLE TYPE:		Water
		DATE SAMPLED:		10/10/2012
Parameter	Unit	G / S	RDL	3805539
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	<1.0
1,1-Dichloroethylene	µg/L	0.5	0.30	<0.30
Methylene Chloride	µg/L	5	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	0.5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	400	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2	0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.5	0.30	<0.30
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20
Benzene	µg/L	0.5	0.20	<0.20
1,2-Dichloropropane	µg/L	0.5	0.20	<0.20
Trichloroethylene	µg/L	0.5	0.20	<0.20
Bromodichloromethane	µg/L	2	0.20	<0.20
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	0.5	0.20	<0.20
Toluene	µg/L	0.8	0.20	<0.20
Dibromochloromethane	µg/L	2	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	0.5	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	0.5	0.10	<0.10
Ethylbenzene	µg/L	0.5	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20
Bromoform	µg/L	5	0.10	<0.10

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2012-10-11

DATE REPORTED: 2012-10-16

		SAMPLE DESCRIPTION:		7+145
		SAMPLE TYPE:		Water
		DATE SAMPLED:		10/10/2012
Parameter	Unit	G / S	RDL	3805539
Styrene	µg/L	0.5	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.5	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	72	0.20	<0.20
n-Hexane	µg/L	5	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		102
4-Bromofluorobenzene	% Recovery	50-140		97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2012-10-11

DATE REPORTED: 2012-10-16

		SAMPLE DESCRIPTION:		7+145
		SAMPLE TYPE:		Water
		DATE SAMPLED:		10/10/2012
Parameter	Unit	G / S	RDL	3805539
Antimony	µg/L	1.5	0.5	2.7
Arsenic	µg/L	13	1.0	3.4
Barium	µg/L	610	2.0	33.8
Beryllium	µg/L	0.5	0.5	<0.5
Boron	µg/L	1700	10.0	361
Cadmium	µg/L	0.5	0.2	<0.2
Chromium	µg/L	11	2.0	18.5
Cobalt	µg/L	3.8	0.5	2.2
Copper	µg/L	5	1.0	2.9
Lead	µg/L	1.9	0.5	<0.5
Molybdenum	µg/L	23	0.5	61.2
Nickel	µg/L	14	1.0	70.2
Selenium	µg/L	5	1.0	7.0
Silver	µg/L	0.3	0.2	<0.2
Thallium	µg/L	0.5	0.3	<0.3
Uranium	µg/L	8.9	0.5	6.6
Vanadium	µg/L	3.9	0.4	3.9
Zinc	µg/L	160	5.0	21.1
Mercury	µg/L	0.1	0.02	<0.02
Chromium VI	µg/L	25	5	<5
Cyanide	µg/L	5	2	<2
Sodium	µg/L	490000	500	268000
Chloride	µg/L	790000	100	392000
Nitrate as N	µg/L		50	<50
Nitrite as N	µg/L		50	<50
Electrical Conductivity	uS/cm		2	2330
pH	pH Units		NA	7.68

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

Certified By:



Guideline Violation

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
3805539	7+145	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Antimony	1.5	2.7
3805539	7+145	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Chromium	11	18.5
3805539	7+145	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Molybdenum	23	61.2
3805539	7+145	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Nickel	14	70.2
3805539	7+145	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Selenium	5	7.0

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Oct 16, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	1		< 0.20	< 0.20	0.0%	< 0.20	114%	50%	140%	104%	50%	140%	109%	50%	140%
Vinyl Chloride	1		< 0.17	< 0.17	0.0%	< 0.17	122%	50%	140%	106%	50%	140%	112%	50%	140%
Bromomethane	1		< 0.20	< 0.20	0.0%	< 0.20	110%	50%	140%	120%	50%	140%	116%	50%	140%
Trichlorofluoromethane	1		< 0.40	< 0.40	0.0%	< 0.40	116%	50%	140%	108%	50%	140%	112%	50%	140%
Acetone	1		< 1.0	< 1.0	0.0%	< 1.0	116%	50%	140%	117%	50%	140%	101%	50%	140%
1,1-Dichloroethylene	1		< 0.30	< 0.30	0.0%	< 0.30	118%	50%	140%	119%	60%	130%	98%	50%	140%
Methylene Chloride	1		< 0.30	< 0.30	0.0%	< 0.30	NA	50%	140%	NA	60%	130%	NA	50%	140%
trans- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	116%	50%	140%	104%	60%	130%	113%	50%	140%
Methyl tert-butyl ether	1		< 0.20	< 0.20	0.0%	< 0.20	113%	50%	140%	106%	60%	130%	118%	50%	140%
1,1-Dichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	94%	50%	140%	107%	60%	130%	116%	50%	140%
Methyl Ethyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	76%	50%	140%	107%	50%	140%	112%	50%	140%
cis- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	119%	50%	140%	100%	60%	130%	108%	50%	140%
Chloroform	1		< 0.20	< 0.20	0.0%	< 0.20	108%	50%	140%	110%	60%	130%	120%	50%	140%
1,2-Dichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	103%	50%	140%	102%	60%	130%	117%	50%	140%
1,1,1-Trichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	116%	50%	140%	107%	60%	130%	112%	50%	140%
Carbon Tetrachloride	1		< 0.20	< 0.20	0.0%	< 0.20	113%	50%	140%	108%	60%	130%	118%	50%	140%
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	112%	50%	140%	101%	60%	130%	110%	50%	140%
1,2-Dichloropropane	1		< 0.20	< 0.20	0.0%	< 0.20	110%	50%	140%	100%	60%	130%	111%	50%	140%
Trichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	106%	50%	140%	100%	60%	130%	107%	50%	140%
Bromodichloromethane	1		< 0.20	< 0.20	0.0%	< 0.20	104%	50%	140%	102%	60%	130%	115%	50%	140%
Methyl Isobutyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	85%	50%	140%	95%	50%	140%	94%	50%	140%
1,1,2-Trichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	116%	50%	140%	97%	60%	130%	105%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	113%	50%	140%	92%	60%	130%	94%	50%	140%
Dibromochloromethane	1		< 0.10	< 0.10	0.0%	< 0.10	110%	50%	140%	108%	60%	130%	114%	50%	140%
Ethylene Dibromide	1		< 0.10	< 0.10	0.0%	< 0.10	116%	50%	140%	99%	60%	130%	102%	50%	140%
Tetrachloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	118%	50%	140%	107%	60%	130%	110%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	101%	60%	130%	107%	50%	140%
Chlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	100%	50%	140%	105%	60%	130%	110%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	107%	50%	140%	90%	60%	130%	93%	50%	140%
m & p-Xylene	1		< 0.20	< 0.20	0.0%	< 0.20	118%	50%	140%	91%	60%	130%	94%	50%	140%
Bromoform	1		< 0.10	< 0.10	0.0%	< 0.10	104%	50%	140%	101%	60%	130%	110%	50%	140%
Styrene	1		< 0.10	< 0.10	0.0%	< 0.10	110%	50%	140%	92%	60%	130%	99%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	95%	60%	130%	106%	50%	140%
o-Xylene	1		< 0.10	< 0.10	0.0%	< 0.10	114%	50%	140%	90%	60%	130%	94%	50%	140%
1,3-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	116%	50%	140%	96%	60%	130%	98%	50%	140%
1,4-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	119%	50%	140%	96%	60%	130%	100%	50%	140%
1,2-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	116%	50%	140%	96%	60%	130%	99%	50%	140%
1,3-Dichloropropene	1		< 0.30	< 0.30	0.0%	< 0.30	94%	50%	140%	97%	60%	130%	104%	50%	140%
Xylene Mixture	1		< 0.20	< 0.20	0.0%	< 0.20	116%	50%	140%	91%	60%	130%	94%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Oct 16, 2012			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
n-Hexane	1		< 0.20	< 0.20	0.0%	< 0.20	NA	50%	140%	103%	60%	130%	101%	50%	140%
O. Reg. 153(511) - PAHs (Water)															
Naphthalene	1		< 0.20	< 0.20	0.0%	< 0.20	94%	50%	140%	98%	50%	140%	85%	50%	140%
Acenaphthylene	1		< 0.20	< 0.20	0.0%	< 0.20	97%	50%	140%	98%	50%	140%	91%	50%	140%
Acenaphthene	1		< 0.20	< 0.20	0.0%	< 0.20	98%	50%	140%	93%	50%	140%	84%	50%	140%
Fluorene	1		< 0.20	< 0.20	0.0%	< 0.20	94%	50%	140%	93%	50%	140%	88%	50%	140%
Phenanthrene	1		< 0.10	< 0.10	0.0%	< 0.10	99%	50%	140%	99%	50%	140%	89%	50%	140%
Anthracene	1		< 0.10	< 0.10	0.0%	< 0.10	99%	50%	140%	96%	50%	140%	89%	50%	140%
Fluoranthene	1		< 0.20	< 0.20	0.0%	< 0.20	94%	50%	140%	88%	50%	140%	82%	50%	140%
Pyrene	1		< 0.20	< 0.20	0.0%	< 0.20	92%	50%	140%	91%	50%	140%	93%	50%	140%
Benz(a)anthracene	1		< 0.20	< 0.20	0.0%	< 0.20	93%	50%	140%	86%	50%	140%	87%	50%	140%
Chrysene	1		< 0.10	< 0.10	0.0%	< 0.10	94%	50%	140%	92%	50%	140%	85%	50%	140%
Benzo(b)fluoranthene	1		< 0.10	< 0.10	0.0%	< 0.10	93%	50%	140%	98%	50%	140%	90%	50%	140%
Benzo(k)fluoranthene	1		< 0.10	< 0.10	0.0%	< 0.10	91%	50%	140%	95%	50%	140%	95%	50%	140%
Benzo(a)pyrene	1		< 0.01	< 0.01	0.0%	< 0.01	101%	50%	140%	88%	50%	140%	95%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	84%	50%	140%	78%	50%	140%
Dibenz(a,h)anthracene	1		< 0.20	< 0.20	0.0%	< 0.20	99%	50%	140%	85%	50%	140%	86%	50%	140%
Benzo(g,h,i)perylene	1		< 0.20	< 0.20	0.0%	< 0.20	99%	50%	140%	91%	50%	140%	87%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	98%	50%	140%	85%	50%	140%

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T651064

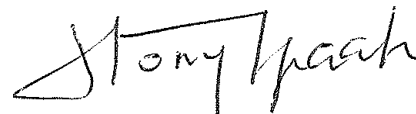
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Water Analysis															
RPT Date: Oct 16, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Antimony	1		< 0.5	< 0.5	0.0%	< 0.5	104%	70%	130%	93%	80%	120%	96%	70%	130%
Arsenic	1		19.9	23.1	14.9%	< 1.0	99%	70%	130%	101%	80%	120%	103%	70%	130%
Barium	1		30.1	34.5	13.6%	< 2.0	92%	70%	130%	96%	80%	120%	100%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	95%	70%	130%	97%	80%	120%	100%	70%	130%
Boron	1		77.1	92.6	18.3%	< 10.0	99%	70%	130%	94%	80%	120%	106%	70%	130%
Cadmium	1		< 0.2	< 0.2	0.0%	< 0.2	97%	70%	130%	97%	80%	120%	110%	70%	130%
Chromium	1		4.8	5.6	15.4%	< 2.0	97%	70%	130%	101%	80%	120%	104%	70%	130%
Cobalt	1		< 0.5	< 0.5	0.0%	< 0.5	100%	70%	130%	104%	80%	120%	98%	70%	130%
Copper	1		4.9	5.6	13.3%	< 1.0	93%	70%	130%	98%	80%	120%	96%	70%	130%
Lead	1		< 0.5	< 0.5	0.0%	< 0.5	92%	70%	130%	97%	80%	120%	96%	70%	130%
Molybdenum	1		9.7	11.7	18.7%	< 0.5	97%	70%	130%	100%	80%	120%	101%	70%	130%
Nickel	1		5.3	5.9	10.7%	< 1.0	102%	70%	130%	107%	80%	120%	99%	70%	130%
Selenium	1		1.5	1.5	0.0%	< 1.0	97%	70%	130%	98%	80%	120%	102%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	103%	70%	130%	108%	80%	120%	96%	70%	130%
Thallium	1		< 0.3	< 0.3	0.0%	< 0.3	99%	70%	130%	114%	80%	120%	102%	70%	130%
Uranium	1		0.5	0.6	18.2%	< 0.5	99%	70%	130%	102%	80%	120%	101%	70%	130%
Vanadium	1		2.7	3.0	10.5%	< 0.4	99%	70%	130%	103%	80%	120%	100%	70%	130%
Zinc	1		67.3	76.3	12.5%	< 5.0	97%	70%	130%	109%	80%	120%	102%	70%	130%
Mercury	1		< 0.02	< 0.02	0.0%	< 0.02	94%	70%	130%	106%	80%	120%	93%	70%	130%
Chromium VI	1		< 5	< 5	0.0%	< 5	100%	70%	130%	104%	80%	120%	103%	70%	130%
Cyanide	1		< 2	< 2	0.0%	< 2	97%	70%	130%	110%	80%	120%	111%	70%	130%
Sodium	1		1890	1880	0.5%	< 500	99%	70%	130%	99%	80%	120%	95%	70%	130%
Chloride	1		66900	64900	3.0%	< 100	92%	70%	130%	90%	70%	130%	87%	70%	130%
Nitrate as N	1		1510	1510	0.0%	< 50	94%	70%	130%	96%	70%	130%	98%	70%	130%
Nitrite as N	1		309	367	17.2%	< 50	NA	70%	130%	93%	70%	130%	113%	70%	130%
Electrical Conductivity	1	3805539	2330	2320	0.0%	< 2	99%	90%	110%	NA			NA		
pH	1	3805539	7.68	7.80	2.0%	NA	99%	90%	110%	NA			NA		

Comments: NA - Not Applicable.

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T651064

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 13T687858

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Analyst

DATE REPORTED: Feb 15, 2013

PAGES (INCLUDING COVER): 4

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 13T687858

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2013-02-12

DATE REPORTED: 2013-02-15

		SAMPLE DESCRIPTION:		BH 1+200(D)	BH 2+425(D)	BH 3+065(D)	BH 4+495(D)
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2/12/2013	2/12/2013	2/12/2013	2/12/2013
Parameter	Unit	G / S	RDL	4127970	4127972	4127976	4127980
Benzene	µg/L	0.5	0.20	0.43	0.42	<0.20	<0.20
Toluene	µg/L	0.8	0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.5	0.10	<0.10	<0.10	<0.10	<0.10
Xylene Mixture	µg/L	72	0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L		25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	420	25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA	NA	NA
Surrogate	Unit	Acceptable Limits					
Terphenyl	%	60-140		122	106	120	114

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

4127970-4127980 The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

n-C6 and n-C10 response factors are within 30% of Toluene response factor.

n-C10, n-C16 and n-C34 response factors are within 10% of their average.

C50 response factor is within 70% of n-C10 + n-C16 n-C34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687858

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Feb 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Water)															
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	108%	60%	130%	102%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	109%	60%	130%	101%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	104%	50%	140%	106%	60%	130%	105%	50%	140%
Xylene Mixture	1		< 0.20	< 0.20	0.0%	< 0.20	102%	50%	140%	104%	60%	130%	106%	50%	140%
F1 (C6 to C10)	1		< 25	< 25	0.0%	< 25	103%	60%	140%	106%	60%	140%	105%	60%	140%
F2 (C10 to C16)	1		< 100	< 100	0.0%	< 100	100%	60%	140%	69%	60%	140%	75%	60%	140%
F3 (C16 to C34)	1		< 100	< 100	0.0%	< 100	101%	60%	140%	104%	60%	140%	86%	60%	140%
F4 (C34 to C50)	1		< 100	< 100	0.0%	< 100	96%	60%	140%	140%	60%	140%	91%	60%	140%

Certified By:



CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 13T687858

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Analyst

DATE REPORTED: Feb 15, 2013

PAGES (INCLUDING COVER): 4

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 13T687858

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2013-02-12

DATE REPORTED: 2013-02-15

		SAMPLE DESCRIPTION:		BH 1+200(D)	BH 2+425(D)	BH 3+065(D)	BH 4+495(D)
		SAMPLE TYPE:		Water	Water	Water	Water
		DATE SAMPLED:		2/12/2013	2/12/2013	2/12/2013	2/12/2013
Parameter	Unit	G / S	RDL	4127970	4127972	4127976	4127980
Benzene	µg/L	0.5	0.20	0.43	0.42	<0.20	<0.20
Toluene	µg/L	0.8	0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.5	0.10	<0.10	<0.10	<0.10	<0.10
Xylene Mixture	µg/L	72	0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6 to C10)	µg/L		25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	420	25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA	NA	NA
Surrogate	Unit	Acceptable Limits					
Terphenyl	%	60-140		122	106	120	114

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

4127970-4127980 The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

n-C6 and n-C10 response factors are within 30% of Toluene response factor.

n-C10, n-C16 and n-C34 response factors are within 10% of their average.

C50 response factor is within 70% of n-C10 + n-C16 n-C34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687858

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Feb 15, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Water)															
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	101%	50%	140%	108%	60%	130%	102%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	109%	60%	130%	101%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	104%	50%	140%	106%	60%	130%	105%	50%	140%
Xylene Mixture	1		< 0.20	< 0.20	0.0%	< 0.20	102%	50%	140%	104%	60%	130%	106%	50%	140%
F1 (C6 to C10)	1		< 25	< 25	0.0%	< 25	103%	60%	140%	106%	60%	140%	105%	60%	140%
F2 (C10 to C16)	1		< 100	< 100	0.0%	< 100	100%	60%	140%	69%	60%	140%	75%	60%	140%
F3 (C16 to C34)	1		< 100	< 100	0.0%	< 100	101%	60%	140%	104%	60%	140%	86%	60%	140%
F4 (C34 to C50)	1		< 100	< 100	0.0%	< 100	96%	60%	140%	140%	60%	140%	91%	60%	140%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687858

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Toluene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10)	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL -91- 5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T687858

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Toluene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10)	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL -91- 5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID



Certificate of Analysis

AGAT WORK ORDER: 13T692723

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2013-02-28

DATE REPORTED: 2013-03-06

		SAMPLE DESCRIPTION:		BH7-270
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2/28/2013
Parameter	Unit	G / S	RDL	4161564
Naphthalene	µg/L	7	0.20	<0.20
Acenaphthylene	µg/L	1	0.20	<0.20
Acenaphthene	µg/L	4.1	0.20	<0.20
Fluorene	µg/L	120	0.20	<0.20
Phenanthrene	µg/L	0.1	0.10	<0.10
Anthracene	µg/L	0.1	0.10	<0.10
Fluoranthene	µg/L	0.4	0.20	<0.20
Pyrene	µg/L	0.2	0.20	<0.20
Benz(a)anthracene	µg/L	0.2	0.20	<0.20
Chrysene	µg/L	0.1	0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.1	0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.1	0.10	<0.10
Benzo(a)pyrene	µg/L	0.01	0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.2	0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	2	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140	86	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

4161564 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 13T692723

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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2013-02-28

DATE REPORTED: 2013-03-06

		SAMPLE DESCRIPTION:		BH7-270
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2/28/2013
Parameter	Unit	G / S	RDL	4161564
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	48
1,1-Dichloroethylene	µg/L	0.5	0.30	<0.30
Methylene Chloride	µg/L	5	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	0.5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	400	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2	0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.5	0.30	<0.30
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20
Benzene	µg/L	0.5	0.20	0.48
1,2-Dichloropropane	µg/L	0.5	0.20	<0.20
Trichloroethylene	µg/L	0.5	0.20	<0.20
Bromodichloromethane	µg/L	2	0.20	<0.20
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	0.5	0.20	<0.20
Toluene	µg/L	0.8	0.20	4.8
Dibromochloromethane	µg/L	2	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	0.5	0.20	0.34
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	0.5	0.10	<0.10
Ethylbenzene	µg/L	0.5	0.10	<0.10
m & p-Xylene	µg/L		0.20	0.20
Bromoform	µg/L	5	0.10	<0.10

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T692723

PROJECT NO: 11-12-2073

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CANADA L4Z 1Y2
TEL (905)712-5100
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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2013-02-28

DATE REPORTED: 2013-03-06

		SAMPLE DESCRIPTION:		BH7-270
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2/28/2013
Parameter	Unit	G / S	RDL	4161564
Styrene	µg/L	0.5	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.5	0.10	<0.10
o-Xylene	µg/L		0.10	0.11
1,3-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	72	0.20	0.31
n-Hexane	µg/L	5	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		109
4-Bromofluorobenzene	% Recovery	50-140		111

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 13T692723

PROJECT NO: 11-12-2073

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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2013-02-28

DATE REPORTED: 2013-03-06

		SAMPLE DESCRIPTION:		BH7-270
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2/28/2013
Parameter	Unit	G / S	RDL	4161564
Antimony	µg/L	1.5	0.5	<0.5
Arsenic	µg/L	13	1.0	3.4
Barium	µg/L	610	2.0	363
Beryllium	µg/L	0.5	0.5	<0.5
Boron	µg/L	1700	10.0	988
Cadmium	µg/L	0.5	0.2	0.3
Chromium	µg/L	11	2.0	3.3
Cobalt	µg/L	3.8	0.5	11.5
Copper	µg/L	5	1.0	8.6
Lead	µg/L	1.9	0.5	<0.5
Molybdenum	µg/L	23	0.5	34.7
Nickel	µg/L	14	1.0	43.2
Selenium	µg/L	5	1.0	4.3
Silver	µg/L	0.3	0.2	<0.2
Thallium	µg/L	0.5	0.3	<0.3
Uranium	µg/L	8.9	0.5	15.3
Vanadium	µg/L	3.9	0.4	0.8
Zinc	µg/L	160	5.0	55.0
Mercury	µg/L	0.1	0.02	<0.02
Chromium VI	µg/L	25	5	<5
Cyanide	µg/L	5	2	<2
Sodium	µg/L	490000	500	996000
Chloride	µg/L	790000	500	1800000
Nitrate as N	µg/L		250	<250
Nitrite as N	µg/L		250	<250
Electrical Conductivity	uS/cm		2	6240
pH	pH Units		NA	7.50

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

4161564 Sample required dilution prior to analysis for anions in order to keep the analytes within the valid calibration range of the instrument; the RDLs were changed to reflect the dilution.

Certified By:



Guideline Violation

AGAT WORK ORDER: 13T692723

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
4161564	BH7-270	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Chloride	790000	1800000
4161564	BH7-270	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Cobalt	3.8	11.5
4161564	BH7-270	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Copper	5	8.6
4161564	BH7-270	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Molybdenum	23	34.7
4161564	BH7-270	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Nickel	14	43.2
4161564	BH7-270	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Sodium	490000	996000
4161564	BH7-270	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Uranium	8.9	15.3
4161564	BH7-270	T1(ALL GW) - Current	O. Reg. 153(511) - VOCs (Water)	Toluene	0.8	4.8

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 13T746663

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab Supervisor

DATE REPORTED: Aug 19, 2013

PAGES (INCLUDING COVER): 12

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 13T746663

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PAHs (Water)

DATE RECEIVED: 2013-08-13

DATE REPORTED: 2013-08-19

		SAMPLE DESCRIPTION:		BH5+060
		SAMPLE TYPE:		Water
		DATE SAMPLED:		8/9/2013
Parameter	Unit	G / S	RDL	4645580
Naphthalene	µg/L	7	0.20	<0.20
Acenaphthylene	µg/L	1	0.20	<0.20
Acenaphthene	µg/L	4.1	0.20	<0.20
Fluorene	µg/L	120	0.20	<0.20
Phenanthrene	µg/L	0.1	0.10	<0.10
Anthracene	µg/L	0.1	0.10	<0.10
Fluoranthene	µg/L	0.4	0.20	<0.20
Pyrene	µg/L	0.2	0.20	<0.20
Benz(a)anthracene	µg/L	0.2	0.20	<0.20
Chrysene	µg/L	0.1	0.10	<0.10
Benzo(b)fluoranthene	µg/L	0.1	0.10	<0.10
Benzo(k)fluoranthene	µg/L	0.1	0.10	<0.10
Benzo(a)pyrene	µg/L	0.01	0.01	<0.01
Indeno(1,2,3-cd)pyrene	µg/L	0.2	0.20	<0.20
Dibenz(a,h)anthracene	µg/L	0.2	0.20	<0.20
Benzo(g,h,i)perylene	µg/L	0.2	0.20	<0.20
2-and 1-methyl Naphthalene	µg/L	2	0.20	0.35
Surrogate	Unit	Acceptable Limits		
Chrysene-d12	%	50-140	83	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

4645580 Note: The result for Benzo(b)Flouranthene is the total of the Benzo(b)&(j)Flouranthene isomers because the isomers co-elute on the GC column.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T746663

PROJECT NO: 11-12-2073

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

DATE RECEIVED: 2013-08-13

DATE REPORTED: 2013-08-19

		SAMPLE DESCRIPTION:		BH5+060
		SAMPLE TYPE:		Water
		DATE SAMPLED:		8/9/2013
Parameter	Unit	G / S	RDL	4645580
F1 (C6 to C10)	µg/L		25	<25
F1 (C6 to C10) minus BTEX	µg/L	420	25	<25
F2 (C10 to C16)	µg/L	150	100	<100
F2 (C10 to C16) minus Naphthalene	µg/L	150	100	<100
F3 (C16 to C34)	µg/L	500	100	<100
F3 (C16 to C34) minus PAHs	µg/L	500	100	<100
F4 (C34 to C50)	µg/L	500	100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140		114

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

4645580

The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

Total C6-C50 results are corrected for BTEX and PAH contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 13T746663

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
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CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2013-08-13

DATE REPORTED: 2013-08-19

		SAMPLE DESCRIPTION:		BH5+060
		SAMPLE TYPE:		Water
		DATE SAMPLED:		8/9/2013
Parameter	Unit	G / S	RDL	4645580
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	140
1,1-Dichloroethylene	µg/L	0.5	0.30	<0.30
Methylene Chloride	µg/L	5	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	0.5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	400	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2	0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.5	0.30	<0.30
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20
Benzene	µg/L	0.5	0.20	<0.20
1,2-Dichloropropane	µg/L	0.5	0.20	<0.20
Trichloroethylene	µg/L	0.5	0.20	<0.20
Bromodichloromethane	µg/L	2	0.20	<0.20
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	0.5	0.20	<0.20
Toluene	µg/L	0.8	0.20	<0.20
Dibromochloromethane	µg/L	2	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	0.5	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	0.5	0.10	<0.10
Ethylbenzene	µg/L	0.5	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20
Bromoform	µg/L	5	0.10	<0.10

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T746663

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2013-08-13

DATE REPORTED: 2013-08-19

		SAMPLE DESCRIPTION:		BH5+060
		SAMPLE TYPE:		Water
		DATE SAMPLED:		8/9/2013
Parameter	Unit	G / S	RDL	4645580
Styrene	µg/L	0.5	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.5	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	72	0.20	<0.20
n-Hexane	µg/L	5	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		96
4-Bromofluorobenzene	% Recovery	50-140		115

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T746663

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

O. Reg. 153(511) - Metals & Inorganics (Water)

DATE RECEIVED: 2013-08-13

DATE REPORTED: 2013-08-19

		SAMPLE DESCRIPTION:		BH5+060
		SAMPLE TYPE:		Water
		DATE SAMPLED:		8/9/2013
Parameter	Unit	G / S	RDL	4645580
Antimony	µg/L	1.5	0.5	2.3
Arsenic	µg/L	13	1.0	1.6
Barium	µg/L	610	2.0	1010
Beryllium	µg/L	0.5	0.5	<0.5
Boron	µg/L	1700	10.0	1450
Cadmium	µg/L	0.5	0.2	2.4
Chromium	µg/L	11	2.0	10.3
Cobalt	µg/L	3.8	0.5	67.9
Copper	µg/L	5	1.0	38.8
Lead	µg/L	1.9	0.5	<0.5
Molybdenum	µg/L	23	0.5	89.2
Nickel	µg/L	14	1.0	175
Selenium	µg/L	5	1.0	26.6
Silver	µg/L	0.3	0.2	0.7
Thallium	µg/L	0.5	0.3	0.9
Uranium	µg/L	8.9	0.5	43.2
Vanadium	µg/L	3.9	0.4	<0.4
Zinc	µg/L	160	5.0	30.8
Mercury	µg/L	0.1	0.02	<0.02
Chromium VI	µg/L	25	5	<5
Cyanide	µg/L	5	2	<2
Sodium	µg/L	490000	5000	7110000
Chloride	µg/L	790000	50000	16300000
Nitrate as N	µg/L		5000	<5000
Nitrite as N	µg/L		5000	<5000
Electrical Conductivity	uS/cm		2	34500
pH	pH Units		NA	7.43

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to T1(ALL GW) - Current
4645580 RDLs were changed to indicate dilution prior to analysis due to the matrix and to keep the analytes within a valid calibration range of the instrument.

Certified By:

Elizabeth Polakowska



Guideline Violation

AGAT WORK ORDER: 13T746663

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Antimony	1.5	2.3
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Barium	610	1010
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Cadmium	0.5	2.4
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Chloride	790000	16300000
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Cobalt	3.8	67.9
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Copper	5	38.8
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Molybdenum	23	89.2
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Nickel	14	175
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Selenium	5	26.6
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Silver	0.3	0.7
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Sodium	490000	7110000
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Thallium	0.5	0.9
4645580	BH5+060	T1(ALL GW) - Current	O. Reg. 153(511) - Metals & Inorganics (Water)	Uranium	8.9	43.2

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T746663

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Aug 19, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	1		< 0.20	< 0.20	0.0%	< 0.20	125%	50%	140%	115%	50%	140%	76%	50%	140%
Vinyl Chloride	1		< 0.17	< 0.17	0.0%	< 0.17	110%	50%	140%	101%	50%	140%	79%	50%	140%
Bromomethane	1		< 0.20	< 0.20	0.0%	< 0.20	100%	50%	140%	119%	50%	140%	97%	50%	140%
Trichlorofluoromethane	1		< 0.40	< 0.40	0.0%	< 0.40	103%	50%	140%	120%	50%	140%	101%	50%	140%
Acetone	1		< 1.0	< 1.0	0.0%	< 1.0	121%	50%	140%	91%	50%	140%	113%	50%	140%
1,1-Dichloroethylene	1		< 0.30	< 0.30	0.0%	< 0.30	122%	50%	140%	111%	60%	130%	100%	50%	140%
Methylene Chloride	1		< 0.30	< 0.30	0.0%	< 0.30	122%	50%	140%	99%	60%	130%	112%	50%	140%
trans- 1,2-Dichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	119%	50%	140%	113%	60%	130%	94%	50%	140%
Methyl tert-butyl ether	1		< 0.20	< 0.20	0.0%	< 0.20	108%	50%	140%	108%	60%	130%	100%	50%	140%
1,1-Dichloroethane	1		2.1	1.7	21.1%	< 0.30	119%	50%	140%	115%	60%	130%	98%	50%	140%
Methyl Ethyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	127%	50%	140%	96%	50%	140%	123%	50%	140%
cis- 1,2-Dichloroethylene	1		1.0	0.96	4.1%	< 0.20	112%	50%	140%	96%	60%	130%	77%	50%	140%
Chloroform	1		< 0.20	< 0.20	0.0%	< 0.20	122%	50%	140%	122%	60%	130%	99%	50%	140%
1,2-Dichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	128%	50%	140%	123%	60%	130%	97%	50%	140%
1,1,1-Trichloroethane	1		< 0.30	< 0.30	0.0%	< 0.30	126%	50%	140%	113%	60%	130%	97%	50%	140%
Carbon Tetrachloride	1		< 0.20	< 0.20	0.0%	< 0.20	114%	50%	140%	106%	60%	130%	90%	50%	140%
Benzene	1		< 0.20	< 0.20	0.0%	< 0.20	117%	50%	140%	100%	60%	130%	80%	50%	140%
1,2-Dichloropropane	1		< 0.20	< 0.20	0.0%	< 0.20	125%	50%	140%	107%	60%	130%	82%	50%	140%
Trichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	116%	50%	140%	103%	60%	130%	80%	50%	140%
Bromodichloromethane	1		< 0.20	< 0.20	0.0%	< 0.20	121%	50%	140%	120%	60%	130%	96%	50%	140%
Methyl Isobutyl Ketone	1		< 1.0	< 1.0	0.0%	< 1.0	71%	50%	140%	93%	50%	140%	124%	50%	140%
1,1,2-Trichloroethane	1		< 0.20	< 0.20	0.0%	< 0.20	121%	50%	140%	110%	60%	130%	103%	50%	140%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.20	114%	50%	140%	110%	60%	130%	85%	50%	140%
Dibromochloromethane	1		< 0.10	< 0.10	0.0%	< 0.10	115%	50%	140%	96%	60%	130%	102%	50%	140%
Ethylene Dibromide	1		< 0.10	< 0.10	0.0%	< 0.10	129%	50%	140%	114%	60%	130%	89%	50%	140%
Tetrachloroethylene	1		< 0.20	< 0.20	0.0%	< 0.20	119%	50%	140%	117%	60%	130%	103%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	116%	60%	130%	110%	50%	140%
Chlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	128%	50%	140%	105%	60%	130%	93%	50%	140%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.10	105%	50%	140%	100%	60%	130%	78%	50%	140%
m & p-Xylene	1		< 0.20	< 0.20	0.0%	< 0.20	119%	50%	140%	105%	60%	130%	77%	50%	140%
Bromoform	1		< 0.10	< 0.10	0.0%	< 0.10	128%	50%	140%	117%	60%	130%	103%	50%	140%
Styrene	1		< 0.10	< 0.10	0.0%	< 0.10	104%	50%	140%	103%	60%	130%	77%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.10	< 0.10	0.0%	< 0.10	NA	50%	140%	110%	60%	130%	114%	50%	140%
o-Xylene	1		< 0.10	< 0.10	0.0%	< 0.10	88%	50%	140%	78%	60%	130%	77%	50%	140%
1,3-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	127%	50%	140%	106%	60%	130%	80%	50%	140%
1,4-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	129%	50%	140%	115%	60%	130%	86%	50%	140%
1,2-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.10	126%	50%	140%	111%	60%	130%	106%	50%	140%
1,3-Dichloropropene	1		< 0.30	< 0.30	0.0%	< 0.30	98%	50%	140%	92%	60%	130%	89%	50%	140%
n-Hexane	1		< 0.20	< 0.20	0.0%	< 0.20	NA	50%	140%	109%	60%	130%		50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T746663

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Aug 19, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Water)

F1 (C6 to C10)	1	< 25	< 25	0.0%	< 25	104%	60%	140%	106%	60%	140%	108%	60%	140%
F2 (C10 to C16)	1	< 100	< 100	0.0%	< 100	104%	60%	140%	64%	60%	140%	63%	60%	140%
F3 (C16 to C34)	1	< 100	< 100	0.0%	< 100	109%	60%	140%	108%	60%	140%	126%	60%	140%
F4 (C34 to C50)	1	< 100	< 100	0.0%	< 100	104%	60%	140%	91%	60%	140%	136%	60%	140%

O. Reg. 153(511) - PAHs (Water)

Naphthalene	1	< 0.20	< 0.20	0.0%	< 0.20	85%	50%	140%	93%	50%	140%	86%	50%	140%
Acenaphthylene	1	< 0.20	< 0.20	0.0%	< 0.20	94%	50%	140%	93%	50%	140%	88%	50%	140%
Acenaphthene	1	< 0.20	< 0.20	0.0%	< 0.20	97%	50%	140%	94%	50%	140%	91%	50%	140%
Fluorene	1	< 0.20	< 0.20	0.0%	< 0.20	97%	50%	140%	98%	50%	140%	93%	50%	140%
Phenanthrene	1	< 0.10	< 0.10	0.0%	< 0.10	90%	50%	140%	88%	50%	140%	91%	50%	140%
Anthracene	1	< 0.10	< 0.10	0.0%	< 0.10	106%	50%	140%	113%	50%	140%	103%	50%	140%
Fluoranthene	1	< 0.20	< 0.20	0.0%	< 0.20	98%	50%	140%	105%	50%	140%	106%	50%	140%
Pyrene	1	< 0.20	< 0.20	0.0%	< 0.20	103%	50%	140%	105%	50%	140%	106%	50%	140%
Benz(a)anthracene	1	< 0.20	< 0.20	0.0%	< 0.20	81%	50%	140%	70%	50%	140%	99%	50%	140%
Chrysene	1	< 0.10	< 0.10	0.0%	< 0.10	118%	50%	140%	104%	50%	140%	114%	50%	140%
Benzo(b)fluoranthene	1	< 0.10	< 0.10	0.0%	< 0.10	96%	50%	140%	81%	50%	140%	77%	50%	140%
Benzo(k)fluoranthene	1	< 0.10	< 0.10	0.0%	< 0.10	125%	50%	140%	116%	50%	140%	84%	50%	140%
Benzo(a)pyrene	1	< 0.01	< 0.01	0.0%	< 0.01	114%	50%	140%	80%	50%	140%	80%	50%	140%
Indeno(1,2,3-cd)pyrene	1	< 0.20	< 0.20	0.0%	< 0.20	110%	50%	140%	71%	50%	140%	73%	50%	140%
Dibenz(a,h)anthracene	1	< 0.20	< 0.20	0.0%	< 0.20	108%	50%	140%	71%	50%	140%	78%	50%	140%
Benzo(g,h,i)perylene	1	< 0.20	< 0.20	0.0%	< 0.20	107%	50%	140%	84%	50%	140%	72%	50%	140%
2-and 1-methyl Naphthalene	1	< 0.20	< 0.20	0.0%	< 0.20	84%	50%	140%	79%	50%	140%	81%	50%	140%

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T746663

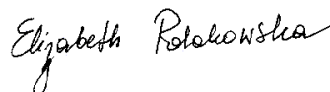
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Water Analysis															
RPT Date: Aug 19, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Water)															
Antimony	1		< 0.5	< 0.5	0.0%	< 0.5	98%	70%	130%	90%	80%	120%	96%	70%	130%
Arsenic	1		1.3	1.3	0.0%	< 1.0	98%	70%	130%	102%	80%	120%	110%	70%	130%
Barium	1		6.5	6.6	1.5%	< 2.0	101%	70%	130%	103%	80%	120%	99%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	97%	70%	130%	90%	80%	120%	101%	70%	130%
Boron	1		< 10.0	< 10.0	0.0%	< 10.0	105%	70%	130%	98%	80%	120%	103%	70%	130%
Cadmium	1		< 0.2	< 0.2	0.0%	< 0.2	100%	70%	130%	105%	80%	120%	105%	70%	130%
Chromium	1		< 2.0	< 2.0	0.0%	< 2.0	100%	70%	130%	102%	80%	120%	101%	70%	130%
Cobalt	1		< 0.5	< 0.5	0.0%	< 0.5	103%	70%	130%	104%	80%	120%	100%	70%	130%
Copper	1		< 1.0	< 1.0	0.0%	< 1.0	102%	70%	130%	108%	80%	120%	101%	70%	130%
Lead	1		< 0.5	< 0.5	0.0%	< 0.5	95%	70%	130%	101%	80%	120%	98%	70%	130%
Molybdenum	1		< 0.5	< 0.5	0.0%	< 0.5	100%	70%	130%	99%	80%	120%	103%	70%	130%
Nickel	1		< 1.0	< 1.0	0.0%	< 1.0	103%	70%	130%	105%	80%	120%	99%	70%	130%
Selenium	1		< 1.0	< 1.0	0.0%	< 1.0	100%	70%	130%	102%	80%	120%	113%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	108%	70%	130%	114%	80%	120%	121%	70%	130%
Thallium	1		< 0.3	< 0.3	0.0%	< 0.3	102%	70%	130%	106%	80%	120%	102%	70%	130%
Uranium	1		< 0.5	< 0.5	0.0%	< 0.5	100%	70%	130%	101%	80%	120%	98%	70%	130%
Vanadium	1		2.2	2.3	4.4%	< 0.4	98%	70%	130%	99%	80%	120%	100%	70%	130%
Zinc	1		8.6	8.4	2.4%	< 5.0	99%	70%	130%	102%	80%	120%	101%	70%	130%
Mercury	1		< 0.02	< 0.02	0.0%	< 0.02	97%	70%	130%	96%	80%	120%	95%	70%	130%
Chromium VI	1		< 5	< 5	0.0%	< 5	102%	70%	130%	99%	80%	120%	98%	70%	130%
Cyanide	1		< 2	< 2	0.0%	< 2	106%	70%	130%	106%	80%	120%	106%	70%	130%
Sodium	1		4450	4450	0.0%	< 500	97%	70%	130%	92%	80%	120%	89%	70%	130%
Chloride	4647924		57700	57300	0.7%	< 100	92%	70%	130%	93%	70%	130%	94%	70%	130%
Nitrate as N	4647924		< 50	< 50	0.0%	< 50	91%	70%	130%	100%	70%	130%	109%	70%	130%
Nitrite as N	4647924		< 50	< 50	0.0%	< 50	NA	70%	130%	94%	70%	130%	97%	70%	130%
Electrical Conductivity	4644345		1100	1100	0.5%	< 2	107%	90%	110%	NA			NA		
pH	4644345		6.66	6.77	1.6%	NA	98%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T746663

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Acenaphthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluorene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Phenanthrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Chrysene-d12	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
F1 (C6 to C10)	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC/FID
F3 (C16 to C34) minus PAHs	VOL-91-5010	MOE PHC E3421	GC/FID
F4 (C34 to C50)	VOL -91- 5010	MOE PHC- E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T746663

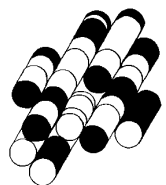
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Mercury	MET-93-6100	EPA SW-846 7470 & 245.1	CVAAS
Chromium VI	INOR-93-6034	SM 3500-Cr B	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE METHOD CN- 3015 & SM 4500 CN- I	TECHNICON AUTO ANALYZER
Sodium	MET-93-6105	EPA SW-846 6010C & 200.7	ICP/OES
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrate as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Nitrite as N	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE

APPENDIX J

TERRAPROBE INC.



CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 12T654666

MICROBIOLOGY ANALYSIS REVIEWED BY: Inesa Alizarchyk, Inorganic Lab Supervisor

TRACE ORGANICS REVIEWED BY: Jacky Takeuchi, BScH (Chem Eng), BSc (Bio), C.Chem, Laboratory Manager

WATER ANALYSIS REVIEWED BY: Elizabeth Polakowska, MSc (Animal Sci), PhD (Agri Sci), Inorganic Lab Supervisor

DATE REPORTED: Oct 25, 2012

PAGES (INCLUDING COVER): 9

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Sample IDs corrected on January 9, 2013 as per client's request.

Sample IDs corrected on February 20, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 12T654666

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

Microbiological Analysis (water)

DATE RECEIVED: 2012-10-22

DATE REPORTED: 2012-10-25

		SAMPLE DESCRIPTION:		1+200	2+425	3+065	4+495	7+145
		SAMPLE TYPE:		Water	Water	Water	Water	Water
		DATE SAMPLED:		10/19/2012	10/19/2012	10/19/2012	10/19/2012	10/19/2012
Parameter	Unit	G / S	RDL	3838665	3838683	3838699	3838714	3838732
Escherichia coli	CFU/100mL	200	1	1	7	184	ND	4

Comments: 3838714 RDL - Reported Detection Limit; ND - Not Detected. G / S - Guideline / Standard: Refers to HALTON STORM

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T654666

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

Halton Sanitary Sewer By-law - Organics

DATE RECEIVED: 2012-10-22

DATE REPORTED: 2012-10-25

		SAMPLE DESCRIPTION:		1+200	2+425	3+065	4+495	7+145
		SAMPLE TYPE:		Water	Water	Water	Water	Water
		DATE SAMPLED:		10/19/2012	10/19/2012	10/19/2012	10/19/2012	10/19/2012
Parameter	Unit	G / S	RDL	3838665	3838683	3838699	3838714	3838732
Oil and Grease (animal/vegetable) in water	mg/L	150	0.5	0.7	<0.5	0.6	<0.5	0.6
Oil and Grease (mineral) in water	mg/L	15	0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzene	mg/L	0.01	0.0002	<0.0002	<0.0002	0.0003	0.0003	0.0003
Chloroform	mg/L	0.04	0.0002	<0.0002	<0.0002	0.0003	<0.0002	<0.0002
Methylene Chloride	mg/L	2.0	0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
cis- 1,2-Dichloroethylene	mg/L		0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
trans-1,3-Dichloropropene	mg/L		0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
Trichloroethylene	mg/L	0.4	0.0002	<0.0002	<0.0002	<0.0002	0.0002	<0.0002
1,1,2,2-Tetrachloroethane	mg/L		0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Toluene	mg/L	0.016	0.0002	<0.0002	<0.0002	0.0005	<0.0002	0.0006
Ethylbenzene	mg/L	0.16	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tetrachloroethene	mg/L	1.0	0.010	<0.010	<0.010	<0.010	<0.010	<0.010
1,2-Dichlorobenzene	mg/L		0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
1,4-Dichlorobenzene	mg/L	0.08	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Xylenes (Total)	mg/L		0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Total PAHs	mg/L		0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Halton San. Comb

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 12T654666

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

Halton Sanitary and Combined Sewer Use By-law - Inorganics

DATE RECEIVED: 2012-10-22

DATE REPORTED: 2012-10-25

		SAMPLE DESCRIPTION:			1+200	2+425	3+065		4+495	7+145
		SAMPLE TYPE:			Water	Water	Water		Water	Water
		DATE SAMPLED:			10/19/2012	10/19/2012	10/19/2012		10/19/2012	10/19/2012
Parameter	Unit	G / S: A	G / S: B	RDL	3838665	3838683	3838699	RDL	3838714	3838732
pH	pH Units	6.0-10.0	6.0-10.0	NA	7.67	7.81	7.27	NA	7.92	7.87
CBOD (5)	mg/L	300	300	5	<5[<A]	<5[<A]	15[<A]	5	<5[<A]	11[<A]
Total Suspended Solids	mg/L	350	350	10	4600[>B]	850[>B]	1120[>B]	10	15[<A]	125[<A]
Fluoride	mg/L	10	10	0.25	<0.25[<A]	<0.25[<A]	<0.25[<A]	0.05	<0.05[<A]	<0.05[<A]
Sulphate	mg/L	1500	1500	0.5	1190[<A]	431[<A]	944[<A]	0.10	306[<A]	436[<A]
Total Cyanide	mg/L	2	2	0.002	<0.002[<A]	<0.002[<A]	<0.002[<A]	0.002	<0.002[<A]	<0.002[<A]
Phenols	mg/L	1	1	0.002	<0.002[<A]	<0.002[<A]	0.004[<A]	0.002	<0.002[<A]	0.002[<A]
Total Kjeldahl Nitrogen	mg/L	100	100	0.10	14.4[<A]	3.68[<A]	13.0[<A]	0.10	1.49[<A]	1.77[<A]
Total Phosphorus	mg/L	10	10	0.05	2.18[<A]	0.06[<A]	0.08[<A]	0.05	<0.05[<A]	0.05[<A]
Total Aluminum	mg/L	50	50	0.020	67.5[>B]	10.9[<A]	21.4[<A]	0.020	0.301[<A]	2.33[<A]
Total Antimony	mg/L	5	5	0.020	<0.020[<A]	<0.020[<A]	<0.020[<A]	0.020	<0.020[<A]	<0.020[<A]
Total Arsenic	mg/L	1	1	0.015	0.036[<A]	<0.015[<A]	0.082[<A]	0.015	<0.015[<A]	<0.015[<A]
Total Beryllium	mg/L	5	5	0.010	<0.010[<A]	<0.010[<A]	<0.010[<A]	0.010	<0.010[<A]	<0.010[<A]
Total Cadmium	mg/L	1	1	0.010	<0.010[<A]	<0.010[<A]	<0.010[<A]	0.010	<0.010[<A]	<0.010[<A]
Total Chromium	mg/L	3	3	0.020	0.087[<A]	0.034[<A]	0.220[<A]	0.020	<0.020[<A]	0.061[<A]
Total Cobalt	mg/L	5	5	0.020	0.055[<A]	<0.020[<A]	0.056[<A]	0.020	<0.020[<A]	<0.020[<A]
Total Copper	mg/L	3	3	0.015	0.071[<A]	0.019[<A]	0.050[<A]	0.015	<0.015[<A]	0.015[<A]
Total Iron	mg/L	50	50	0.050	83.3[>B]	11.6[<A]	29.6[<A]	0.050	0.907[<A]	5.59[<A]
Total Lead	mg/L	3	3	0.020	<0.020[<A]	<0.020[<A]	<0.020[<A]	0.020	<0.020[<A]	<0.020[<A]
Total Manganese	mg/L	5	5	0.020	2.72[<A]	1.72[<A]	8.44[>B]	0.020	0.241[<A]	0.638[<A]
Total Mercury	mg/L	0.05	0.05	0.0002	<0.0002[<A]	<0.0002[<A]	<0.0002[<A]	0.0002	<0.0002[<A]	<0.0002[<A]
Total Molybdenum	mg/L	5	5	0.020	<0.020[<A]	0.032[<A]	0.056[<A]	0.020	0.020[<A]	0.064[<A]
Total Nickel	mg/L	3	3	0.015	0.115[<A]	0.030[<A]	0.122[<A]	0.015	<0.015[<A]	0.083[<A]
Total Selenium	mg/L	5	5	0.020	0.044[<A]	0.034[<A]	0.066[<A]	0.020	<0.020[<A]	<0.020[<A]
Total Silver	mg/L	5	5	0.020	<0.020[<A]	<0.020[<A]	<0.020[<A]	0.020	<0.020[<A]	<0.020[<A]
Total Tin	mg/L	5	5	0.025	<0.025[<A]	<0.025[<A]	<0.025[<A]	0.025	<0.025[<A]	<0.025[<A]
Total Titanium	mg/L	5	5	0.020	0.501[<A]	0.155[<A]	0.327[<A]	0.020	<0.020[<A]	0.033[<A]
Total Zinc	mg/L	3	3	0.020	0.257[<A]	0.195[<A]	0.110[<A]	0.020	<0.020[<A]	0.048[<A]

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: A Refers to Halton San. Comb, B Refers to Halton San. Comb
3838665-3838699 The RDLs for Fluoride & Sulphate adjusted to reflect dilution prior to samples analysis.

Certified By:

Elizabeth Polakowska



Guideline Violation

AGAT WORK ORDER: 12T654666

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
3838665	1+200	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Aluminum	50	67.5
3838665	1+200	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Iron	50	83.3
3838665	1+200	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Suspended Solids	350	4600
3838683	2+425	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Suspended Solids	350	850
3838699	3+065	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Manganese	5	8.44
3838699	3+065	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Suspended Solids	350	1120

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T654666

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Microbiology Analysis

RPT Date: Oct 25, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Microbiological Analysis (water)

Escherichia coli	1	ND	ND	NA	< 1	NA	NA	NA
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Comments: ND - Not Detected, ; NA - % RPD Not Applicable

NA - Not Applicable

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T654666

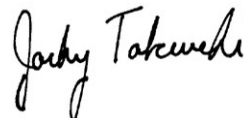
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Oct 25, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Halton Sanitary Sewer By-law - Organics															
Oil and Grease (animal/vegetable) in water	1		< 0.5	< 0.5	0.0%	< 0.5	NA	60%	130%	96%	60%	130%	NA	60%	130%
Oil and Grease (mineral) in water	1		< 0.5	< 0.5	0.0%	< 0.5	NA	60%	130%	82%	60%	130%	NA	60%	130%
Benzene	1		< 0.0002	< 0.0002	0.0%	< 0.0002	108%	60%	130%	116%	60%	130%	106%	60%	130%
Chloroform	1		< 0.0002	< 0.0002	0.0%	< 0.0002	95%	60%	130%	107%	60%	130%	111%	60%	130%
Methylene Chloride	1		< 0.0003	< 0.0003	0.0%	< 0.0003	123%	60%	130%	107%	60%	130%	120%	60%	130%
cis- 1,2-Dichloroethylene	1		< 0.0002	< 0.0002	0.0%	< 0.0002	115%	60%	130%	107%	60%	130%	98%	60%	130%
trans-1,3-Dichloropropene	1		< 0.0003	< 0.0003	0.0%	< 0.0003	91%	60%	130%	85%	60%	130%	79%	60%	130%
Trichloroethylene	1		< 0.0002	< 0.0002	0.0%	< 0.0002	122%	60%	130%	100%	60%	130%	96%	60%	130%
1,1,2,2-Tetrachloroethane	1		< 0.0002	< 0.0002	0.0%	< 0.0002	102%	60%	130%	119%	60%	130%	109%	60%	130%
Toluene	1		< 0.0002	< 0.0002	0.0%	< 0.0002	96%	60%	130%	114%	60%	130%	107%	60%	130%
Ethylbenzene	1		< 0.0001	< 0.0001	0.0%	< 0.0001	108%	60%	130%	112%	60%	130%	104%	60%	130%
Tetrachloroethene	1		< 0.010	< 0.010	0.0%	< 0.010	120%	60%	130%	123%	60%	130%	118%	60%	130%
1,2-Dichlorobenzene	1		< 0.0002	< 0.0002	0.0%	< 0.0002	78%	60%	130%	101%	60%	130%	93%	60%	130%
1,4-Dichlorobenzene	1		< 0.0002	< 0.0002	0.0%	< 0.0002	73%	60%	130%	105%	60%	130%	98%	60%	130%
Xylenes (Total)	1		< 0.0002	< 0.0002	0.0%	< 0.0002	110%	60%	130%	106%	60%	130%	98%	60%	130%
Total PAHs	1		< 0.0003	< 0.0003	0.0%	< 0.0003	103%	60%	130%	94%	60%	130%	92%	60%	130%

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T654666

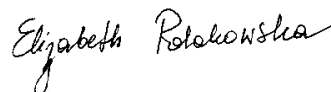
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Water Analysis															
RPT Date: Oct 25, 2012			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Halton Sanitary and Combined Sewer Use By-law - Inorganics															
pH	1	3838665	7.67	7.71	0.5%	NA	102%	90%	110%	NA			NA		
CBOD (5)	1		194	193	0.5%	< 5	97%	75%	125%	NA			NA		
Total Suspended Solids	1		237	247	4.1%	< 10	110%	80%	120%	NA			NA		
Fluoride	1		< 0.05	< 0.05	0.0%	< 0.05	94%	90%	110%	100%	90%	110%	90%	80%	120%
Sulphate	1		710	724	2.0%	< 0.10	100%	90%	110%	100%	90%	110%	100%	80%	120%
Total Cyanide	1	3838665	< 0.002	< 0.002	0.0%	< 0.002	91%	80%	120%	93%	90%	110%	102%	70%	130%
Phenols	3		<0.001	<0.001	0.0%	< 0.002	102%	90%	110%	98%	90%	110%	91%	80%	120%
Total Kjeldahl Nitrogen	1	3838665	14.4	14.8	3.0%	< 0.10	101%	80%	120%	106%	80%	120%	100%	70%	130%
Total Phosphorus	1		< 0.05	< 0.05	0.0%	< 0.05	96%	90%	110%	101%	90%	110%	98%	80%	120%
Total Aluminum	1	3838714	0.301	0.333	10.1%	< 0.020	107%	90%	110%	101%	80%	120%	100%	70%	130%
Total Antimony	1	3838714	< 0.020	< 0.020	0.0%	< 0.020	104%	90%	110%	105%	80%	120%	107%	70%	130%
Total Arsenic	1	3838714	< 0.015	< 0.015	0.0%	< 0.015	100%	90%	110%	97%	80%	120%	106%	70%	130%
Total Beryllium	1	3838714	< 0.010	< 0.010	0.0%	< 0.010	101%	90%	110%	99%	80%	120%	108%	70%	130%
Total Cadmium	1	3838714	< 0.010	< 0.010	0.0%	< 0.010	101%	90%	110%	105%	80%	120%	100%	70%	130%
Total Chromium	1	3838714	< 0.020	< 0.020	0.0%	< 0.020	101%	90%	110%	105%	80%	120%	102%	70%	130%
Total Cobalt	1	3838714	< 0.020	< 0.020	0.0%	< 0.020	99%	90%	110%	100%	80%	120%	98%	70%	130%
Total Copper	1	3838714	< 0.015	< 0.015	0.0%	< 0.015	99%	90%	110%	104%	80%	120%	99%	70%	130%
Total Iron	1	3838714	0.907	0.856	5.8%	< 0.050	100%	90%	110%	118%	80%	120%	103%	70%	130%
Total Lead	1	3838714	< 0.020	< 0.020	0.0%	< 0.020	100%	90%	110%	108%	80%	120%	99%	70%	130%
Total Manganese	1	3838714	0.241	0.257	6.4%	< 0.020	104%	90%	110%	100%	80%	120%	118%	70%	130%
Total Mercury	1		< 0.0002	< 0.0002	0.0%	< 0.0002	103%	90%	110%	99%	90%	110%	98%	70%	130%
Total Molybdenum	1	3838714	0.020	0.022	9.5%	< 0.020	102%	90%	110%	105%	80%	120%	109%	70%	130%
Total Nickel	1	3838714	< 0.015	< 0.015	0.0%	< 0.015	104%	90%	110%	105%	80%	120%	105%	70%	130%
Total Selenium	1	3838714	< 0.020	< 0.020	0.0%	< 0.020	99%	90%	110%	99%	80%	120%	103%	70%	130%
Total Silver	1	3838714	< 0.020	< 0.020	0.0%	< 0.020	102%	90%	110%	114%	80%	120%	102%	70%	130%
Total Tin	1	3838714	< 0.025	< 0.025	0.0%	< 0.025	103%	90%	110%	102%	80%	120%	101%	70%	130%
Total Titanium	1	3838714	< 0.020	< 0.020	0.0%	< 0.020	103%	90%	110%	101%	80%	120%	107%	70%	130%
Total Zinc	1	3838714	< 0.020	< 0.020	0.0%	< 0.020	98%	90%	110%	98%	80%	120%	96%	70%	130%

Comments: NA - Not Applicable.

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 12T654666

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Trace Organics Analysis			
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 3510C & SM5520	GRAVIMETRIC
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 3510C & SM5520	GRAVIMETRIC
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans-1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylenes (Total)	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Total PAHs	ORG-91-5105	EPA SW-846 3510 & 8270	GC/MS
Water Analysis			
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
CBOD (5)	INOR-93-6006	SM 5210 B	DO METER
Total Suspended Solids	INOR-93-6028	SM 2540 D	BALANCE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Total Cyanide	INOR-93-6051	MOE 3015 & SM 4500 CN- A,B,C	TECHNICON AUTO ANALYZER
Phenols	INOR-93-6050	MOE ROPHEN-E3179 & SM 5530 D	TECHNICON AUTO ANALYZER
Total Kjeldahl Nitrogen	INOR-93-6048	QuikChem 10-107-06-2-I & SM 4500-Norg D	LACHAT FIA
Total Phosphorus	INOR-93-6022	SM 4500-P B&E	SPECTROPHOTOMETER
Total Aluminum	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Antimony	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Arsenic	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Beryllium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Cadmium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Chromium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Cobalt	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Copper	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Iron	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Lead	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Manganese	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Mercury	MET-93-6100	EPA SW 846-7470 & 245.1	CVAAS
Total Molybdenum	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Nickel	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Selenium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Silver	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Tin	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Titanium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Zinc	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS

CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 13T745828

MICROBIOLOGY ANALYSIS REVIEWED BY: Inesa Alizarchyk, Inorganic Lab Supervisor

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

DATE REPORTED: Aug 16, 2013

PAGES (INCLUDING COVER): 10

VERSION*: 2

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 2: Sample ID revised and report re-issued on Aug 19, 13.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T745828

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

Microbiological Analysis (water)

DATE RECEIVED: 2013-08-09

DATE REPORTED: 2013-08-16

SAMPLE DESCRIPTION: BH 5+060

SAMPLE TYPE: Water

DATE SAMPLED: 8/9/2013

Parameter	Unit	G / S	RDL	4637329
Escherichia coli	CFU/100mL	200	100	1300

Comments: 4637329 RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to HALTON STORM
RDL >1 indicates dilutions of the sample.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T745828

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

Halton Sanitary and Combined Sewer By-law - Organics

DATE RECEIVED: 2013-08-09

DATE REPORTED: 2013-08-16

		SAMPLE DESCRIPTION:		BH 5+060
		SAMPLE TYPE:		Water
		DATE SAMPLED:		8/9/2013
Parameter	Unit	G / S	RDL	4637329
Oil and Grease (animal/vegetable) in water	mg/L	150	0.5	0.7
Oil and Grease (mineral) in water	mg/L	15	0.5	<0.5
Benzene	mg/L	0.01	0.0002	0.00037
Chloroform	mg/L	0.04	0.0002	<0.0002
Methylene Chloride	mg/L	2.0	0.0003	<0.0003
Trichloroethylene	mg/L	0.4	0.0002	<0.0002
Toluene	mg/L	0.016	0.0002	0.00035
Ethylbenzene	mg/L	0.16	0.0001	<0.0001
Tetrachloroethene	mg/L	1.0	0.010	<0.010
1,4-Dichlorobenzene	mg/L	0.08	0.0002	<0.0002
Naphthalene	mg/L	140	0.0003	<0.0003

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Halton San. Comb

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 13T745828

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

Halton Sanitary and Combined Sewer Use By-law - Inorganics

DATE RECEIVED: 2013-08-09

DATE REPORTED: 2013-08-16

		SAMPLE DESCRIPTION:		BH 5+060
		SAMPLE TYPE:		Water
		DATE SAMPLED:		8/9/2013
Parameter	Unit	G / S	RDL	4637329
pH	pH Units	6.0-10.0	NA	6.43
CBOD (5)	mg/L	300	5	82
Total Suspended Solids	mg/L	350	10	40000
Fluoride	mg/L	10	50.0	<50.0
Sulphate	mg/L	1500	100	752
Total Cyanide	mg/L	2	0.002	<0.002
Phenols	mg/L	1	0.002	0.027
Total Kjeldahl Nitrogen	mg/L	100	1.0	26.8
Total Phosphorus	mg/L	10	0.05	8.32
Total Aluminum	mg/L	50	0.020	540
Total Antimony	mg/L	5	0.020	<0.020
Total Arsenic	mg/L	1	0.015	0.308
Total Beryllium	mg/L	5	0.010	0.027
Total Cadmium	mg/L	1	0.010	<0.010
Total Chromium	mg/L	3	0.020	1.77
Total Cobalt	mg/L	5	0.020	0.492
Total Copper	mg/L	3	0.015	0.679
Total Iron	mg/L	50	0.050	620
Total Lead	mg/L	3	0.020	0.159
Total Manganese	mg/L	5	0.020	26.1
Total Mercury	mg/L	0.05	0.0002	<0.0002
Total Molybdenum	mg/L	5	0.020	0.164
Total Nickel	mg/L	3	0.015	1.26
Total Selenium	mg/L	5	0.020	0.057
Total Silver	mg/L	5	0.020	0.039
Total Tin	mg/L	5	0.025	0.033
Total Titanium	mg/L	5	0.020	3.65
Total Zinc	mg/L	3	0.020	1.68

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Halton San. Comb
4637329 Sample was diluted to keep the analyte in the calibration range, minimize interference and/or to avoid contaminating instrument. The RDLs have been corrected accordingly.

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 13T745828

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	GUIDEVALUE	RESULT
4637329	BH 5+060	HALTON STORM	Microbiological Analysis (water)	Escherichia coli	200	1300
4637329	BH 5+060	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Aluminum	50	540
4637329	BH 5+060	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Iron	50	620
4637329	BH 5+060	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Manganese	5	26.1
4637329	BH 5+060	Halton San. Comb	Halton Sanitary and Combined Sewer Use By-law - Inorganics	Total Suspended Solids	350	40000

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T745828

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Microbiology Analysis

RPT Date: Aug 16, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Microbiological Analysis (water)

Escherichia coli	1	ND	ND	NA	< 1	NA	NA	NA
------------------	---	----	----	----	-----	----	----	----

Comments: ND - Not Detected, ; NA - % RPD Not Applicable

NA - Not Applicable

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T745828

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

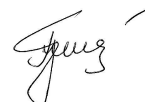
Trace Organics Analysis

RPT Date: Aug 16, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Halton Sanitary and Combined Sewer By-law - Organics

Oil and Grease (animal/vegetable) in water	1		< 0.5	< 0.5	0.0%	< 0.5	NA	60%	130%	106%	60%	130%	NA	60%	130%
Oil and Grease (mineral) in water	1		< 0.5	< 0.5	0.0%	< 0.5	NA	60%	130%	90%	60%	130%	NA	60%	130%
Benzene	1		< 0.20	< 0.20	0.0%	< 0.0002	89%	60%	130%	107%	60%	130%	121%	60%	130%
Chloroform	1		< 0.20	< 0.20	0.0%	< 0.0002	107%	60%	130%	118%	60%	130%	128%	60%	130%
Methylene Chloride	1		< 0.30	< 0.30	0.0%	< 0.0003	120%	60%	130%	124%	60%	130%	107%	60%	130%
Trichloroethylene	1		< 0.20	< 0.20	0.0%	< 0.0002	129%	60%	130%	100%	60%	130%	115%	60%	130%
Toluene	1		< 0.20	< 0.20	0.0%	< 0.0002	91%	60%	130%	100%	60%	130%	116%	60%	130%
Ethylbenzene	1		< 0.10	< 0.10	0.0%	< 0.0001	76%	60%	130%	94%	60%	130%	113%	60%	130%
Tetrachloroethene	1		< 0.20	< 0.20	0.0%	< 0.010	87%	60%	130%	109%	60%	130%	125%	60%	130%
1,4-Dichlorobenzene	1		< 0.10	< 0.10	0.0%	< 0.0002	104%	60%	130%	108%	60%	130%	121%	60%	130%
Naphthalene	1		< 0.20	< 0.20	0.0%	< 0.0003	96%	60%	140%	103%	140%	140%	77%	60%	140%

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T745828

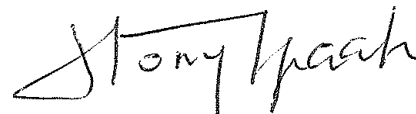
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Water Analysis															
RPT Date: Aug 16, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Halton Sanitary and Combined Sewer Use By-law - Inorganics															
pH	1		7.88	7.94	0.8%	NA	100%	90%	110%	NA			NA		
CBOD (5)	1		< 5	< 5	0.0%	< 5	100%	75%	125%	NA			NA		
Total Suspended Solids	1		52	52	0.0%	< 10	104%	80%	120%	NA			NA		
Fluoride	4635371		<0.25	<0.25	0.0%	< 0.05	94%	90%	110%	92%	90%	110%	104%	80%	120%
Sulphate	4635371		146	144	1.2%	< 0.10	94%	90%	110%	100%	90%	110%	90%	80%	120%
Total Cyanide	1		< 0.002	< 0.002	0.0%	< 0.002	110%	80%	120%	101%	90%	110%	117%	70%	130%
Phenols	4637329	4637329	<0.002	<0.002	0.0%	< 0.002	100%	90%	110%	98%	90%	110%	102%	80%	120%
Total Kjeldahl Nitrogen	4632890		1.06	1.12	5.5%	< 0.10	103%	80%	120%	86%	80%	120%	85%	70%	130%
Total Phosphorus	1		0.06	0.06	0.0%	< 0.05	109%	90%	110%	103%	90%	110%	99%	80%	120%
Total Aluminum	1		1.73	1.72	0.6%	< 0.020	102%	90%	110%	117%	80%	120%	111%	70%	130%
Total Antimony	1		< 0.020	< 0.020	0.0%	< 0.020	99%	90%	110%	100%	80%	120%	99%	70%	130%
Total Arsenic	1		< 0.015	< 0.015	0.0%	< 0.015	100%	90%	110%	103%	80%	120%	108%	70%	130%
Total Beryllium	1		< 0.010	< 0.010	0.0%	< 0.010	99%	90%	110%	95%	80%	120%	98%	70%	130%
Total Cadmium	1		< 0.010	< 0.010	0.0%	< 0.010	100%	90%	110%	105%	80%	120%	115%	70%	130%
Total Chromium	1		< 0.020	< 0.020	0.0%	< 0.020	101%	90%	110%	110%	80%	120%	103%	70%	130%
Total Cobalt	1		< 0.020	< 0.020	0.0%	< 0.020	100%	90%	110%	107%	80%	120%	103%	70%	130%
Total Copper	1		0.021	0.021	0.0%	< 0.015	100%	90%	110%	105%	80%	120%	99%	70%	130%
Total Iron	1		0.285	0.297	4.1%	< 0.050	100%	90%	110%	109%	80%	120%	109%	70%	130%
Total Lead	1		< 0.020	< 0.020	0.0%	< 0.020	101%	90%	110%	108%	80%	120%	101%	70%	130%
Total Manganese	1		0.468	0.459	1.9%	< 0.020	102%	90%	110%	109%	80%	120%	104%	70%	130%
Total Mercury	1		< 0.0002	< 0.0002	0.0%	< 0.0002	99%	90%	110%	102%	90%	110%	100%	70%	130%
Total Molybdenum	1		0.029	0.029	0.0%	< 0.020	99%	90%	110%	101%	80%	120%	104%	70%	130%
Total Nickel	1		0.053	0.054	1.9%	< 0.015	100%	90%	110%	108%	80%	120%	101%	70%	130%
Total Selenium	1		< 0.020	< 0.020	0.0%	< 0.020	99%	90%	110%	103%	80%	120%	111%	70%	130%
Total Silver	1		< 0.020	< 0.020	0.0%	< 0.020	99%	90%	110%	114%	80%	120%	108%	70%	130%
Total Tin	1		< 0.025	< 0.025	0.0%	< 0.025	103%	90%	110%	108%	80%	120%	107%	70%	130%
Total Titanium	1		< 0.020	< 0.020	0.0%	< 0.020	100%	90%	110%	105%	80%	120%	102%	70%	130%
Total Zinc	1		0.022	0.022	0.0%	< 0.020	96%	90%	110%	109%	80%	120%	106%	70%	130%

Comments: NA signifies Not Applicable.

Certified By:



QA Violation

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T745828

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

RPT Date: Aug 16, 2013			REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Sample Id	Sample Description	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
Halton Sanitary and Combined Sewer By-law - Organics											
Naphthalene		BH 5+060	96%	60%	140%	103%	140%	140%	77%	60%	140%

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T745828

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Microbiology Analysis			
Escherichia coli	MIC-93-7010	EPA 1604	Membrane Filtration
Trace Organics Analysis			
Oil and Grease (animal/vegetable) in water	VOL-91-5011	EPA SW-846 3510C & SM5520	GRAVIMETRIC
Oil and Grease (mineral) in water	VOL-91-5011	EPA SW-846 3510C & SM5520	GRAVIMETRIC
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Naphthalene	ORG 5505	EPA SW-846 3510C & 8270	GC/MS
Water Analysis			
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
CBOD (5)	INOR-93-6006	SM 5210 B	DO METER
Total Suspended Solids	INOR-93-6028	SM 2540 D	BALANCE
Fluoride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Total Cyanide	INOR-93-6051	MOE 3015 & SM 4500 CN- A,B,C	TECHNICON AUTO ANALYZER
Phenols	INOR-93-6050	MOE ROPHEN-E3179 & SM 5530 D	TECHNICON AUTO ANALYZER
Total Kjeldahl Nitrogen	INOR-93-6048	QuiKChem 10-107-06-2-I & SM 4500-Norg D	LACHAT FIA
Total Phosphorus	INOR-93-6022	SM 4500-P B&E	SPECTROPHOTOMETER
Total Aluminum	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Antimony	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Arsenic	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Beryllium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Cadmium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Chromium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Cobalt	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Copper	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Iron	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Lead	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Manganese	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Mercury	MET-93-6100	EPA SW 846-7470 & 245.1	CVAAS
Total Molybdenum	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Nickel	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Selenium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Silver	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Tin	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Titanium	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS
Total Zinc	MET-93-6103	EPA SW-846 3010A & 6020A	ICP-MS



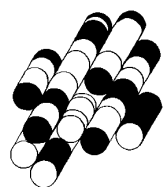
1471Y2

P: 905.712.5100 • F: 905.712.5122

Data collected: May 31, 2019

APPENDIX K

TERRAPROBE INC.



CLIENT NAME: TERRAPROBE INC.
11 INDELL LANE
BRAMPTON, ON L6T3Y3
(905) 796-2650

ATTENTION TO: Michael Diez de Aux

PROJECT NO: 11-12-2073

AGAT WORK ORDER: 13T738322

SOIL ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Anthony Dapaah, PhD (Chem), Inorganic Lab Manager

DATE REPORTED: Jul 26, 2013

PAGES (INCLUDING COVER): 10

VERSION*: 3

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

***NOTES**

VERSION 3: Alkalinity added and report re-issued on August 1, 2013.

Sample IDs corrected and report re-issued on August 2, 2013 as per client's request.

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

Alkalinity (Water)

DATE RECEIVED: 2013-07-19

DATE REPORTED: 2013-07-26

		SAMPLE DESCRIPTION:		1+ 200 Deep	3+ 065 Deep	2+ 425 Deep
		SAMPLE TYPE:		Water	Water	Water
		DATE SAMPLED:		7/18/2013	7/18/2013	7/19/2013
Parameter	Unit	G / S	RDL	4569537	4569541	4569543
Alkalinity (as CaCO ₃)	µg/L	5000	133000	295000	250000	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: TERRAPROBE INC.

ATTENTION TO: Michael Diez de Aux

Inorganic Chemistry (Water)

DATE RECEIVED: 2013-07-19

DATE REPORTED: 2013-07-26

		SAMPLE DESCRIPTION:		1+ 200 Deep	3+ 065 Deep	2+ 425 Deep	
		SAMPLE TYPE:		Water	Water	Water	
		DATE SAMPLED:		7/18/2013	7/18/2013	7/19/2013	
Parameter	Unit	G / S	RDL	4569537	4569541	RDL	4569543
pH	pH Units	NA	7.73	8.01	NA	7.53	
Electrical Conductivity	uS/cm	2	7570	8020	2	38100	
Chloride	µg/L	10000	1960000	2160000	50000	16000000	
Sulphate	µg/L	10000	1120000	944000	50000	560000	
Sulphide	µg/L	50	<50	<50	50	<50	
Redox Potential	mV	5	221	212	5	240	
Resistivity	ohms.cm		132	125		26	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T738322

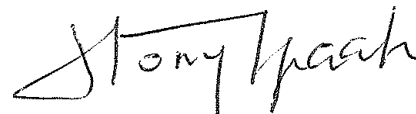
PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Soil Analysis															
RPT Date: Jul 26, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1		< 0.8	< 0.8	0.0%	< 0.8	104%	70%	130%	83%	80%	120%	77%	70%	130%
Arsenic	1		5	4	22.2%	< 1	105%	70%	130%	96%	80%	120%	93%	70%	130%
Barium	1		44	43	2.3%	< 2	92%	70%	130%	93%	80%	120%	91%	70%	130%
Beryllium	1		< 0.5	< 0.5	0.0%	< 0.5	70%	70%	130%	95%	80%	120%	82%	70%	130%
Boron	1		5	6	18.2%	< 5	79%	70%	130%	98%	80%	120%	78%	70%	130%
Boron (Hot Water Soluble)	1		<0.10	<0.10	0.0%	< 0.10	101%	60%	140%	105%	70%	130%	103%	60%	140%
Cadmium	1		< 0.5	< 0.5	0.0%	< 0.5	106%	70%	130%	105%	80%	120%	103%	70%	130%
Chromium	1		16	16	0.0%	< 2	91%	70%	130%	102%	80%	120%	92%	70%	130%
Cobalt	1		7.6	7.5	1.3%	< 0.5	95%	70%	130%	101%	80%	120%	92%	70%	130%
Copper	1		30	30	0.0%	< 1	100%	70%	130%	106%	80%	120%	87%	70%	130%
Lead	1		22	26	16.7%	< 1	102%	70%	130%	105%	80%	120%	101%	70%	130%
Molybdenum	1		0.7	0.6	15.4%	< 0.5	106%	70%	130%	102%	80%	120%	105%	70%	130%
Nickel	1		16	16	0.0%	< 1	102%	70%	130%	103%	80%	120%	93%	70%	130%
Selenium	1		< 0.4	< 0.4	0.0%	< 0.4	77%	70%	130%	99%	80%	120%	103%	70%	130%
Silver	1		< 0.2	< 0.2	0.0%	< 0.2	90%	70%	130%	113%	80%	120%	110%	70%	130%
Thallium	1		< 0.4	< 0.4	0.0%	< 0.4	95%	70%	130%	107%	80%	120%	105%	70%	130%
Uranium	1		< 0.5	< 0.5	0.0%	< 0.5	87%	70%	130%	89%	80%	120%	88%	70%	130%
Vanadium	1		22	22	0.0%	< 1	100%	70%	130%	104%	80%	120%	98%	70%	130%
Zinc	1		89	91	2.2%	< 5	97%	70%	130%	113%	80%	120%	89%	70%	130%
Chromium VI	1	4569523	< 0.2	< 0.2	0.0%	< 0.2	102%	70%	130%	102%	80%	120%	104%	70%	130%
Cyanide	1		< 0.040	< 0.040	0.0%	< 0.040	102%	70%	130%	99%	80%	120%	103%	70%	130%
Mercury	1		< 0.10	< 0.10	0.0%	< 0.10	113%	70%	130%	107%	80%	120%	105%	70%	130%
Electrical Conductivity (2:1)	1		0.062	0.064	3.2%	< 0.005	97%	90%	110%	NA			NA		
Sodium Adsorption Ratio	1		0.317	0.320	0.9%	NA	NA			NA			NA		
pH, 2:1 CaCl2 Extraction	1		8.01	8.03	0.2%	NA	100%	90%	110%	NA			NA		

Comments: NA signifies Not Applicable.

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis

RPT Date: Jul 26, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Soil)															
Dichlorodifluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	93%	50%	140%	101%	50%	140%	74%	50%	140%
Vinyl Chloride	1		< 0.02	< 0.02	0.0%	< 0.02	113%	50%	140%	81%	50%	140%	70%	50%	140%
Bromomethane	1		< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	127%	50%	140%	106%	50%	140%
Trichlorofluoromethane	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	85%	50%	140%	107%	50%	140%
Acetone	1		< 0.50	< 0.50	0.0%	< 0.50	109%	50%	140%	92%	50%	140%	99%	50%	140%
1,1-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	111%	60%	130%	93%	50%	140%
Methylene Chloride	1		< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	119%	60%	130%	109%	50%	140%
Trans- 1,2-Dichloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	99%	50%	140%	116%	60%	130%	102%	50%	140%
Methyl tert-butyl Ether	1		< 0.05	< 0.05	0.0%	< 0.05	102%	50%	140%	115%	60%	130%	113%	50%	140%
1,1-Dichloroethane	1		< 0.02	< 0.02	0.0%	< 0.02	103%	50%	140%	115%	60%	130%	106%	50%	140%
Methyl Ethyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	63%	50%	140%	71%	50%	140%	66%	50%	140%
Cis- 1,2-Dichloroethylene	1		< 0.02	< 0.02	0.0%	< 0.02	114%	50%	140%	121%	60%	130%	104%	50%	140%
Chloroform	1		< 0.04	< 0.04	0.0%	< 0.04	99%	50%	140%	112%	60%	130%	98%	50%	140%
1,2-Dichloroethane	1		< 0.03	< 0.03	0.0%	< 0.03	79%	50%	140%	93%	60%	130%	90%	50%	140%
1,1,1-Trichloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	110%	60%	130%	92%	50%	140%
Carbon Tetrachloride	1		< 0.05	< 0.05	0.0%	< 0.05	90%	50%	140%	107%	60%	130%	89%	50%	140%
Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	78%	50%	140%	93%	60%	130%	80%	50%	140%
1,2-Dichloropropane	1		< 0.03	< 0.03	0.0%	< 0.03	72%	50%	140%	82%	60%	130%	72%	50%	140%
Trichloroethylene	1		< 0.03	< 0.03	0.0%	< 0.03	112%	50%	140%	91%	60%	130%	82%	50%	140%
Bromodichloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	91%	50%	140%	97%	60%	130%	86%	50%	140%
Methyl Isobutyl Ketone	1		< 0.50	< 0.50	0.0%	< 0.50	80%	50%	140%	74%	50%	140%	90%	50%	140%
1,1,2-Trichloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	112%	50%	140%	92%	60%	130%	95%	50%	140%
Toluene	1		< 0.05	< 0.05	0.0%	< 0.05	109%	50%	140%	92%	60%	130%	90%	50%	140%
Dibromochloromethane	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	91%	60%	130%	92%	50%	140%
Ethylene Dibromide	1		< 0.04	< 0.04	0.0%	< 0.04	90%	50%	140%	79%	60%	130%	82%	50%	140%
Tetrachloroethylene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	110%	60%	130%	110%	50%	140%
1,1,1,2-Tetrachloroethane	1		< 0.04	< 0.04	0.0%	< 0.04	99%	50%	140%	109%	60%	130%	109%	50%	140%
Chlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	113%	50%	140%	101%	60%	130%	98%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	94%	60%	130%	90%	50%	140%
m & p-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	106%	50%	140%	92%	60%	130%	92%	50%	140%
Bromoform	1		< 0.05	< 0.05	0.0%	< 0.05	115%	50%	140%	96%	60%	130%	100%	50%	140%
Styrene	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	80%	60%	130%	81%	50%	140%
1,1,2,2-Tetrachloroethane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	102%	60%	130%	105%	50%	140%
o-Xylene	1		< 0.05	< 0.05	0.0%	< 0.05	79%	50%	140%	66%	60%	130%	66%	50%	140%
1,3-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	103%	50%	140%	78%	60%	130%	79%	50%	140%
1,4-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	119%	50%	140%	99%	60%	130%	104%	50%	140%
1,2-Dichlorobenzene	1		< 0.05	< 0.05	0.0%	< 0.05	108%	50%	140%	80%	60%	130%	84%	50%	140%
1,3-Dichloropropene	1		< 0.04	< 0.04	0.0%	< 0.04	90%	50%	140%	86%	60%	130%	83%	50%	140%
n-Hexane	1		< 0.05	< 0.05	0.0%	< 0.05	NA	50%	140%	115%	60%	130%	78%	50%	140%

Quality Assurance

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Trace Organics Analysis (Continued)

RPT Date: Jul 26, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (Soil)

Benzene	1		< 0.02	< 0.02	0.0%	< 0.02	113%	50%	140%	107%	60%	130%	118%	50%	140%
Toluene	1		< 0.08	< 0.08	0.0%	< 0.08	117%	50%	140%	111%	60%	130%	121%	50%	140%
Ethylbenzene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	109%	60%	130%	122%	50%	140%
Xylene Mixture	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	107%	60%	130%	116%	50%	140%
F1 (C6 to C10)	1		< 5	< 5	0.0%	< 5	113%	60%	140%	111%	80%	120%	108%	60%	140%
F2 (C10 to C16)	1		< 10	< 10	0.0%	< 10	110%	60%	140%	85%	80%	120%	103%	60%	140%
F3 (C16 to C34)	1		< 50	< 50	0.0%	< 50	120%	60%	140%	96%	80%	120%	102%	60%	140%
F4 (C34 to C50)	1		< 50	< 50	0.0%	< 50	100%	60%	140%	110%	80%	120%	115%	60%	140%

O. Reg. 153(511) - PAHs (Soil)

Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	92%	50%	140%	78%	50%	140%	61%	50%	140%
Acenaphthylene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	79%	50%	140%	60%	50%	140%
Acenaphthene	1		< 0.05	< 0.05	0.0%	< 0.05	100%	50%	140%	84%	50%	140%	61%	50%	140%
Fluorene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	77%	50%	140%	64%	50%	140%
Phenanthrene	1		< 0.05	< 0.05	0.0%	< 0.05	78%	50%	140%	68%	50%	140%	68%	50%	140%
Anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	116%	50%	140%	85%	50%	140%	89%	50%	140%
Fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	95%	50%	140%	82%	50%	140%	87%	50%	140%
Pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	105%	50%	140%	88%	50%	140%	95%	50%	140%
Benz(a)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	95%	50%	140%	90%	50%	140%
Chrysene	1		< 0.05	< 0.05	0.0%	< 0.05	65%	50%	140%	103%	50%	140%	107%	50%	140%
Benzo(b)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	74%	50%	140%	50%	50%	140%	66%	50%	140%
Benzo(k)fluoranthene	1		< 0.05	< 0.05	0.0%	< 0.05	129%	50%	140%	105%	50%	140%	102%	50%	140%
Benzo(a)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	130%	50%	140%	85%	50%	140%	84%	50%	140%
Indeno(1,2,3-cd)pyrene	1		< 0.05	< 0.05	0.0%	< 0.05	110%	50%	140%	74%	50%	140%	80%	50%	140%
Dibenz(a,h)anthracene	1		< 0.05	< 0.05	0.0%	< 0.05	105%	50%	140%	74%	50%	140%	80%	50%	140%
Benzo(g,h,i)perylene	1		< 0.05	< 0.05	0.0%	< 0.05	97%	50%	140%	76%	50%	140%	83%	50%	140%
2-and 1-methyl Naphthalene	1		< 0.05	< 0.05	0.0%	< 0.05	86%	50%	140%	78%	50%	140%	61%	50%	140%

Certified By:



Quality Assurance

CLIENT NAME: TERRAPROBE INC.

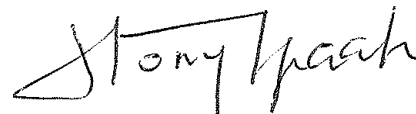
AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

Water Analysis															
RPT Date: Jul 26, 2013			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Inorganic Chemistry (Water)															
pH	4566151		7.84	7.88	0.5%	NA	97%	90%	110%	NA	0%	0%	NA	0%	0%
Electrical Conductivity	4566151		5790	5750	0.7%	< 2	105%	80%	120%	NA	0%	0%	NA	0%	0%
Chloride	4566598		3680	4020	8.9%	< 100	93%	90%	110%	96%	90%	110%	95%	80%	120%
Sulphate	4566598		116000	121000	4.3%	< 100	94%	90%	110%	96%	90%	110%	105%	80%	120%
Sulphide	1		< 50	< 50	0.0%	< 50	101%	80%	120%	105%	85%	115%	107%	70%	130%
Redox Potential	1	4569537	221	221	0.0%	< 5	109%	70%	130%	NA	70%	130%	NA	70%	130%
Alkalinity (Water)															
Alkalinity (as CaCO3)	1		329000	330000	0.3%	< 5000	98%	80%	120%	NA	0%	0%	NA	0%	0%

Certified By:



Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron (Hot Water Soluble)	MET-93-6104	EPA SW 846 6010C; MSA, Part 3, Ch.21	ICP/OES
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium VI	INOR-93-6029	SM 3500 B; MSA Part 3, Ch. 25	SPECTROPHOTOMETER
Cyanide	INOR-93-6052	MOE CN-3015 & E 3009 A; SM 4500 CN	TECHNICON AUTO ANALYZER
Mercury	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Electrical Conductivity (2:1)	INOR-93-6036	McKeague 4.12, SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	PH METER

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Acenaphthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluorene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Phenanthrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benz(a)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Chrysene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(a)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
2-and 1-methyl Naphthalene	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Moisture Content	Org 5506	EPA SW-846 3540 & 8270	BALANCE
Chrysene-d12	ORG-91-5106	EPA SW846 3541 & 8270	GC/MS
Benzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Toluene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Ethylbenzene	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
Xylene Mixture	VOL-91-5009	EPA SW-846 5035 & 8260	P & T GC/MS
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method	P & T GC/FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method, EPA SW846 8015	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: TERRAPROBE INC.

AGAT WORK ORDER: 13T738322

PROJECT NO: 11-12-2073

ATTENTION TO: Michael Diez de Aux

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE
Water Analysis			
Alkalinity (as CaCO ₃)	INOR-93-6000	SM 2320 B	TITRATION
pH	INOR-93-6000	SM 4500-H+ B	PC TITRATE
Electrical Conductivity	INOR-93-6000	SM 2510 B	PC TITRATE
Chloride	INOR-93-6004	SM 4110 B	ION CHROMATOGRAPH
Sulphate	INOR 1004	SM 4110 B	ION CHROMATOGRAPH
Sulphide	INOR-93-6054	SM 4500 S2-D	SPECTROPHOTOMETER
Redox Potential		SM 2510 B	REDOX POTENTIAL ELECTRODE
Resistivity		SM 2510 B	EC METER



AGAT

Laboratories

2 small Blue Coolers

5835 Coopers Avenue

Mississauga, ON

L4Z 1Y2

www.agatlabs.com • webeearth.agatlabs.com

Chain of Custody Record

P: 905.712.5100 • F: 905.712.5122

Client Information

Company: TerraProbe Ltd.
Contact: Mike Dierckx
Address: 11 Endell Lane, Brampton, ON
L6T 3Y3
Phone: 905-796-2650 Fax: 905-796-2250
Project: 11-12-2013 PO: _____
AGAT Quotation #: _____
Please note, if quotation number is not provided,
client will be billed full price for analysis.

Regulatory Requirements

☒ Regulation 153/04
(reg. 511 Amend)
Table 1 Indicate one
☒ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (check one)
☐ Coarse ☒ Fine
☐ Sewer Use
Region _____ Indicate one
☐ CCME
☐ Other (specify) _____
☐ Sanitary
☐ Storm
☐ Prov. Water Quality
☐ Objectives (PWQO)
☐ None

Invoice To

Company: _____ Same: Yes ☒ No ☐
Contact: _____
Address: _____

Legend Matrix

GW Ground Water **O** Oil
SW Surface Water **P** Paint
SD Sediment **S** Soil

Report Information - reports to be sent to:

1. Name: Mike D
Email: m.dierckx@terraprobe.ca
2. Name: _____
Email: _____

Is this a drinking water sample?
(potable water intended for human consumption)
☐ Yes ☒ No

If "Yes", please use the
Drinking Water Chain of Custody Form

Is this submission for a Record of Site Condition?
☐ Yes ☒ No

Contact: _____		Address: _____		If "Yes", please use the Drinking Water Chain of Custody Form	
Legend Matrix		Report Information – reports to be sent to:			
GW Ground Water	O Oil	1. Name: <u>Mike D</u>			
SW Surface Water	P Paint	Email: <u>indrazkaur@terra-pride.ca</u>			
SD Sediment	S Soil	2. Name: _____			
		Email: _____			
Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments
BH S+100 SSS	July 17/13	11:00am	S	2	Depth: 10'
BH S+100' SS1	"	"	S	1	Depth: 0'
BH S+100' SS3	"	"	S	2	Depth: 5'
BH S+100' SS2	"	"	S	1	Depth: 2 1/2'
1+200 Deep	July 18/13	10:00am	GL	2	Deep Well
3+065 Deep	"	11:30am	GL	2	Deep Well
2+ 044 425 Deep	July 19/13	1:30pm	GL	2	Deep Well

Laboratory Use Only
Arrival Temperature: 15, 8.1, 8.5°C
AGAT WO #: 13T738322
Lab Temperature: _____
Notes: _____

Turnaround Time Required (TAT) Required*

Regular TAT ☒ 5 to 7 Working Days
Rush TAT (please provide prior notification)
Rush Surcharges Apply
☐ 3 Working Days
☐ 2 Working Days
☐ 1 Working Day
OR
Date Required (Rush surcharges may apply): _____

*TAT is exclusive of weekends and statutory holidays