

APPENDIX E

Well Logs (MW3 and MW5)

Project: 438 Lansdowne

Client: Cataraquai Region Conservation Authority

File: p:\438\field results\borehole logs

Driller: G.E.T

Equipment: CME 55, HQ Core, SS

Monitor Number: MW3

Ground Elevation (m): est. 111masl

Top of Monitor (m): --

Borehole Log: BH3

Sheet: 1 of 3

Field Observer: C.R

Field Instrument: N/A

Date: 06/09/18

SUBSURFACE PROFILE

Mon. Data	Depth	Lithology	Description	Sample #	Type	% Recovery	Vapours *(CGI/PID) (ppm)	Remarks
	ft m		Ground Surface					
	0							
	1		Clay mottled grey and brown, trace gravel					above grade piezometer stick up and casing, no screen open borehole
	2		some brown sand at 2.0m					
	3		Sandstone fine to coarse grained, light grey, iron stained bands.					<i>Hole Fill Material:</i> 0.0m to 3.3m bentonite 3.3m to 6.9m concrete slurry 6.9m rubber gasket/seal 6.9m to 34.0m open borehole
	4		angular, granite clasts (breccia) with thin (4cm) limestone seem connected to calcite infilled subvertical fracture at lower contact					
	5		Pink Granite and/or Migmatic Gniess					
	6						oxidized fracture at 5.0m	
	7						oxidized fracture at 7.1m	
	8							
	9							
	10						oxidized fracture at 10.0m	
	11							
	12							
	13						fracture at 13.0m	
	14							
	15							

This borehole log should not be separated from the accompanying report.



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Driller: G.E.T

Equipment: CME 55, HQ Core, SS

Monitor Number: MW3

Ground Elevation (m): est. 111masl

Top of Monitor (m): --

Borehole Log: BH3

Sheet: 2 of 3

Field Observer: C.R

Field Instrument: N/A

Date: 06/09/18

SUBSURFACE PROFILE

Mon. Data	Depth	Lithology	Description	Sample #	Type	% Recovery	Vapours *(CGI/PID) (ppm)	Remarks
	50	[Lithology pattern]						
	51							
	52							
	53							
	54							
	55							
	56							
	57							
	58							
	59							
	60							
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	89							
	90							
	91							
	92							
	93							
	94							
	95							
	96							
	97							
	98							
	99							
								fracture at 26.2m

This borehole log should not be separated from the accompanying report.



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Client: Cataraquai Region Conservation Authority

File: p:\438\field results\borehole logs

Driller: G.E.T

Equipment: CME 55, HQ Core, SS

Monitor Number: MW3

Ground Elevation (m): est. 111masl

Top of Monitor (m): --

Borehole Log: BH3

Sheet: 3 of 3

Field Observer: C.R

Field Instrument: N/A

Date: 06/09/18

SUBSURFACE PROFILE

Mon. Data	Depth	Lithology	Description	Sample #	Type	% Recovery	Vapours *(CGI/PID) (ppm)	Remarks
	100	[Patterned Lithology]						competent bedrock
	101							
	102							
	103							
	104							
	105							
	106							
	107							
	108							
	109							
	110							
	111							
	112		End of Borehole at 34.0m					
	113							
	114							
	115							
	116							
	117							
	118							
	119							
	120							
	121							
	122							
	123							
	124							
	125							
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	138							
	139							
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	142							
	143							
	144							
	145							
	146							
	147							
	148							

This borehole log should not be separated from the accompanying report.



Project: 438 Lansdowne

Client: Cataraquai Region Conservation Authority

File: p:\438\field results\borehole logs

Driller: G.E.T

Equipment: CME 55, HQ Core, SS

Monitor Number: MW5

Ground Elevation (m): est. 111masl

Top of Monitor (m): -

Borehole Log: BH5

Sheet: 1 of 3

Field Observer: C.R

Field Instrument:

Date: 06/09/18

SUBSURFACE PROFILE							Sample #	Type	% Recovery	Vapours *(CGI/PID) (ppm)	Remarks
Mon. Data	Depth	Lithology	Description								
	0 ft 0 m		Ground Surface								
	1		Clay								above grade piezometer stick up and casing, no screen
	2										open borehole
	3		Sandstone								
	4			light grey with infilled vugs.							
	5			Some dark grey calcareous inter beds							
	6										
	7										
	8										oxidized fractures from 1.5m to 2.5m
	9										
	10										
	11										
	12										
	13										
	14										
	15										
	16										
	17										
	18										
	19										
	20										
	21										
	22										
	23										
	24										
	25										
	26										
	27			white							
	28										
	29										
	30										
	31										
	32										
	33										
	34										
	35										
	36										
	37										
	38										
	39										
	40										
	41										
	42										
	43										
	44										
	45										
	46										
	47										
											fracture at 11.5m
											oxidized fracture at 13.7m

This borehole log should not be separated from the accompanying report.



Project: 438 Lansdowne

Client: Cataraquai Region Conservation Authority

File: p:\438\field results\borehole logs

Driller: G.E.T

Equipment: CME 55, HQ Core, SS

Monitor Number: MW5

Ground Elevation (m): est. 111masl

Top of Monitor (m): -

Borehole Log: BH5

Sheet: 2 of 3

Field Observer: C.R

Field Instrument:

Date: 06/09/18

SUBSURFACE PROFILE

Mon. Data	Depth	Lithology	Description	Sample #	Type	% Recovery	Vapours *(CGI/PID) (ppm)	Remarks
	48		Pink Granite and/or Migmatic Gniess					
	49							
	50							
	51							
	52							
	53							
	54							
	55							
	56							
	57							
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	91							
	92							
	93							
								oxidized subvertical fracture at 17.5m
								subvertical fracture at 21.3m
								subvertical fracture at 23.0m
								highly fractured from 25.0m to 25.3m

This borehole log should not be separated from the accompanying report.



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Driller: G.E.T

Equipment: CME 55, HQ Core, SS

Monitor Number: MW5

Ground Elevation (m): est. 111masl

Top of Monitor (m): -

Borehole Log: BH5


Sheet: 3 of 3

Field Observer: C.R

Field Instrument:

Date: 06/09/18

SUBSURFACE PROFILE

Mon. Data	Depth	Lithology	Description	Sample #	Type	% Recovery	Vapours *(CGI/PID) (ppm)	Remarks	
	94								
	95								
	96								
	97								
	98								
	99								
	100								
	101								
	102								
	103								
	104								
	105								
	106								
	107								
	108								
	109								
	110								
	111								
	112								
	113								
	114								
	115								
	116								
	117								
	118								
	119								
	120								
	121								
	122								
	123								
	124								
	125								
	126								
	127								
	128								
	129		End of Borehole at 38.5m						
	130								
	131								
	132								
	133								
	134								
	135								
	136								
	137								
	138								
	139								
	140								

subvertical fractures from 32.0m to 33.0m

subvertical fracture at 37.7m

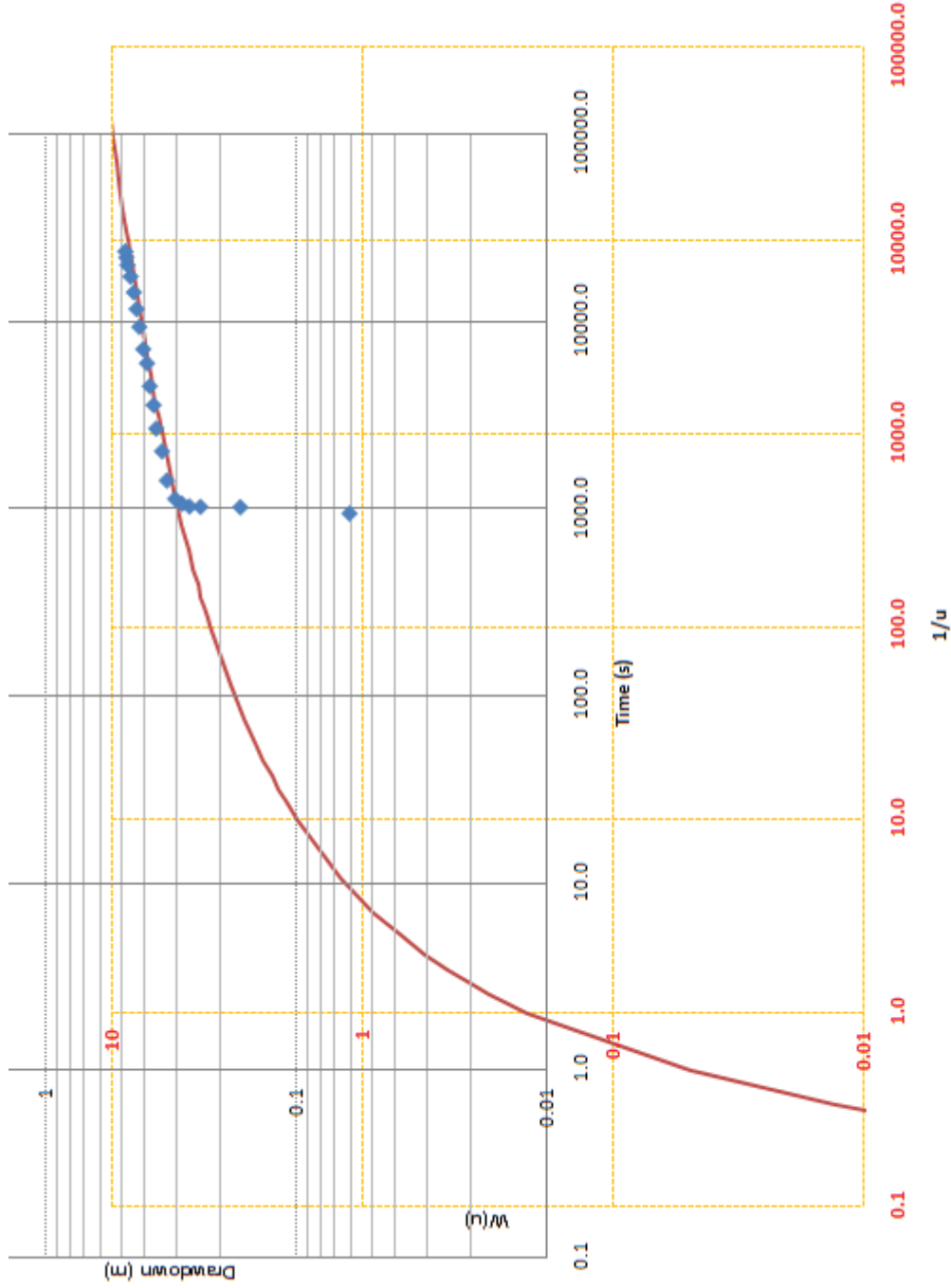
This borehole log should not be separated from the accompanying report.



APPENDIX F

Pumping Test Analysis

MW5 Test at 13:30



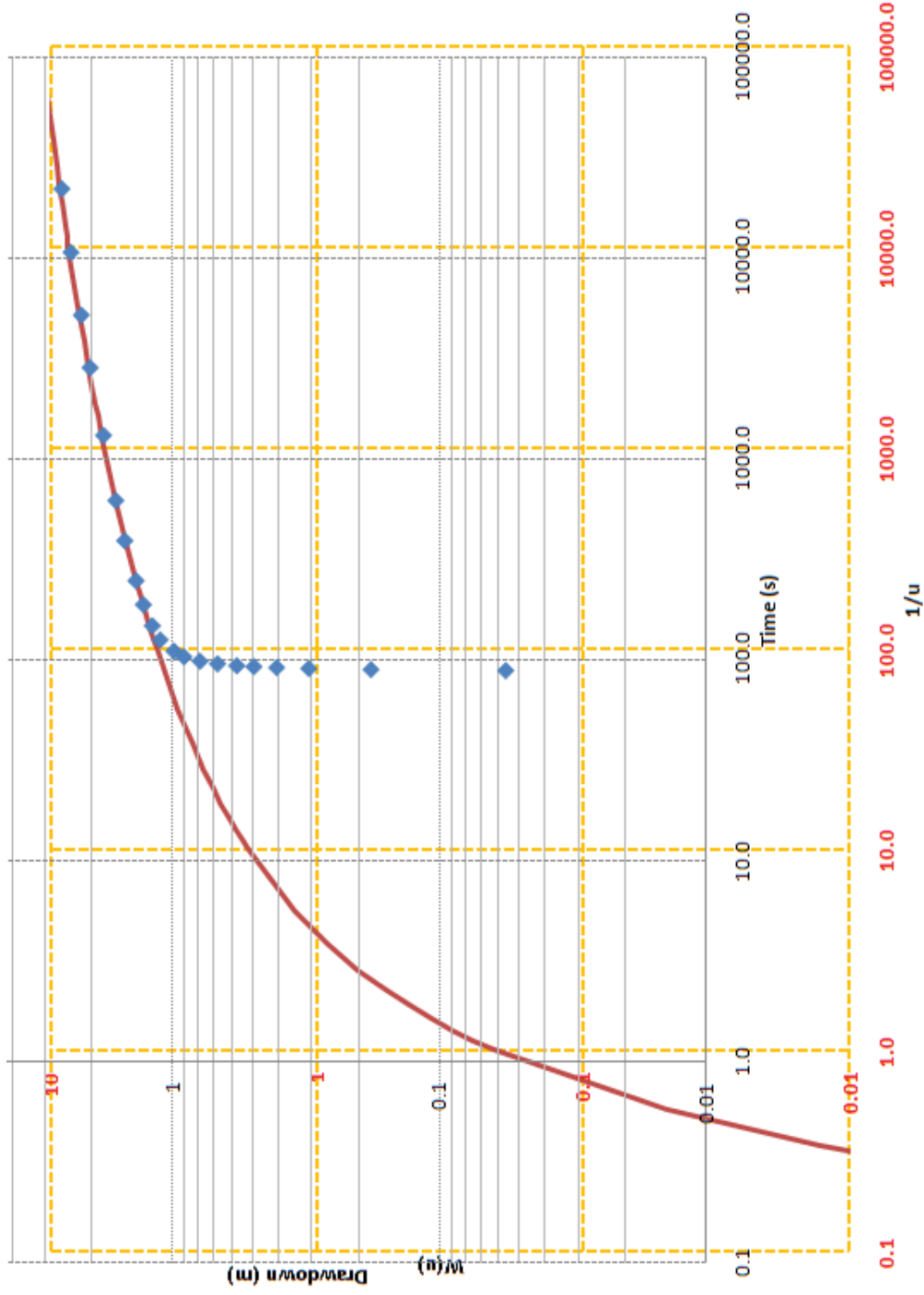
Theis $T = Q \cdot W(u) / (4 \cdot \pi \cdot s)$
 $S = u \cdot T \cdot r / (r^2)$

$W(u)$
 $1/u = u$

time 1 s
 s 0.05 m
 Q 0.0005 m³/s

T 8.0E-04 m²/s
 Sat thick. 68.75 m
 K 30.94 m
 2.6E-05 m/s

MW-3 at 9:51



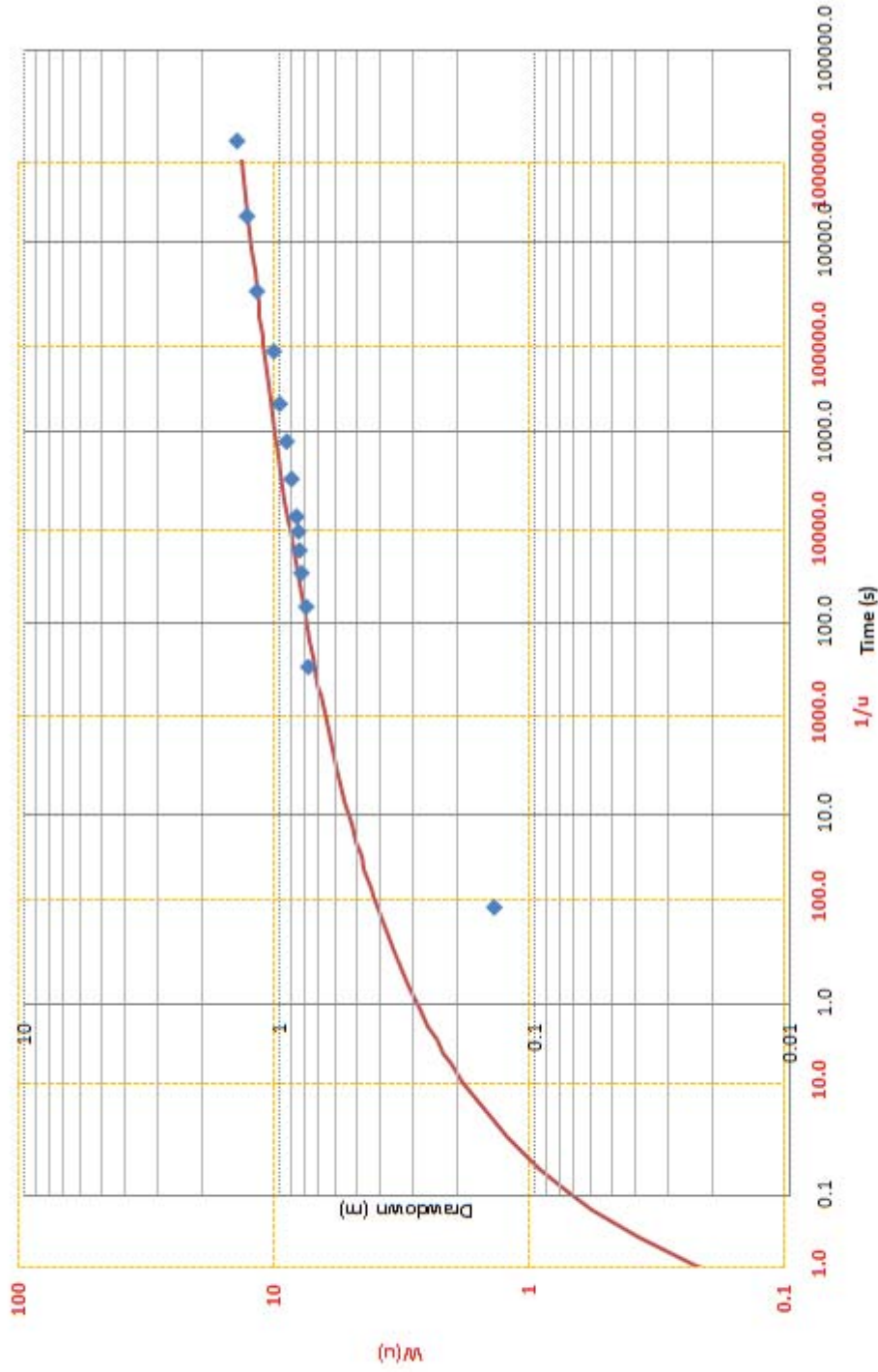
Theis $T = Q * W(u) / (4 * \pi * s)$
 $S = u * T * t / (r^2)$

$W(u)$
 $1/u = u$

time	1 s
s	0.3 m
Q	0.0005 m ³ /s

T	1.3E-04 m ² /s
Sat thick.	11.46 m ² /day
K	29.32 m
	4.5E-06 m/s

MUN1 at 18:44 15 Sep 2009



Theis $T = Q \cdot W(u) / (4 \cdot \pi \cdot s)$
 $S = u \cdot T \cdot t / (r^2)$

$W(u)$ 10
 $1/u = u$ 10

time 0.2 s
 s 1.1 m
 Q 0.0083 m³/s

T 6.0E-03 m²/s
 518.8 m²/day
 Sat thick. 35.36 m
 K 1.7E-04 m/s