

Bot Bouw
T.a.v. dhr. M. Hollander
Postbus 15
1700 AA Heerhugowaard

Heerhugowaard, 25 januari 2022

project: 30701, J. Duikerweg te Heerhugowaard
betreft: Infiltratie onderzoek



Geachte heer Hollander,

Bij deze verstrekken wij u de bevindingen van het infiltratieonderzoek, uitgevoerd ter plaatse van de nieuwbouwlocatie aan de J. Duikerweg te Heerhugowaard. Het voornemen is om ter plaatse van het toekomstige parkeerterrein infiltratiekranten te plaatsen om regenwater te bufferen.

Op 16 december 2021 zijn op een drietal punten doorlatendheidsmetingen uitgevoerd om de infiltratiesnelheid te bepalen. Voorafgaand aan het infiltratieonderzoek zijn op 14 december een viertal proefboringen verricht om inzicht te verkrijgen in de bodemopbouw en de grondwaterstand. De bodemopbouw bestaat afwisselend uit zand en klei en de grondwaterstand bevindt zich op een diepte van circa 0,8 m-mv.

De proeven zijn uitgevoerd in de bodemlaag boven de grondwaterstand. Er zijn twee proeven uitgevoerd te plaatse van een bodemlaag die hoofdzakelijk uit klei bestaat en er is een proef uitgevoerd ter plaatse van een zandige laag. Alle proeven zijn in duplo uitgevoerd.

De resultaten zijn samengevat in tabel 1. Een uitdraai van de K-waarde bepalingen is bijgevoegd in bijlage II. De ligging van de meetpunten is opgenomen in bijlage I en de resultaten van de proefboringen zijn opgenomen in bijlage III.

Tabel 1: Waterdoorlatendheid

Meetpunt	Traject (m-mv)	Grondsoort	K-waarde (m/24u)
102	0,40 – 0,50	Klei, sterk zandig	0,195
103	0,40 – 0,50	Klei, matig zandig	0,260
104	0,40 – 0,50	Zand, zwak kleilig	0,205

Op basis van de resultaten kan gesteld worden dat er verspreid over de onderzoekslocatie weinig verschillen zijn in de waterdoorlatendheid.

Vertrouwende er op u hiermee van dienst te zijn geweest.

Met vriendelijke groet,
Grondslag BV



Dhr. V.J.A. Vrolijk, MSc

BIJLAGE I : Boorpuntenkaart
BIJLAGE II : Uitdraai K-waarde bepalingen
BIJLAGE III : Boorbeschrijvingen

BIJLAGE I





BIJLAGE II



MEETPUNT 102





Location: 30701

Site: 102

Time interval between readings: 1 minute

Ksat Method: Glover Solution

Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than +/- 5 % for 2 consecutive readings

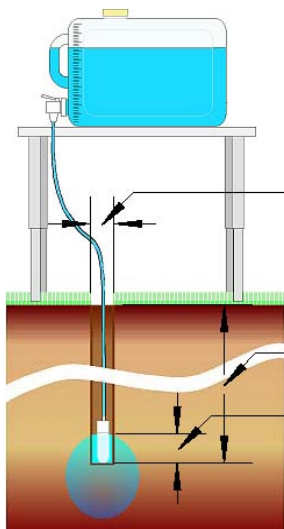
Steady Flow Rate: 8,133 ml/min

Temp. Adj. FR: 8,147 ml/min

Percolation Rate: 9,640 min/cm

Ksat: 0,24 Meters / day

Notes:



10 cm Hole Diameter

20 ° C Water Temperature

50 cm Hole Depth

7 cm Water Height in Hole

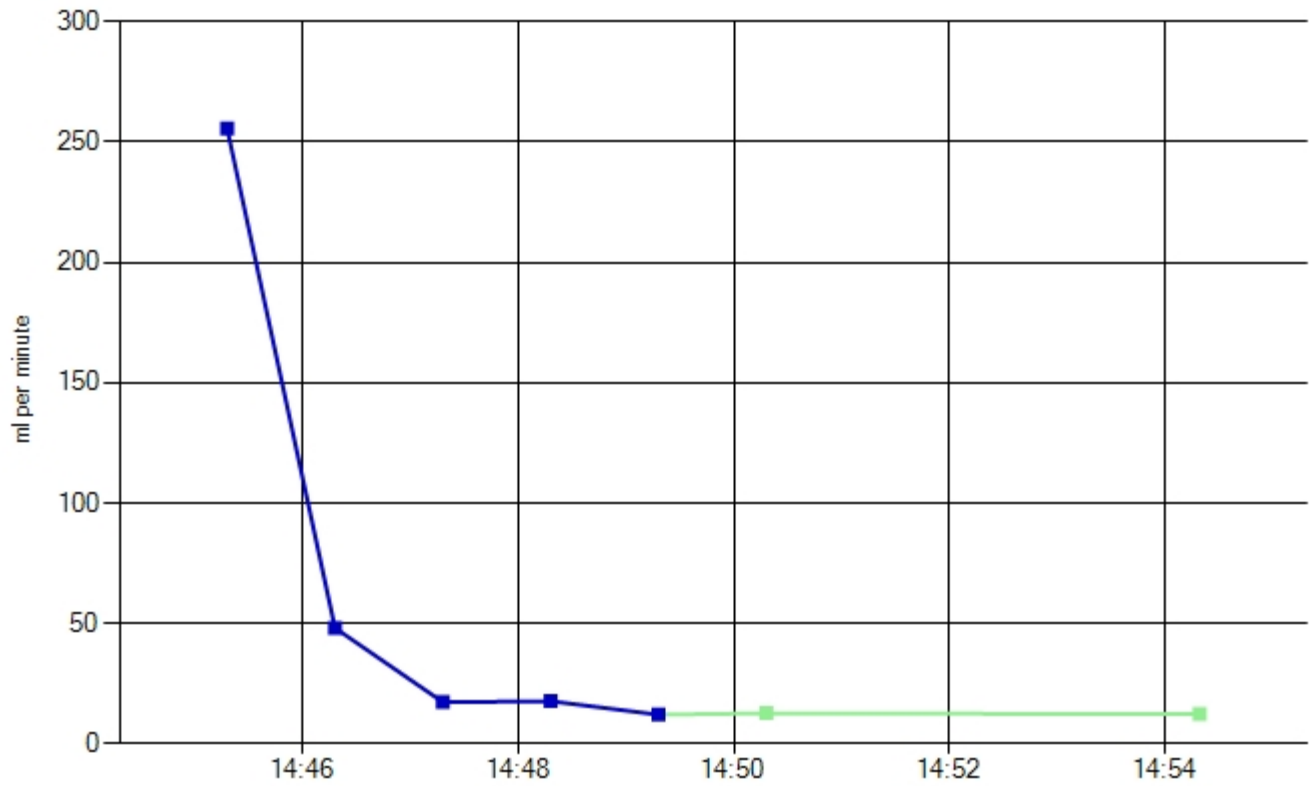
Water Table Depth

Site GPS Position

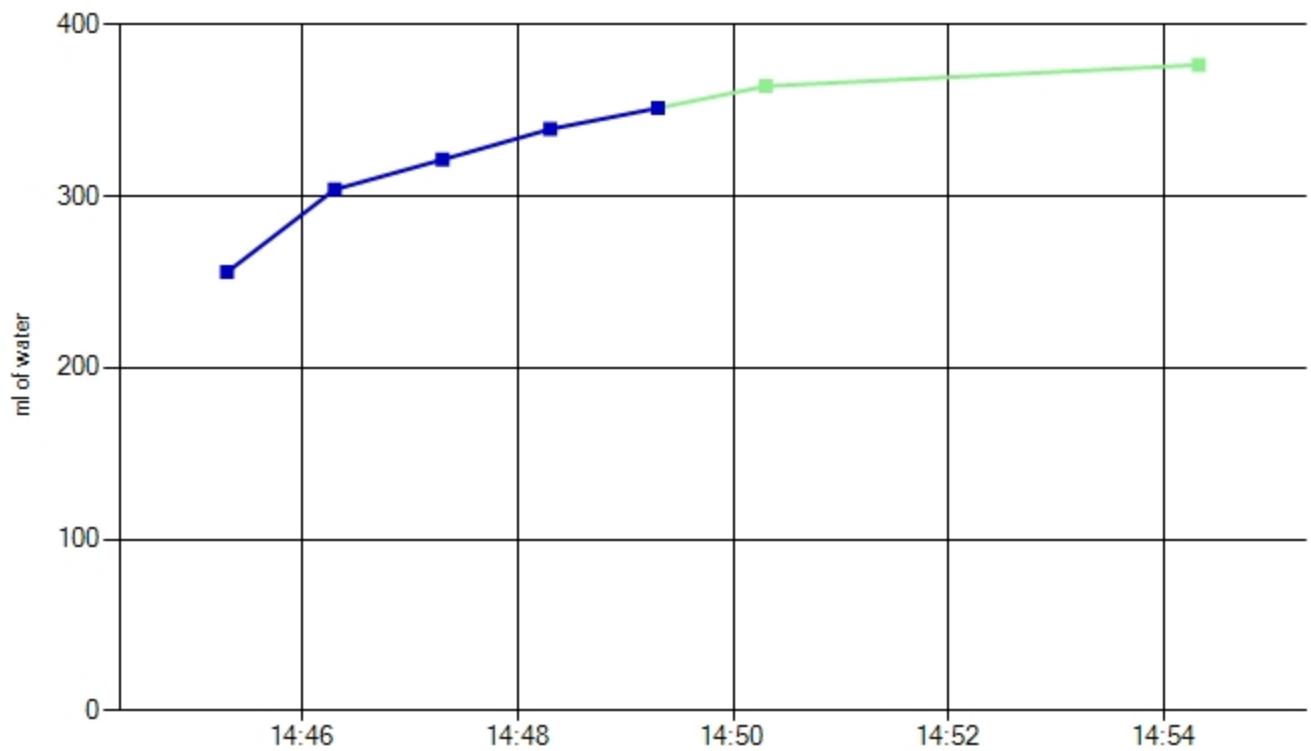
	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



<u>Time</u>	<u>Reservoir Water Level</u>	<u>Elapsed Time Interval</u>	<u>Interval Water Consumed</u>	<u>Total Water Consumed</u>	<u>Water Consumption Rate</u>	<u>Ignore Reading</u>
14:44:18	6805,2 ml					
14:45:18	6549,6 ml	1 minute	255,6 ml	255,6 ml	255,600 ml/min	
14:46:18	6501,4 ml	1 minute	48,2 ml	303,8 ml	48,200 ml/min	
14:47:18	6484,0 ml	1 minute	17,4 ml	321,2 ml	17,400 ml/min	
14:48:18	6466,2 ml	1 minute	17,8 ml	339,0 ml	17,800 ml/min	
14:49:18	6454,0 ml	1 minute	12,2 ml	351,2 ml	12,200 ml/min	
14:50:18	6441,2 ml	1 minute	12,8 ml	364,0 ml	12,800 ml/min	
14:51:19	6431,2 ml	1 minute				Yes
14:52:19	6430,2 ml	1 minute				Yes
14:53:19	6425,6 ml	1 minute				Yes
14:54:19	6413,2 ml	1 minute	12,4 ml	376,4 ml	12,400 ml/min	
14:55:19	6415,4 ml	1 minute				Yes



Location: 30701

Site: 102

Time interval between readings: 1 minute

Ksat Method: Glover Solution

Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than +/- 5 % for 2 consecutive readings

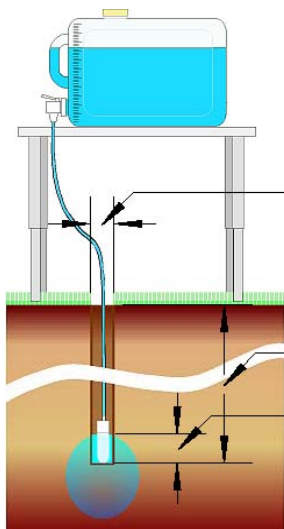
Steady Flow Rate: 5,200 ml/min

Temp. Adj. FR: 5,209 ml/min

Percolation Rate: 15,077 min/cm

Ksat: 0,15 Meters / day

Notes:



10 cm Hole Diameter

20 ° C Water Temperature

50 cm Hole Depth

7 cm Water Height in Hole

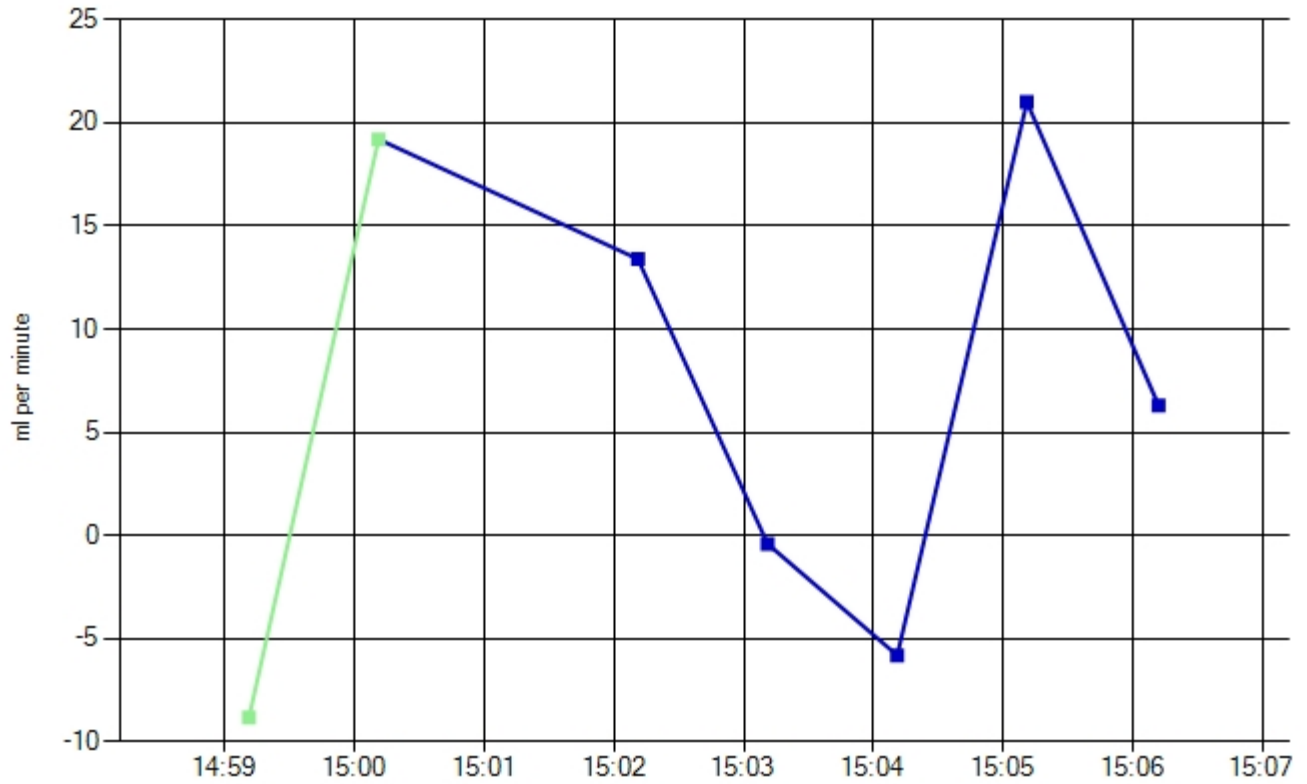
Water Table Depth

Site GPS Position

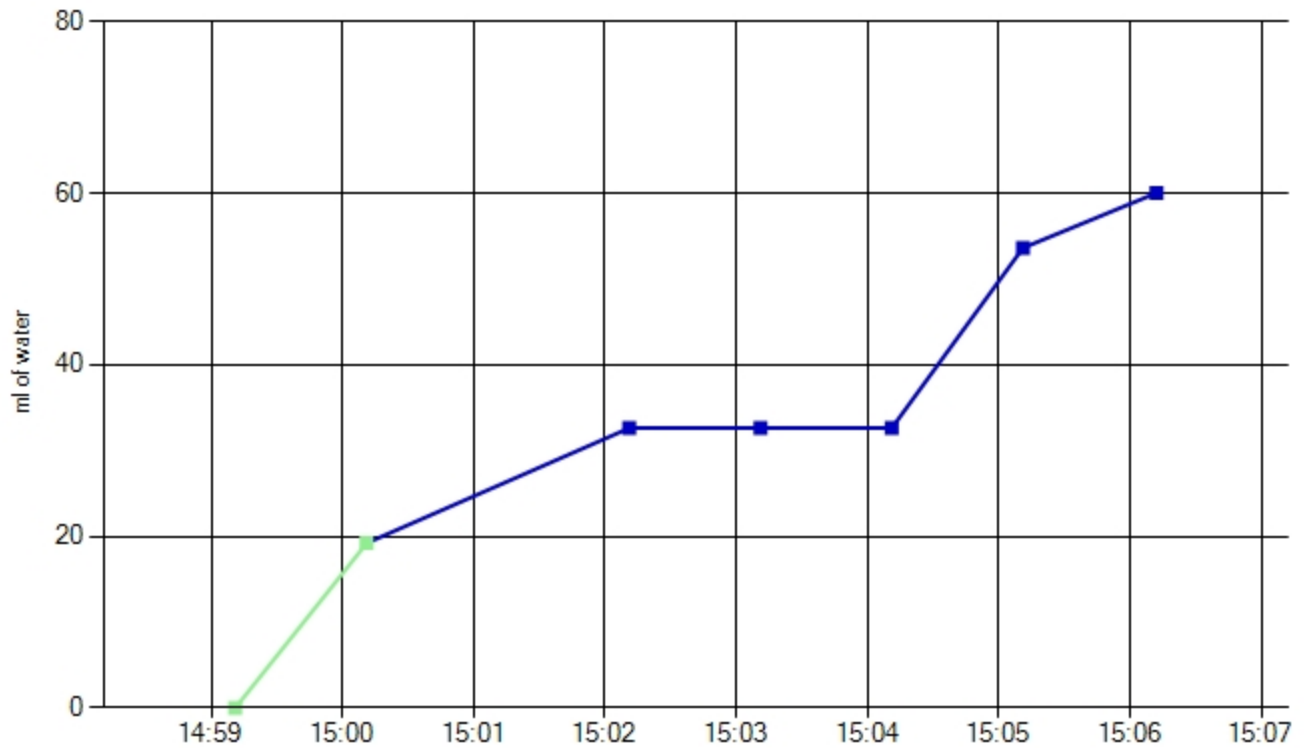
	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



<u>Time</u>	<u>Reservoir Water Level</u>	<u>Elapsed Time Interval</u>	<u>Interval Water Consumed</u>	<u>Total Water Consumed</u>	<u>Water Consumption Rate</u>	<u>Ignore Reading</u>
14:58:11	6405,2 ml					
14:59:11	6414,0 ml	1 minute	-8,8 ml	,0 ml	-8,800 ml/min	
15:00:11	6394,8 ml	1 minute	19,2 ml	19,2 ml	19,200 ml/min	
15:01:11	6391,0 ml	1 minute				Yes
15:02:11	6377,6 ml	1 minute	13,4 ml	32,6 ml	13,400 ml/min	
15:03:11	6378,0 ml	1 minute	-,4 ml	32,6 ml	-,400 ml/min	
15:04:11	6383,8 ml	1 minute	-5,8 ml	32,6 ml	-5,800 ml/min	
15:05:11	6362,8 ml	1 minute	21,0 ml	53,6 ml	21,000 ml/min	
15:06:12	6356,4 ml	1 minute	6,4 ml	60,0 ml	6,295 ml/min	

MEETPUNT 103





Location: 30701

Site: 104

Time interval between readings: 1 minute

Ksat Method: Glover Solution

Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than +/- 10 % for 2 consecutive readings

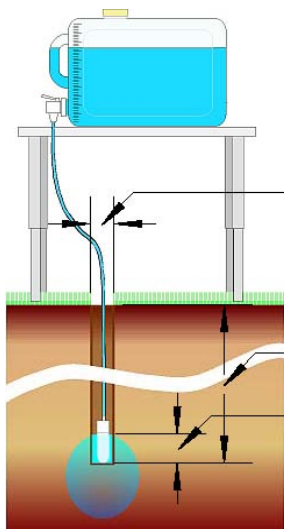
Steady Flow Rate: 15,713 ml/min

Temp. Adj. FR: 15,741 ml/min

Percolation Rate: 4,990 min/cm

Ksat: 0,46 Meters / day

Notes:



10 cm Hole Diameter

20 ° C Water Temperature

50 cm Hole Depth

7 cm Water Height in Hole

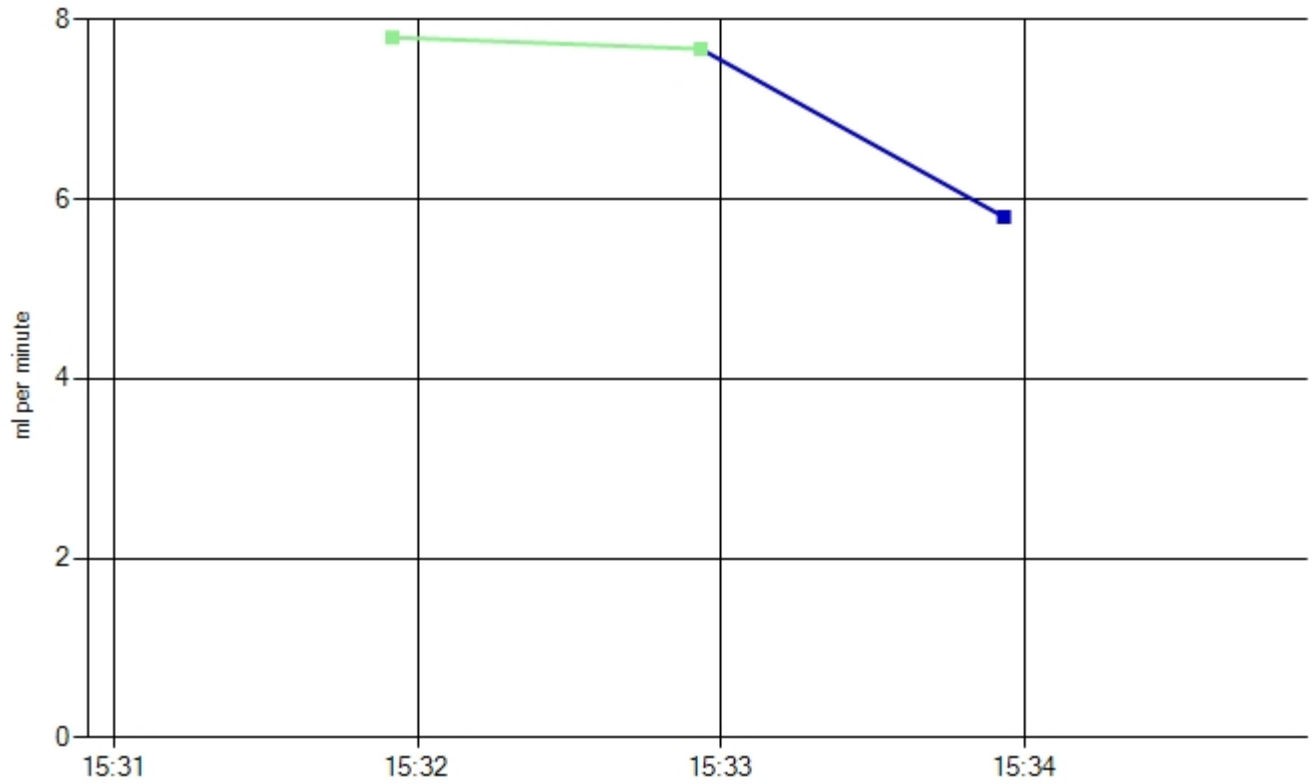
Water Table Depth

Site GPS Position

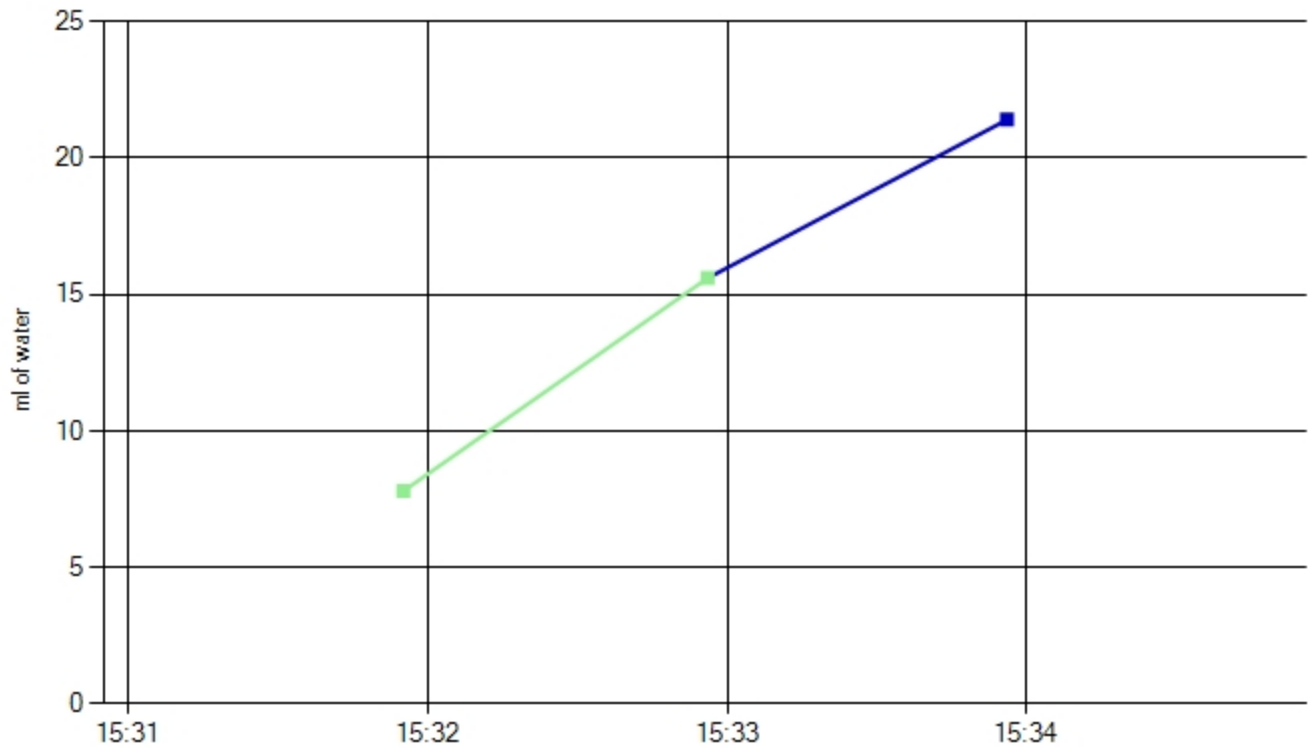
	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



<u>Time</u>	<u>Reservoir Water Level</u>	<u>Elapsed Time Interval</u>	<u>Interval Water Consumed</u>	<u>Total Water Consumed</u>	<u>Water Consumption Rate</u>	<u>Ignore Reading</u>
15:29:55	6131,0 ml					
15:30:55	6099,2 ml	1 minute				Yes
15:31:55	6091,4 ml	1 minute	7,8 ml	7,8 ml	7,800 ml/min	
15:32:56	6083,6 ml	1 minute	7,8 ml	15,6 ml	7,672 ml/min	
15:33:56	6077,8 ml	1 minute	5,8 ml	21,4 ml	5,800 ml/min	



Location: 30701

Site: 104

Time interval between readings: 1 minute

Ksat Method: Glover Solution

Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than +/- 10 % for 2 consecutive readings

Steady Flow Rate: 2,000 ml/min

Temp. Adj. FR: 2,004 ml/min

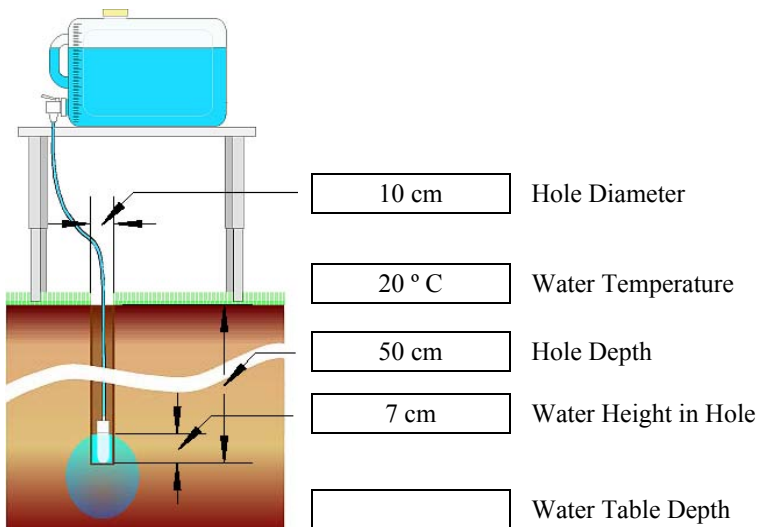
Percolation Rate: 39,201 min/cm

Ksat: 0,06 Meters / day

Notes:

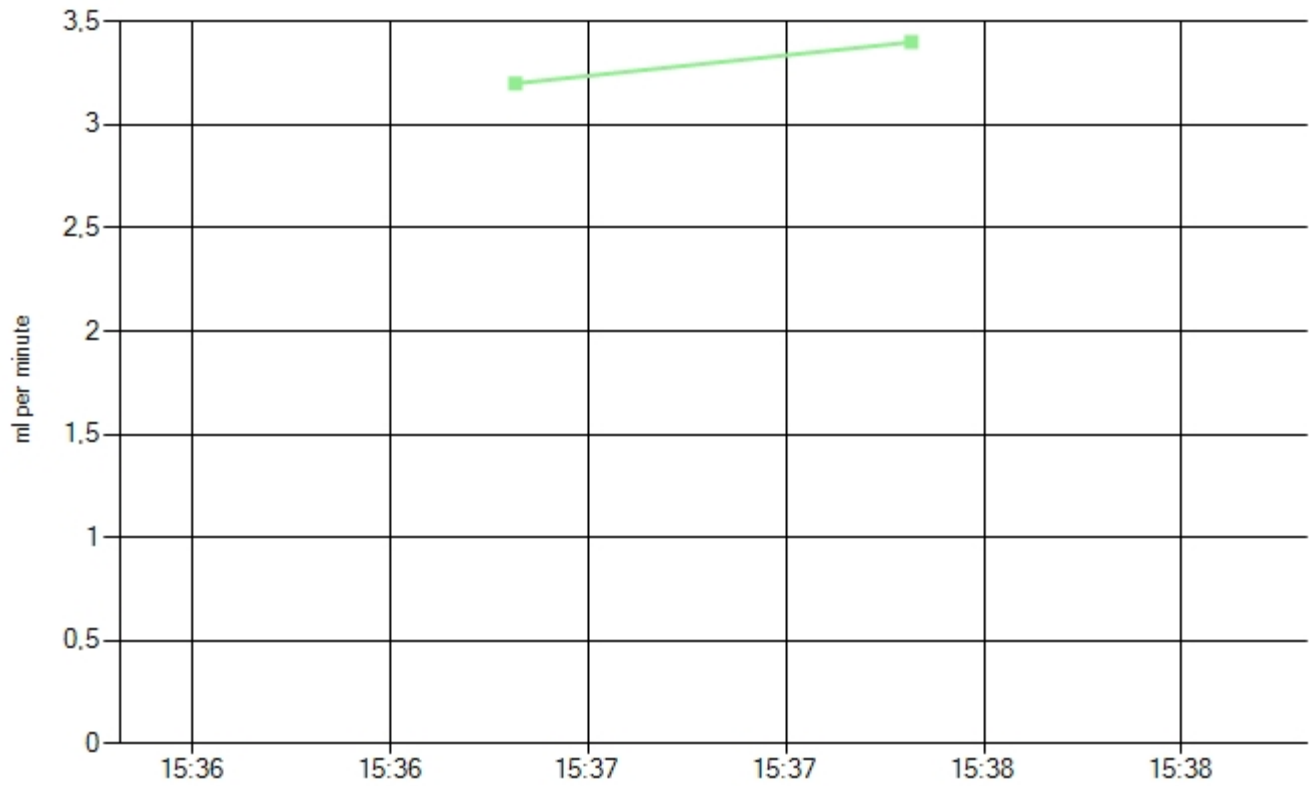
Site GPS Position

	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

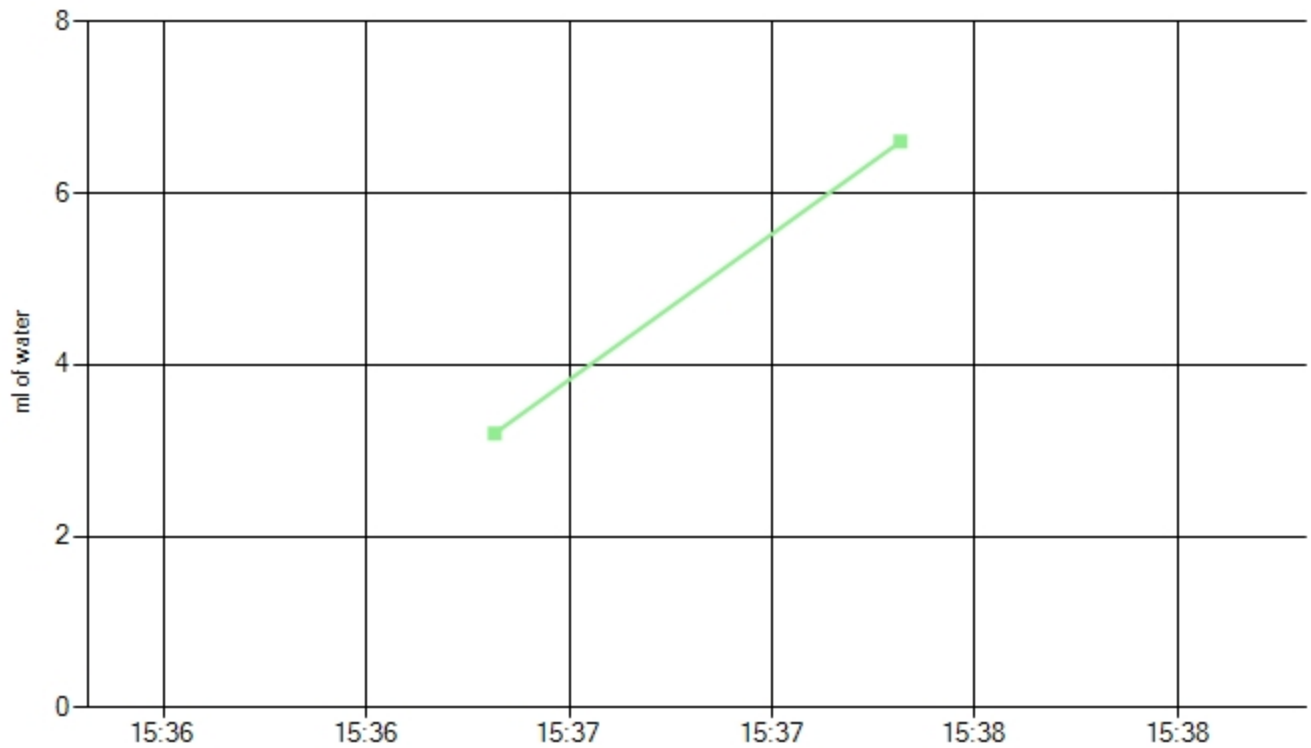


Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



<u>Time</u>	<u>Reservoir Water Level</u>	<u>Elapsed Time Interval</u>	<u>Interval Water Consumed</u>	<u>Total Water Consumed</u>	<u>Water Consumption Rate</u>	<u>Ignore Reading</u>
15:34:49	6075,2 ml					
15:35:49	6075,8 ml	1 minute				Yes
15:36:49	6072,6 ml	1 minute	3,2 ml	3,2 ml	3,200 ml/min	
15:37:49	6069,2 ml	1 minute	3,4 ml	6,6 ml	3,400 ml/min	

MEETPUNT 104





Location: 30701

Site: 104

Time interval between readings: 1 minute

Ksat Method: Glover Solution

Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than +/- 10 % for 2 consecutive readings

Steady Flow Rate: 7,700 ml/min

Temp. Adj. FR: 7,714 ml/min

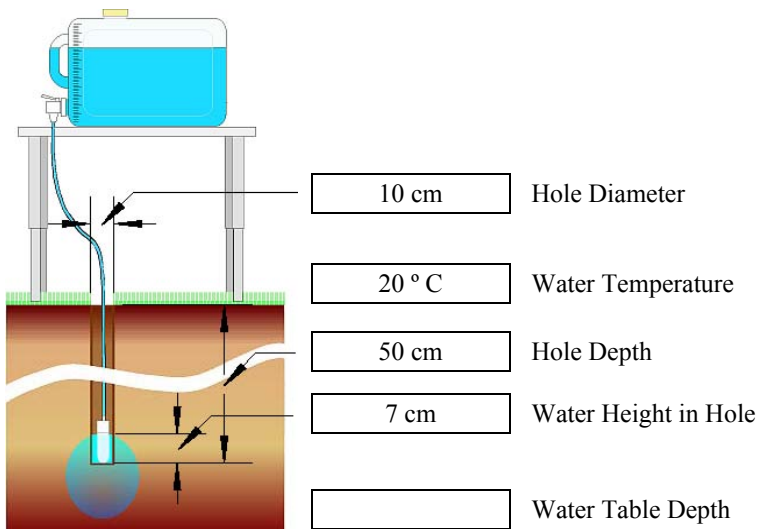
Percolation Rate: 10,182 min/cm

Ksat: 0,22 Meters / day

Notes:

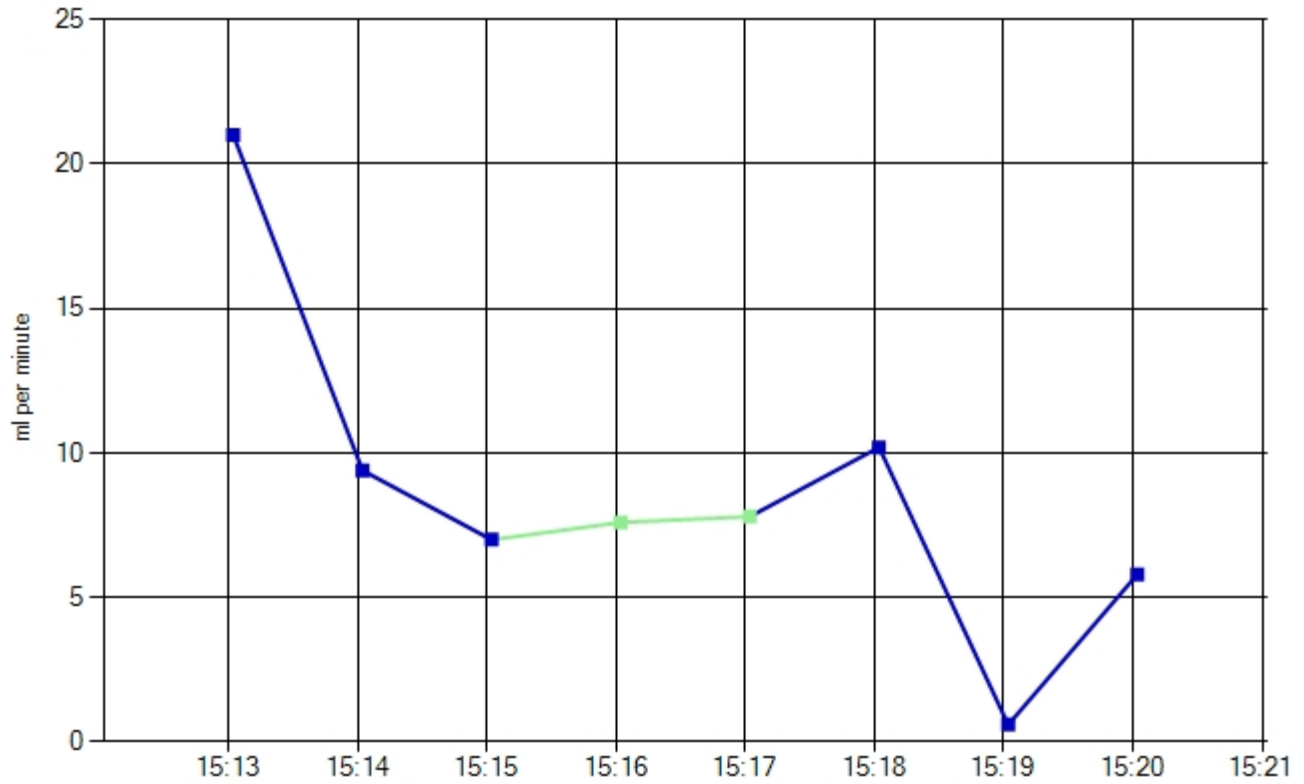
Site GPS Position

	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

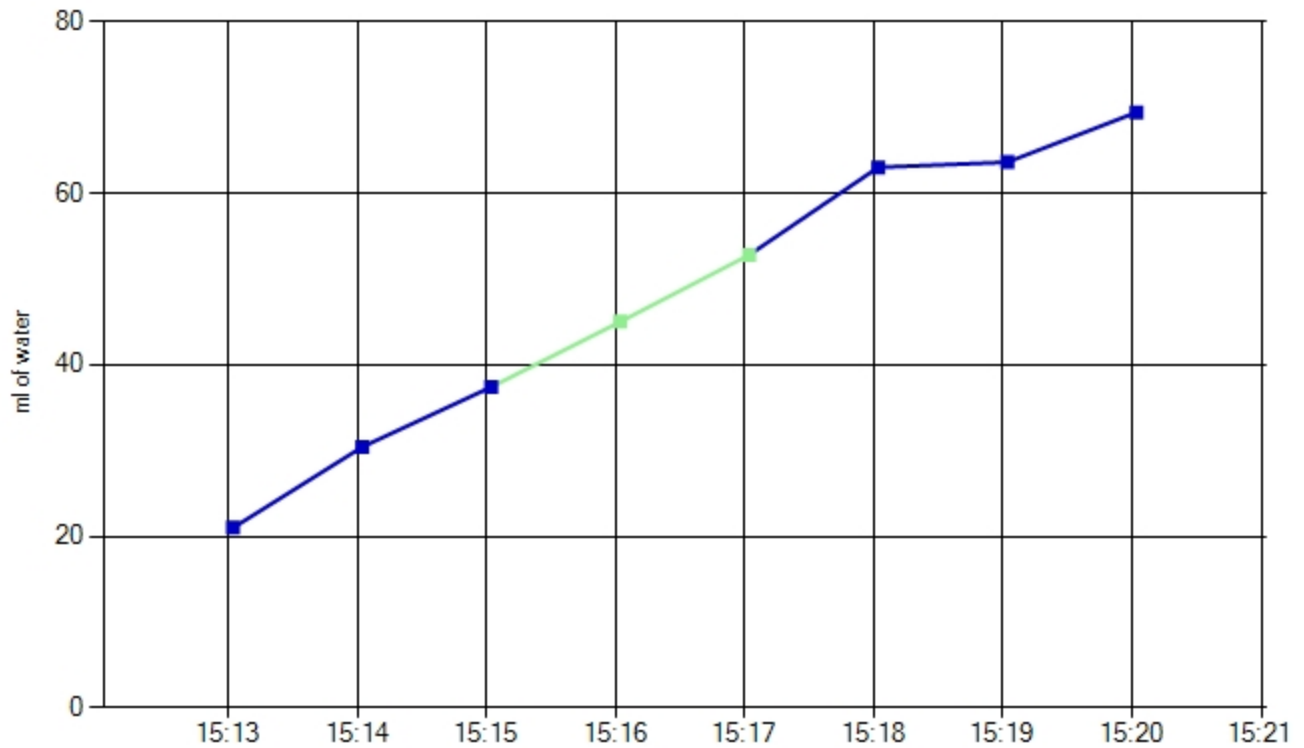


Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



<u>Time</u>	<u>Reservoir Water Level</u>	<u>Elapsed Time Interval</u>	<u>Interval Water Consumed</u>	<u>Total Water Consumed</u>	<u>Water Consumption Rate</u>	<u>Ignore Reading</u>
15:12:02	6545,2 ml					
15:13:02	6524,2 ml	1 minute	21,0 ml	21,0 ml	21,000 ml/min	
15:14:02	6514,8 ml	1 minute	9,4 ml	30,4 ml	9,400 ml/min	
15:15:02	6507,8 ml	1 minute	7,0 ml	37,4 ml	7,000 ml/min	
15:16:02	6500,2 ml	1 minute	7,6 ml	45,0 ml	7,600 ml/min	
15:17:02	6492,4 ml	1 minute	7,8 ml	52,8 ml	7,800 ml/min	
15:18:02	6482,2 ml	1 minute	10,2 ml	63,0 ml	10,200 ml/min	
15:19:02	6481,6 ml	1 minute	,6 ml	63,6 ml	,600 ml/min	
15:20:02	6475,8 ml	1 minute	5,8 ml	69,4 ml	5,800 ml/min	



Location: 30701

Site: 104

Time interval between readings: 1 minute

Ksat Method: Glover Solution

Steady Flow Rate Condition

Steady Flow Rate achieved when Water Consumption Rate changes less than +/- 17 % for 2 consecutive readings

Steady Flow Rate: 6,520 ml/min

Temp. Adj. FR: 6,532 ml/min

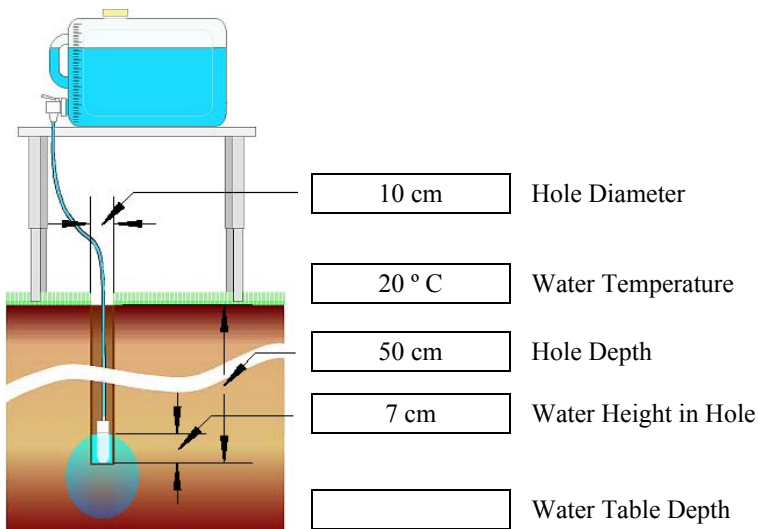
Percolation Rate: 12,025 min/cm

Ksat: 0,19 Meters / day

Notes:

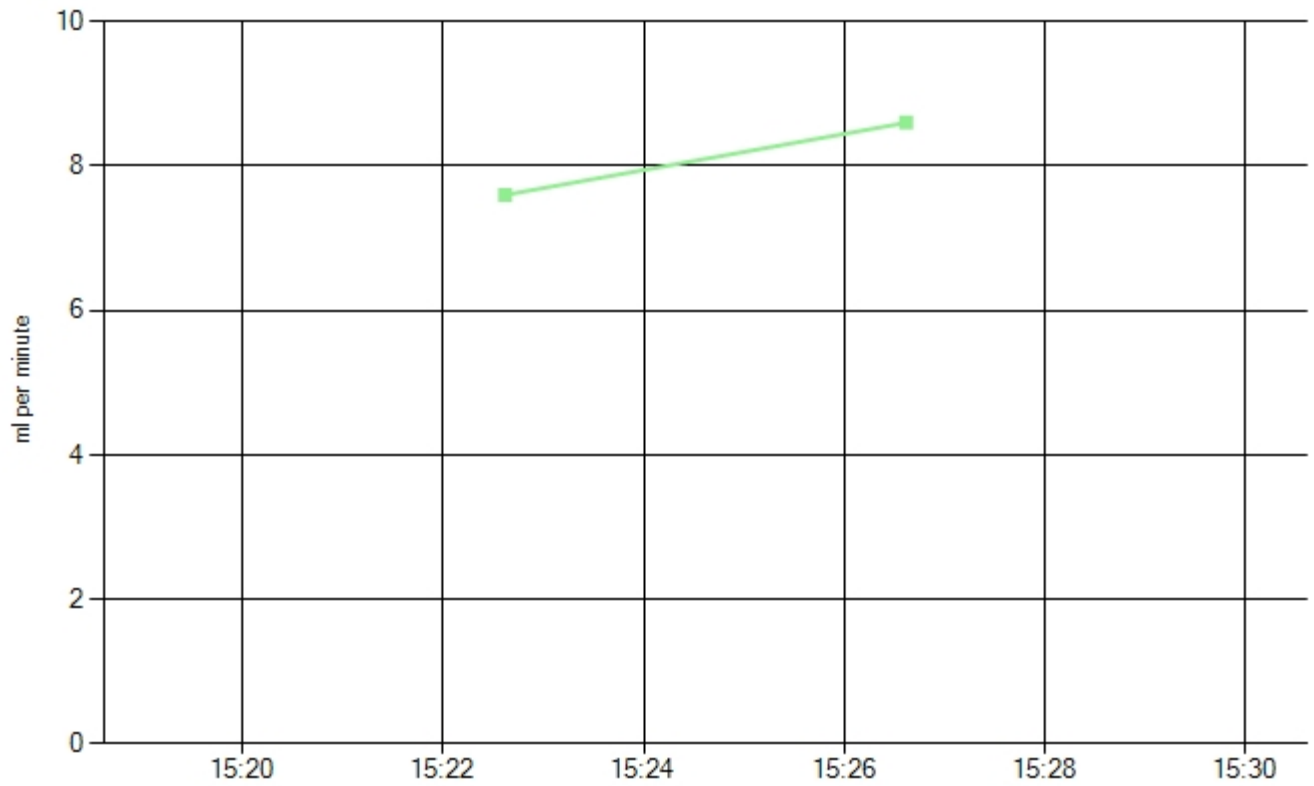
Site GPS Position

	Degrees	Minutes	Seconds	
Longitude:	0	0	0	East
Latitude:	0	0	0	North

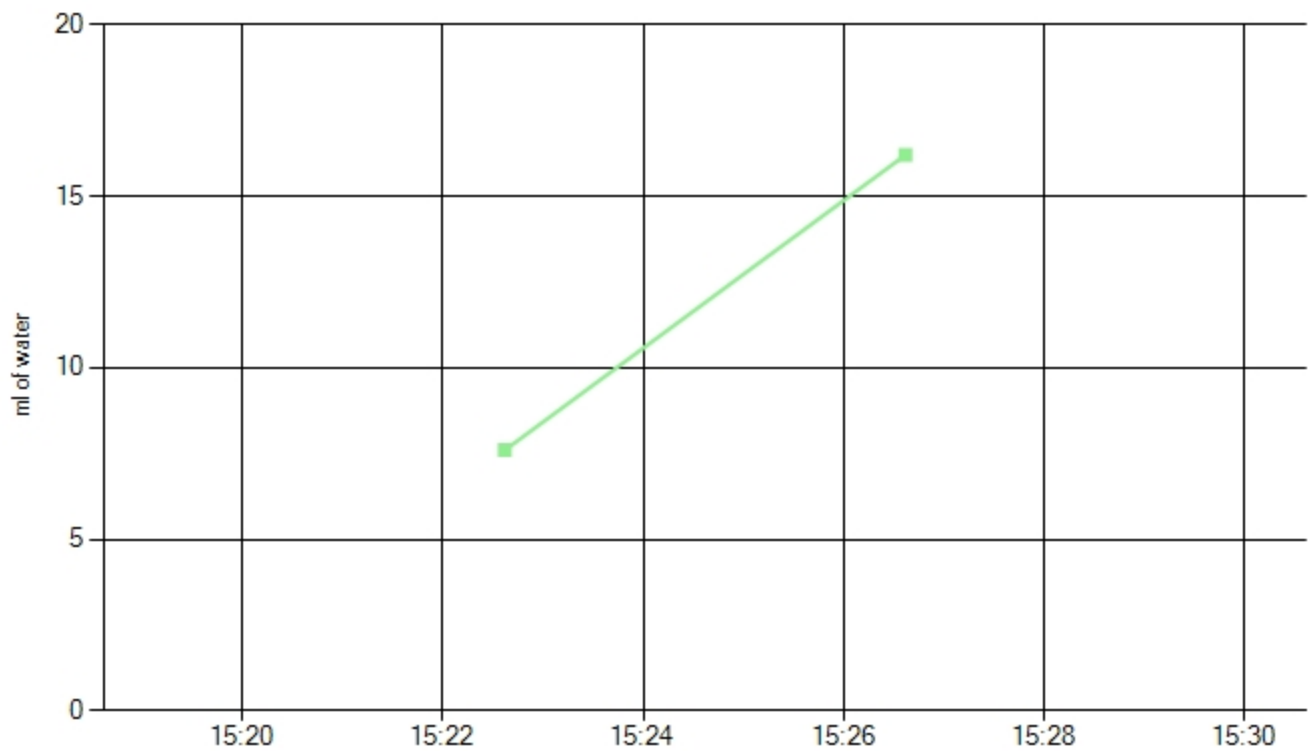


Soil Texture-Structure Category:

Water Consumption Rate



Total Water Consumed



<u>Time</u>	<u>Reservoir Water Level</u>	<u>Elapsed Time Interval</u>	<u>Interval Water Consumed</u>	<u>Total Water Consumed</u>	<u>Water Consumption Rate</u>	<u>Ignore Reading</u>
15:21:37	6477,4 ml					
15:22:37	6469,8 ml	1 minute	7,6 ml	7,6 ml	7,600 ml/min	
15:23:37	6463,4 ml	1 minute				Yes
15:24:37	6458,8 ml	1 minute				Yes
15:25:37	6453,4 ml	1 minute				Yes
15:26:37	6444,8 ml	1 minute	8,6 ml	16,2 ml	8,600 ml/min	

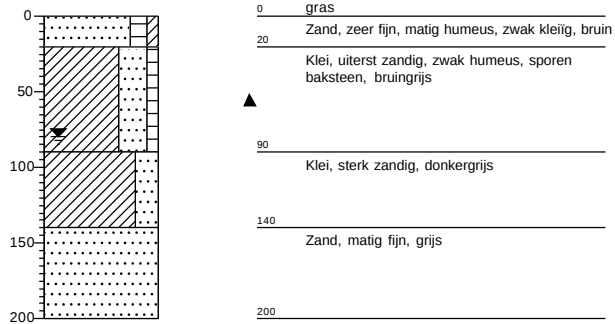
BOORPROFIELEN



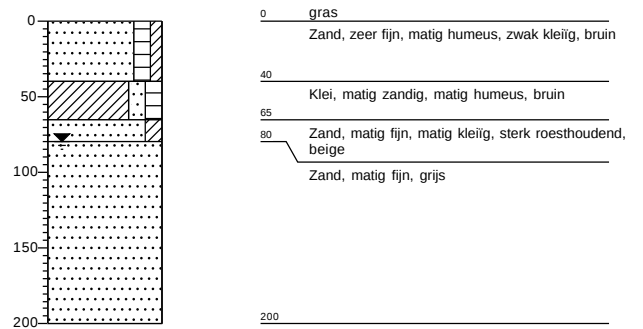
BIJLAGE III



Boring 102



Boring 103



Boring 104

