

Appendix 7-1 – Factual Report, Site Investigation 2020-2021



Bord na Móna
Drehid Waste Management Facility

Site Investigation
for Proposed
Landfill Extension

October 2022

CDM
Smith

Document Control Sheet

Client	Bord na Móna			
Project	Drehid Waste Management Facility, Timahoe, Co. Kildare			
Project No:	263228			
Report	Factual Report for Site Investigation at Drehid Waste Management Facility			
Document Reference:	263228/40/DG/11			
Version	Author	Checked	Reviewed	Date
1	C. Fitzgerald	R. O'Carroll	H. Moe	12 October 2022

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Section 1 Introduction

CDM Smith Ireland Limited (CDM Smith) was engaged by Bord na Móna (BnM) to lead an expanded site investigation (SI) for the proposed Landfill Expansion Area (LEA) south of the existing Drehid waste management facility (WMF) at Timahoe, Co. Kildare, Ireland. The SI included ground investigations (GI) and enhanced groundwater and surface water monitoring across Timahoe South Bog (TSB), mainly. The SI works (which included enhanced monitoring) were conducted between 13 July 2021 and 22 June 2022.

1.1 Purpose and Scope

The purpose of the SI works was to address the key technical points that were cited by An Bord Pleanála (ABP) in their November 2020 rejection of planning permission to add non-hazardous and hazardous landfill cells to the existing Drehid WMF. The points of refusal were:

- The planned development would, in combination with other projects in the area, contribute to the degradation of the Timahoe Bog, resulting in an excess of ammonia and suspended solids in the Cushaling and Figile Rivers, with a consequent impact in preventing these rivers to develop into a suitable habitat for salmonid species.
- Past hydrological and hydrogeological investigations presented in the previous EIAR of 2017 were insufficient to conclude that the proposed development will not give rise to significant negative impacts on groundwater and surface water receptors.
- The information presented in the previous EIAR of 2017 was insufficient to demonstrate that the subsurface geology of the site is suitable for the proposed hazardous waste cell, referring to the site's high groundwater levels and uncertainty with regards to subsurface conditions.

Although the updated, current planning application does not include hazardous waste cells, each point of rejection guided the scope of the SI works.

1.2 Ground Investigations

The GI comprised:

1. Drilling of boreholes within and near the LEA to characterise subsoils and bedrock, and to check the nature of subsurface anomalies which had been identified from a surface geophysical survey programme in 2016 (Apex 2016).
2. Converting boreholes into new, temporary and permanent monitoring wells for hydraulic testing, groundwater level and groundwater quality monitoring purposes, in three hydrogeological units: peat, Quaternary sediments, and bedrock.
3. Replacing a subset of existing monitoring wells with new ones, such that separate and representative samples from each of the main hydrogeological units could be obtained.

Details of the GI are provided in Section 2.

1.3 Monitoring

Monitoring activity comprised:

- Deploying pressure transducers in select monitoring wells and surface water locations, notably in the Borrow Pit, several artificial drains within and streams leaving Timahoe Bog, including Cushaling River.
- Taking routine manual groundwater level measurements ('dips') across Timahoe Bog.
- Sampling monitoring wells and surface water for water quality characterisation purposes.

Details are provided in Section 3.

1.4 Roles and Responsibilities

Several entities were involved or engaged in the SI works, as summarised in Table 1.

Table 1 Summary of Contributions

Role	Entity	Comment
GI Contractor	Causeway Geotechnical Ltd.	-
GI & SI Supervisor	CDM Smith	-
Geotechnical Laboratory (i)	Causeway Geotechnical Ltd.	Moisture content and PSD
Geotechnical Laboratory (ii)	Pro Soils Ltd.	Permeability in a triaxial cell
Environmental Laboratory	Eurofins Chemtest Ltd.	pH and Fraction Organic Carbon
Borehole Survey	Causeway Geotechnical Ltd.	-
Monitoring Well Survey	Landmark Engineering	-
Groundwater Monitoring	Marron Environmental	Water chemistry and gauging
Surface Water Monitoring	Marron Environmental	Water chemistry and flow measurements
Transducer Deployment	CDM Smith	Surface water and groundwater
Monitoring Well Development	CDM Smith	-
Falling/Rising-Head Testing	CDM Smith	-

Section 2 Ground Investigations

2.1 Drilling of Boreholes and Testing of Subsurface Materials

2.1.1 Summary

A total of 54 boreholes were drilled, as follows:

- 24 boreholes in (20 no.) and near (4 no.) the LEA, along two transects oriented roughly NW-SE and NE-SW, following existing access tracks.
- 30 boreholes in other parts of Timahoe Bog, which included boreholes to/in bedrock to verify the nature of surface geophysical signals highlighted by Apex (2016), including N-S trending low-resistivity features in the LEA and northwest of the Borrow Pit.

A map of the boreholes drilled by CDM Smith is provided in **Appendix A** and a summary of these boreholes is provided in **Appendix B**. The boreholes were drilled with a Beretta T44 air rotary drill rig or an Eijkelkamp Fraste XL Duo sonic drill rig. The air rotary method was applied where coring of subsoils and/or bedrock was not required. The sonic method was applied where cores and sampling for triaxial vertical permeability testing were required.

Drilled diameters are presented in Table 2.

Table 2 Drilled Diameters

Drilling Method	Diameter in Subsoils (mm)	Diameter in Bedrock (mm)	Rotary Coring in Bedrock (mm)
Air Rotary	127	127	146
Sonic	177	146	n/a

All samples and cores were geologically logged and photographed. CDM Smith logged 39 boreholes on site. Thirty cores were transported to the offices of Causeway Geotechnical Ltd. (CGL) in Ballymoney, Co. Antrim or Balbriggan, Co. Dublin. CGL logged 15 cored holes at their offices. CDM Smith inspected all cores and spot-checked the logging by CGL. The resulting logs are presented in **Appendix C**.

22 no. of subsoil samples from 18 no. boreholes were sent for laboratory analysis of moisture content, particle size distribution (PSD) through wet sieving and hydrometer, bulk and dry density, pH, and fraction of organic carbon (FOC).

17 no. samples from 11 no. boreholes were also collected for triaxial vertical permeability testing, bulk and dry density, and moisture content of clay/silt units.

Drilling and logging procedures were in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997- 2:2007) and BS 5930:2015.

Laboratory testing was performed in UKAS accredited laboratories. The results are attached in **Appendix D**, with corresponding Peg IDs indicated in **Appendix B**. A Peg ID is a preliminary ID used to identify the location and purpose of boreholes before being drilled, most Peg IDs were converted to borehole/monitoring well IDs after drilling/installation.

One borehole, WLPC01, was specifically drilled to the northwest of the Borrow Pit near the western margin of the landholding to verify the nature of an apparent north-south trending geophysical (low-resistivity) anomaly identified by Apex (2016).

2.1.2 Difficulties Encountered

Extensive core loss was experienced in subsoils in borehole LFTBH01.

One borehole was redrilled, LFBH10, due to an obstruction downhole. Replacement borehole LFBH10A was drilled close by. LFBH10 was considered in the numbers presented above.

2.2 Installation of Monitoring Wells

2.2.1 Summary

A total of 41 no. new monitoring wells were installed at 23 no. locations, including locations within and downgradient of the LEA, and within the broader landholding, for improved spatial representation of groundwater levels and quality. This included establishing 1 no. well in bedrock in Timahoe North Bog to serve as a groundwater level reference point in the northerly direction from the WMF.

Ten (10 no.) of the 41 no. monitoring wells installed in total serve as replacements of existing wells.

In the construction of all monitoring wells, bentonite pellets were used as fill and seal material, non-carbonate pea gravel was used as filter pack in the annular space, a polyester filter geosock was used to prevent silting of slots, and unplasticized PVC pipe was used for the plain and slotted sections of well casing (HDPE was used in shallow peat standpipes). Bentonite pellets were sourced from Tolsa UK, Scunthorpe, UK. Pea gravel was sourced from Kelly Sand and Gravel, Bendooragh, Ballymoney, Co. Antrim.

2.2.2 Difficulties Encountered

MW01B was damaged in the period between 22nd February and 12th April 2022, it was further damaged and buried between 12th April and 22nd June 2022. The hole was found on 27th June 2022 and subsequently repaired. The pressure transducer, which was deployed in the well, has not been retrieved.

2.3 Surveying

All boreholes were surveyed upon completion with easting/northing (Irish Transverse Mercator - ITM) and ground level elevation (to metres above Ordnance Datum, Malin Head – m OD).

Monitoring wells were also surveyed for headworks and top of casing elevations, for the highest point of the lip of the casing. Survey information is presented in **Appendix B**.

2.4 Well Development

Well development was undertaken by CDM Smith by purging (inertial pumping) until groundwater was clear of suspended solids or cleared as much as practical. Across the majority of wells, at least 10 well volumes were purged and 14 well volumes were purged on average from each well. Monitoring wells which purged dry had at least three well volumes removed.

2.5 Hydraulic Testing

Falling and rising head tests (FHT/RHT) were carried out by CDM Smith in 15 Quaternary sediments and 6 bedrock wells, specifically to estimate the hydraulic conductivity of the response zone in each well.

A Waterra SLG-50 36mm diameter 3-part calibrated slug was added and subsequently removed from wells to cause a sudden water level change, and the water level response was measured with a pressure transducer and dip meter. An FHT measures the falling water level response after the slug has been added and an RHT measures the rising water level response once the slug has been removed.

The data were subsequently analysed by CDM smith using the AQTESOLV software. A total of 70 repeat RHT/FHT were analysed. A summary of the monitoring wells tested is presented in **Appendix B** and the plotted results are included in **Appendix E**.

Section 3 Monitoring

3.1 Groundwater Quality

Groundwater sampling by Marron Environmental in existing and new monitoring wells followed the schedule shown in Table 3.

Table 3 Groundwater Sampling Frequencies by Parameter

Parameter	Annual	Quarterly	Monthly	Note
pH	X	X	X	Field parameter
Temperature	X	X	X	Field parameter
Conductivity	X	X	X	Field parameter
Dissolved Oxygen	X	X	X	Field parameter
Redox Potential	X	X	X	Field parameter
pH	X	X	X	-
Conductivity	X	X	X	-
Chloride	X	X	X	-
Ammonia as NH ₃ -N	X	X	X	-
Ammonia as NH ₄	X	X	X	-
Sulphate	X	-	-	-
Nitrate as NO ₃	X	X	X	-
Total Oxidised Nitrogen	X	X	X	-
Orthophosphate	X	X	X	-
Total Phosphorus	X	X	X	-
Calcium-dissolved/filtered	X	-	-	-
Magnesium-dissolved/filtered	X	-	-	-
Potassium-dissolved/filtered	X	-	-	-
Sodium-dissolved/filtered	X	-	-	-
Iron-dissolved/filtered	X	-	-	-
Boron -dissolved/filtered	X	-	-	-
Arsenic-dissolved/filtered	X	-	-	-
Barium-dissolved/filtered	X	-	-	-
Cadmium-dissolved/filtered	X	-	-	-
Cobalt-dissolved/filtered	X	-	-	-
Chromium-dissolved/filtered	X	-	-	-
Copper-dissolved/filtered	X	-	-	-
Mercury-dissolved/filtered	X	-	-	-
Manganese-dissolved/filtered	X	-	-	-
Beryllium-dissolved/filtered	X	-	-	-
Nickel-dissolved/filtered	X	-	-	-
Lead-dissolved/filtered	X	-	-	-
Antimony-dissolved/filtered	X	-	-	-
Selenium-dissolved/filtered	X	-	-	-
Silver-dissolved/filtered	X	-	-	-
Aluminium-dissolved/filtered	X	-	-	-

Parameter	Annual	Quarterly	Monthly	Note
Tin-dissolved/filtered	X	-	-	-
Zinc-dissolved/filtered	X	-	-	-
PAHs				
VOCs	X	-	-	-
Alcohols/Acetates	X	-	-	-
Acetonitrile	X	-	-	-
Coliforms	X	-	-	-

The sampling was specifically carried out in:

- 32 new monitoring wells
- 4 existing wells where regular sampling had ceased
- 19 existing compliance monitoring wells

Details of which wells were sampled and their associated hydrogeological units are presented in Table 4. The laboratory data for groundwater are available through BnM. A map of the wells monitored is provided in **Appendix A**.

Table 4 Groundwater Monitoring Locations

ID	Peg ID	New/ Existing	Hydrogeological Unit	Sampling Frequency	Transducer Deployment	Comment
MW02P	WLMW02P	New	Peat	Monthly		-
MW02Q	WLMW02Q	New	Quaternary	Quarterly/Annual	X	-
MW02B	WLMW02W	New	Bedrock	Quarterly/Annual		-
MW03P	WLMW03P	New	Peat	Monthly		-
MW03Q	WLMW03Q	New	Quaternary	Quarterly/Annual	X	-
MW03B	WLMW03W	New	Bedrock	Quarterly/Annual	X	-
MW04P	WLMW04P	New	Peat	Monthly		-
MW04Q	WLMW04Q	New	Quaternary	Quarterly/Annual		Suspended ¹
MW04B	WLMW04W	New	Bedrock	Quarterly/Annual		Suspended ¹
MW05P	WLMW05P	New	Peat	Monthly		-
MW05Q	WLMW05Q	New	Quaternary	Quarterly/Annual	X	Suspended ¹
MW05B	WLMW05W	New	Bedrock	Quarterly/Annual	X	Suspended ¹
MW06P	WLMW06P	New	Peat	Monthly		-
MW06Q	WLMW06Q	New	Quaternary	Quarterly/Annual		-
MW06B	WLMW06W	New	Bedrock	Quarterly/Annual		-
MW07P	WLMW07P	New	Peat	Monthly		-
MW07Q	WLMW07Q	New	Quaternary	Quarterly/Annual		-
MW07B	WLMW07W	New	Bedrock	Quarterly/Annual		-
LW01	LFMW01	New	Quaternary	Quarterly/Annual		-
LW02S	LFMW02B	New	Quaternary	Quarterly/Annual	X	Suspended ¹
LW02D	LFMW02	New	Quaternary	Quarterly/Annual	X	-
RW02P	RWGW02S	New	Peat	Monthly		-

ID	Peg ID	New/ Existing	Hydrogeological Unit	Sampling Frequency	Transducer Deployment	Comment
RW02S	RWGW02D	New	Quaternary	Quarterly/Annual	X	-
RW03P	RWGW03S	New	Peat	Monthly		-
RW03S	RWGW03D	New	Quaternary	Quarterly/Annual	X	-
RW04P	RWGW04S	New	Peat	Monthly		-
RW04S	RWGW04D	New	Quaternary	Quarterly/Annual		-
RW09A	RWGW09S	New	Quaternary	Quarterly/Annual	X	-
RW09B	RWGW09D	New	Quaternary	Quarterly/Annual	X	-
RW10P	RWGW10S	New	Peat	Monthly		-
RW10S	RWGW10D	New	Quaternary	Quarterly/Annual	X	-
LFBH05	LFBH05	New	Quaternary	Quarterly/Annual		-
R8	-	Existing	Bedrock	Quarterly/Annual		-
R9	-	Existing	Quaternary	Quarterly/Annual		-
R10	-	Existing	Quaternary	Quarterly/Annual		-
R11	-	Existing	Bedrock	Quarterly/Annual		-
GW1S	-	Existing	Quaternary	Quarterly/Annual		Compliance ²
GW1D	-	Existing	Bedrock	Quarterly/Annual		Compliance ²
GW2S	-	Existing	Peat & Quat	Quarterly/Annual		Compliance ²
GW2D	-	Existing	Bedrock	Quarterly/Annual	X	Compliance ²
GW3S	-	Existing	Peat & Quat	Quarterly/Annual		Compliance ²
GW3AD	-	Existing	Bedrock	Quarterly/Annual		Compliance ²
GW4S	-	Existing	Quaternary	Quarterly/Annual		Compliance ²
GW4D	-	Existing	Bedrock	Quarterly/Annual	X	Compliance ²
GW5AS	-	Existing	Quaternary	Quarterly/Annual	X	Compliance ²
GW5AD	-	Existing	Bedrock	Quarterly/Annual	X	Compliance ²
GW6	-	Existing	Bedrock	Quarterly/Annual		Compliance ²
GW9	-	Existing	Unknown	Quarterly/Annual		Compliance ²
GW10	-	Existing	Unknown	Quarterly/Annual		Compliance ²
GW11S	-	Existing	Quaternary	Quarterly/Annual		Compliance ²
GW11D	-	Existing	Bedrock	Quarterly/Annual		Compliance ²
GW12S	-	Existing	Quaternary	Quarterly/Annual		Compliance ²
GW12D	-	Existing	Bedrock	Quarterly/Annual		Compliance ²
GW13S	-	Existing	Quaternary	Quarterly/Annual		Compliance ²
GW13D	-	Existing	Bedrock	Quarterly/Annual		Compliance ²

¹ Samples taken during one monitoring round but sampling was then suspended.

² Monitoring well also included in site compliance monitoring.

3.2 Groundwater Level

Monitoring wells were routinely manually measured, mostly on a biweekly or monthly basis between 6 September 2021 and 28 July 2022. Pressure transducers (Rugged TROLL 100) were also employed by CDM Smith in both Quaternary (10 no.) and bedrock (4 no.) wells on a rolling basis over the monitoring period, whereby loggers were moved between wells in order to build up a view of how different wells in both hydrogeological units responded to climatic conditions and events. This included paired wells at the same location but with response zones in different

hydrogeological units. Water level and temperature measurements were recorded by the pressure transducers every 15 minutes and were corrected with a barometric pressure transducer (Rugged Baro TROLL).

The groundwater level transducer data are presented in **Appendix F**.

3.3 Surface Water Quality

Surface water samples taken by Marron Environmental were analysed for the parameters listed in Table 5 at the locations and frequencies presented in Table 6, between 25 August 2021 to 26 April 2022.

Table 5 Parameters Analysed in Surface Water Samples

Existing Weekly	Existing Monthly	New Monthly
Conductivity	COD	Orthophosphate
Chloride	BOD	Total Phosphorous
Suspended Solids	-	Nitrate as NO3
Ammonia (NH3 as N)	-	Total Oxidised Nitrogen
Ammonia (as NH4)	-	-

The details of surface water stations are presented in Table 6. A map of the surface water stations monitored is provided in **Appendix A**.

Table 6 Surface Water Monitoring Stations

ID	Water Body	Easting (ITM)	Northing (ITM)	Flows	Transducer Data	Sampling Frequency	Comment
SW4	Cushaling River	671498.74	731249.57	-	-	Weekly/ Monthly	Compliance ¹
SW5	Outfall of old BnM settlement ponds	674010.97	730832.46	-	-	Weekly/ Monthly	Compliance ¹
SW6	Outflow of ICW	674373.34	731534.74	-	-	Weekly/ Monthly	Compliance ¹
SW7	Inflow of ICW	674350.72	731757.92	-	-	Weekly/ Monthly	-
RS01	Mulgeeth	677294.17	734028.84	X	X	Weekly/ Monthly	-
RS02	Cushaling River	673506.14	730828.93	X	X	Weekly/ Monthly	-
RS03	Drainage network (Timahoe South Bog)	675184.05	730244.41	-	-	Weekly/ Monthly	Suspended ²
RS04	Abbeylough	671821.37	729214.29	X	X	Weekly/ Monthly	-
RS05	Drainage network (Timahoe South Bog)	674358.85	728999.73	-	-	Weekly/ Monthly	-
RS06	Drainage network (Timahoe South Bog)	675021.30	729529.23	-	-	Weekly/ Monthly	-
RS07	Upper Ballynakill	676949.67	728112.44	-	-	Weekly/ Monthly	Suspended ³
RS08	Allenwood north	675653.96	728080.55	-	-	Weekly/ Monthly	Suspended ³

ID	Water Body	Easting (ITM)	Northing (ITM)	Flows	Transducer Data	Sampling Frequency	Comment
						Monthly	
RS09	Drainage network (Timahoe South Bog)	674482.80	730497.82	-	-	Weekly/ Monthly	Added ²
RS10	Drainage network (Timahoe South Bog)	673605.95	730053.25	-	-	Weekly/ Monthly	Added ²

¹ Monitoring station also included in site compliance monitoring.

² RS03 was sampled until November 2021, across which period the drainage channel remained stagnant. The monitoring station was then discontinued and replaced with RS09 and RS10.

³ Sampling was discontinued in October 2021 as no suitable monitoring point could be maintained.

3.4 Surface Water Level

Pressure transducers (Rugged TROLL 100) were installed by CDM Smith at three surface water monitoring stations for continuous recording of depth of water between 13 August 2021 to 22 June 2022. Water level and temperature measurements were recorded by the pressure transducers every 15 minutes. These are identified in Table 6 and related data are presented graphically in **Appendix G**.

The transducer deployments were supplemented by periodic flow measurements with a flow meter () at the same stations. Flow meter measurements involve setting up a transect across the breadth of a stream using a tape measure. The depth of the water column and water velocity are recorded at pre-determined intervals to produce the volume output. The number of intervals required to produce an accurate output is based on the width of the stream. The number of velocity readings taken at each interval depends on the depth of the stream and optimised to reduce the margin of error. The flow estimates are presented in Table 7.

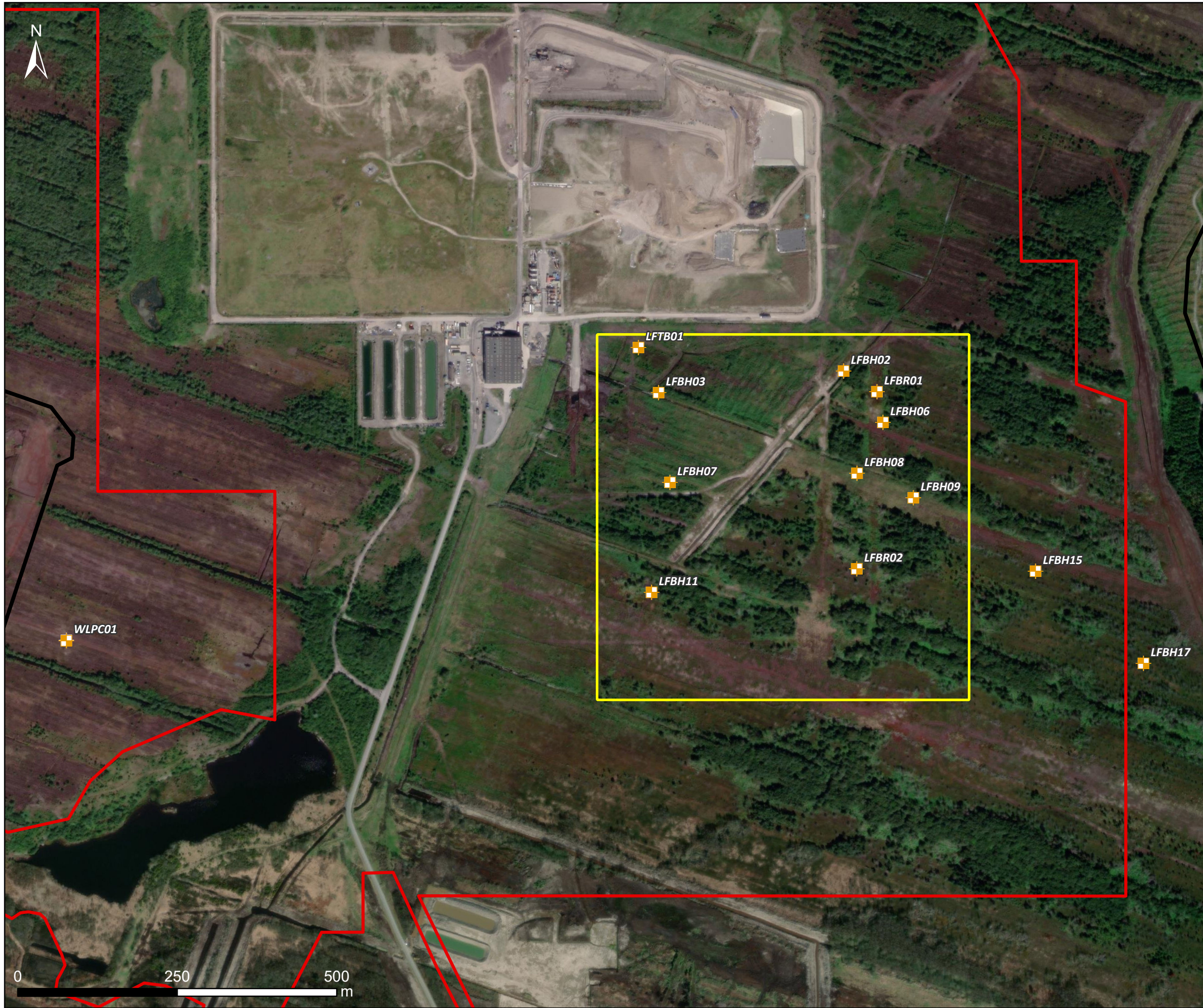
Table 7 Flow Measurements





ID	Date	Mean Depth (m)	Flow (m ³ /s)	Flow (l/s)
RS01	08/10/2021	0.131	0.010	10.0
RS02	08/10/2021	0.193	0.017	17.0
RS04	08/10/2021	0.193	0.011	11.0
RS01	02/11/2021	0.576	0.094	94.0
RS02	02/11/2021	0.475	0.068	68.0
RS04	02/11/2021	0.334	0.097	97.0
RS01	30/11/2021	0.173	0.013	13.0
RS02	30/11/2021	0.191	0.014	14.0
RS04	30/11/2021	0.180	0.012	12.0
RS01	20/01/2021	0.199	0.040	40.0
RS02	20/01/2021	0.272	0.064	64.0
RS04	20/01/2021	0.300	0.046	46.0
RS01	08/02/2022	0.235	0.065	65.0
RS02	08/02/2022	0.341	0.049	49.0
RS04	08/02/2022	0.361	0.082	82.0
RS01	08/03/2022	0.195	0.048	48.0
RS02	08/03/2022	0.198	0.011	11.1
RS04	08/03/2022	0.247	0.037	36.7

ID	Date	Mean Depth (m)	Flow (m ³ /s)	Flow (l/s)
RS01	05/04/2022	0.164	0.034	33.7
RS02	05/04/2022	0.214	0.004	4.1
RS04	05/04/2022	0.248	0.019	18.7

Appendix A

Borehole, Monitoring Well and Surface Water Station Maps



-  New Boreholes 2021
-  Proposed Landfill Extension Footprint
-  Ownership Boundary
-  Activity Boundary

Client:
BORD NA MÓNA
 Naturally Driven

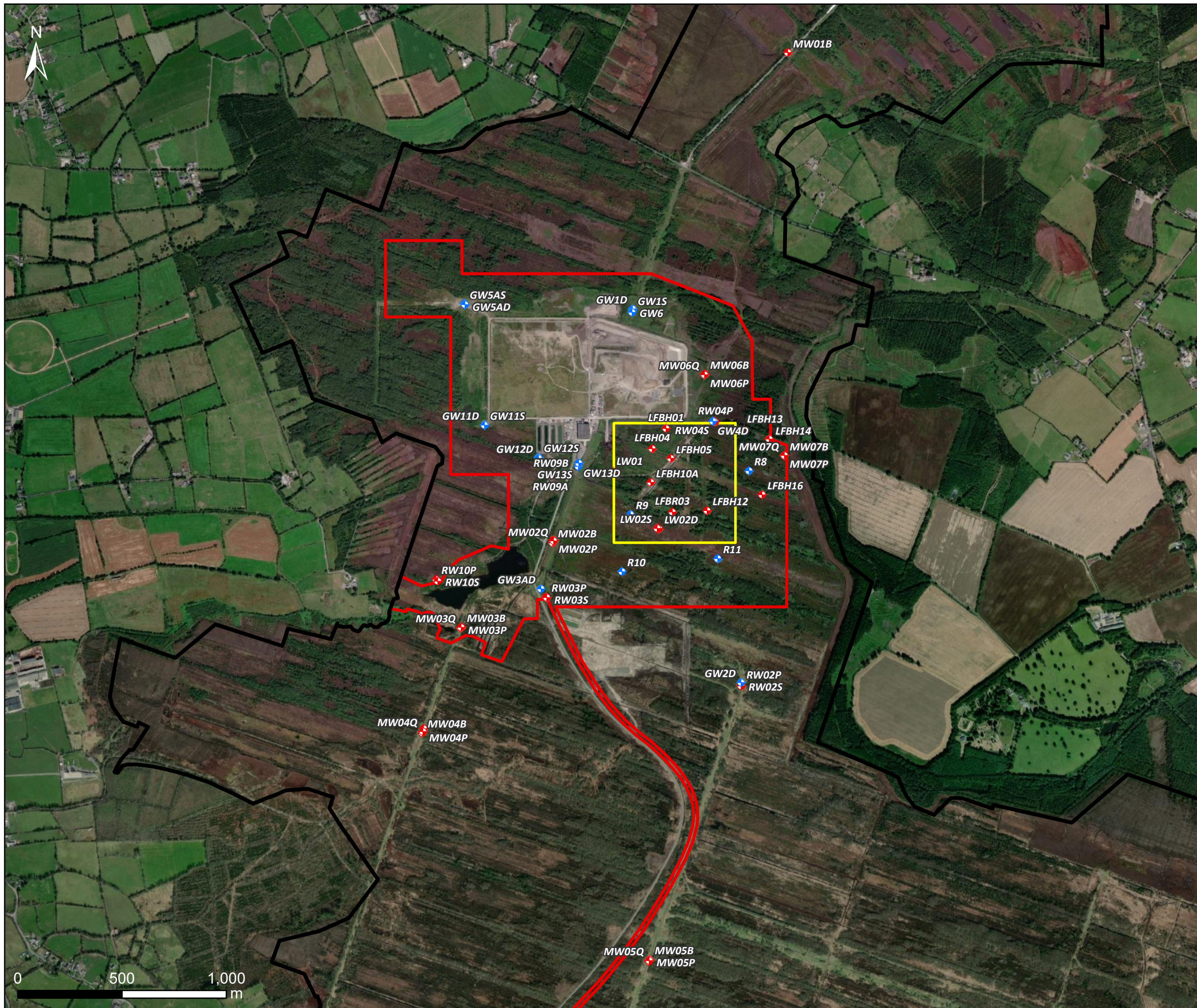
Consultant:
CDM Smith
 cdmsmith.com

Project Code: 263228

Project:
 DREHID LANDFILL

Drawing Title:
**NEW BOREHOLES
 2021**

Drawn by: BP	Approved by: CF	Date: 15/03/2023
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- Type
- ◆ Existing Monitoring Wells
 - ◆ New Monitoring Wells 2021
 - Proposed Landfill Extension Footprint
 - Ownership Boundary
 - Activity Boundary

Client:
BORD NA MÓNA
 Naturally Driven

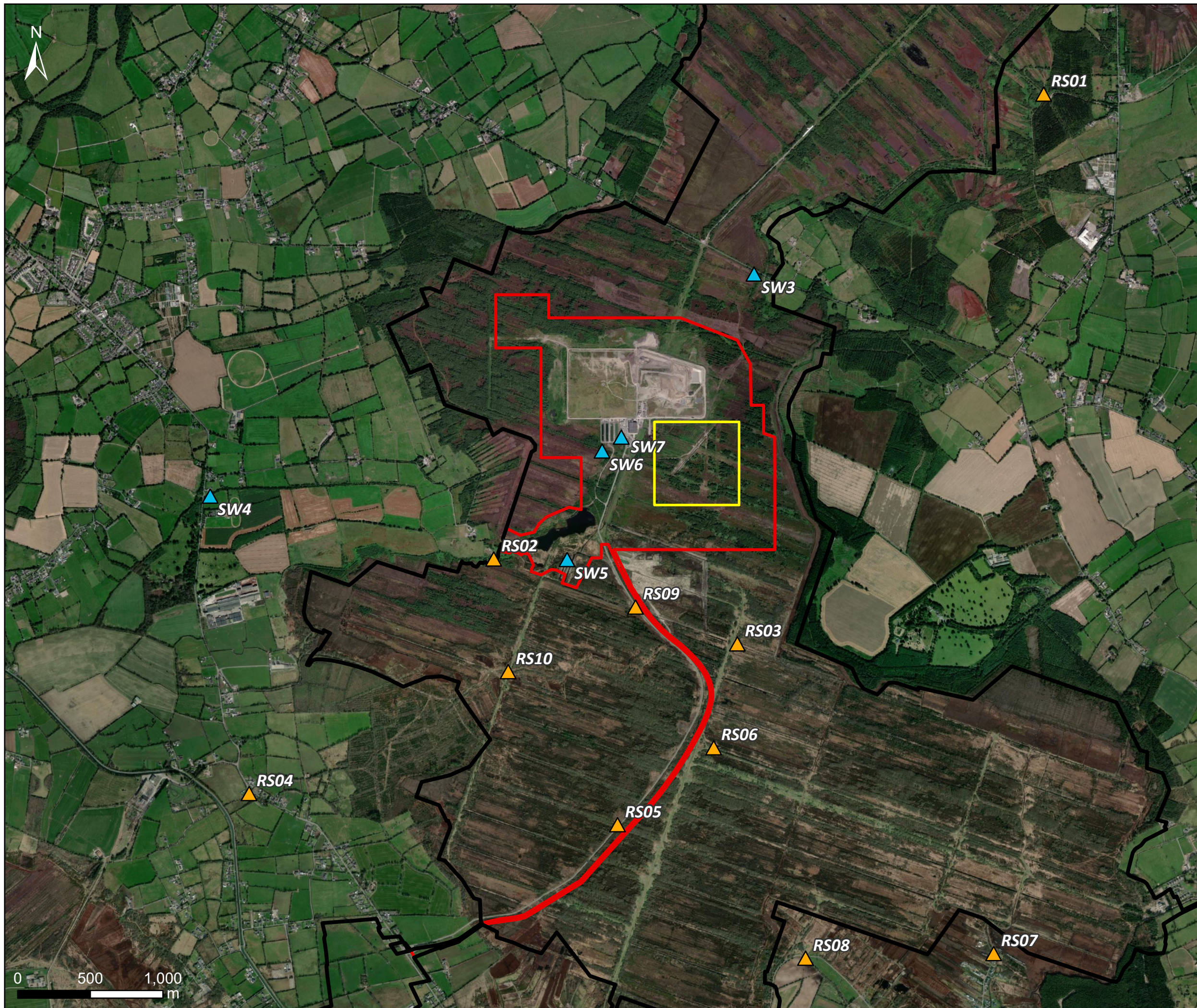
Consultant:
CDM Smith
 cdmsmith.com

Project Code:
 263228

Project:
 DREHID LANDFILL

Drawing Title:
SITE MONITORING WELLS

Drawn by: BP	Approved by: CF	Date: 15/03/2023
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- ▲ New Surface Water Station
- ▲ Existing Surface Water Station
- Proposed Landfill Extension Footprint
- Ownership Boundary
- Activity Boundary

Client:

BORD NA MÓNA
Naturally Driven

Consultant:

**CDM
Smith**
cdmsmith.com

Project Code:

263228

Project:

DREHID LANDFILL

Drawing Title:

**SURFACE WATER
STATIONS**

Drawn by:

BP

Approved by:

CF

Date:

15/03/2023

Appendix B

Ground Investigation Locations

Borehole ID	Monitoring Well ID	Peg ID	Easting (ITM)	Northing (ITM)	Ground Level (m OD)	Drilling Method	Total Depth (TD)	Geological Unit at TD	PSD Test	Triaxial Test	Elevation (m OD)	Elevation Reference Point	Well Depth (m bToC)	Hydrogeological Unit	Response Zone Top (m bToC)	Response Zone Bottom (m bToC)	FHT/RHT	Transducer Start	Transducer End	Cored	Core in Storage	Comment
LFBH01	LFBH01	LFBH01	674863.16	731746.89	83.250	Air Rotary	10.00	-	Yes	-	83.424	Plastic Pipe (ToC)	7.50	Quaternary	6.00	7.50	-	-	-	No	-	-
LFBH02	-	LFBH02	674999.32	731715.05	83.002	Air Rotary	7.00	Quaternary (Gravel)	-	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBH03	-	LFBH03	674709.35	731680.95	82.278	Air Rotary	7.00	Quaternary (Clay)	Yes	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBH04	LFBH04	LFBH04	674796.81	731650.00	83.818	Air Rotary	14.50	-	-	-	83.929	Plastic Pipe (ToC)	14.50	Quaternary	6.00	7.50	Yes	-	-	No	-	-
LFBH05	LFBH05	LFBH05	674885.47	731603.23	84.507	Air Rotary	7.00	-	-	-	84.715	Plastic Pipe (ToC)	7.00	Quaternary	5.00	7.00	Yes	-	-	No	-	-
LFBH06	-	LFBH06	675060.95	731634.31	83.961	Sonic	7.50	Quaternary (Clay)	-	-	-	-	-	-	-	-	-	-	-	Yes	-*	-
LFBH07	-	LFBH07	674727.17	731540.43	83.959	Air Rotary	8.50	Quaternary (Sand & Gravel)	-	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBH08	-	LFBH08	675020.45	731554.60	84.557	Sonic	10.00	Quaternary (Clay)	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LFBH09	-	LFBH09	675108.70	731516.64	84.510	Sonic	10.50	Quaternary (Clay)	-	Yes	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LFBH10	-	LFBH10	674791.96	731490.87	84.512	Sonic	2.30	Quaternary (Clay)	-	-	-	-	-	-	-	-	-	-	-	Yes	-*	-
LFBH10A	LFBH10A	LFBH10	674789.67	731488.17	84.736	Sonic	8.80	-	-	Yes	84.873	Plastic Pipe (ToC)	7.60	Quaternary	6.00	7.60	Yes	-	-	Yes	Yes	-
LFBH11	-	LFBH11	674698.29	731368.60	84.249	Air Rotary	6.00	Quaternary (Clay)	Yes	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBH12	LFBH12	LFBH12	675060.26	731353.28	85.782	Air Rotary	7.00	-	Yes	-	86.198	Plastic Pipe (ToC)	3.50	Quaternary	3.00	3.50	-	-	-	No	-	-
LFBH13	LFBH13	LFBH13	675238.07	731741.02	84.185	Air Rotary	7.00	-	-	-	84.341	Plastic Pipe (ToC)	3.50	Quaternary	2.00	3.50	Yes	-	-	No	-	-
LFBH14	LFBH14	LFBH14	675357.48	731697.23	85.130	Sonic	8.50	-	Yes	-	85.542	Plastic Pipe (ToC)	8.50	Quaternary	6.00	8.50	Yes	-	-	Yes	-*	-
LFBH15	-	LFBH15	675300.18	731401.22	85.282	Air Rotary	8.50	Quaternary (Clay)	-	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBH16	LFBH16	LFBH16	675323.47	731430.02	85.712	Sonic	12.40	-	-	Yes	85.832	Plastic Pipe (ToC)	12.40	Quaternary	2.60	3.00	-	-	-	Yes	Yes	-
LFBH17	-	LFBH17	675469.34	731257.12	86.119	Air Rotary	17.50	Quaternary (Clay)	Yes	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBR01	-	LFBR01	675051.57	731682.63	83.898	Sonic	18.00	Limestone Bedrock	-	Yes	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LFBR02	-	LFBR02	675020.00	731405.41	85.361	Sonic	25.70	Limestone Bedrock	-	Yes	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LFBR03	LFBR03	LFBR03	674893.24	731346.47	84.873	Sonic	21.50	-	-	Yes	85.253	Plastic Pipe (ToC)	8.40	Quaternary	6.50	8.40	-	-	-	Yes	Yes	-
LFTB01	-	LFTB01	674677.79	731752.04	83.012	Air Rotary	12.50	Limestone Bedrock	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LW01	LW01	LFMW01	674610.18	731538.91	83.379	Air Rotary	10.00	-	Yes	-	83.561	Plastic Pipe (ToC)	10.00	Quaternary	7.00	10.00	Yes	-	-	No	-	-
LW02D	LW02D	LFMW02	674829.34	731265.87	84.853	Air Rotary	13.00	-	Yes	-	84.917	Plastic Pipe (ToC)	10.60	Quaternary	8.60	10.60	Yes	12/04/2022	22/06/2022	No	-	-
LW02S	LW02S	LFMW02B	674820.57	731269.13	84.760	Air Rotary	7.00	-	-	-	84.849	Plastic Pipe (ToC)	7.00	Quaternary	5.00	6.20	Yes	12/04/2022	22/06/2022	No	-	-
MW01B	MW01B	WLMW01W	675446.45	733547.55	85.300	Sonic	25.50	-	-	-	85.719	Plastic Pipe (ToC)	25.50	Bedrock	21.50	25.50	-	19/10/2021	22/06/2022	Yes	Yes	Transducer not retrieved. Survey not completed on pipe (ToC)
MW02B	MW02B	WLMW02W	674319.35	731198.76	84.674	Sonic	37.50	-	Yes	Yes	85.119	Plastic Pipe (ToC)	37.50	Bedrock	32.50	37.50	Yes	19/10/2021	22/06/2022	Yes	Yes	-
MW02P	MW02P	WLMW02P	674322.87	731213.62	84.743	Sonic	3.00	-	-	-	85.097	Plastic Pipe (ToC)	3.00	Peat	0.50	3.00	-	-	-	Yes	-*	-
MW02Q	MW02Q	WLMW02Q	674323.89	731207.44	84.854	Sonic	20.00	-	-	-	85.170	Plastic Pipe (ToC)	4.50	Quaternary	3.50	4.50	Yes	12/04/2022	22/06/2022	Yes	-*	-
MW03B	MW03B	WLMW03W	673882.75	730795.54	84.060	Sonic	19.50	-	-	Yes	84.312	Plastic Pipe (ToC)	19.50	Bedrock	14.50	19.50	Yes	08/12/2021	11/04/2022	Yes	Yes	-
MW03P	MW03P	WLMW03P	673878.04	730791.82	84.294	Sonic	4.50	-	-	-	84.560	Plastic Pipe (ToC)	3.55	Peat	1.00	3.55	-	-	-	Yes	-*	-
MW03Q	MW03Q	WLMW03Q	673880.75	730793.72	84.150	Sonic	9.00	-	-	-	84.478	Plastic Pipe (ToC)	8.00	Quaternary	4.30	7.80	Yes	08/12/2021	11/04/2022	Yes	-*	-
MW04B	MW04B	WLMW04W	673695.13	730288.39	84.426	Sonic	24.10	-	-	-	84.717	Plastic Pipe (ToC)	24.10	Bedrock	19.10	24.10	Yes	-	-	Yes	Yes	-
MW04P	MW04P	WLMW04P	673701.44	730308.42	84.423	Sonic	4.50	-	-	-	84.753	Plastic Pipe (ToC)	3.40	Peat	1.00	3.40	-	-	-	Yes	-*	-
MW04Q	MW04Q	WLMW04Q	673697.44	730296.25	84.505	Sonic	11.50	-	-	-	84.767	Plastic Pipe (ToC)	10.80	Quaternary	9.00	10.80	Yes	-	-	Yes	-*	-
MW05B	MW05B	WLMW05W	674783.81	729202.74	85.665	Sonic	27.00	-	Yes	Yes	85.754	Plastic Pipe (ToC)	26.70	Bedrock	17.70	26.70	Yes	20/08/2021	12/04/2022	Yes	Yes	-
MW05P	MW05P	WLMW05P	674781.19	729193.69	85.875	Sonic	4.50	-	-	-	86.000	Plastic Pipe (ToC)	3.00	Peat	1.50	3.00	-	-	-	Yes	-*	-
MW05Q	MW05Q	WLMW05Q	674782.55	729198.25	85.588	Sonic	13.80	-	Yes	-	85.721	Plastic Pipe (ToC)	10.40	Quaternary	7.50	10.40	Yes	19/10/2021	12/04/2022	Yes	-*	-
MW06B	MW06B	WLMW06W	675049.20	732007.37	82.695	Sonic	21.00	-	Yes	-	83.083	Plastic Pipe (ToC)	21.00	Bedrock	17.00	21.00	Yes	-	-	Yes	Yes	-
MW06P	MW06P	WLMW06P	675048.86	732006.48	82.681	Sonic	3.00	-	-	-	83.157	Plastic Pipe (ToC)	3.00	Peat	1.00	2.90	-	-	-	Yes	-*	-
MW06Q	MW06Q	WLMW06Q	675047.90	732004.36	82.740	Sonic	11.70	-	Yes	-	83.129	Plastic Pipe (ToC)	11.40	Quaternary	9.00	11.40	-	-	-	Yes	-*	-
MW07B	MW07B	WLMW07W	675430.17	731615.73	86.592	Sonic	18.00	-	-	Yes	86.788	Plastic Pipe (ToC)	18.00	Bedrock	13.90	17.90	Yes	-	-	Yes	Yes	-
MW07P	MW07P	WLMW07P	675430.19	731619.17	86.556	Sonic	1.50	-	-	-	86.830	Plastic Pipe (ToC)	1.50	Peat	0.50	1.50	-	-	-	Yes	-*	-
MW07Q	MW07Q	WLMW07Q	675430.19	731617.00	86.548	Sonic	6.00	-	Yes	-	86.742	Plastic Pipe (ToC)	6.00	Quaternary	4.50	5.90	-	-	-	Yes	-*	-
RW02P	RW02P	RWGW02S	675222.79	730523.61	84.346	Air Rotary	1.00	-	-	-	87.241	Plastic Pipe (ToC)	0.85	Peat	0.35	0.85	-	-	-	No	-	Replacement of GW2S
RW02S	RW02S	RWGW02D	675222.54	730513.98	84.340	Air Rotary	13.00	-	Yes	-	87.077	Plastic Pipe (ToC)	11.00	Quaternary	8.00	11.00	-	11/08/2021	19/10/2021	No	-	Replacement of GW2S
RW03P	RW03P	RWGW03S	674288.38	730940.10	84.001	Air Rotary	2.20	-	-	-	84.354	Plastic Pipe (ToC)	2.20	Peat	0.50	2.20	-	-	-	No	-	Replacement of GW3S
RW03S	RW03S	RWGW03D	674291.35	730936.25	83.959	Air Rotary	10.00	-	-	-	84.210	Plastic Pipe (ToC)	9.50	Quaternary	8.50	9.50	Yes	19/08/2021	10/09/2021	No	-	Replacement of GW3S
RW04P	RW04P	RWGW04S	675099.16	731778.68	84.268	Air Rotary	3.30	-	-	-	84.480	Plastic Pipe (ToC)	3.30	Peat	1.50	3.30	-	-	-	No	-	Replacement of GW4S
RW04S	RW04S	RWGW04D	675094.24	731780.42	84.339	Air Rotary	13.00	-	Yes	-	84.652	Plastic Pipe (ToC)	11.00	Quaternary	7.30	10.30	-	-	-	No	-	Replacement of GW4S
RW09A	RW09A	RWGW09S	674309.21	731523.24	83.076	Air Rotary	4.00	-	Yes	-	83.292	Plastic Pipe (ToC)	4.00	Quaternary	2.00	4.00	-	18/08/2021	19/10/2021	No	-	Replacement of GW9
RW09B	RW09B	RWGW09D	674311.37	731527.80	83.003	Air Rotary	10.00	-	Yes	-	83.063	Plastic Pipe (ToC)	10.00	Quaternary	8.00	10.00	Yes	18/08/2021	12/04/2022	No	-	Replacement of GW9. Transducer data across two date ranges
RW10P	RW10P	RWGW10S	673760.86	731024.30	83.713	Air Rotary	2.80	-	-	-	83.963	Plastic Pipe (ToC)	2.60	Peat	0.50	2.60	-	-	-	No	-	Replacement of GW10
RW10S	RW10S	RWGW10D	673768.50	731016.43	83.759	Air Rotary	7.00	-	Yes	-	83.889	Plastic Pipe (ToC)	4.50	Quaternary	3.00	4.50	Yes	18/08/2021	12/04/2022	No	-	Replacement of GW10
WLPC01	-	WLPC01	673781.25	731292.73	83.297	Air Rotary	16.00	Limestone Bedrock	-	-	-	-	-	-	-	-	-	-	-	No	-	-

Notes:

ToC	Top of Casing (PVC plastic pipe)
*	Sonic material was logged on site and stored in core boxes

Appendix C

Borehole Logs

Abbreviations

B = Bulk sample

U = Undisturbed sample

▼ = Water Strike



Borehole Log

Borehole No.

LFBH10

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674791.96 - 731490.87

Hole Type
SNC

Location: Allenstown, Kildare



Level: 84.51

Scale
1:25

Client: Bord na Móna

Dates: 09/10/2021 -

Logged By
Causeway Geotech

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.50	83.01		PEAT	1
					2.30	82.21		BOULDER	2
							End of borehole at 2.30 m		3
									4
									5

Remarks

Obstruction at 2.30 m bgl - stopped drilling - hole abandoned and redrilled in a nearby location





Borehole Log

Borehole No.

LFBH01

Sheet 1 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674863.16 - 731746.89

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.25

Scale
1:25

Client: Bord na Móna

Dates: 13/07/2021 - 13/07/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
█	▼						Very soft dark brown fibrous PEAT.		
		2.00 - 3.00	B		1.00	82.25	Very soft high plasticity grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	1	
					2.50	80.75	Very soft high plasticity grey slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	2	
					3.00	80.25	Very soft high plasticity grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	3	
				5.00	78.25		Continued on next sheet	5	

Remarks





Borehole Log

Borehole No.

LFBH01

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674863.16 - 731746.89

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.25

Scale
1:25

Client: Bord na Móna

Dates: 13/07/2021 - 13/07/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		7.50 - 8.50	B		7.50	75.75		Loose grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL.	6
								Stiff to very stiff grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	7
					10.00	73.25		End of borehole at 10.00 m	8
									9
									10

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674999.32 - 731715.05

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.00

 Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 07/09/2021

 Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	82.50		Very soft high plasticity brownish grey slightly gravelly slightly sandy CLAY. Moist material	1
								Very soft low plasticity grey gravelly sandy CLAY. Moist material	
		1.50 - 1.95	U		1.50	81.50		Stiff low plasticity grey slightly gravelly slightly sandy CLAY. Damp material	2
		2.00 - 2.45	U					Stiff low plasticity dark grey gravelly sandy CLAY. Gravel is angular to subangular fine to medium. Damp material	
		4.00 - 4.45	U		3.80	79.20		Loose dark grey sandy clayey angular to subrounded fine to medium GRAVEL. Damp material	4
								5	

Continued on next sheet

Remarks



Borehole Log

Borehole No.

LFBH02

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674999.32 - 731715.05

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.00

Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 07/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		5.50 - 7.00	B		5.50	77.50		Loose sandy clayey angular to subangular fine to medium GRAVEL.
					7.00	76.00		
							End of borehole at 7.00 m	



Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674709.35 - 731680.95

 Hole Type
RO

Location: Allenstown, Kildare

Level: 82.28

 Scale
1:25

Client: Bord na Móna

Dates: 14/07/2021 - 14/07/2021

 Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.50 - 3.50	B		1.30	80.98		Very soft dark brown fibrous PEAT	1
					1.50	80.78		Very soft high plasticity dark grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse	2
								Very soft high plasticity dark grey slightly gravelly silty CLAY with medium boulder content. Gravel is subangular to subrounded fine to coarse	
				4.00	78.28		Very soft medium to high plasticity dark grey slightly gravelly silty CLAY. Gravel is angular to subrounded fine to coarse	4	
Continued on next sheet								5	

Remarks



Borehole Log

Borehole No.

LFBH03

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674709.35 - 731680.95

Hole Type
RO

Location: Allenstown, Kildare

Level: 82.28

Scale
1:25

Client: Bord na Móna

Dates: 14/07/2021 - 14/07/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					7.00	75.28		End of borehole at 7.00 m	6 7 8 9 10

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674796.81 - 731650.00

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.82

 Scale
1:25

Client: Bord na Móna

Dates: 03/09/2021 - 06/09/2021

 Logged By
CF/FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
▼					0.50	83.32		Very soft high plasticity dark brown PEAT. Small pieces of organic matter. Moist material	
					1.50	82.32		Medium dense brown slightly sandy clayey angular to subrounded fine to medium GRAVEL. Sand is fine to coarse. Damp material	1
					1.90	81.92		Very soft high plasticity pale brown gravelly CLAY. Gravel is angular fine to medium. Moist material	
					2.30	81.52		Very soft high plasticity brownish grey gravelly CLAY. Gravel is angular fine to medium. Moist material	2
					2.50	81.32		Very soft high plasticity grey slightly sandy gravelly CLAY. Gravel is angular fine to medium. Sand is fine to coarse. Moist material	
					4.00	79.82		Medium dense grey sandy clayey angular to subrounded fine to medium GRAVEL. Sand is fine to coarse. Moist material	3
					4.50	79.32		Very soft high plasticity grey slightly sandy gravelly CLAY. Gravel is angular fine to medium. Sand is fine to coarse. Moist material	4
								Continued on next sheet	5

Remarks

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674796.81 - 731650.00

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.82

 Scale
1:25

Client: Bord na Móna

Dates: 03/09/2021 - 06/09/2021

 Logged By
CF/FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.70	78.12		Very loose grey/dark grey slightly clayey sandy angular to subrounded fine to medium GRAVEL. Sand is medium to coarse. Wet material	6
					7.50	76.32		Very loose brownish grey slightly clayey gravelly medium to coarse SAND. Gravel is angular to subrounded fine to medium. Wet material	7
					10.00	73.82		Increased silt/clay content. Saturated material	8
								Continued on next sheet	9
									10

Remarks

Borehole Log

Borehole No.

LFBH04

Sheet 3 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674796.81 - 731650.00

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.82

Scale
1:25

Client: Bord na Móna

Dates: 03/09/2021 - 06/09/2021

Logged By
CF/FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					11.50	72.32		Very loose dark grey slightly sandy clayey angular to subrounded fine to medium GRAVEL.	11
					13.00	70.82		Very soft low plasticity grey gravelly sandy CLAY. Gravel is angular to subangular fine to medium. Moist material	12
					14.50	69.32		LIMESTONE	13
								End of borehole at 14.50 m	14
									15

Remarks

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674885.47 - 731603.23

 Hole Type
RO

Location: Allenstown, Kildare

Level: 84.51

 Scale
1:25

Client: Bord na Móna

Dates: 08/09/2021 - 08/09/2021

 Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Loose brown angular to slightly sandy clayey subrounded fine to medium GRAVEL. Damp material		
							<i>Increased clay content</i>		
				1.50	83.01		Loose brown angular to slightly sandy very clayey subrounded fine to medium GRAVEL. Damp material	1	
				2.00	82.51		Loose brownish grey slightly sandy very clayey angular to subrounded fine to coarse GRAVEL. Damp material	2	
		2.50 - 2.95	U	2.50	82.01		Loose grey angular to sandy slightly clayey subrounded fine to medium GRAVEL. Damp material		
				3.00	81.51		Loose dark grey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Moist material	3	
				3.50	81.01		Loose grey slightly clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Wet material		
				4.00	80.51		Loose grey slightly clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Increased clay content. Wet material	4	
				4.50	80.01		Loose grey very clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Wet material	5	

Continued on next sheet

Remarks

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674885.47 - 731603.23

 Hole Type
RO

Location: Allenstown, Kildare

Level: 84.51

 Scale
1:25

Client: Bord na Móna

Dates: 08/09/2021 - 08/09/2021

 Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.50	79.01	Loose pale grey very clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Saturated material	
					6.50	78.01		Loose grey very clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Wet material
					7.00	77.51	End of borehole at 7.00 m	

 6
7
8
9
10

Remarks



Borehole Log

Borehole No.

LFBH06

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675060.95 - 731634.31

Hole Type
SNC

Location: Allenstown, Kildare

Level: 83.96

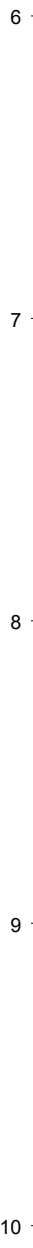
Scale
1:25

Client: Bord na Móna

Dates: 18/09/2021 - 18/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					7.50	76.46			
								End of borehole at 7.50 m	



Remarks





Borehole Log

Borehole No.

LFBH07

Sheet 1 of 2

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 674727.17 - 731540.43	Hole Type RO
Location: Allenstown, Kildare		Level: 83.96	Scale 1:25
Client: Bord na Móna		Dates: 06/09/2021 - 07/09/2021	Logged By FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▼				0.50	83.46		Very soft dark brown PEAT. Damp material	
					1.00	82.96		Soft low plasticity grey slightly sandy gravelly CLAY. Moist material	1
					2.50	81.46		Loose pale grey slightly sandy clayey angular to subrounded fine to medium GRAVEL. Moist material	2
					3.00	80.96		Loose grey slightly clayey gravelly medium to coarse SAND. Gravel is angular to subrounded fine to coarse. Dry material	3
					4.00	79.96		Soft low plasticity dark grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse. Damp material	4
Continued on next sheet								5	

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674727.17 - 731540.43

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.96

 Scale
1:25

Client: Bord na Móna

Dates: 06/09/2021 - 07/09/2021

 Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▼	6.00 - 7.00	B		6.00	77.96		Loose grey clayey GRAVEL and SAND. Gravel is angular to subrounded fine to coarse. Moist material	6
					7.00	76.96		Loose grey sandy clayey angular to subrounded fine to coarse GRAVEL. Saturated material	7
					7.50	76.46		Loose grey slightly gravelly fine to coarse SAND. Gravel is angular to subrounded fine to coarse. Wet material	
					8.00	75.96		Very loose pale grey slightly clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse.	8
					8.50	75.46	End of borehole at 8.50 m		

Remarks

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 675020.45 - 731554.60	Hole Type SNC
Location: Allenstown, Kildare		Level: 84.56	Scale 1:25
Client: Bord na Móna		Dates: 12/10/2021 -	Logged By Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
[Redacted]		3.00 - 3.45	U		0.10	84.46		Grass & TOPSOIL	1
					0.30	84.26		Very soft greyish brown slightly sandy gravelly organic CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse	
					0.60	83.96		Spongy blackish brown fibrous PEAT with fragments of wood (40-50 mm thick)	
					1.50	83.06		Soft to firm pale brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse	
					2.10	82.46		Very soft brown slightly sandy gravelly CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse	
					3.00	81.56		Very soft brownish grey sandy very gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. (Very low recovery)	
				4.60	79.96		Stiff brownish grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse	4	
Continued on next sheet								5	

Remarks



Borehole Log

Borehole No.

LFBH08

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675020.45 - 731554.60

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.56

Scale
1:25

Client: Bord na Móna

Dates: 12/10/2021 -

Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					8.25	76.31		Very stiff brownish grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse	6 7 8
					10.00	74.56		End of borehole at 10.00 m	9 10

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675108.70 - 731516.64

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.51

 Scale
1:25

Client: Bord na Móna

Dates: 13/10/2021 - 13/10/2021

 Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		1.50 - 1.95	U		0.10	84.41		Grass & TOPSOIL	1
					0.50	84.01		Very soft pale orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	
					0.90	83.61		Very soft pale orangish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	
					2.30	82.21		Very soft brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. Plant material present, likely present from up-hole	
					2.50	82.01		Very soft grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse	
					3.20	81.31		Stiff to very stiff grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (predominantly limestone)	
					4.50		B		
					4.90	79.61		Very soft greyish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to coarse (predominantly limestone)	
		4.50 - 4.95	U						

Continued on next sheet

Remarks

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675108.70 - 731516.64

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.51

 Scale
1:25

Client: Bord na Móna

Dates: 13/10/2021 - 13/10/2021

 Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.70	78.81		Greyish brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular fine to medium	6
					6.07	78.44		Very soft brownish grey slightly gravelly very sandy CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse	7
					9.00	75.51		Greyish brown clayey very gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium	9
					9.50	75.01		Very soft greyish brown slightly gravelly sandy CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to medium	
					9.85	74.66		Very stiff grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine	10

Continued on next sheet

Remarks



Borehole Log

Borehole No.

LFBH09

Sheet 3 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675108.70 - 731516.64

Hole Type
SNC

Location: Allenstown, Kildare

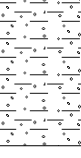
Level: 84.51

Scale
1:25

Client: Bord na Móna

Dates: 13/10/2021 - 13/10/2021

Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.50	74.01		End of borehole at 10.50 m <div style="text-align: right;"> 11 12 13 14 15 </div>

Remarks



Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 674789.67 - 731488.17	Hole Type SNC
Location: Allenstown, Kildare		Level: 84.74	Scale 1:25
Client: Bord na Móna		Dates: 09/10/2021 - 10/10/2021	Logged By Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.45	83.29		Soft pale brown becoming grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse. Gravel is predominantly limestone. (Low recovery)	1
								Grey clayey very sandy subangular fine to coarse GRAVEL. Gravel is limestone. (Low recovery)	2
					3.15	81.59		Stiff greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is predominantly limestone.	3
					3.70	81.04		Very stiff greyish brown slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is predominantly limestone.	4
					4.50	80.24		Very stiff greyish brown to brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is predominantly limestone.	5
Continued on next sheet									

Remarks



Borehole Log

Borehole No.
LFBH10A
Sheet 2 of 2
Hole Type
SNC
Scale
1:25
Logged By
Causeway Geotech Ltd

Project Name: Drehid Site Investigation Project No. 263228 Co-ords: 674789.67 - 731488.17
Location: Allenstown, Kildare Level: 84.74
Client: Bord na Móna Dates: 09/10/2021 - 10/10/2021

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		6.00 - 6.27	U					
				6.75	77.99		Very stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is predominantly limestone	
							Bed of angular to subangular fine to coarse sandy GRAVEL	
				8.80	75.94		End of borehole at 8.80 m	

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674698.29 - 731368.60

 Hole Type
RO

Location: Allenstown, Kildare

Level: 84.25

 Scale
1:25

Client: Bord na Móna

Dates: 15/07/2021 - 15/07/2021

 Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		3.00 - 4.00	B		1.20	83.05		Very soft dark brown fibrous PEAT	1
					2.00	82.25		Very soft high plasticity grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse	2
					2.50	81.75		Firm low plasticity dark grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse	3
								Stiff to very stiff low plasticity dark grey slightly gravelly silty CLAY with medium boulder content. Gravel is subangular to subrounded fine to coarse	4
							Continued on next sheet	5	

Remarks



Borehole Log

Borehole No.

LFBH11

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674698.29 - 731368.60

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.25

Scale
1:25

Client: Bord na Móna

Dates: 15/07/2021 - 15/07/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	78.25		<p>End of borehole at 6.00 m</p>	6
									7
									8
									9
									10

Remarks



Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 675060.26 - 731353.28	Hole Type RO
Location: Allenstown, Kildare		Level: 85.78	Scale 1:25
Client: Bord na Móna		Dates: 01/10/2021 - 01/10/2021	Logged By CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.70	85.08		Very soft high plasticity dark brown PEAT. Organic matter of twigs and roots present. Wet material	
					2.50	83.28		Soft high plasticity grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to medium. Damp material	1
					3.00	82.78		Dense grey slightly sandy silty clayey subangular to rounded fine to medium GRAVEL. Damp material	2
		3.00 - 3.50	B		3.50	82.28		Loose grey clayey sandy subangular to subrounded fine to medium GRAVEL. Wet material	3
					5.00	80.78		Medium dense grey slightly sandy silty very clayey subangular to subrounded GRAVEL. Moist material becoming damp	4
							Continued on next sheet	5	

Remarks



Borehole Log

Borehole No.

LFBH12

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675060.26 - 731353.28

Hole Type
RO

Location: Allenstown, Kildare

Level: 85.78

Scale
1:25

Client: Bord na Móna

Dates: 01/10/2021 - 01/10/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.50	79.28		Medium dense pale brownish grey slightly sandy silty very clayey subangular to subrounded GRAVEL. Damp material	6
					7.00	78.78		Soft high plasticity grey slightly gravelly CLAY. Gravel is angular fine to medium. Moist material	7
								End of borehole at 7.00 m	7
									8
									9
									10

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675238.07 - 731741.02

 Hole Type
RO

Location: Allenstown, Kildare

Level: 84.19

 Scale
1:25

Client: Bord na Móna

Dates: 03/08/2021 - 03/08/2021

 Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.50	83.68	Very soft low plasticity brown slightly gravelly slightly clayey PEAT. Gravel is angular to subrounded fine to medium.		
					1.00	83.18	Soft low plasticity brownish grey slightly gravelly slightly sandy CLAY. Gravel is angular to subrounded fine to medium. Moist material		
					1.50	82.68	Very soft high plasticity pale grey slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium. Moist material	1	
					2.00	82.18	Very soft high plasticity pale grey slightly sandy gravelly CLAY with high boulder content. Gravel is angular to subrounded fine to medium. Moist material <i>Boulder</i>	2	
					4.00	80.18	Very soft low plasticity pale grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to medium. Saturated material <i>Wet material</i>	3	
						Stiff low plasticity dark grey slightly gravelly silty CLAY	4		
								5	

Continued on next sheet

Remarks



Borehole Log

Borehole No.

LFBH13

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675238.07 - 731741.02

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.19

Scale
1:25

Client: Bord na Móna

Dates: 03/08/2021 - 03/08/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					7.00	77.18			
								End of borehole at 7.00 m	

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675357.48 - 731697.23

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.13

 Scale
1:25

Client: Bord na Móna

Dates: 18/09/2021 - 18/09/2021

 Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1		1.50 - 1.95	U		0.75	84.38		Stiff low plasticity dark brown PEAT. Roots and twigs present, brittle. Brittle and moist material becoming damp	
					2.70	82.43		Very soft low plasticity pale grey slightly gravelly sandy CLAY with medium boulder content. Gravel is angular to subrounded fine to coarse. Moist material	1
					3.00	82.13		Very soft low plasticity pale grey gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse. Moist material	2
					3.80	81.33		Very soft low plasticity pale grey gravelly sandy CLAY. Gravel is angular to subrounded fine to medium. Damp material	3
					4.00	81.13		Very soft low plasticity pale grey sandy very gravelly CLAY. Saturated material (drilling water added)	4
					4.65	80.48		Stiff becoming very stiff low plasticity pale grey gravelly sandy CLAY with low boulder content. Gravel is angular to subrounded fine to medium. Damp material	5
							Very stiff low plasticity grey gravelly sandy CLAY with low boulder content. Gravel is angular to subrounded fine to medium. Damp to dry material		

Continued on next sheet

Remarks

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675357.48 - 731697.23

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.13

 Scale
1:25

Client: Bord na Móna

Dates: 18/09/2021 - 18/09/2021

 Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		6.00 - 8.50	B		5.44	79.69		Very stiff low plasticity grey slightly gravelly sandy CLAY with low boulder content. Brittle limestone boulder. Dry material	
					6.00	79.13		Dense becoming loose becoming dense grey very gravelly very clayey SAND. Gravel is angular to subrounded fine to coarse. Looser at top and towards end of run. Damp material	
					7.50	77.63		Loose pale grey slightly clayey very gravelly SAND with medium boulder content. Gravel is angular to subrounded fine to medium. Moist material	
					8.50	76.63		End of borehole at 8.50 m	

Remarks



Borehole Log

Borehole No.

LFBH15

Sheet 1 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675300.18 - 731401.22

Hole Type
RO

Location: Allenstown, Kildare

Level: 85.28

Scale
1:25

Client: Bord na Móna

Dates: 05/08/2021 - 05/08/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Very soft dark brown fibrous PEAT		
				2.00	83.28		Very soft high plasticity grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	1 2	
				4.50	80.78		Stiff to very stiff dark grey high plasticity slightly gravelly silty CLAY with medium boulder content. Gravel is subangular to subrounded fine to coarse	3 4 5	

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFBH15

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675300.18 - 731401.22

Hole Type
RO

Location: Allenstown, Kildare

Level: 85.28

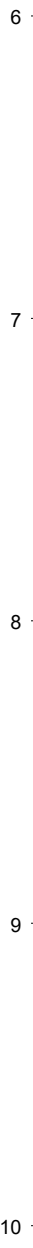
Scale
1:25

Client: Bord na Móna

Dates: 05/08/2021 - 05/08/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		6.00 - 6.50	B					
				8.50	76.78		End of borehole at 8.50 m	



Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675323.47 - 731430.02

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.71

 Scale
1:25

Client: Bord na Móna

Dates: 13/10/2021 - 14/10/2021

 Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		3.00 - 3.45	U		1.50	84.21		Spongy brownish black fibrous PEAT. Pieces of wood present.	1
					2.45	83.26		Low plasticity brownish black pseudofibrous PEAT. Pieces of wood present	2
					3.00	82.71		Soft grey calcareous slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse.	3
					4.50	81.21		Very soft grey slightly sandy slightly gravelly CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	4
								Grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse. (Low recovery)	5

Continued on next sheet

Remarks

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675323.47 - 731430.02

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.71

 Scale
1:25

Client: Bord na Móna

Dates: 13/10/2021 - 14/10/2021

 Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					5.25	80.46		Very soft grey slightly sandy slightly gravelly CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	
					5.70	80.01		Firm brownish grey slightly sandy slightly gravelly CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse.	6
					6.50	79.21		Greyish brown very gravelly very clayey fine to coarse SAND with low subangular cobble content. Gravel is subangular fine to medium	
					7.10	78.61		Firm brownish grey slightly sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	7
					7.43	78.28		Pale brown to brown very gravelly very clayey fine to coarse calcareous SAND. Gravel is subangular fine to medium	
					9.20	76.51		Stiff greyish brown slightly sandy gravelly CLAY with low subangular cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse.	8 9 10

Continued on next sheet

Remarks

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675323.47 - 731430.02

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.71

 Scale
1:25

Client: Bord na Móna

Dates: 13/10/2021 - 14/10/2021

 Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.60	75.11		Very stiff pale brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium	
					11.00	74.71		Grey angular to subangular fine to coarse GRAVEL with low subangular cobble content.	11
					11.25	74.46		Medium strong massive grey LIMESTONE with rare orangish white calcite veins (approx. 5 mm thick). Predominantly fresh. Discontinuities: 1. 5-20 degree joints, medium spaced (310/467/780) 2. 30-40 degree joints, medium spaced (230/350/356), planar, rough, brown clay infill on some joint surfaces (approx., 15 mm thick)	12
					12.65	73.06	End of borehole at 12.65 m		13
									14
									15

Remarks



Borehole Log

Borehole No.

LFBH17

Sheet 1 of 4

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 675469.34 - 731257.12	Hole Type RO
Location: Allenstown, Kildare		Level: 86.12	Scale 1:25
Client: Bord na Móna		Dates: 04/08/2021 - 04/08/2021	Logged By CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▼							Very soft dark brown fibrous PEAT	1
					2.50	83.62		Very soft high plasticity grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse.	3
		4.50 - 5.50	B		4.00	82.12		Stiff to very stiff high plasticity dark grey slightly gravelly silty CLAY with medium boulder content. Gravel is subangular to subrounded fine to coarse.	4
Continued on next sheet								5	

Remarks





Borehole Log

Borehole No.

LFBH17

Sheet 2 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675469.34 - 731257.12

Hole Type
RO

Location: Allenstown, Kildare

Level: 86.12

Scale
1:25

Client: Bord na Móna

Dates: 04/08/2021 - 04/08/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	80.12		Dense brown fine silty SAND.	6
		7.00 - 8.00	B		6.50	79.62		Stiff to very stiff high plasticity dark grey slightly gravelly silty CLAY with medium boulder content. Gravel is subangular to subrounded fine to coarse.	7
									8
									9
									10

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFBH17

Sheet 3 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675469.34 - 731257.12

Hole Type
RO

Location: Allenstown, Kildare

Level: 86.12

Scale
1:25

Client: Bord na Móna

Dates: 04/08/2021 - 04/08/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							11	
							12	
							13	
							14	
							15	

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFBH17

Sheet 4 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675469.34 - 731257.12

Hole Type
RO

Location: Allenstown, Kildare

Level: 86.12

Scale
1:25

Client: Bord na Móna

Dates: 04/08/2021 - 04/08/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					17.50	68.62	End of borehole at 17.50 m	

16
17
18
19
20

Remarks



Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 675051.57 - 731682.63	Hole Type SNC
Location: Allenstown, Kildare		Level: 83.90	Scale 1:25
Client: Bord na Móna		Dates: 23/09/2021 - 28/09/2021	Logged By Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Low plasticity dark brown pseudofibrous PEAT. Occasional fine rootlets and rare fragments of gravel sized wood		
				0.95	82.95		Very soft pale brownish grey slightly sandy slightly gravelly CLAY. Occasional fragments of wood and small pockets of peat (up to 5 mm). Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (various lithologies)	1	
				1.15	82.75		Very soft to soft pale bluish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (various lithologies)		
				2.20	81.70		Firm to soft pale grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	2	
		3.00 - 3.45	U				Firm pale grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)		
		4.00	B	3.90	80.00		Stiff pale grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	4	
		4.25	B				Very stiff grey slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)		
				4.50	79.40		Very stiff grey slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)		
				4.65	79.25		Very stiff grey slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	5	

Continued on next sheet

Remarks

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 675051.57 - 731682.63	Hole Type SNC
Location: Allenstown, Kildare		Level: 83.90	Scale 1:25
Client: Bord na Móna		Dates: 23/09/2021 - 28/09/2021	Logged By Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.25	77.65		Stiff to very stiff brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	6
					6.80	77.10		Grey slightly sandy very clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.	7
					7.05	76.85		Very stiff brownish grey slightly sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	7
		8.05	B						8
					8.60	75.30		Stiff brownish grey sandy gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	9
					9.10	74.80		Stiff grey slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	9
									10

Continued on next sheet

Remarks

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675051.57 - 731682.63

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 83.90

 Scale
1:25

Client: Bord na Móna

Dates: 23/09/2021 - 28/09/2021

 Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.50	73.40		Dark grey slightly clayey slightly gravelly fine to coarse SAND. Gravel is subrounded fine to coarse (various lithologies)	11
					11.05	72.85		Grey slightly sandy very clayey subangular to subrounded fine to coarse GRAVEL. Sand is fine to coarse.	
					11.30	72.60		Very stiff dark grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse (various lithologies)	12
					13.50	70.40		Grey subangular SAND and GRAVEL with low cobble content. Sand is fine to coarse	
					14.75	69.15		Medium strong pale grey massive LIMESTONE with white calcite veins (up to 15 mm thick). Predominantly fresh: Occasional clay deposits on some fracture surfaces. Discontinuities: 1. 60-70 degree joints at 16.90-17.20 m and 17.75-17.85 m undulating rough with soft brownish grey slightly sandy gravelly clay infill (10 mm thick) on 16.90-17.20 m joint and rare bluish grey clay deposits (1 mm thick) on 17.75-17.85 m joint 2. 50-70 degree joint at 15.75-16.35 m undulating rough with firm brownish grey slightly sandy gravelly clay infill on joint surface. 3. 5 degree joint at 17.40 m slightly undulating rough with bluish grey clay deposits (<1 mm thick) on fracture surface	14
								Continued on next sheet	15

Remarks



Borehole Log

Borehole No.

LFBR01

Sheet 4 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675051.57 - 731682.63

Hole Type
SNC

Location: Allenstown, Kildare

Level: 83.90

Scale
1:25

Client: Bord na Móna

Dates: 23/09/2021 - 28/09/2021

Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					18.00	65.90	End of borehole at 18.00 m	

16

17

18

19

20

Remarks





Borehole Log

Borehole No.

LFBR02

Sheet 1 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675020.00 - 731405.41

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.36

Scale
1:25

Client: Bord na Móna

Dates: 01/10/2021 - 02/10/2021

Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.85	84.51		Spongy dark brown pseudofibrous PEAT. Frequent fine rootlets and occasional gravel sized fragments of wood	
					1.10	84.26		Soft pale brownish grey slightly sandy slightly gravelly CLAY. Occasional pockets of peat and fragments of wood. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	1
								Soft to firm pale grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	2
					4.30	81.06		Very stiff grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	3
									4
									5

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFBR02

Sheet 2 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675020.00 - 731405.41

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.36

Scale
1:25

Client: Bord na Móna

Dates: 01/10/2021 - 02/10/2021

Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	79.36		Dark grey clayey sandy subangular fine to coarse GRAVEL. Sand is fine to coarse	6
					6.95	78.41		Very stiff dark greyish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	7
					7.40	77.96		Very stiff dark brownish grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	8
					9.90	75.46		Grey gravelly clayey fine to coarse SAND. Gravel is subangular fine to coarse (various lithologies)	10

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFBR02

Sheet 3 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675020.00 - 731405.41

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.36

Scale
1:25

Client: Bord na Móna

Dates: 01/10/2021 - 02/10/2021

Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.70	74.66		Very stiff brownish grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	11
					11.90	73.46		Grey gravelly clayey fine to coarse SAND. Gravel is subangular fine to coarse (various lithologies)	12
					12.50	72.86		Very stiff dark greyish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)	13
		13.50 - 13.95	U						14
									15

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFBR02

Sheet 4 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675020.00 - 731405.41

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.36

Scale
1:25

Client: Bord na Móna

Dates: 01/10/2021 - 02/10/2021

Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		16.50 - 16.95	U					
					19.05	66.31		Very stiff pale greyish brown becoming pale grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse (various lithologies predominantly limestone)
					19.50	65.86		Grey slightly clayey sandy angular to subangular fine to coarse GRAVEL. Sand is fine to coarse

Continued on next sheet

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675020.00 - 731405.41

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.36

 Scale
1:25

Client: Bord na Móna

Dates: 01/10/2021 - 02/10/2021

 Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					21.10	64.26		Pale brown slightly sandy very clayey subangular fine to coarse GRAVEL. Sand is fine to coarse	21
					21.80	63.56		Weak massive grey LIMESTONE with rare orangish greyish white calcite veins (1-25 mm thick). Partially weathered, slightly reduced strength, closer fracture spacing, orangish brown discolouration on some joint surfaces. Discontinuities: 1. 10-30 degree joints, medium spaced (42/228/400), planar, rough, pale brown clay infill (20-80 mm thick) and orangish brown staining on most joint surfaces. 2. 65-90 degree joints, widely spaced (100/683/800), undulating, rough, orangish brown staining and clay infill on most joint surfaces.	22 23 24
Continued on next sheet								25	

Remarks



Borehole Log

Borehole No.

LFBR02

Sheet 6 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675020.00 - 731405.41

Hole Type
SNC

Location: Allenstown, Kildare


Level: 85.36

Scale
1:25

Client: Bord na Móna

Dates: 01/10/2021 - 02/10/2021

Logged By
Causeway Geotech Ltd.

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					25.90	59.46		
								End of borehole at 25.90 m

26
27
28
29
30

Remarks





Borehole Log

Borehole No.

LFBR03

Sheet 1 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674893.24 - 731346.47

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.87

Scale
1:25

Client: Bord na Móna

Dates: 29/07/2021 - 30/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description				
		Depth (m)	Type	Results								
1					0.68	84.19		Plastic brownish black pseudofibrous PEAT.				
										Soft to firm pale brown slightly sandy gravelly CLAY with low subangular cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	1	
												2
												3
					2.85	82.02		Soft grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium				
					3.00	81.87		Firm to stiff greyish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse				
									4			
									5			

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFBR03

Sheet 2 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674893.24 - 731346.47

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.87

Scale
1:25

Client: Bord na Móna

Dates: 29/07/2021 - 30/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	78.87		Greyish brown very gravelly very clayey fine to coarse SAND. Gravel is subangular fine to coarse	6
					7.65	77.22		Very stiff brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse	8
			9.00 - 9.25	U					9
								Continued on next sheet	10

Remarks



Borehole Log

Borehole No.

LFBR03

Sheet 3 of 5

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 674893.24 - 731346.47	Hole Type SNC
Location: Allenstown, Kildare		Level: 84.87	Scale 1:25
Client: Bord na Móna		Dates: 29/07/2021 - 30/09/2021	Logged By Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		10.50 - 10.95	U		10.40	74.47		Greyish brown very gravelly very clayey fine to coarse SAND. Gravel is subangular fine to medium	
					11.00	73.87		Dark grey clayey fine to medium SAND.	11
					11.60	73.27		Dark grey silty fine SAND.	
					11.95	72.92		Very stiff greyish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse	12
		13.50 - 13.95	U		13.80	71.07		Grey orangish brown subangular to rounded fine to coarse GRAVEL with high cobble content. Widely spaced medium beds of very sandy very clayey subangular to rounded fine to coarse gravel.	14
								Continued on next sheet	15

Remarks



Borehole Log

Borehole No.

LFBR03

Sheet 4 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674893.24 - 731346.47

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.87

Scale
1:25

Client: Bord na Móna

Dates: 29/07/2021 - 30/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					18.15	66.72		Greyish black and grey sandy gravelly clayey COBBLES and BOULDERS. Sand is fine to coarse. Gravel is subangular fine to coarse	16 17 18 19 20

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFBR03

Sheet 5 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674893.24 - 731346.47

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.87

Scale
1:25

Client: Bord na Móna

Dates: 29/07/2021 - 30/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					20.50	64.37		Medium strong massive grey LIMESTONE. Partially weathered: orangish brown discolouration on fracture surfaces.
					21.50	63.37		
End of borehole at 21.50 m								

21
22
23
24
25

Remarks





Borehole Log

Borehole No.

LFTB01

Sheet 1 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674677.79 - 731752.04

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.01

Scale
1:25

Client: Bord na Móna

Dates: 30/08/2021 - 02/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▼							PEAT (poor recovery)	1
					2.50	80.51		Low plasticity dark brown slightly clayey pseudofibrous PEAT. Occasional fine to medium rootlets and fragments of wood	2
					3.50	79.51		Grey slightly clayey very sandy subangular to subrounded fine to coarse GRAVEL with high cobble and high boulder content (very low recovery)	3
								4	
								5	

Continued on next sheet

Remarks





Borehole Log

Borehole No.

LFTB01

Sheet 2 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674677.79 - 731752.04

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.01

Scale
1:25

Client: Bord na Móna

Dates: 30/08/2021 - 02/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					8.00	75.01			
								Grey silty clayey gravelly SAND with high cobble and high boulder content (poor recovery)	

Continued on next sheet

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674677.79 - 731752.04

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.01

 Scale
1:25

Client: Bord na Móna

Dates: 30/08/2021 - 02/09/2021

 Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					11.00	72.01			
					12.50	70.51		Medium strong massive pale grey LIMESTONE. Partially weathered: slightly reduced strength, slightly closer fracture spacing, orangish brown discolouration on most fracture surfaces. Discontinuities: 1. 45 degree joints at 11.50-11.55 m and 11.60-11.80 m, undulating, rough, strong orangish and orangish brown staining on most joint surfaces, grey sandy clay infill on some joint surfaces (<1 mm thick). 2. 70-90 degree joints, at 11.00-11.40 m and 11.65-12.10 m, undulating, rough, patchy orangish brown staining and grey sandy clay infill (up to 3 mm thick) on most joint surfaces	11 12
								End of borehole at 12.50 m	13 14 15

Remarks



Borehole Log

Borehole No.

LW01

Sheet 1 of 2

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 674610.18 - 731538.91	Hole Type RO
Location: Allenstown, Kildare		Level: 83.38	Scale 1:25
Client: Bord na Móna		Dates: 14/07/2021 - 14/07/2021	Logged By CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
█							Very soft dark brown fibrous PEAT		
					2.00	81.38	Very soft low plasticity brownish grey slightly gravelly slightly sandy silty CLAY	1	
					2.50	80.88	Very soft low plasticity grey slightly gravelly slightly sandy silty CLAY	2	
		4.00 - 4.50	B		4.10	79.28	Firm high plasticity dark grey slightly gravelly silty CLAY with low boulder content. Gravel is subangular to subrounded fine to coarse	3	
		5.00 - 6.00	B		5.00	78.38		4	
Continued on next sheet								5	

Remarks
Peg ID: LFMW01



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674610.18 - 731538.91

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.38

 Scale
1:25

Client: Bord na Móna

Dates: 14/07/2021 - 14/07/2021

 Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	77.38		Stiff to very stiff low plasticity dark grey gravelly CLAY with low boulder content. Gravel is subangular to subrounded fine to coarse	6
		8.00 - 10.00	B		8.00	75.38		Dense dark grey clayey subangular to subrounded fine to coarse GRAVEL	7
					10.00	73.38		Dense pale grey slightly clayey sandy subrounded fine to coarse GRAVEL	8
								End of borehole at 10.00 m	10

Remarks

Peg ID: LFMW01

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674829.34 - 731265.87

 Hole Type
RO

Location: Allenstown, Kildare

Level: 84.85

 Scale
1:25

Client: Bord na Móna

Dates: 15/07/2021 - 15/07/2021

 Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
█	▼				1.20	83.65		Very soft dark brown fibrous PEAT	1
								Firm high plasticity dark grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse	2
					4.00	80.85		Loose grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL.	4
	▼				5.00	79.85			5

Continued on next sheet

Remarks

Peg ID: LFMW02

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674829.34 - 731265.87

 Hole Type
RO

Location: Allenstown, Kildare

Level: 84.85

 Scale
1:25

Client: Bord na Móna

Dates: 15/07/2021 - 15/07/2021

 Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		6.00 - 7.00	B				Stiff to very stiff high plasticity dark grey slightly gravelly silty CLAY with low boulder content. Gravel is subangular to subrounded fine to coarse	6	
	▼	7.00 - 8.00	B	7.00	77.85		Dense grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL	7	
				8.00	76.85		Stiff to very stiff high plasticity dark grey slightly gravelly silty CLAY with low boulder content. Gravel is subangular to subrounded fine to coarse	8	
				9.20	75.65		Dense grey SAND & GRAVEL. Gravel is subangular to subrounded fine to coarse. Sand is fine to coarse	9	
		10.00 - 11.00	B					10	

Continued on next sheet

Remarks

Peg ID: LFMW02



Borehole Log

Borehole No.

LW02D

Sheet 3 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674829.34 - 731265.87

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.85

Scale
1:25

Client: Bord na Móna

Dates: 15/07/2021 - 15/07/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					11.70	73.15		Very stiff high plasticity dark grey slightly gravelly silty CLAY with low boulder content. Gravel is subangular to subrounded fine to coarse
					13.00	71.85		
		End of borehole at 13.00 m						

Remarks
Peg ID: LFMW02





Borehole Log

Borehole No.

LW02S

Sheet 1 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674820.57 - 731269.13

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.76

Scale
1:25

Client: Bord na Móna

Dates: 16/07/2021 - 16/07/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.20	83.56		Very soft dark brown fibrous PEAT	1
					4.00	80.76		Firm high plasticity dark grey slightly gravelly silty CLAY. Gravel is subangular to subrounded fine to coarse	2
					5.00	79.76		Loose grey slightly clayey sandy subangular to subrounded fine to coarse GRAVEL.	3
								Continued on next sheet	4
									5

Remarks
Peg ID: LFMW02B





Borehole Log

Borehole No.

LW02S

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674820.57 - 731269.13

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.76

Scale
1:25

Client: Bord na Móna

Dates: 16/07/2021 - 16/07/2021

Logged By
CMC

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					7.00	77.76		Stiff to very stiff high plasticity dark grey slightly gravelly silty CLAY with low boulder content. Gravel is subangular to subrounded fine to coarse
								6
								7
							End of borehole at 7.00 m	7
								8
								9
								10

Remarks
Peg ID: LFMW02B





Borehole Log

Borehole No.

MW01B

Sheet 1 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675446.67 - 733547.56

Hole Type
SNC

Location: Allenstown, Kildare




Level: 85.30

Scale
1:25

Client: Bord na Móna

Dates: 05/10/2021 - 07/10/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							NO RECOVERY	1
					1.50	83.80		2
					3.00	82.30		3
					3.35	81.95		4
Continued on next sheet								5

Remarks
Peg ID: WLMW01W





Borehole Log

Borehole No.

MW01B

Sheet 2 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675446.67 - 733547.56

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.30

Scale
1:25

Client: Bord na Móna

Dates: 05/10/2021 - 07/10/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	79.30		Soft greyish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	6
					7.15	78.15		Stiff greyish brown slightly sandy CLAY. Sand is fine.	7
					7.40	77.90		Greyish brown sandy gravelly CLAY with low subangular cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse	
					8.00	77.30		Greyish brown slightly gravelly very clayey fine to medium SAND. Gravel is subangular to subrounded fine to coarse	8
					9.90	75.40		Very stiff brownish grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. Cobbles are subangular cobbles.	10

Continued on next sheet

Remarks

Peg ID: WLMW01W





Borehole Log

Borehole No.

MW01B

Sheet 3 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675446.67 - 733547.56

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.30

Scale
1:25

Client: Bord na Móna

Dates: 05/10/2021 - 07/10/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
1					10.25	75.05		Stiff brownish grey sandy gravelly CLAY with low subangular cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse
					11.55	73.75		Very stiff brownish grey slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse
					14.20	71.10		Stiff greyish white slightly sandy slightly gravelly CLAY with low subangular cobble content. Sand is fine to coarse. Gravel is angular fine to coarse
					14.50	70.80		Stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse
					15.00	70.30		

Continued on next sheet

Remarks

Peg ID: WLMW01W



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675446.67 - 733547.56

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.30

 Scale
1:25

Client: Bord na Móna

Dates: 05/10/2021 - 07/10/2021

 Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
[Redacted]					16.05	69.25		Greyish black subangular fine to coarse GRAVEL with medium cobble content. Cobbles are angular to subangular. Gravel and cobbles are limestone
					17.00	68.30		Weak massive dark grey LIMESTONE. Partially weathered: slightly reduced strength, closer fracture spacing. Discontinuities: 1. 20-40 degree joints, closely spaces (80/136/180), planar, rough.

Continued on next sheet

Remarks

Peg ID: WLMW01W



Borehole Log

Borehole No.

MW01B

Sheet 6 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675446.67 - 733547.56

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.30

Scale
1:25

Client: Bord na Móna

Dates: 05/10/2021 - 07/10/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					25.50	59.80		End of borehole at 25.50 m

26
27
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29
30

Remarks
Peg ID: WLMW01W





Borehole Log

Borehole No.

MW02B

Sheet 1 of 8

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674319.35 - 731198.76

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.67

Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 09/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
WLMW02W								Low plasticity blackish brown slightly gravelly PEAT. Rare fine rootlets and frequent gravel sized fragments of wood with patchy oil deposits.	1
								Soft dark brown slightly sandy slightly gravelly CLAY with occasional pockets of peat (<5 mm).	2
								Pale greyish brown clayey gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse. Gravel is of various lithologies, predominantly limestone.	3
								Pale grey slightly clayey very sandy subrounded to subangular fine to coarse GRAVEL. Sand is fine to coarse. Gravel is of various lithologies, predominantly limestone.	4
									5
		3.85 - 4.85	B		3.65 3.85 4.40	81.02 80.82 80.27			

Continued on next sheet

Remarks

Peg ID: WLMW02W





Borehole Log

Borehole No.

MW02B

Sheet 2 of 8

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674319.35 - 731198.76

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.67

Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 09/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		7.00	B		6.50	78.17		
		7.50 - 7.95	U		7.40	77.27		Stiff grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is of various lithologies, predominantly limestone.
		9.95	B					Stiff grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular fine to coarse. Gravel is of various lithologies, predominantly limestone.

Continued on next sheet

Remarks

Peg ID: WLMW02W





Borehole Log

Borehole No.

MW02B

Sheet 3 of 8

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674319.35 - 731198.76

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.67

Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 09/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
1					10.25	74.42		Very stiff brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse. Gravel is of various lithologies, predominantly limestone.
		12.00 - 12.45	U		12.00	72.67		
		13.00 - 13.45	U		13.25	71.42		
					14.20	70.47		

Continued on next sheet

Remarks
Peg ID: WLMW02W



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674319.35 - 731198.76

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.67

 Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 09/09/2021

 Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		16.50 - 16.80	U		16.65	68.02	<p>Very stiff greyish brown slightly sandy slightly gravelly silty organic CLAY. Sand is fine to coarse. Gravel is angular fine to coarse. Gravel is of various lithologies, predominantly limestone.</p>	
		18.00 - 18.45	U		17.95	66.72		
					19.35	65.32	<p>Very stiff greyish brown slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular fine to coarse. Gravel is of various lithologies, predominantly limestone.</p>	

Continued on next sheet

Remarks

Peg ID: WLMW02W



Borehole Log

Borehole No.

MW02B

Sheet 5 of 8

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674319.35 - 731198.76

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.67

Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 09/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					20.85	63.82		<p>Very stiff brown slightly gravelly sandy silty organic CLAY. Sand is fine to coarse. Gravel is angular fine to coarse. Gravel is of various lithologies, predominantly limestone.</p>	21
					22.95	61.72			<p>Very stiff greyish brown slightly sandy slightly gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is of various lithologies, predominantly limestone.</p>
					24.90	59.77		<p>Grey slightly clayey very sandy subangular fine to coarse GRAVEL with low cobble content. Sand is fine to coarse. Gravel is of various lithologies, predominantly limestone. Cobbles are limestone.</p>	25

Continued on next sheet

Remarks

Peg ID: WLMW02W





Borehole Log

Borehole No.

MW02B

Sheet 6 of 8

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674319.35 - 731198.76

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.67

Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 09/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					26.60	58.07		
								Greyish brown slightly clayey sandy subangular fine to coarse GRAVEL with high subangular cobble content. Sand is fine to coarse. Gravel is predominantly limestone and sandstone.

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Continued on next sheet

Remarks
Peg ID: WLMW02W



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674319.35 - 731198.76

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.67

 Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 09/09/2021

 Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					31.20	53.47		
								Weak grey LIMESTONE with high pale brown clay infill. Distinctly weathered, locally destructed to sandy clayey gravel. Discontinuities: 1. 10-30 degree joints, closely spaced (70/181/200), planar, rough with up to 200 mm of firm pale brown sandy gravelly clay infill.
					34.10	50.57		Weak massive grey LIMESTONE. Distinctly weathered: reduced strength, orangish brown discolouration on fracture surfaces. Discontinuities: 1. 10-30 degree joints, closely spaced (40/126/170), planar, rough with pale brown clay infill and orangish brown staining on joint surfaces (up to 250 mm thick). 2. 70-90 degree joints, medium spaced (50/486/250), planar to undulating, rough, orangish brown staining and brown clay infill (up to 100 mm thick)

31

32

33

34

35

Continued on next sheet

Remarks

Peg ID: WLMW02W



Borehole Log

Borehole No.

MW02B

Sheet 8 of 8

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674319.35 - 731198.76

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.67

Scale
1:25

Client: Bord na Móna

Dates: 07/09/2021 - 09/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				37.50	47.17		End of borehole at 37.50 m	

36
37
38
39
40

Remarks
Peg ID: WLMW02W





Borehole Log

Borehole No.

MW02P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674322.87 - 731213.62

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.74

Scale
1:25

Client: Bord na Móna

Dates: 10/08/2021 - 10/08/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.50	83.24		Very soft low plasticity brownish red silty PEAT with low boulder content and low cobble content. Roots and twigs present	1
					3.00	81.74		Very soft low plasticity thinly laminated dark reddish brown clayey PEAT. Roots and twigs present. Moist material becoming brittle at the bottom of layer	2
								End of borehole at 3.00 m	3
									4
									5

Remarks

Peg ID: WLMW02P





Borehole Log

Borehole No.

MW02Q

Sheet 1 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674323.89 - 731207.44

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.85

Scale
1:25

Client: Bord na Móna

Dates: 11/08/2021 - 12/08/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.50	83.35		Very soft low plasticity brownish red silty PEAT with low boulder content and low cobble content. Roots and twigs present	1
								Very soft low plasticity thinly laminated dark reddish brown clayey PEAT. Roots and twigs present. Moist material becoming brittle at the bottom of layer	2
					3.05	81.80		Loose brownish grey/green/grey very clayey SAND and GRAVEL. Gravel is angular to subangular medium to coarse. Roots and twigs and present. Transition zone from peat at top of layer. Saturated material	3
					4.50	80.35		Loose dark brown/brown/brownish grey/green sandy clayey angular to subrounded medium to coarse GRAVEL with low boulder content and low cobble content. Large subrounded boulder at bottom of layer. Cobbles are subrounded. Roots and twigs present. Clay content increases with depth. Saturated material	4
									5

Continued on next sheet

Remarks

Peg ID: WLMW02Q





Borehole Log

Borehole No.

MW02Q

Sheet 2 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674323.89 - 731207.44

Hole Type
SNC

Location: Allenstown, Kildare

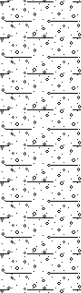

Level: 84.85

Scale
1:25

Client: Bord na Móna

Dates: 11/08/2021 - 12/08/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	78.85		<p>Piece of wood</p> <p>Very stiff low plasticity pale grey slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subrounded fine to medium. Saturated material (drilling water added)</p>	6
					9.90	74.95		<p>Very stiff low plasticity pale grey slightly gravelly sandy CLAY. Damp material</p>	10

Continued on next sheet

Remarks
Peg ID: WLMW02Q





Borehole Log

Borehole No.

MW02Q

Sheet 3 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674323.89 - 731207.44

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.85

Scale
1:25

Client: Bord na Móna

Dates: 11/08/2021 - 12/08/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					13.00	71.85		Increased gravel content	11
									12
									13
								Stiff low plasticity dark grey slightly sandy very gravelly CLAY. Gravel is angular to subrounded medium to coarse. Damp material	
					14.00	70.85			14
								Very stiff low plasticity dark grey slightly gravelly CLAY. Decreased gravel content with depth. Pale grey undisturbed and dark grey disturbed material. Dry material	
									15

Continued on next sheet

Remarks

Peg ID: WLMW02Q





Borehole Log

Borehole No.

MW02Q

Sheet 4 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674323.89 - 731207.44

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.85

Scale
1:25

Client: Bord na Móna

Dates: 11/08/2021 - 12/08/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					17.00	67.85		Very stiff low plasticity grey slightly gravelly slightly sandy CLAY. Gravel is angular to subrounded fine to coarse. Dry material	17
					18.50	66.35		Stiff low plasticity grey gravelly slightly sandy CLAY	19
					20.00	64.85		End of borehole at 20.00 m	20

Remarks
Peg ID: WLMW02Q





Borehole Log

Borehole No.

MW03B

Sheet 1 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673882.75 - 730795.54

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.06

Scale
1:25

Client: Bord na Móna

Dates: 04/09/2021 - 06/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Spongy dark brownish black and orangish brown pseudofibrous PEAT with occasional fragments of wood up to 40 mm in diameter.		
					3.90	80.16	Firm grey slightly sandy slightly gravelly silty CLAY with low cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse		
					4.50	79.56	Stiff grey slightly sandy gravelly silty CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse		
Continued on next sheet									

Remarks

Peg ID: WLMW03W



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 673882.75 - 730795.54

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.06

 Scale
1:25

Client: Bord na Móna

Dates: 04/09/2021 - 06/09/2021

 Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	78.06		Stiff to very stiff grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse	6
		7.00	B						7
					7.50	76.56		Very stiff brownish grey slightly gravelly sandy CLAY with low subangular cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse	8
					8.50	75.56		Greyish white sandy silty subangular fine to coarse GRAVEL. Sand is fine to coarse. Gravel is limestone.	9
					9.00	75.06		Medium strong massive grey LIMESTONE. Partially weathered: slightly reduced strength, closer fracture spacing, faint and patch pale orangish brown discolouration on some joint surfaces. Discontinuities: 1. 0-20 degree joints, closely spaced (11/136/320), planar, rough, faint and patchy pale orangish brown staining on some joint surfaces. 2. 30-50 degree joints, closely spaced (25/150/472), planar to undulating, rough, brownish grey clay infill on some joint surfaces (2-10 mm thick)	9
								Continued on next sheet	10

Remarks

Peg ID: WLMW03W



Borehole Log

Borehole No.

MW03B

Sheet 3 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673882.75 - 730795.54

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.06

Scale
1:25

Client: Bord na Móna

Dates: 04/09/2021 - 06/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.50	73.56		<p>Medium strong grey indistinctly bedded LIMESTONE. Partially weathered: slightly reduced strength, slightly closer fracture spacing. Discontinuities: 1. 5-20 degree joints, closely spaced (31/196/670), planar, rough, pale greyish brown clay infill on some joint surfaces (20-25 mm thick). 2. 30-60 degree joints, widely spaced (460/750/810), planar, smooth to rough, patchy orangish brown staining on most joint surfaces. 3. 75-90 degree joints, at 10.50-10.80 m, 11.75-12.18 m and 14.20-14.60 m, undulating, smooth, pale orangish brown staining on some joint surfaces, pale brown clay infill on some joint surfaces (1-5 mm thick).</p>
					15.00	69.06		

11
12
13
14
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Continued on next sheet

Remarks
Peg ID: WLMW03W





Borehole Log

Borehole No.

MW03B

Sheet 4 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673882.75 - 730795.54

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.06

Scale
1:25

Client: Bord na Móna

Dates: 04/09/2021 - 06/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
1						[Brick Pattern]	Strong grey indistinctly thinly bedded LIMESTONE. Partially weathered: faint and patchy pale orangish brown staining on some joint surfaces. Discontinuities: 1. 0-10 degree joints, medium spaced (60/563/1950), planar, rough. 2. 20-50 degree joints, widely spaced (400/750/1440), planar, rough, patchy orangish brown staining on some joint surfaces, pale orangish brown clay infill on some joint surfaces (30-100 mm thick).	
					19.50	64.56	----- End of borehole at 19.50 m	

16

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Remarks

Peg ID: WLMW03W





Borehole Log

Borehole No.

MW03P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673878.04 - 730791.82

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.29

Scale
1:25

Client: Bord na Móna

Dates: 03/09/2021 - 03/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							No recovery	
				1.50	82.79		Very soft low plasticity dark brown PEAT. Roots, twigs present. Moist material at the top, damp material at the bottom	
				3.55	80.74		Stiff low plasticity pale grey slightly gravelly slightly sandy CLAY. Damp material on the inside.	
				4.50	79.79		End of borehole at 4.50 m	

Remarks
Peg ID: WLMW03P





Borehole Log

Borehole No.

MW03Q

Sheet 1 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673880.75 - 730793.72

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.15

Scale
1:25

Client: Bord na Móna

Dates: 04/09/2021 - 04/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Very soft low plasticity reddish dark brown PEAT. Roots and twigs. Damp material		
					3.80	80.35	Stiff low plasticity pale grey slightly sandy CLAY with low boulder content. Damp material		
		4.50 - 7.00	B		4.27	79.88	Loose pale grey clayey GRAVEL and SAND with medium boulder content. Gravel is angular to subrounded fine to coarse. Large boulders at top of layer. Wet material		
							Continued on next sheet		

Remarks

Peg ID: WLMW02Q





Borehole Log

Borehole No.

MW03Q

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673880.75 - 730793.72

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.15

Scale
1:25

Client: Bord na Móna

Dates: 04/09/2021 - 04/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					7.83	76.32		Increased clay content
								Increased clay content
								Very stiff low plasticity pale grey slightly gravelly sandy CLAY with medium boulder content .
					9.00	75.15		End of borehole at 9.00 m

Remarks

Peg ID: WLMW02Q





Borehole Log

Borehole No.

MW04B

Sheet 1 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673695.13 - 730288.39

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.43

Scale
1:25

Client: Bord na Móna

Dates: 31/08/2021 - 01/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1					0.15	84.28		TOPSOIL	1
								Spongy brownish black fibrous PEAT	
					1.50	82.93		Spongy brownish black pseudofibrous PEAT (low recovery)	2
					3.90	80.53		Soft to firm grey slightly sandy slightly gravelly CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse	3
							Continued on next sheet	4	
								5	

Remarks
Peg ID: WLMW04W



Borehole Log

Borehole No.

MW04B

Sheet 2 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673695.13 - 730288.39

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.43

Scale
1:25

Client: Bord na Móna

Dates: 31/08/2021 - 01/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	78.43		Stiff grey slightly sandy gravelly CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse	6
					7.50	76.93		Very stiff grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium	8
								Continued on next sheet	10

Remarks
Peg ID: WLMW04W





Borehole Log

Borehole No.

MW04B

Sheet 3 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673695.13 - 730288.39

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.43

Scale
1:25

Client: Bord na Móna

Dates: 31/08/2021 - 01/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.50	73.93		Very stiff grey slightly gravelly very sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse	11
					12.50	71.93		Pale grey subangular GRAVEL with medium cobble content. Gravel and cobbles are limestone	12
					12.85	71.58		Medium strong massive pale grey LIMESTONE. Occasional calcite veins of various orientations (2-10 mm thick). Partially weathered: slightly reduced strength, slightly closer fracture spacing, orangish brown discolouration on most fracture surfaces. Discontinuities: 1. 10-20 degree joints, medium spaced (70/563/650), undulating, rough, clean. 2. 30-45 degree joints, medium spaced (25/322/890), planar to undulating, smooth, patchy orangish brown staining on joint surfaces (5-15 mm thick). 3. 55-70 degree joints, medium spaced (100/450/910), planar, rough, patchy pale orangish brown staining on joint surfaces, brown slightly sandy gravelly clay infill on some joint surfaces (approx. 25 mm thick). 4. 80-90 degree joints, at 14.25-14.50m (incipient from 14.258-14.33m), and 14.30-14.58 m, undulating smooth, pale brownish grey staining on joint surfaces. <u>Void infill of firm greyish brown slightly sandy gravelly clay with medium cobble content</u>	13 14
									15

Continued on next sheet

Remarks

Peg ID: WLMW04W



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 673695.13 - 730288.39

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.43

 Scale
1:25

Client: Bord na Móna

Dates: 31/08/2021 - 01/09/2021

 Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
Well	Water Strikes				15.10	69.33	[Brick Pattern]	Weak massive grey LIMESTONE with white calcite veins of various orientations (1-17 mm thick). Partially weathered: reduced strength, closer fracture spacing, orangish brown discolouration on most fracture surfaces. Discontinuities: 1. 10-20 degree joints, closely spaced (16/167/400), undulating, rough, patchy orangish brown staining on most joint surfaces, orangish brown clay infill on some joints (approx. 15 mm thick). 2. 30-40 degree joints, medium spaced (80/375/740), planar to undulating, smooth, orangish brown staining on most joint surfaces. 3. 55-70 degree joints, medium spaced (40/321/900), planar to undulating, smooth, orangish brown staining on joint surfaces. 4. 80-90 degree joints, widely spaced (60/1125/200), undulating, rough, orangish brown staining on joint surfaces, brown clay infill on most joint surfaces (approx. 5 mm thick).
					19.60	64.83		Medium strong massive grey LIMESTONE. Partially weathered: patchy orangish brown staining on most joint surfaces. Discontinuities: 1. 10-20 degree joints, medium spaced (45/409/1240), planar, rough strong dark orangish brown staining on most joint surfaces. 2. 30-40 degree joints, widely spaced (390/1500/1600), planar, rough, strong orangish brown staining in some joint surfaces. 3. 70-80 degree joint, at 20.90-21.10 m bgl, undulating, rough, brown sandy gravelly clay infill on joint surface (25-30 mm thick).

16

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Continued on next sheet

Remarks

Peg ID: WLMW04W



Borehole Log

Borehole No.

MW04B

Sheet 5 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673695.13 - 730288.39

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.43

Scale
1:25

Client: Bord na Móna

Dates: 31/08/2021 - 01/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				24.10	60.33		End of borehole at 24.10 m	

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22

23

24

25

Remarks
Peg ID: WLMW04W





Borehole Log

Borehole No.

MW04P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673701.44 - 730308.42

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.42

Scale
1:25

Client: Bord na Móna

Dates: 03/09/2021 - 03/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.50	82.92		Brownish black PEAT. Roots and twigs. Wet material. Poor recovery (5%)	1
					3.00	81.42		Very soft low plasticity reddish brown PEAT. Roots and twigs present. Brittle material at bottom of layer. Moist material	2
					3.40	81.02		Very soft low plasticity brown PEAT. Occasional roots and twigs. Wet material	3
					4.50	79.92		Very soft low plasticity pale grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to medium. Damp material	4
								End of borehole at 4.50 m	5

Remarks
Peg ID: WLMW04P





Borehole Log

Borehole No.

MW04Q

Sheet 1 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673697.44 - 730296.25

Hole Type
SNC

Location: Allenstown, Kildare

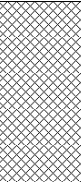

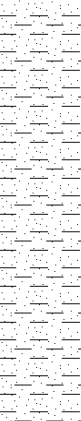

Level: 84.51

Scale
1:25

Client: Bord na Móna

Dates: 02/09/2021 - 02/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
█					0.60	83.90		PEAT. Roots and twigs present. Moist material (MADEGROUND)
								Very soft low plasticity thinly bedded dark brownish black PEAT. Twigs and roots present
					3.30	81.20		Very soft becoming soft high plasticity grey slightly sandy CLAY. Moist material
					4.72	79.78		Very soft becoming soft high plasticity pale grey gravelly sandy CLAY with low boulder content. Gravel is angular to subangular fine to coarse. Wet material

Continued on next sheet

Remarks

Peg ID: WLMW04Q





Borehole Log

Borehole No.

MW04Q

Sheet 2 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673697.44 - 730296.25

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.51

Scale
1:25

Client: Bord na Móna

Dates: 02/09/2021 - 02/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	78.50		Very stiff low plasticity pale grey gravelly very sandy CLAY with low cobble content. Gravel is angular to subrounded fine to coarse. Moist material	6
					7.50	77.00		Dense becoming very dense pale grey very clayey SAND and GRAVEL with medium boulder content. Gravel is angular to subrounded fine to coarse. Moist material	7
			9.00 - 10.80	B		9.00	75.50		Dense pale grey clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Damp material
									9
									10

Continued on next sheet

Remarks

Peg ID: WLMW04Q





Borehole Log

Borehole No.

MW04Q

Sheet 3 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673697.44 - 730296.25

Hole Type
SNC

Location: Allenstown, Kildare

Level: 84.51

Scale
1:25

Client: Bord na Móna

Dates: 02/09/2021 - 02/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.95	73.56		Wholly decomposed very pale grey LIMESTONE	11
					11.50	73.00		End of borehole at 11.50 m	12
									13
									14
									15

Remarks

Peg ID: WLMW04Q





Borehole Log

Borehole No.

MW05B

Sheet 1 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674783.81 - 729202.74

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.67

Scale
1:25

Client: Bord na Móna

Dates: 17/08/2021 - 18/08/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Spongy brownish black fibrous PEAT. Fragments of wood and occasional rootlets.	1	
					1.50	84.16		Low plasticity brownish black pseudofibrous PEAT.	
					1.80	83.86		Pale greyish brown slightly gravelly clayey fine to medium SAND. Gravel is angular fine to medium.	2
					2.25	83.42		Soft brown slightly sandy slightly gravelly CLAY with a thin bed of greyish brown fine to medium SAND. Sand is fine to coarse. Gravel is subangular fine to coarse.	
		3.00 - 3.45	U		3.00	82.66		Soft to firm grey slightly sandy gravelly CLAY with low subangular cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse.	3
					4.50	81.17		Stiff grey slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.	4
								Continued on next sheet	5

Remarks
Peg ID: WLMW05W





Borehole Log

Borehole No.

MW05B

Sheet 2 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674783.81 - 729202.74

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.67

Scale
1:25

Client: Bord na Móna

Dates: 17/08/2021 - 18/08/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	79.67		Very stiff grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. (Low recovery)	6
		7.50 - 9.00	B		7.50	78.17		Grey clayey very gravelly fine to coarse SAND with low subrounded cobble content. Gravel is subangular fine to coarse.	7
					9.00	76.67		Very stiff grey slightly gravelly very sandy CLAY with low subangular cobble content. Sand is fine to coarse. Gravel is subrounded fine to coarse.	8
									9
									10

Continued on next sheet

Remarks

Peg ID: WLMW05W





Borehole Log

Borehole No.

MW05B

Sheet 3 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674783.81 - 729202.74

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.67

Scale
1:25

Client: Bord na Móna

Dates: 17/08/2021 - 18/08/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.50	75.17		Very stiff slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse.	11
					12.00	73.67		Very stiff greyish brown slightly sandy very gravelly CLAY with medium subrounded cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse.	12
					12.90	72.76		Medium strong massive grey LIMESTONE with white calcite veins of various orientations (1-4 mm thick). Partially weathered: slightly reduced strength, slightly closer fracture spacing, pale orangish brown discolouration on most fracture surfaces. Discontinuities: 1. 20-30 degree joints, medium spaced (90/263/415), planar to undulating, rough, orangish brown staining on joint surfaces, brown clay infill on joint at 14.55 m (30-35 mm thick). 2. 45-65 degree joints, at 14.44 m and 14.63 m, undulating, rough, patchy orangish brown staining on joint surfaces. 3. Approximately 90 degree joint, at 14.40-14.47 m, planar, rough.	13
					15.00	70.67		Continued on next sheet	15

Remarks
Peg ID: WLMW05W





Borehole Log

Borehole No.

MW05B

Sheet 4 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674783.81 - 729202.74

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.67

Scale
1:25

Client: Bord na Móna

Dates: 17/08/2021 - 18/08/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							<p>Medium strong massive grey LIMESTONE with yellowish white calcite veins of various orientations (1-3 mm thick). Predominantly fresh: orangish brown discolouration on most joint surfaces. Discontinuities: 1. 10-15 degree joints, widely spaced (78/750/2600), planar to undulating, rough, pale orangish brown staining on most joint surfaces. 2. 20-30 degree joints, medium spaced (93/462/730), planar, rough, dark orangish brown staining on most joint surfaces, dark brown clay infill on joint at 18.42 m. 3. 50-60 degree joints, widely spaced (90/1500/4000), planar, rough, strong orangish brown staining on joint surfaces. 4. 70-90 degree joints, at 16.10-16.90 m, 22.10-22.50 m, 23.80-24.10 m and 24.08-24.37 m bgl, planar to undulating, rough, strong, orangish brown staining on joint surfaces.</p>	16	
								17	
								18	
								19	
								20	

Continued on next sheet

Remarks

Peg ID: WLMW05W





Borehole Log

Borehole No.

MW05B

Sheet 5 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674783.81 - 729202.74

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.67

Scale
1:25

Client: Bord na Móna

Dates: 17/08/2021 - 18/08/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
+								21
+								22
+								23
+								24
+								25

Continued on next sheet

Remarks
Peg ID: WLMW05W





Borehole Log

Borehole No.

MW05B

Sheet 6 of 6

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674783.81 - 729202.74

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.67

Scale
1:25

Client: Bord na Móna

Dates: 17/08/2021 - 18/08/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				27.00	58.66		End of borehole at 27.00 m	

26

27

28

29

30

Remarks
Peg ID: WLMW05W





Borehole Log

Borehole No.

MW05P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674781.19 - 729193.69

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.88

Scale
1:25

Client: Bord na Móna

Dates: 13/08/2021 - 16/08/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								Very soft low plasticity dark reddish brown PEAT. Roots and twigs present. Saturated material becoming wet	1
					3.00	82.88		Soft to stiff high plasticity grey slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subrounded fine to coarse. Sand is coarse Subrounded cobbles. Moist material	3
				4.50	81.38	End of borehole at 4.50 m			5

Remarks
Peg ID: WLMW05P





Borehole Log

Borehole No.

MW05Q

Sheet 1 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674782.55 - 729198.25

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.59

Scale
1:25

Client: Bord na Móna

Dates: 16/08/2021 - 17/08/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.40	84.19		Very soft low plasticity dark brown PEAT. Roots present. Moist material	1
					2.95	82.64		Soft to firm high plasticity grey slightly sandy gravelly CLAY. Gravel is subangular to subrounded fine to coarse. Sand is coarse. Moist material	2
					3.80 3.90	81.79 81.69		Loose bluish grey slightly gravelly fine to coarse SAND. Gravel is rounded fine to medium. Moist material	4
							Stiff low plasticity brownish grey gravelly CLAY with low cobble content. Gravel is angular to subrounded fine to medium. Cobbles are subrounded. Damp material		
					4.50	81.09		Firm low plasticity grey slightly sandy very gravelly CLAY with medium cobble content. Gravel is very angular to subrounded fine to medium. Cobbles are subrounded. Wet material	5

Continued on next sheet

Remarks

Peg ID: WLMW05Q





Borehole Log

Borehole No.

MW05Q

Sheet 2 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674782.55 - 729198.25

Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.59

Scale
1:25

Client: Bord na Móna

Dates: 16/08/2021 - 17/08/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					5.30	80.29		Very stiff low plasticity brownish grey slightly sandy gravelly CLAY with low cobble content. Gravel is angular to subrounded fine to coarse Cobbles are subrounded. Damp material
		7.50 - 10.40	B		7.50	78.09		Very loose brownish grey slightly clayey very sandy angular to subrounded fine to coarse GRAVEL with low cobble and low boulder content. Sand is fine to coarse. Cobbles and boulders are subrounded. Wet material

6

7

8

9

10

Continued on next sheet

Remarks

Peg ID: WLMW05Q



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674782.55 - 729198.25

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 85.59

 Scale
1:25

Client: Bord na Móna

Dates: 16/08/2021 - 17/08/2021

 Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					10.40	75.19		Very stiff low plasticity brownish grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to coarse. Sand is fine to medium and in discrete lenses. Damp to moist material
					12.20	73.39		
					12.80	72.79		Medium strong pale brown/pale grey LIMESTONE. Partially discoloured to pale brown and fairly stable
					13.80	71.79	End of borehole at 13.80 m	

 Remarks
Peg ID: WLMW05Q



Borehole Log

Borehole No.

MW06B

Sheet 1 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675049.20 - 732007.37

Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.70

Scale
1:25

Client: Bord na Móna

Dates: 20/09/2021 - 22/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
								1	
								2	
								3	
								4	
				4.50	78.19		Spongy brownish black slightly gravelly pseudofibrous PEAT. Occasional fragments of wood. Gravel is subrounded to rounded coarse	5	

Continued on next sheet

Remarks
Peg ID: WLMW06W





Borehole Log

Borehole No.

MW06B

Sheet 2 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675049.20 - 732007.37

Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.70

Scale
1:25

Client: Bord na Móna

Dates: 20/09/2021 - 22/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1		7.25	B		6.60	76.10		6	
					6.90	75.80			Very stiff greyish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse
		8.75	B						9
					9.00	73.69			

Continued on next sheet

Remarks
Peg ID: WLMW06W



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675049.20 - 732007.37

 Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.70

 Scale
1:25

Client: Bord na Móna

Dates: 20/09/2021 - 22/09/2021

 Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.50	72.19		Firm brownish grey slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse	11
					12.00	70.69		Grey subangular fine to coarse GRAVEL. Gravel is limestone	12
					13.00	69.69		Weak massive grey LIMESTONE with occasional yellowish white calcite veins (4-40 mm thick). Partially weathered: reduced strength, much closer fracture spacing, pale orangish brown discolouration on most fracture surfaces. Discontinuities: 1. 0-30 degree joints, closely spaced (5/74/165), planar to undulating, smooth, pale orangish brown staining on joint surfaces. 2. 65-85 degree joints, at 13.67-14.60 m, 13.50-15.28 m and 15.20-15.75 m, pale greyish brown gravelly clay infill on joint surfaces (10-40 mm thick) <u>Greyish brown gravelly clay</u>	13 14
Continued on next sheet								15	

 Remarks
Peg ID: WLMW06W



Borehole Log

Borehole No.

MW06B

Sheet 4 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675049.20 - 732007.37

Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.70

Scale
1:25

Client: Bord na Móna

Dates: 20/09/2021 - 22/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					15.75	66.94		<p>Medium strong massive grey LIMESTONE with occasional yellowish white calcite veins of various orientations (1-15 mm thick). Partially weathered: slightly reduced strength, slightly closer fracture spacing, patchy pale orangish brown discolouration on most fracture surfaces. Discontinuities: 1. 0-30 degree joints, closely spaced (30/164/724), planar to undulating, rough, patchy pale orangish brown staining on some joint surfaces, brown clay infill on some joint surfaces (10-20 mm thick). 2. 60-90 degree joints, at 15.80-16.23 m, 16.50-16.74 m, 17.00-17.20 m, 17.65-17.94 m, 18.15-19.80 m, 19.70-20.16 m and 20.40-20.65 m, undulating, smooth, patchy orangish brown staining on some joint surfaces, pale brown clay infill on most joint surfaces (25-40 mm thick).</p>

Continued on next sheet

Remarks

Peg ID: WLMW06W





Borehole Log

Borehole No.

MW06B

Sheet 5 of 5

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675049.20 - 732007.37

Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.70

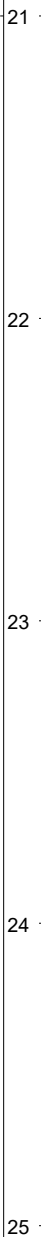
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Client: Bord na Móna

Dates: 20/09/2021 - 22/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					21.00	61.70		End of borehole at 21.00 m



Remarks
Peg ID: WLMW06W





Borehole Log

Borehole No.

MW06P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675048.86 - 732006.48

Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.68

Scale
1:25

Client: Bord na Móna

Dates: 22/09/2021 - 22/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Very soft low plasticity reddish dark brown PEAT. Roots and twigs present. Damp material		
					3.00	79.68	End of borehole at 3.00 m		

Remarks
Peg ID: WLMW06P



Borehole Log

Borehole No.

MW06Q

Sheet 1 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675047.90 - 732004.36

Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.74

Scale
1:25

Client: Bord na Móna

Dates: 22/09/2021 - 23/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Very soft low plasticity dark brown PEAT. Roots and twigs. Damp material becoming wet		
								1	
								2	
								3	
								4	
								5	

Continued on next sheet

Remarks

Peg ID: WLMW06Q





Borehole Log

Borehole No.

MW06Q

Sheet 2 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675047.90 - 732004.36

Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.74

Scale
1:25

Client: Bord na Móna

Dates: 22/09/2021 - 23/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
Well	Water Strikes						(Symbolic pattern)	
					7.80	74.94	(Symbolic pattern)	Very soft low plasticity dark brown very gravelly PEAT. Gravel is angular to subrounded fine to coarse. Wet material
					8.50	74.24	(Symbolic pattern)	Very stiff low plasticity grey gravelly sandy CLAY with high cobble content. Gravel is angular to subrounded fine to coarse. Moist material
		9.00 - 11.40	B					

Continued on next sheet

Remarks

Peg ID: WLMW06Q





Borehole Log

Borehole No.

MW06Q

Sheet 3 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675047.90 - 732004.36

Hole Type
SNC

Location: Allenstown, Kildare

Level: 82.74

Scale
1:25

Client: Bord na Móna

Dates: 22/09/2021 - 23/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					11.40	71.34		Wholly decomposed very pale grey LIMESTONE	11
					11.70	71.04			End of borehole at 11.70 m
									13
									14
									15

Remarks
Peg ID: WLMW06Q





Borehole Log

Borehole No.

MW07B

Sheet 1 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675430.17 - 731615.73

Hole Type
SNC

Location: Allenstown, Kildare

Level: 86.59

Scale
1:25

Client: Bord na Móna

Dates: 13/09/2021 - 15/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1		4.30	B		1.14	85.45		Spongy blackish brown pseudofibrous PEAT. Frequent fine rootlets and rare fragments of gravel sized wood.	1
					1.70	84.89		Soft brownish grey slightly sandy slightly gravelly CLAY. Occasional fragments of wood and rare pockets of peat (<5 mm).	2
					3.95	82.64		Very soft grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Subangular to angular gravel. Gravel is of various lithologies.	3
					4.30	82.64		Soft grey slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to angular fine to coarse. Gravel is of various lithologies.	4
					4.90	81.69		Firm grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded to subangular fine to coarse. Gravel is of various lithologies.	5

Continued on next sheet

Remarks

Peg ID: WLMW07W





Borehole Log

Borehole No.

MW07B

Sheet 2 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675430.17 - 731615.73

Hole Type
SNC

Location: Allenstown, Kildare

Level: 86.59

Scale
1:25

Client: Bord na Móna

Dates: 13/09/2021 - 15/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	80.59		Greyish white slightly sandy very clayey subangular fine to coarse GRAVEL. Sand is fine to coarse.	6
					6.80	79.79		Pale greyish white slightly sandy slightly gravelly highly calcareous CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is limestone	7
					7.50	79.09		Medium strong to strong massive grey LIMESTONE with pale orange calcite veins (up to 15 mm thick). Partially weathered: slightly reduced strength, slight closer fracture spacing with discolouration and clay deposits on most fracture surfaces. Discontinuities: 1. 5-15 degree joints, medium spaced (10/275/590) slightly undulating, rough, with pale brown sandy clay deposits (<1 mm thick) and occasional orangish brown staining on some fracture surfaces. 2. 30-40 degree joints widely spaced (500/1250/190) slightly undulating, rough with pale brown clay deposits (<1 mm thick) on some fracture surfaces. 3. 70-90 degree joints at 7.60-8.05 m, 8.15-8.50 m, 9.60-10.50 m, 14.0-16.20 m, 16.20-16.65 m, 16.50-16.90 m undulating rough with occasional orangish brown staining and pale brown clay deposits (up to 50 mm thick) on most joint surfaces.	8 9
Continued on next sheet								10	

Remarks

Peg ID: WLMW07W





Borehole Log

Borehole No.

MW07B

Sheet 4 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675430.17 - 731615.73

Hole Type
SNC

Location: Allenstown, Kildare

Level: 86.59

Scale
1:25

Client: Bord na Móna

Dates: 13/09/2021 - 15/09/2021

Logged By
Causeway Geotech Ltd

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
				18.00	68.59		End of borehole at 18.00 m	

16

17

18

19

20

Remarks
Peg ID: WLMW07W





Borehole Log

Borehole No.

MW07P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675430.19 - 731619.17

Hole Type
SNC

Location: Allenstown, Kildare

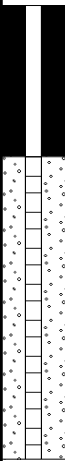

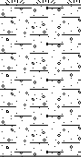
Level: 86.56

Scale
1:25

Client: Bord na Móna

Dates: 17/09/2021 - 17/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							 Soft low plasticity dark brown PEAT. Roots and twigs present. Moist material		
					1.00	85.56	 Soft low plasticity pale grey gravelly sandy CLAY. Gravel is angular to subrounded fine to medium. Moist material	1	
					1.50	85.06	End of borehole at 1.50 m		

Remarks
Peg ID: WLMW07P



Borehole Log

Borehole No.

MW07Q

Sheet 1 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675430.19 - 731617.00

Hole Type
SNC

Location: Allenstown, Kildare

Level: 86.55

Scale
1:25

Client: Bord na Móna

Dates: 17/09/2021 - 17/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.20	85.35		Soft low plasticity brown PEAT. Roots and twigs present. Damp material	1
		1.50 - 1.95	U					Stiff low plasticity brownish grey slightly gravelly sandy CLAY. Gravel is angular to subangular fine to medium. Moist material	2
					2.50	84.05		Soft low plasticity pale grey gravelly sandy CLAY with low boulder content. Gravel is angular to subrounded fine to coarse. Moist material	3
		4.50 - 4.95	U					Soft to firm high plasticity pale grey slightly gravelly slightly sandy CLAY. Moist material	4
		4.95 - 6.00	B		4.30	82.25			5

Continued on next sheet

Remarks

Peg ID: WLMW07Q





Borehole Log

Borehole No.

MW07Q

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675430.19 - 731617.00

Hole Type
SNC

Location: Allenstown, Kildare

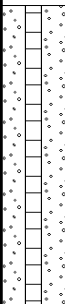
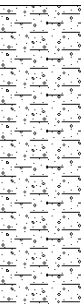
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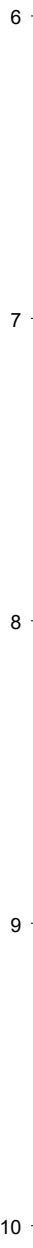
Scale
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Client: Bord na Móna

Dates: 17/09/2021 - 17/09/2021

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					6.00	80.55		End of borehole at 6.00 m



Remarks
Peg ID: WLMW07Q





Borehole Log

Borehole No.

RW02P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675222.79 - 730523.61

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.35

Scale
1:25

Client: Bord na Móna

Dates: 21/07/2021 - 22/07/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Soft low plasticity dark brown slightly gravelly PEAT with low cobble content and low boulder content. Roots, twigs and shells present. Dry material		
				0.50	83.85		Very stiff low plasticity thinly laminated dark brownish red PEAT. Roots and twigs present. Damp material		
				0.85	83.50		Very soft high plasticity brownish grey slightly gravelly slightly sandy CLAY. Damp material		
				1.00	83.35		End of borehole at 1.00 m	1	
								2	
								3	
								4	
								5	

Remarks
Peg ID: RWGW02S



Borehole Log

Borehole No.

RW02S

Sheet 1 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675222.54 - 730513.98

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.34

Scale
1:25

Client: Bord na Móna

Dates: 22/07/2021 - 22/07/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
1					0.50	83.84		Very soft low plasticity brown PEAT. Twigs, roots and worms present. Damp material	
					1.00	83.34		Very soft high plasticity brown slightly clayey slightly gravelly slightly sandy PEAT. Roots present. Damp material	
					2.00	82.34		Very soft high plasticity brownish grey slightly peaty slightly gravelly slightly sandy CLAY. Peat content decreases with depth. Damp material	
					3.00 - 4.00	B		Soft low plasticity brownish grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to medium. Increased gravel content at bottom of layer. Driller notes cobbles and boulders. Damp material	
2							<i>Pale grey colour and material becoming brittle</i>		
									4.00 - 10.00
3									
4									
5									

Continued on next sheet

Remarks

Peg ID: RWGW02D





Borehole Log

Borehole No.

RW02S

Sheet 3 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675222.54 - 730513.98

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.34

Scale
1:25

Client: Bord na Móna

Dates: 22/07/2021 - 22/07/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		11.00 - 13.00	B		11.00	73.34		Loose brownish grey slightly sandy clayey angular to subrounded fine to medium GRAVEL. Damp material becoming wet
					13.00	71.34		
		End of borehole at 13.00 m						

Remarks
Peg ID: RWGW02D





Borehole Log

Borehole No.

RW03P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 674288.38 - 730940.10

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.00

Scale
1:25

Client: Bord na Móna

Dates: 21/07/2021 - 21/07/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Very soft high plasticity brown/dark red PEAT. Roots and twigs present. Damp material becoming wet		
					2.20	81.80			
							End of borehole at 2.20 m		

Remarks
Peg ID: RWGW03S

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 674291.35 - 730936.25	Hole Type RO
Location: Allenstown, Kildare		Level: 83.96	Scale 1:25
Client: Bord na Móna		Dates: 20/07/2021 - 21/07/2021	Logged By CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					6.00	77.96		Dense grey slightly sandy very clayey angular to subrounded fine to medium GRAVEL. Decreased clay content and gravel fining with depth. Limestone parent material of gravel. Driller notes cobbles/boulders. Damp material	6
					7.50	76.46		Loose grey slightly clayey very sandy angular to subrounded fine to medium GRAVEL. Dry material	7
					8.50	75.46		Very soft high plasticity pale grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to medium. Moist material	8
					9.50	74.46		Very loose pale grey slightly clayey sandy angular to subrounded fine to coarse GRAVEL. Increased clay content with depth. Saturated material	9
					10.00	73.96		Very soft low plasticity pale grey slightly gravelly slightly sandy CLAY. Gravel is angular to subrounded fine. Wet material	10
End of borehole at 10.00 m									

 Remarks
 Peg ID: RWGW03D



Borehole Log

Borehole No.

RW04P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675099.16 - 731778.68

Hole Type
RO

Location: Allenstown, Kildare

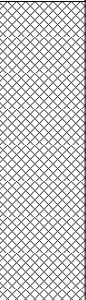

Level: 84.27

Scale
1:25

Client: Bord na Móna

Dates: 29/07/2021 - 29/07/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					1.00	83.27		Very soft high plasticity grey/brown/dark brown CLAY AND PEAT (MADEGROUND). Roots and twigs present. Likely historic ground works in area due to embankment and drain present. Dry material becoming damp <i>Slightly gravelly and slightly sandy</i>	1
								Very soft high plasticity dark brown/brown PEAT. Roots and twigs present. Dark brown undisturbed and brown disturbed material. Moist material	2
					3.30	80.97			3
								End of borehole at 3.30 m	4
									5

Remarks

Peg ID: RWGW04S





Borehole Log

Borehole No.

RW04S

Sheet 1 of 3

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 675094.24 - 731780.42

Hole Type
RO

Location: Allenstown, Kildare

Level: 84.34

Scale
1:25

Client: Bord na Móna

Dates: 29/07/2021 - 29/07/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Type	Results						
█	▼	3.50 - 5.50	B		1.00	83.34		Very soft high plasticity grey/brown/dark brown CLAY AND PEAT (MADEGROUND). Roots and twigs present. Likely historic ground works in area due to embankment and drain present. Dry material becoming damp	1	
									<i>Slightly gravelly and slightly sandy</i>	
									Very soft high plasticity dark brown/brown PEAT. Roots and twigs present. Dark brown undisturbed and brown disturbed material. Moist material	2
				3.20	81.14		Very soft low plasticity grey/pale grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to medium. Wet material	3		
									4	
								5		

Continued on next sheet

Remarks

Peg ID: RWGW04D





Borehole Log

Borehole No.

RW04S

Sheet 2 of 3

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 675094.24 - 731780.42	Hole Type RO
Location: Allenstown, Kildare		Level: 84.34	Scale 1:25
Client: Bord na Móna		Dates: 29/07/2021 - 29/07/2021	Logged By CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		8.00 - 10.00	B		5.50	78.84		Medium dense grey slightly sandy very clayey angular to subrounded fine to medium GRAVEL. Wet material	6
					6.00	78.34		Dense grey slightly sandy very clayey angular to subrounded fine to medium GRAVEL. Decrease in clay with depth. Damp material	
					7.00	77.34		Dense grey slightly sandy clayey angular to subrounded fine to medium GRAVEL. Damp material	
					7.50	76.84		Dense grey slightly sandy slightly clayey angular to subrounded fine to medium GRAVEL. Damp material	
					8.00	76.34		Dense grey slightly sandy clayey angular to subrounded fine to medium GRAVEL. Damp material	
					10.00	74.34		Continued on next sheet	10

Remarks
Peg ID: RWGW04D



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 675094.24 - 731780.42

 Hole Type
RO

Location: Allenstown, Kildare

Level: 84.34

 Scale
1:25

Client: Bord na Móna

Dates: 29/07/2021 - 29/07/2021

 Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					10.50	73.84		Loose grey slightly clayey slightly sandy angular to subrounded fine to medium GRAVEL. Damp to wet material	
					11.00	73.34		Dense grey sandy very clayey angular to subangular fine to medium GRAVEL. Wet material	
					11.50	72.84		Very soft high plasticity grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to medium. Wet material	11
					13.00	71.34		Very soft high plasticity grey slightly sandy slightly gravelly CLAY. Moist material	12
					13.00	71.34	End of borehole at 13.00 m		13
									14
									15

 Remarks
Peg ID: RWGW04D

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674309.21 - 731523.24

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.08

 Scale
1:25

Client: Bord na Móna

Dates: 26/07/2021 - 26/06/2021

 Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
		2.00 - 4.00	B		0.50	82.58		Very loose pale grey very sandy silty angular to subrounded fine to medium GRAVEL with low boulder and low cobble content (MADEGROUND). Dry material	
					1.00	82.08		Very loose brownish grey gravelly fine to medium SAND (MADEGROUND). Gravel is angular to subrounded fine to medium. Dry material	
					1.50	81.58		Loose brownish grey slightly gravelly angular to subangular very fine to fine SAND. Damp material	
					2.00	81.08		Loose brownish grey GRAVEL and SAND. Sand is angular to subangular fine to medium. Gravel is angular to rounded fine to medium. Damp material	
					4.00	79.08		Loose dark grey slightly clayey very sandy angular to rounded fine to medium GRAVEL. Sand is medium to coarse. Wet material	
								End of borehole at 4.00 m	4

 Remarks
Peg ID: RWGW09S

Project Name: Drehid Site Investigation	Project No. 263228	Co-ords: 674311.37 - 731527.80	Hole Type RO
Location: Allenstown, Kildare		Level: 83.00	Scale 1:25
Client: Bord na Móna		Dates: 23/07/2021 - 26/07/2021	Logged By CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
█	▼	2.00 - 4.00	B		0.50	82.50		Very loose pale grey slightly silty very sandy angular to subrounded fine to medium GRAVEL with low boulder and low cobble content (MADEGROUND). Dry material	1
					1.00	82.00		Very loose brownish grey gravelly fine to medium SAND (MADEGROUND). Gravel is angular to subrounded fine to medium. Dry to damp material	
					1.50	81.50		Loose brownish grey slightly gravelly angular to subangular very fine to fine SAND. Damp material	
					2.00	81.00		Loose brownish grey GRAVEL and SAND. Sand is angular to subangular fine to medium. Gravel is angular to rounded fine to medium. Moist material	
					5.00	78.00		Loose dark grey slightly clayey very sandy angular to rounded fine to medium GRAVEL. Sand is medium to coarse. Wet material	

Continued on next sheet

 Remarks
 Peg ID: RWGW09D

Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 674311.37 - 731527.80

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.00

 Scale
1:25

Client: Bord na Móna

Dates: 23/07/2021 - 26/07/2021

 Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Loose dark grey clayey sandy angular to rounded medium to coarse GRAVEL. Wet material		
				6.00	77.00		Loose pale grey slightly sandy very clayey angular to subrounded medium to coarse GRAVEL. Saturated material	6	
				6.50	76.50		Very soft low plasticity grey gravelly CLAY. Gravel is angular to subrounded fine to medium. Wet material	7	
		▼	8.00 - 10.00	B	8.00	75.00	Loose dark grey slightly clayey sandy angular to subrounded fine to medium GRAVEL. Damp material	8	
							Saturated and clay rich appearance of 9.0 to 10.0 m bgl - settlement after weekend	9	
				10.00	73.00		End of borehole at 10.00 m	10	

Remarks

Peg ID: RWGW09D



Borehole Log

Borehole No.

RW10P

Sheet 1 of 1

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673760.86 - 731024.30

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.71

Scale
1:25

Client: Bord na Móna

Dates: 27/07/2021 - 27/07/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							<p>Very soft low plasticity dark brown PEAT. Roots and twigs present. Damp to moist material</p>	
					2.60	81.11	<p>Very soft high plasticity brownish grey slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to medium. Sand is fine to medium. Moist material</p>	
				2.80	80.91		<p>End of borehole at 2.80 m</p>	

Remarks
Peg ID: RWGW10S



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 673768.50 - 731016.43

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.76

 Scale
1:25

Client: Bord na Móna

Dates: 27/07/2021 - 27/07/2021

 Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.60	83.16		Very loose grey/brown SAND AND GRAVEL. Gravel is angular fine to medium. Sand is fine to coarse. Dry material	
					1.80	81.96		Very soft low plasticity dark brown PEAT. Roots and twigs present. Damp to moist material	1
					2.50	81.26		Very soft high plasticity brownish grey slightly gravelly slightly sandy CLAY. Gravel is angular to rounded fine to medium. Sand is fine to medium. Moist material	2
		3.00 - 4.50	B		3.00	80.76		Loose brownish grey slightly sandy clayey subangular to rounded fine to medium GRAVEL. Wet material	3
		4.50 - 5.50	B		4.50	79.26		Very loose grey gravelly angular to rounded fine to medium SAND. Gravel is angular to rounded fine to medium. Moist material	4
							Very soft low plasticity grey sandy gravelly CLAY. Gravel is angular fine to medium. Moist material becoming saturate (drilling water added)	5	

Continued on next sheet

Remarks

Peg ID: RWGW10D



Borehole Log

Borehole No.

RW10S

Sheet 2 of 2

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673768.50 - 731016.43

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.76

Scale
1:25

Client: Bord na Móna

Dates: 27/07/2021 - 27/07/2021

Logged By
CF

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▼				5.50	78.26		Medium dense grey slightly sandy clayey angular to rounded fine to medium GRAVEL. Damp material	
		6.00 - 7.00	B		6.00	77.76		Loose brownish grey sandy clayey angular to subrounded fine to medium GRAVEL. Saturated material	6
					7.00	76.76		End of borehole at 7.00 m	7
									8
									9
									10

Remarks
Peg ID: RWGW10D





Borehole Log

Borehole No.

WLPC01

Sheet 1 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673781.25 - 731292.73

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.30

Scale
1:25

Client: Bord na Móna

Dates: 09/09/2021 -

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
							Very soft low plasticity dark brown PEAT. Roots and twigs. Moist material becoming moist to wet		
					4.00	79.30	Very soft low plasticity pale grey slightly gravelly slightly sandy CLAY. Gravel is angular to subrounded fine to medium. Moist material		
							Continued on next sheet		

Remarks



Project Name: Drehid Site Investigation

 Project No.
263228

Co-ords: 673781.25 - 731292.73

 Hole Type
RO

Location: Allenstown, Kildare

Level: 83.30

 Scale
1:25

Client: Bord na Móna

Dates: 09/09/2021 -

 Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
	▼				5.50	77.80		Very soft low plasticity pale grey sandy very gravelly CLAY. Gravel is angular to subrounded fine to coarse. Moist material	6
					7.00	76.30		Dense pale grey very clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Wet material	7
					8.50	74.80		Loose pale grey very clayey SAND and GRAVEL. Gravel is angular to subrounded fine to medium. Saturated material	9
					10.00	73.30			

Continued on next sheet

Remarks



Borehole Log

Borehole No.

WLPC01

Sheet 3 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673781.25 - 731292.73

Hole Type
RO

Location: Allenstown, Kildare

Level: 83.30

Scale
1:25

Client: Bord na Móna

Dates: 09/09/2021 -

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
							Loose grey very clayey SAND and GRAVEL. Gravel is angular to subrounded fine to coarse. Wet material	11
				13.00	70.30		Loose pale grey slightly sandy slightly clayey angular to subrounded fine to medium GRAVEL. Damp material	13
				14.50	68.80		Medium strong pale grey LIMESTONE	15

Continued on next sheet

Remarks





Borehole Log

Borehole No.

WLPC01

Sheet 4 of 4

Project Name: Drehid Site Investigation

Project No.
263228

Co-ords: 673781.25 - 731292.73

Hole Type
RO

Location: Allenstown, Kildare

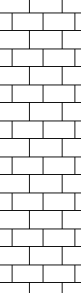
Level: 83.30

Scale
1:25

Client: Bord na Móna

Dates: 09/09/2021 -

Logged By
FP

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					16.00	67.30		<div style="text-align: right; margin-right: 20px;">16</div> <div style="text-align: right; margin-right: 20px;">17</div> <div style="text-align: right; margin-right: 20px;">18</div> <div style="text-align: right; margin-right: 20px;">19</div> <div style="text-align: right; margin-right: 20px;">20</div>
<p style="text-align: right; margin-right: 20px;">End of borehole at 16.00 m</p>								

Remarks



Appendix D

Geotechnical Laboratory Testing Results



CAUSEWAY
GEOTECH

HEAD OFFICE
Causeway Geotech Ltd
8 Drumahiskey Road
Ballymoney
Co. Antrim, N. Ireland, BT53 7QL
NI: +44 (0)28 276 66640

Registered in Northern Ireland.
Company Number: NI610766

REGIONAL OFFICE
Causeway Geotech (IRL) Ltd
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan, Co Dublin, Ireland, K32 VR66
ROI: +353 (0)1 526 7465

Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

**SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT**

19 October 2021

Project Name:	Drehid Waste Management Facility – Further Landfill Development 2021
Project No.:	21-0709
Client:	Bord na Móna
Engineer:	CDM Smith

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s).

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd



1



Project Name: Drehid Waste Management Facility – Further Landfill Development 2021

Report Reference: Schedule 1

The table below details the tests carried out, the specifications used, and the number of tests included in this report.

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	1
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	12
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	8

SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.


Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – subcontracted to Pro Soils Limited (<i>UKAS 4043</i>)	Permeability in a triaxial cell (up to 4 days)	BS 1377-6:1990	1
	Extra over days (more than initial 4 days)		1
SOIL – Subcontracted to Eurofins Chemtest Ltd (<i>UKAS 2183</i>)	pH Value of Soil		1
SOIL – Subcontracted to Eurofins Chemtest Ltd (<i>UKAS 2183</i>)	Fraction Organic Carbon		1

Summary of Classification Test Results

Project No. 21-0709	Project Name Drehid Waste Management Facility – Further Landfill Development 2021
------------------------	--

Hole No.	Sample				Soil Description	Density		w %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Casagrande Classification
	Ref	Top	Base	Type		bulk Mg/m3	dry							
LFBH01	2	7.50	8.50	B	Grey sandy gravelly silty CLAY.			14.0						

All tests performed in accordance with BS1377:1990 unless specified otherwise LAB 01R Version 4

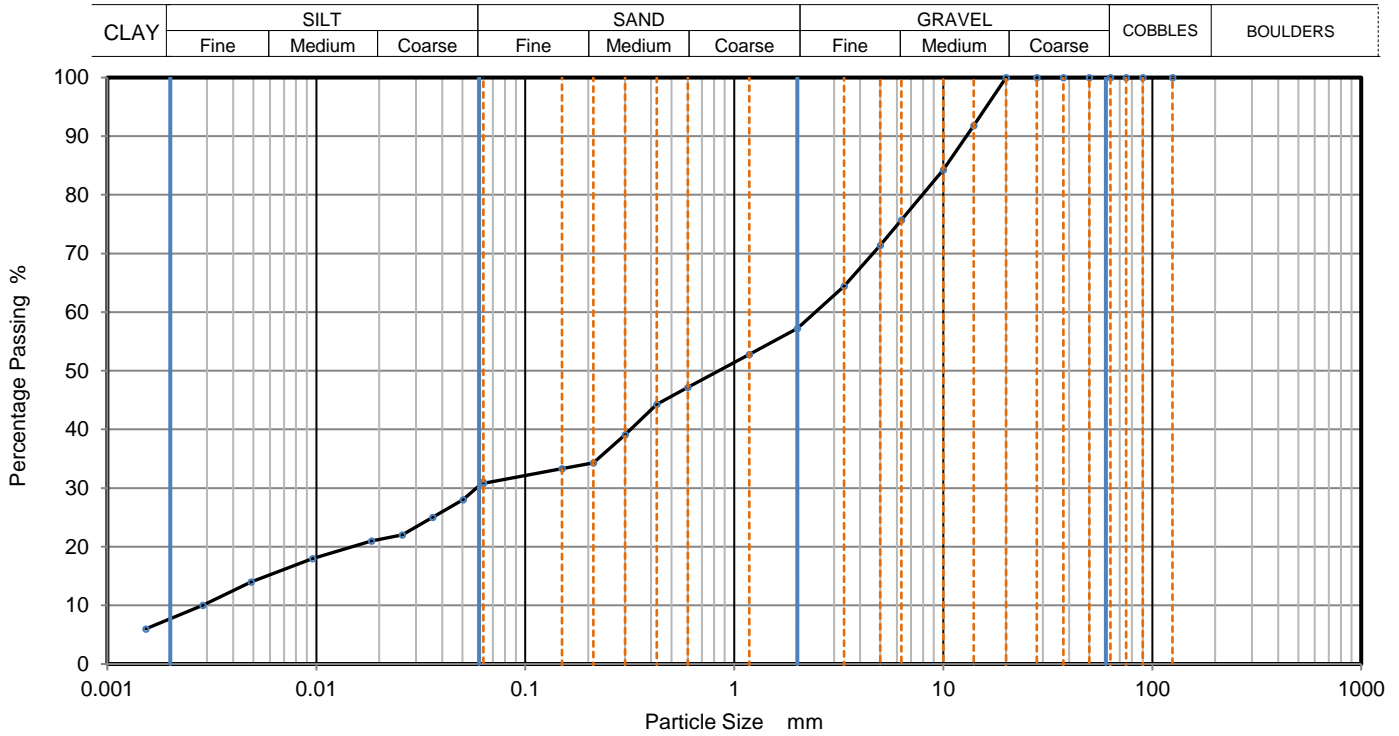
Key Density test Liquid Limit Particle density Linear measurement unless : 4pt cone unless : sp - small pyknometer wd - water displacement cas - Casagrande method gj - gas jar wi - immersion in water 1pt - single point test	Date Printed 18/10/2021	Approved By Stephen.Watson	
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PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	LFBH01
Sample No.	2
Depth, m	7.50
Sample Type	B
KeyLAB ID	Caus2021091610

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Grey sandy gravelly silty CLAY.		
Specimen Reference	4	Specimen Depth	7.5 m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	31
90	100	0.05034	28
75	100	0.03603	25
63	100	0.02579	22
50	100	0.01834	21
37.5	100	0.00958	18
28	100	0.00487	14
20	100	0.00286	10
14	92	0.00153	6
10	84		
6.3	76		
5	71		
3.35	64		
2	57		
1.18	53		
0.6	47		
0.425	44	Particle density (assumed) 2.65 Mg/m3	
0.3	39		
0.212	34		
0.15	33		
0.063	31		

Dry Mass of sample, g 206

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	42.8
Sand	26.3
Silt	23.5
Clay	7.4

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	830
Curvature Coefficient	0.48

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson





PARTICLE SIZE DISTRIBUTION

Job Ref **21-0709**

Borehole/Pit No. **LFMW01**

Site Name **Drehid Waste Management Facility – Further Landfill Development 2021**

Sample No. **2**

Soil Description **Grey sandy slightly gravelly silty CLAY.**

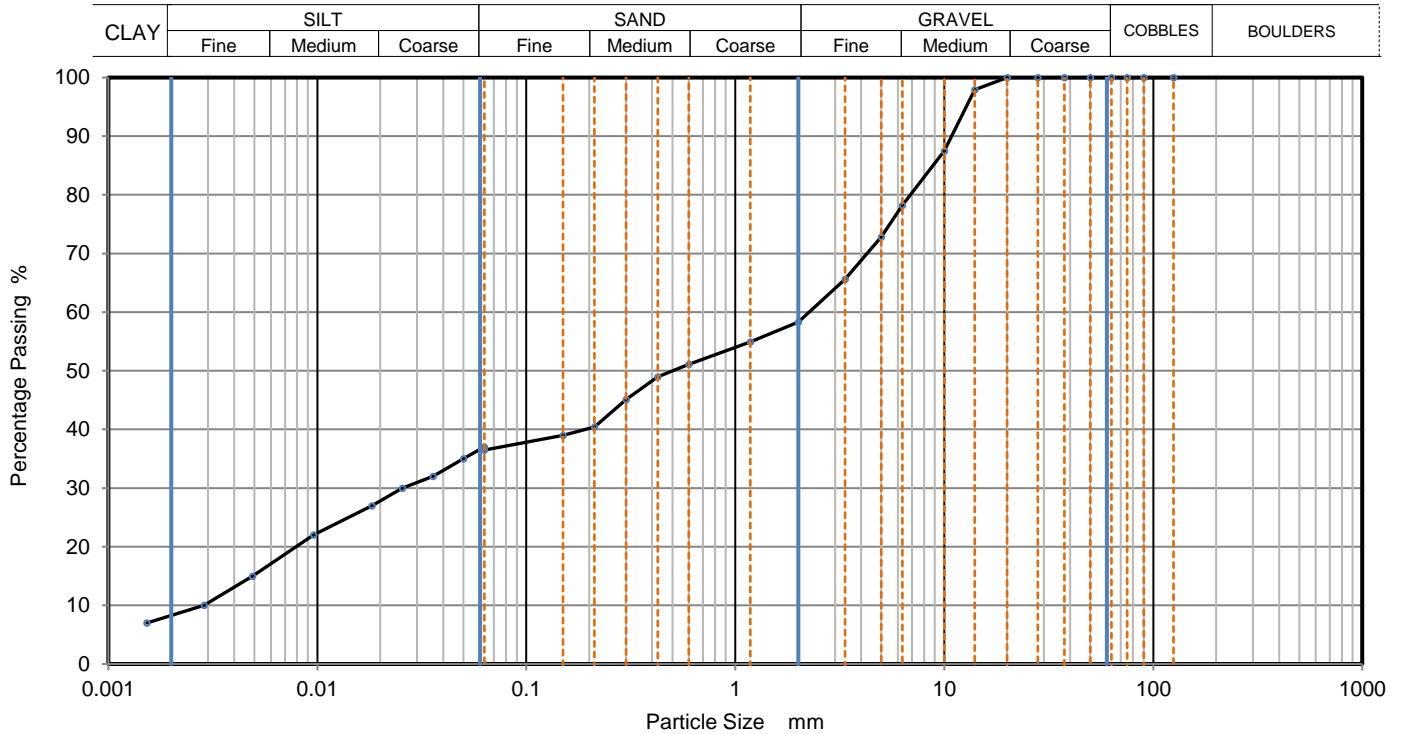
Depth, m **5.00**

Specimen Reference **2** Specimen Depth **5** m

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus2021091611**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	37
90	100	0.05002	35
75	100	0.03581	32
63	100	0.02548	30
50	100	0.01823	27
37.5	100	0.00958	22
28	100	0.00490	15
20	100	0.00287	10
14	98	0.00153	7
10	88		
6.3	78		
5	73		
3.35	66		
2	58		
1.18	55		
0.6	51		
0.425	49	Particle density (assumed) 2.65 Mg/m3	
0.3	45		
0.212	40		
0.15	39		
0.063	37		

Dry Mass of sample, g **207**

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	41.7
Sand	21.8
Silt	28.5
Clay	8.0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	780
Curvature Coefficient	0.11

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen.Watson

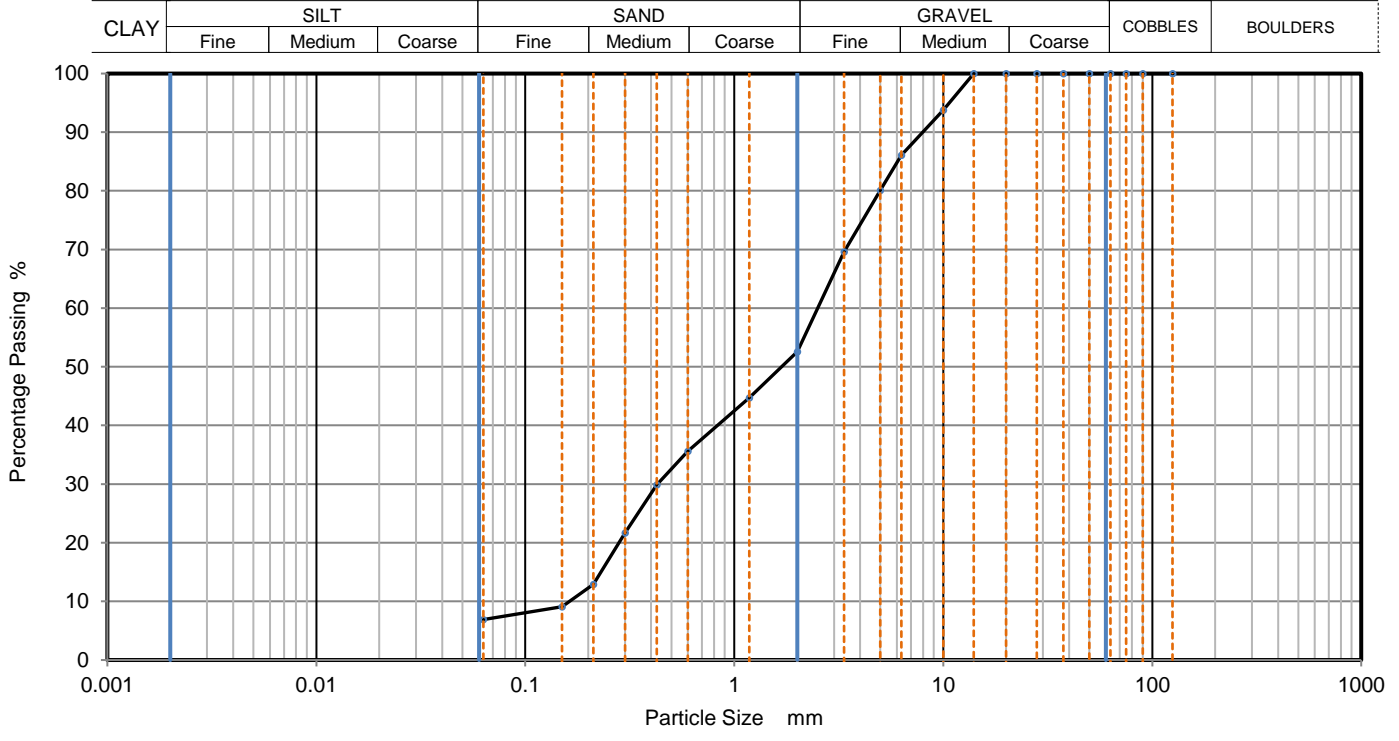




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	LFMW01
Sample No.	3
Depth, m	8.00
Sample Type	B
KeyLAB ID	Caus2021091612

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Grey slightly gravelly silty fine to coarse SAND.		
Specimen Reference	2	Specimen Depth	8 m
Test Method	BS1377:Part 2:1990, clause 9.2		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	94		
6.3	86		
5	80		
3.35	70		
2	53		
1.18	45		
0.6	36		
0.425	30		
0.3	22		
0.212	13		
0.15	9		
0.063	7		

Dry Mass of sample, g	207
Sample Proportions	% dry mass
Cobbles	0.0
Gravel	47.4
Sand	45.7
Fines <0.063mm	7.0
Grading Analysis	
D100 mm	100
D60 mm	2.5
D30 mm	0.428
D10 mm	0.162
Uniformity Coefficient	15
Curvature Coefficient	0.45

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

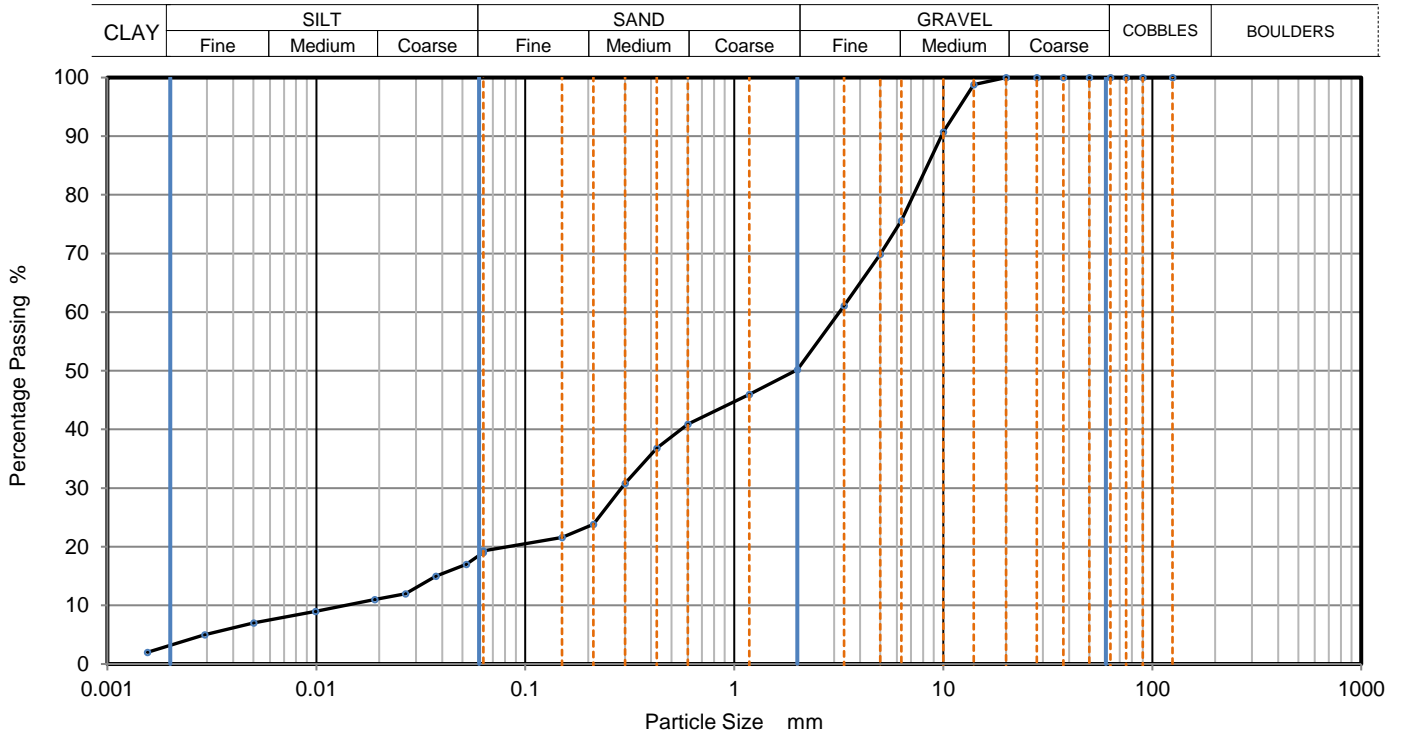
Approved
Stephen.Watson



PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	LFMW02
Sample No.	2
Depth, m	7.00
Sample Type	B
KeyLAB ID	Caus2021091613

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Greyish brown sandy gravelly silty CLAY.		
Specimen Reference	2	Specimen Depth	7 m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	19
90	100	0.05222	17
75	100	0.03736	15
63	100	0.02672	12
50	100	0.01900	11
37.5	100	0.00992	9
28	100	0.00501	7
20	100	0.00293	5
14	99	0.00156	2
10	91		
6.3	76		
5	70		
3.35	61		
2	50		
1.18	46		
0.6	41		
0.425	37	Particle density (assumed) 2.65 Mg/m3	
0.3	31		
0.212	24		
0.15	22		
0.063	19		

Dry Mass of sample, g 207

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	49.8
Sand	30.9
Silt	16.1
Clay	3.2

Grading Analysis	
D100	mm
D60	mm 3.18
D30	mm 0.288
D10	mm 0.0129
Uniformity Coefficient	250
Curvature Coefficient	2

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson

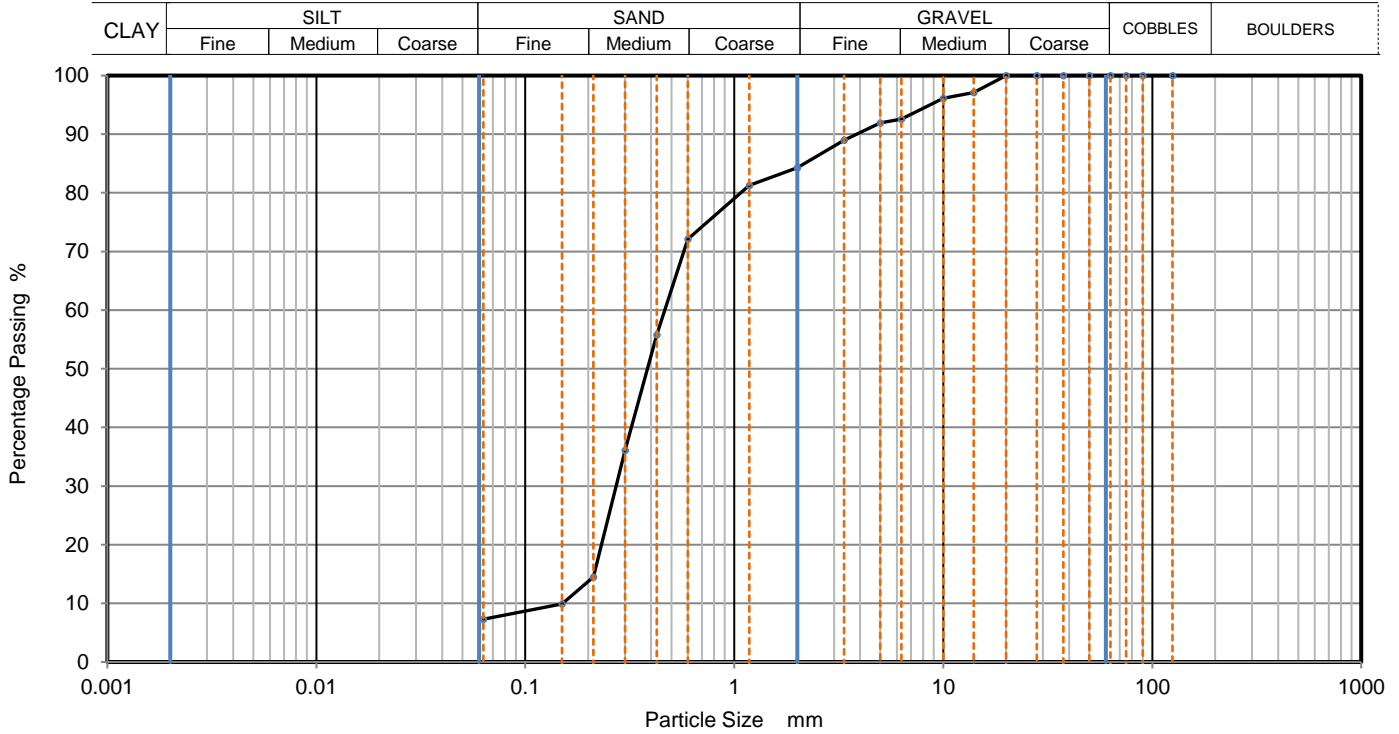




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	LFMW02
Sample No.	3
Depth, m	10.00
Sample Type	B
KeyLAB ID	Caus2021091614

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Dark grey slightly gravelly slightly silty fine to coarse SAND.		
Specimen Reference	2	Specimen Depth	10 m
Test Method	BS1377:Part 2:1990, clause 9.2		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	96		
6.3	93		
5	92		
3.35	89		
2	84		
1.18	81		
0.6	72		
0.425	56		
0.3	36		
0.212	15		
0.15	10		
0.063	7		

Dry Mass of sample, g 206

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	15.7
Sand	77.0
Fines <0.063mm	7.0

Grading Analysis		
D100	mm	
D60	mm	0.465
D30	mm	0.272
D10	mm	0.151
Uniformity Coefficient		3.1
Curvature Coefficient		1.1

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson

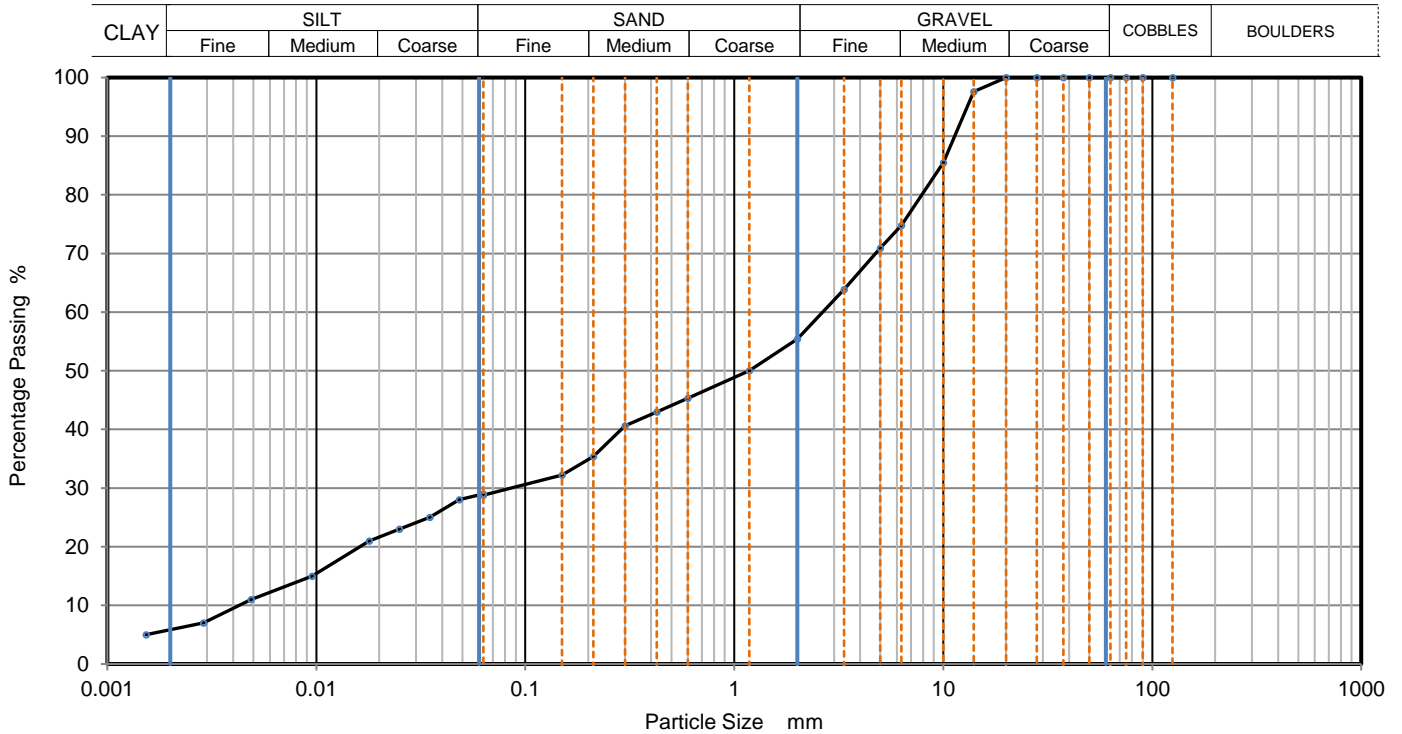




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	RWGW02D
Sample No.	2
Depth, m	4.00
Sample Type	B
KeyLAB ID	Caus2021091615

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Grey sandy slightly gravelly silty CLAY.		
Specimen Reference	2	Specimen Depth	4 m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	29
90	100	0.04837	28
75	100	0.03490	25
63	100	0.02501	23
50	100	0.01791	21
37.5	100	0.00953	15
28	100	0.00488	11
20	100	0.00288	7
14	98	0.00153	5
10	86		
6.3	75		
5	71		
3.35	64		
2	55		
1.18	50		
0.6	45		
0.425	43	Particle density (assumed) 2.65 Mg/m3	
0.3	41		
0.212	35		
0.15	32		
0.063	29		

Dry Mass of sample, g 211

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	44.6
Sand	26.6
Silt	22.8
Clay	6.0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	640
Curvature Coefficient	0.67

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson





PARTICLE SIZE DISTRIBUTION

Job Ref **21-0709**

Borehole/Pit No. **RWGW04D**

Site Name **Drehid Waste Management Facility – Further Landfill Development 2021**

Sample No. **1**

Soil Description **Grey sandy slightly gravelly silty CLAY.**

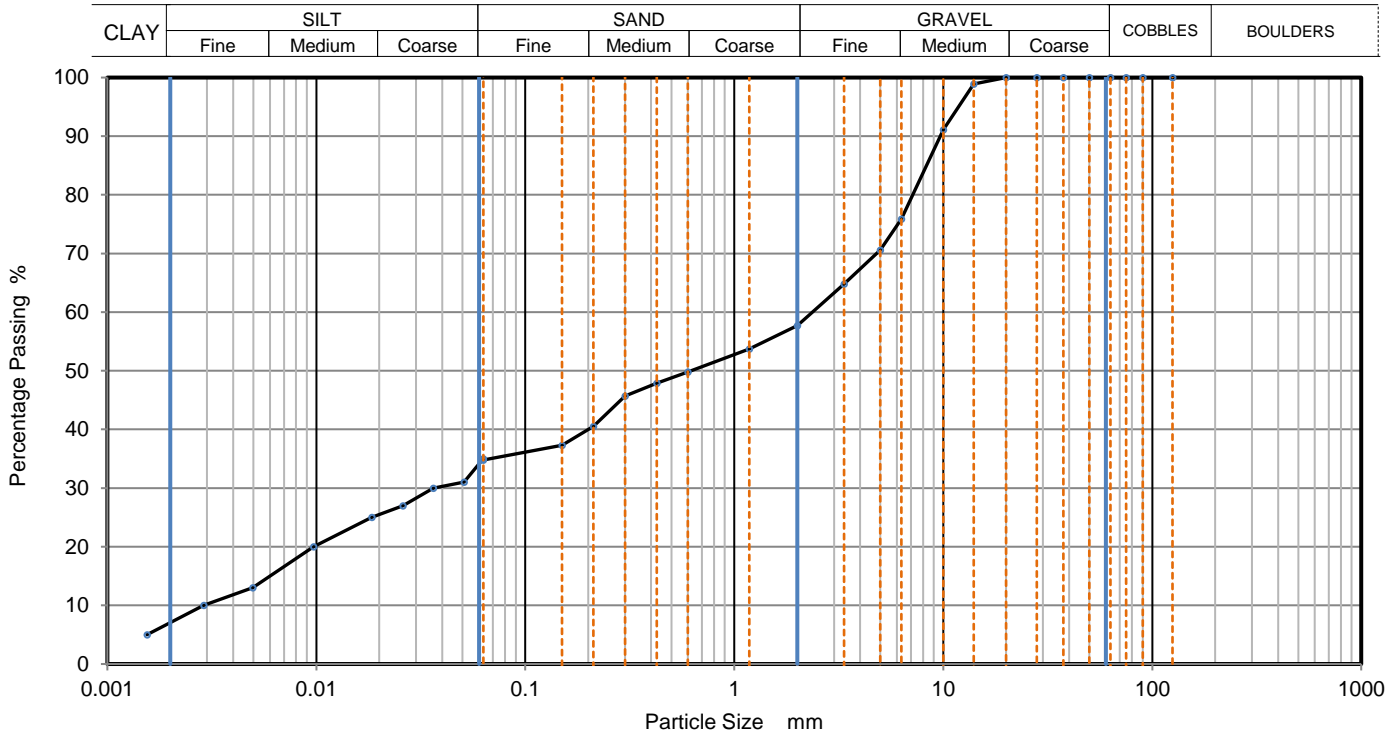
Depth, m **3.50**

Specimen Reference **2** Specimen Depth **3.5** m

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus2021091616**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	35
90	100	0.05097	31
75	100	0.03627	30
63	100	0.02596	27
50	100	0.01846	25
37.5	100	0.00970	20
28	100	0.00496	13
20	100	0.00290	10
14	99	0.00155	5
10	91		
6.3	76		
5	71		
3.35	65		
2	58		
1.18	54		
0.6	50		
0.425	48	Particle density (assumed) 2.65 Mg/m3	
0.3	46		
0.212	41		
0.15	37		
0.063	35		

Dry Mass of sample, g **209**

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	42.3
Sand	23.0
Silt	27.7
Clay	7.0

Grading Analysis		
D100	mm	
D60	mm	2.36
D30	mm	0.0376
D10	mm	0.00292
Uniformity Coefficient		810
Curvature Coefficient		0.2

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen.Watson

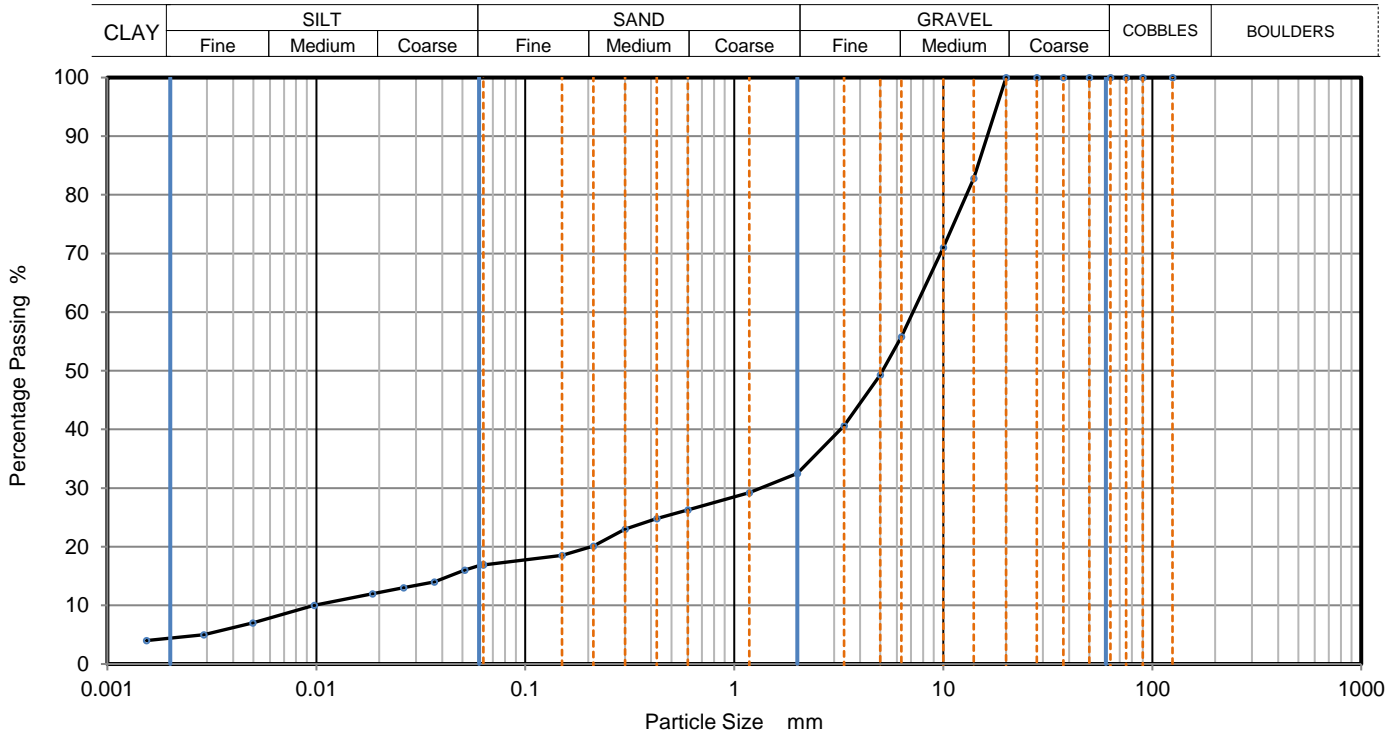




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	RWGW04D

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		Sample No.	2	
Soil Description	Grey very gravelly silty fine to coarse SAND.		Depth, m	8.00	
Specimen Reference	2	Specimen Depth	8 m	Sample Type	B
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		KeyLAB ID	Caus2021091617	



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	17
90	100	0.05129	16
75	100	0.03671	14
63	100	0.02611	13
50	100	0.01857	12
37.5	100	0.00976	10
28	100	0.00496	7
20	100	0.00290	5
14	83	0.00154	4
10	71		
6.3	56		
5	49		
3.35	41		
2	33		
1.18	29		
0.6	26		
0.425	25	Particle density (assumed) 2.65 Mg/m3	
0.3	23		
0.212	20		
0.15	19		
0.063	17		

Dry Mass of sample, g 206

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	67.5
Sand	15.6
Silt	12.6
Clay	4.3

Grading Analysis		
D100	mm	
D60	mm	7.17
D30	mm	1.33
D10	mm	0.0103
Uniformity Coefficient		700
Curvature Coefficient		24

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson





PARTICLE SIZE DISTRIBUTION

Job Ref **21-0709**

Borehole/Pit No. **RWGW09D**

Site Name **Drehid Waste Management Facility – Further Landfill Development 2021**

Sample No. **2**

Soil Description **Brown sandy gravelly silty CLAY.**

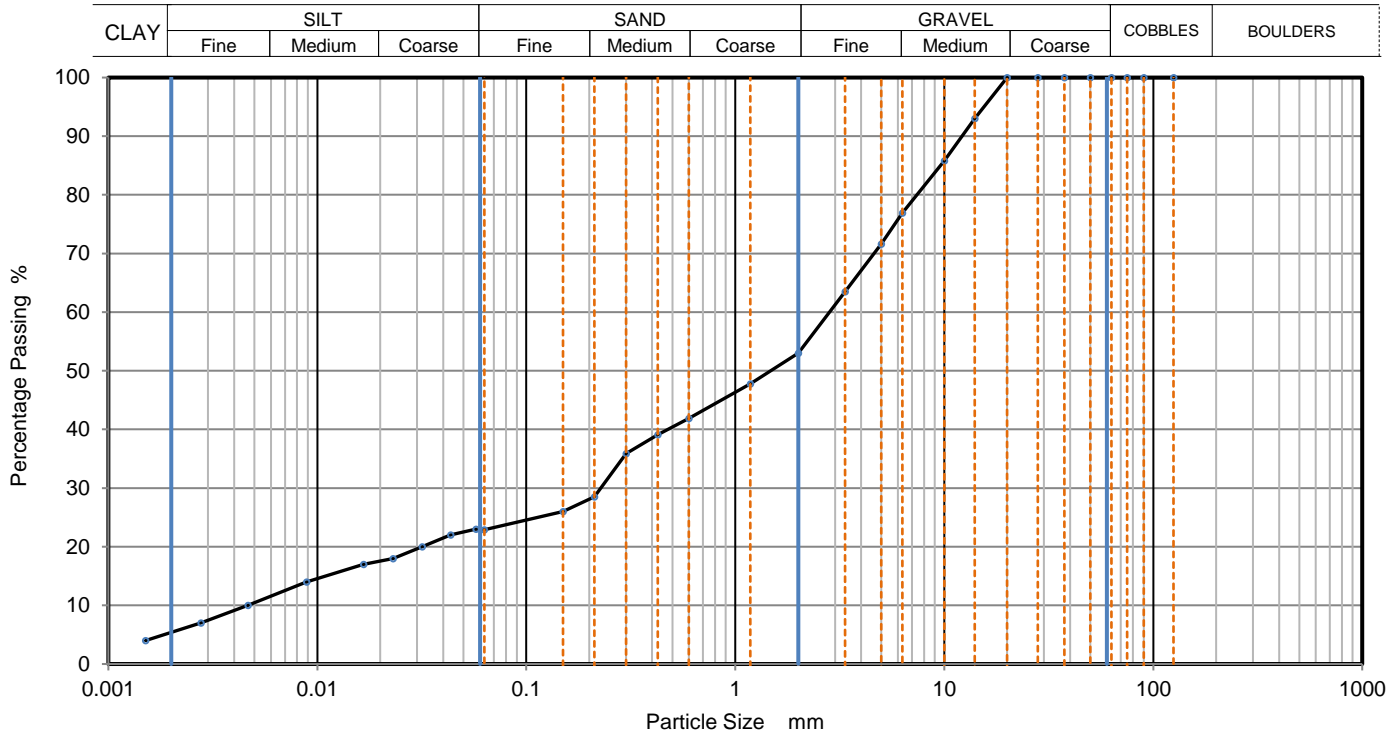
Depth, m **8.00**

Specimen Reference **2** Specimen Depth **8** m

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus2021091618**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05742	23
90	100	0.04344	22
75	100	0.03175	20
63	100	0.02299	18
50	100	0.01662	17
37.5	100	0.00889	14
28	100	0.00465	10
20	100	0.00277	7
14	93	0.00151	4
10	86		
6.3	77		
5	72		
3.35	64		
2	53		
1.18	48		
0.6	42		
0.425	39	Particle density (assumed) 2.65 Mg/m3	
0.3	36		
0.212	29		
0.15	26		
0.063	23		

Dry Mass of sample, g 212

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	47.0
Sand	30.1
Silt	17.2
Clay	5.7

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	620
Curvature Coefficient	4

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen.Watson





PARTICLE SIZE DISTRIBUTION

Job Ref **21-0709**

Borehole/Pit No. **RWGW09S**

Site Name **Drehid Waste Management Facility – Further Landfill Development 2021**

Sample No. **1**

Soil Description **Dark grey slightly gravelly slightly silty fine to coarse SAND.**

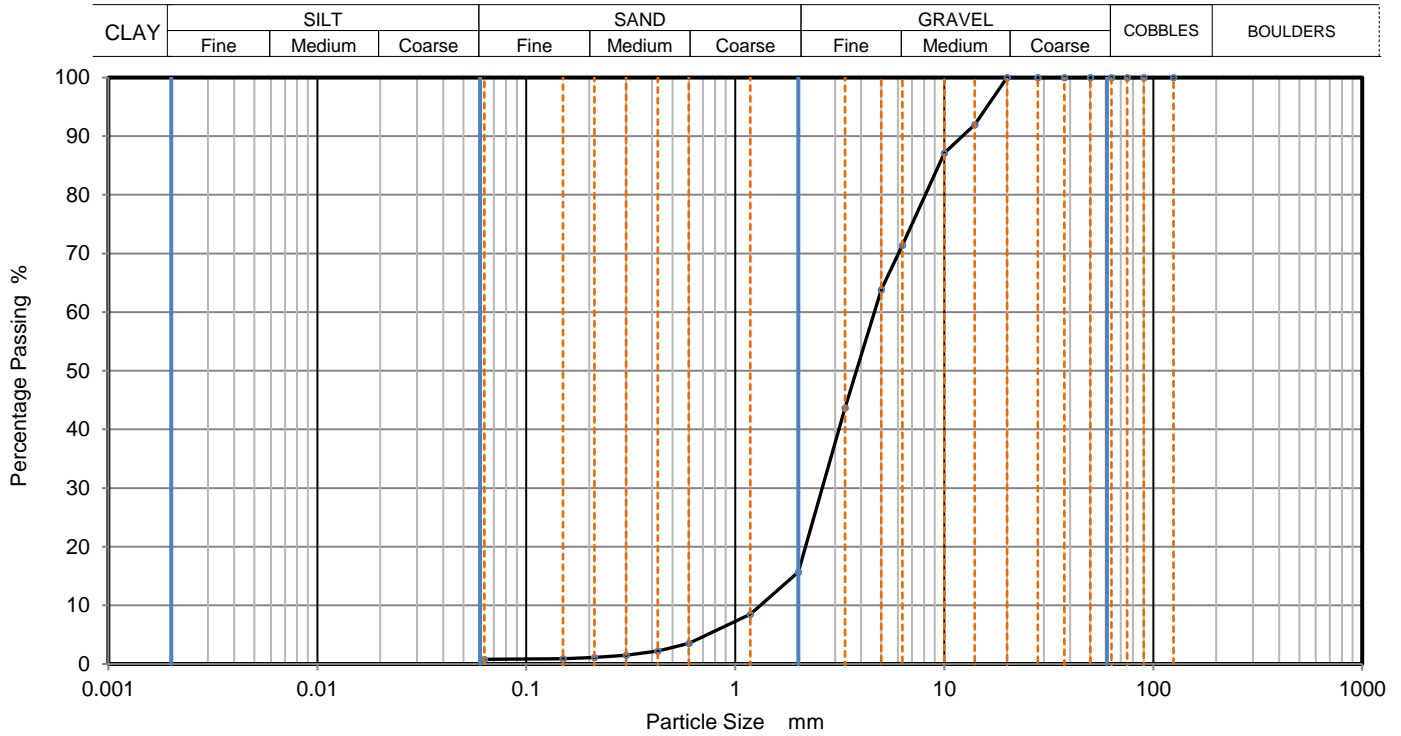
Depth, m **2.00**

Specimen Reference **2** Specimen Depth **2** m

Sample Type **B**

Test Method **BS1377:Part 2:1990, clause 9.2**

KeyLAB ID **Caus2021091619**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	92		
10	87		
6.3	71		
5	64		
3.35	44		
2	16		
1.18	9		
0.6	4		
0.425	2		
0.3	2		
0.212	1		
0.15	1		
0.063	1		

Dry Mass of sample, g **205**

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	84.3
Sand	14.9
Fines <0.063mm	1.0

Grading Analysis		
D100	mm	
D60	mm	4.63
D30	mm	2.6
D10	mm	1.32
Uniformity Coefficient		3.5
Curvature Coefficient		1.1

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen.Watson

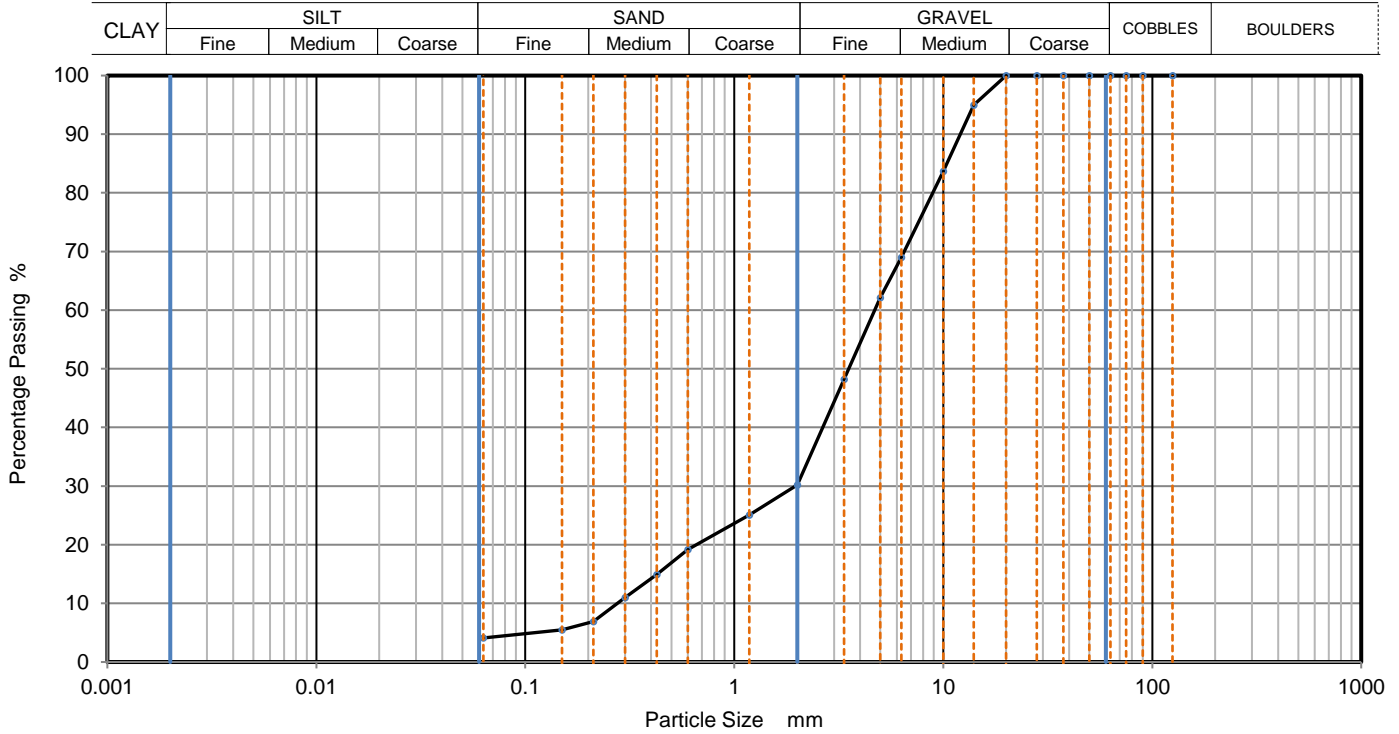




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	RWGW10D
Sample No.	1
Depth, m	3.00
Sample Type	B
KeyLAB ID	Caus2021091620

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Dark grey slightly gravelly slightly silty fine to coarse SAND.		
Specimen Reference	2	Specimen Depth	3 m
Test Method	BS1377:Part 2:1990, clause 9.2		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	95		
10	84		
6.3	69		
5	62		
3.35	48		
2	30		
1.18	25		
0.6	19		
0.425	15		
0.3	11		
0.212	7		
0.15	6		
0.063	4		

Dry Mass of sample, g 215

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	69.8
Sand	26.1
Fines <0.063mm	4.0

Grading Analysis		
D100	mm	
D60	mm	4.7
D30	mm	1.95
D10	mm	0.277
Uniformity Coefficient		17
Curvature Coefficient		2.9

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson

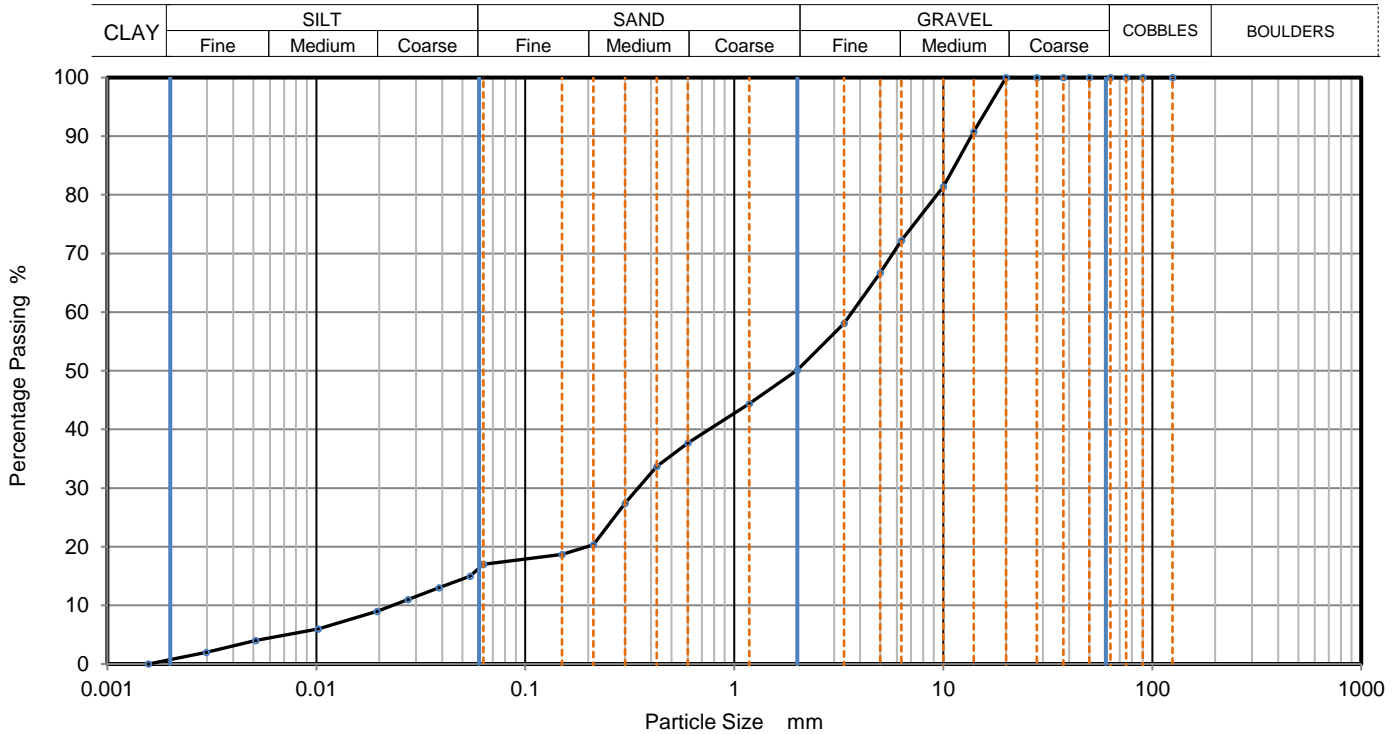




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	WLMW05Q

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021	Sample No.	8
Soil Description	Dark grey sandy very gravelly silty CLAY.	Depth, m	7.50
Specimen Reference	2	Specimen Depth	7.5 m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5	KeyLAB ID	Caus2021091621



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	17
90	100	0.05434	15
75	100	0.03864	13
63	100	0.02747	11
50	100	0.01953	9
37.5	100	0.01019	6
28	100	0.00512	4
20	100	0.00297	2
14	91	0.00157	0
10	81		
6.3	72		
5	67		
3.35	58		
2	50		
1.18	44		
0.6	38		
0.425	34	Particle density (assumed) 2.65 Mg/m3	
0.3	27		
0.212	20		
0.15	19		
0.063	17		

Dry Mass of sample, g 209

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	49.9
Sand	33.2
Silt	16.2
Clay	0.7

Grading Analysis	
D100	mm
D60	mm 3.65
D30	mm 0.347
D10	mm 0.0216
Uniformity Coefficient	170
Curvature Coefficient	1.5

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson





LABORATORY REPORT



4043

Contract Number: PSL21/7814

Report Date: 19 October 2021
Client's Reference: 21-0709
Client Name: Causeway Geotech
8 Drumahiskey Road
Ballymoney
Co. Antrim
BT53 7QL

For the attention of: Stephen Watson

Contract Title: Drehid Waste Management Facility - Further Landfill Development 2021

Date Received: 30/9/2021
Date Commenced: 30/9/2021
Date Completed: 19/10/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:


A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Senior Technician)

S Eyre
(Senior Technician)


D Burton
(Advanced Testing Manager)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: WLMW05W **Top Depth (m) :** 3.00

Sample Number: 1 **Base Depth (m) :** 3.45

Sample Type: UT **Lift Number:**

Date **Grid Reference:**

Description of Specimen	
Brownish grey very gravelly sandy CLAY.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.40
Diameter	mm	101.97
Area	mm ²	8166.48
Volume	cm ³	828.08
Mass	g	1878
Dry Mass	g	1698
Bulk Density	Mg/m ³	2.27
Dry Density	Mg/m ³	2.05
Moisture Content	%	11
Voids Ratio	-	0.292
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	9.1
Bulk Density	Mg/m ³	2.24
Dry Density	Mg/m ³	2.05

Test Setup		
Date Started		13/10/2021
Date Finished		17/10/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	3
Permeability Time	Days	1



PSL
Professional Soils Laboratory

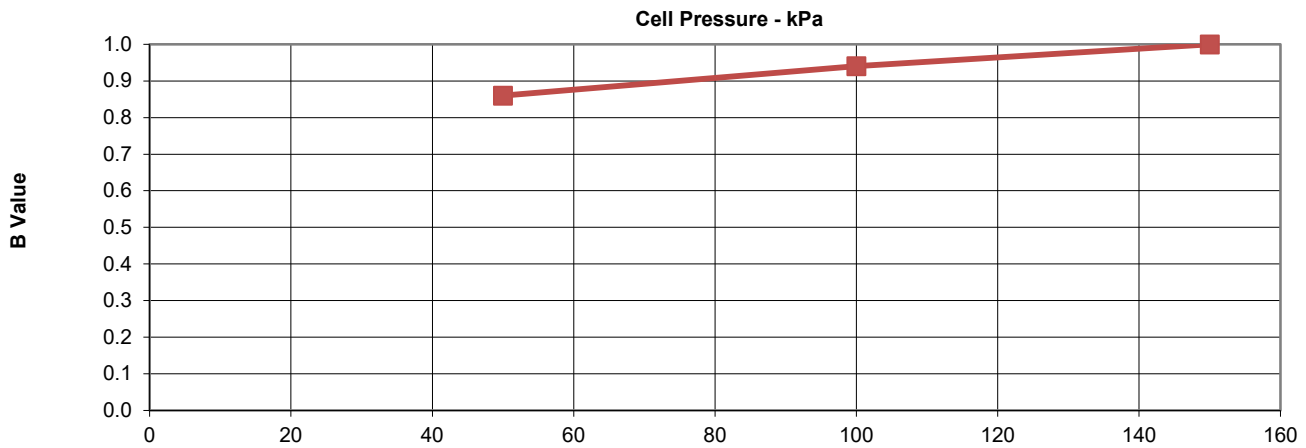
Drehid Waste Management Facility - Further
Landfill Development 2021

Contract No.
PSL21/7814
Client Ref
21-0709

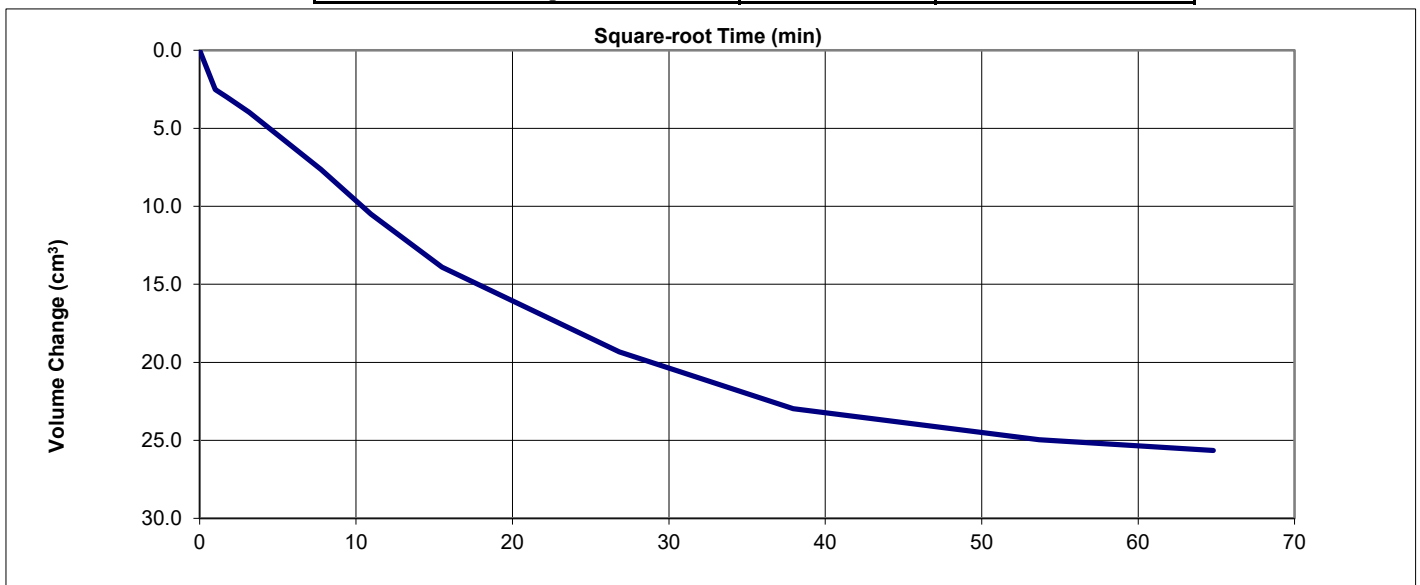
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW05W
Sample Depth	m	3.00
Sample No,		1
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	150
Final B Value	-	1.00



Consolidation		
Effective Pressure	kPa	100
Cell Pressure	kPa	400
Back Pressure	kPa	300
Final PWP	kPa	302
PWP dissipation	%	98



PSL
Professional Soils Laboratory

Drehid Waste Management Facility - Further
Landfill Development 2021

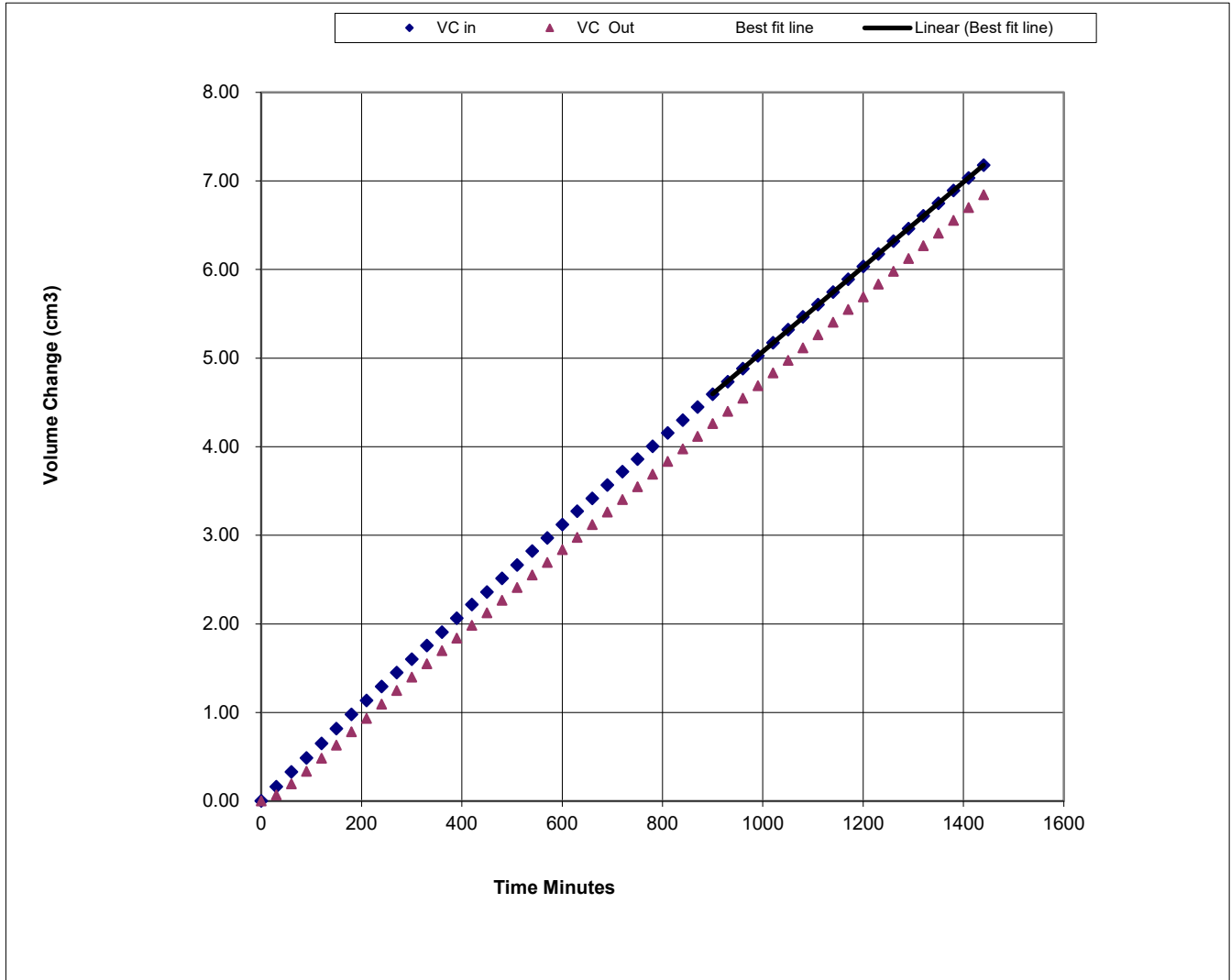
Contract No.
PSL21/7814
Client Ref
21-0709

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW05W
Sample Depth	m	3.00
Sample No.		1
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	400
Mean Effective Stress	kPa	100
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0048
Average Temperature	'C	20
Vertical Permeability K _v	m/s	4.9E-10



PSL
Professional Soils Laboratory

Drehid Waste Management Facility - Further
Landfill Development 2021

Contract No.
PSL21/7814
Client Ref
21-0709



Final Report

Report No.: 21-32601-1
Initial Date of Issue: 24-Sep-2021
Client Causeway Geotech Ltd
Client Address: 8 Drumahiskey Road
Balnamore
Ballymoney
County Antrim
BT53 7QL
Contact(s): Carin Cornwall
Colm Hurley
Darren O'Mahony
Gabiella Horan
Joe Gervin
John Cameron
Lucy Newland
Martin Gardiner
Matthew Gilbert
Michelle Gaffney
Neil Haggan
Paul Dunlop
Sean Ross
Stephen Franey
Stephen Watson
Stuart Abraham
Thomas McAllist
Project 21-0709 Drehid Waste Management
Facility

Quotation No.:		Date Received:	20-Sep-2021
Order No.:		Date Instructed:	20-Sep-2021
No. of Samples:	1		
Turnaround (Wkdays):	7	Results Due:	28-Sep-2021
Date Approved:	24-Sep-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: 21-0709 Drehid Waste Management Facility

Client: Causeway Geotech Ltd	Chemtest Job No.: 21-32601				
Quotation No.:	Chemtest Sample ID.: 1282457				
Order No.:	Client Sample Ref.: 2				
	Sample Location: LFBH01				
	Sample Type: SOIL				
	Top Depth (m): 7.5				
	Date Sampled: 17-Sep-2021				
Determinand	Accred.	SOP	Units	LOD	
Moisture	N	2030	%	0.020	11
pH	U	2010		4.0	8.4
Fraction of Organic Carbon	U	2625		0.0010	0.0033

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com



CAUSEWAY
GEOTECH

HEAD OFFICE
Causeway Geotech Ltd
8 Drumahiskey Road
Ballymoney
Co. Antrim, N. Ireland, BT53 7QL
NI: +44 (0)28 276 66640

Registered in Northern Ireland.
Company Number: NI610766

REGIONAL OFFICE
Causeway Geotech (IRL) Ltd
Unit 1 Fingal House
Stephenstown Industrial Estate
Balbriggan, Co Dublin, Ireland, K32 VR66
ROI: +353 (0)1 526 7465

Registered in Ireland.
Company Number: 633786

www.causewaygeotech.com

**SOIL AND ROCK SAMPLE ANALYSIS
LABORATORY TEST REPORT**

24 November
2021

Project Name:	Drehid Waste Management Facility – Further Landfill Development 2021
Project No.:	21-0709
Client:	Bord na Móna
Engineer:	CDM Smith

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s).

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

Laboratory Manager

Signed for and on behalf of Causeway Geotech Ltd



1



Project Name: Drehid Waste Management Facility – Further Landfill Development 2021

Report Reference: Schedule 2

The table below details the tests carried out, the specifications used, and the number of tests included in this report.

Tests marked with* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	10
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	8

SUB-CONTRACTED TESTS

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

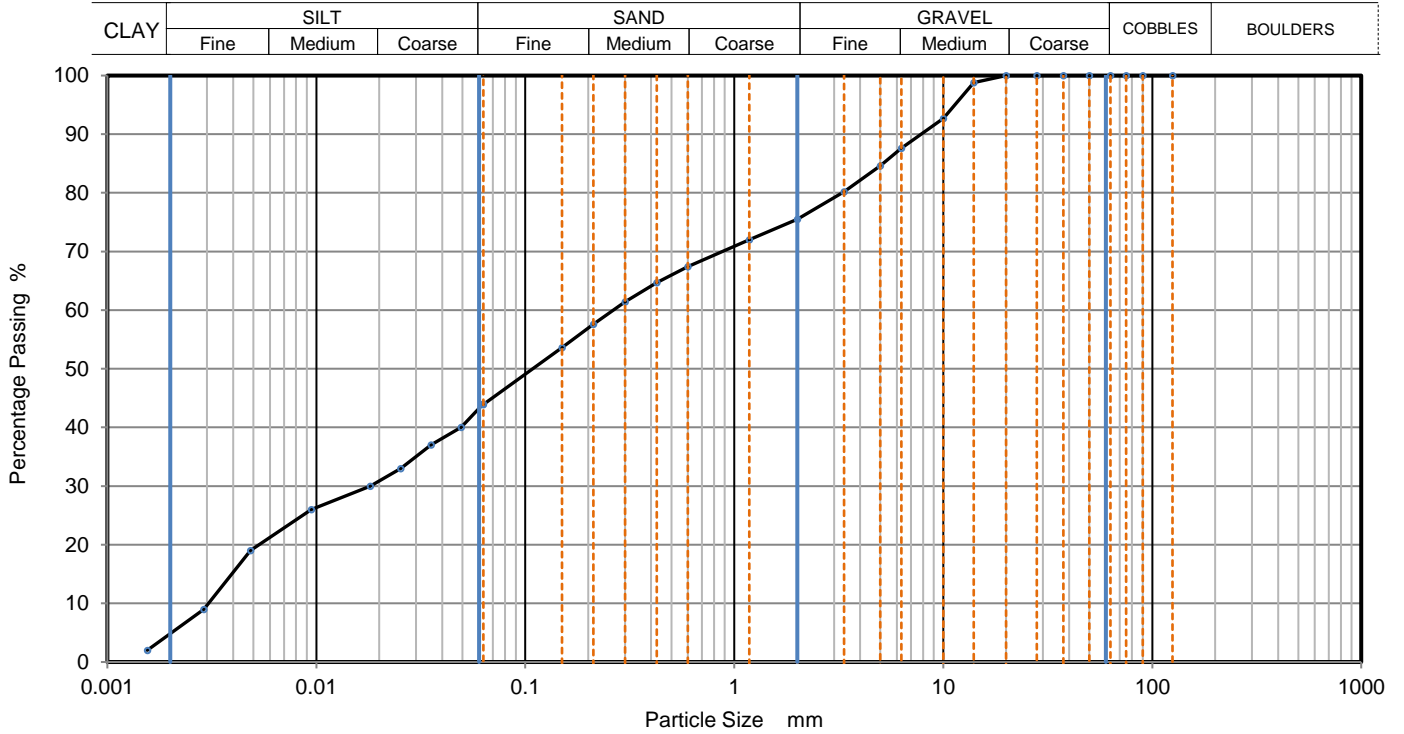
Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – subcontracted to Pro Soils Limited (<i>UKAS 4043</i>)	Permeability in a triaxial cell (up to 4 days)	BS 1377-6:1990	16
	Extra over days (more than initial 4 days)		0
SOIL – subcontracted to Pro Soils Limited (<i>UKAS 4043</i>)	Bulk and dry density by Linear Measurement Method	BS 1377-2: 1990: Cl 7.2	16
SOIL – Subcontracted to Eurofins Chemtest Ltd (<i>UKAS 2183</i>)	pH Value of Soil		7
SOIL – Subcontracted to Eurofins Chemtest Ltd (<i>UKAS 2183</i>)	Fraction Organic Carbon		7



PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	LFBH03
Sample No.	4
Depth, m	2.50
Sample Type	B
KeyLAB ID	Caus2021102731

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Brown sandy slightly gravelly silty CLAY.		
Specimen Reference	3	Specimen Depth	2.5 m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	44
90	100	0.04939	40
75	100	0.03537	37
63	100	0.02532	33
50	100	0.01813	30
37.5	100	0.00947	26
28	100	0.00485	19
20	100	0.00289	9
14	99	0.00155	2
10	93		
6.3	88		
5	85		
3.35	80		
2	76		
1.18	72		
0.6	67		
0.425	65	Particle density (assumed) 2.65 Mg/m3	
0.3	61		
0.212	58		
0.15	54		
0.063	44		

Dry Mass of sample, g 508

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.5
Sand	31.6
Silt	39.3
Clay	4.6

Grading Analysis	
D100	mm
D60	mm 0.264
D30	mm 0.0184
D10	mm 0.00307
Uniformity Coefficient	86
Curvature Coefficient	0.42

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson

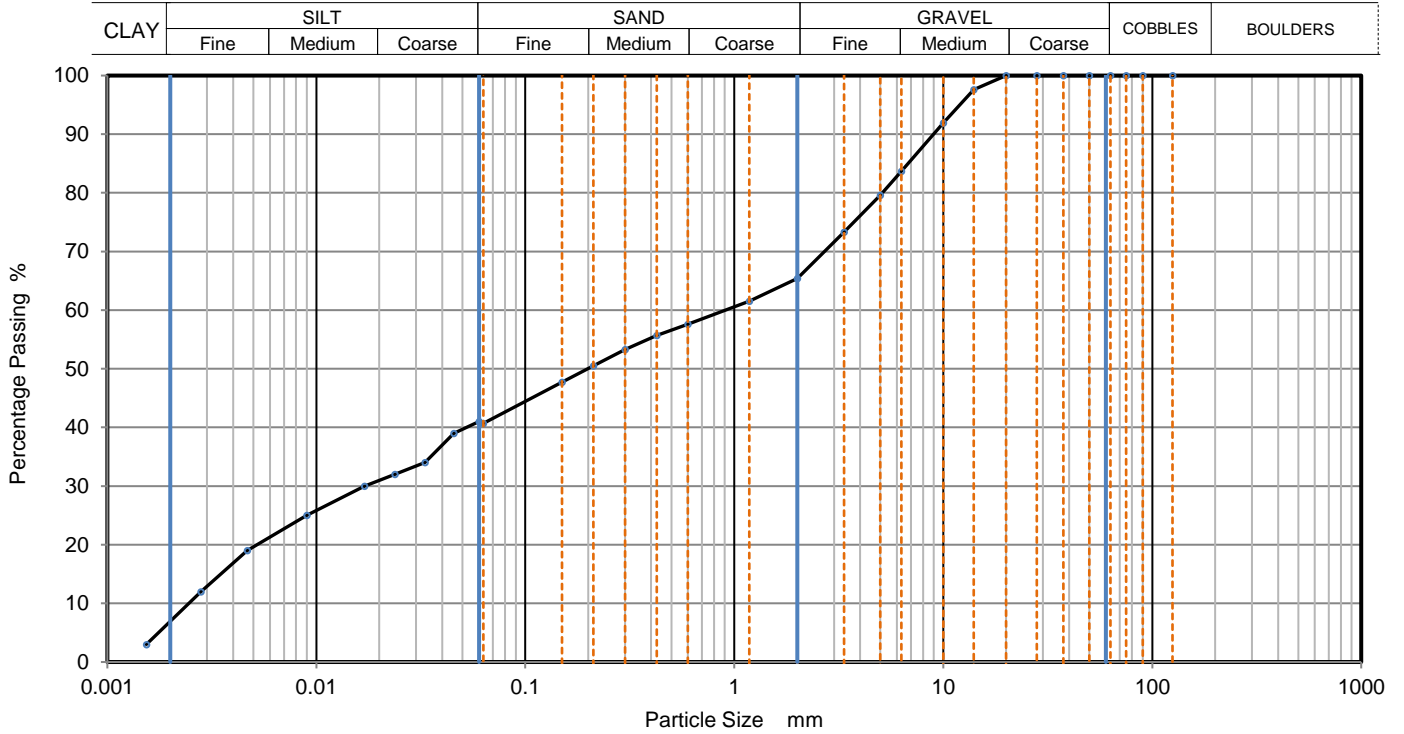




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	LFBH11
Sample No.	4
Depth, m	3.00
Sample Type	B
KeyLAB ID	Caus2021102732

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Greyish brown sandy slightly gravelly silty CLAY.		
Specimen Reference	3	Specimen Depth	3 m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06013	41
90	100	0.04541	39
75	100	0.03307	34
63	100	0.02372	32
50	100	0.01701	30
37.5	100	0.00902	25
28	100	0.00468	19
20	100	0.00280	12
14	98	0.00154	3
10	92		
6.3	84		
5	80		
3.35	73		
2	65		
1.18	62		
0.6	58	Particle density (assumed) 2.65 Mg/m3	
0.425	56		
0.3	53		
0.212	51		
0.15	48		
0.063	41		

Dry Mass of sample, g 506

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	34.6
Sand	24.8
Silt	33.4
Clay	7.2

Grading Analysis		
D100	mm	
D60	mm	0.906
D30	mm	0.0178
D10	mm	0.00242
Uniformity Coefficient		370
Curvature Coefficient		0.14

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson





PARTICLE SIZE DISTRIBUTION

Job Ref **21-0709**

Borehole/Pit No. **LFBH12**

Site Name **Drehid Waste Management Facility – Further Landfill Development 2021**

Sample No. **4**

Soil Description **Grey sandy slightly clayey subangular fine to medium GRAVEL.**

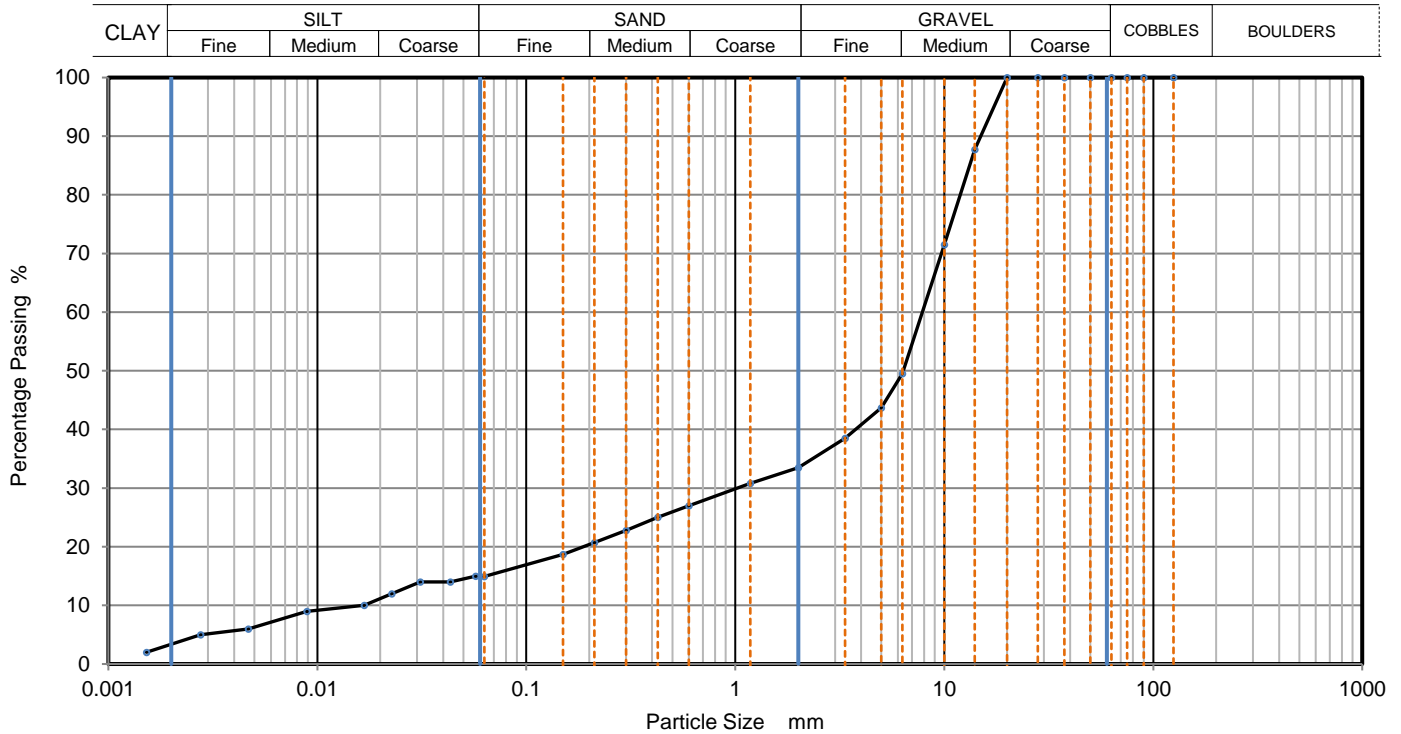
Depth, m **3.00**

Specimen Reference **3** Specimen Depth **3** m

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus2021102726**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05722	15
90	100	0.04328	14
75	100	0.03111	14
63	100	0.02270	12
50	100	0.01677	10
37.5	100	0.00890	9
28	100	0.00468	6
20	100	0.00277	5
14	88	0.00152	2
10	72		
6.3	50		
5	44		
3.35	39		
2	34		
1.18	31		
0.6	27		
0.425	25	Particle density (assumed) 2.65 Mg/m3	
0.3	23		
0.212	21		
0.15	19		
0.063	15		

Dry Mass of sample, g

504

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	66.5
Sand	18.6
Silt	11.9
Clay	3.0

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	480
Curvature Coefficient	8.1

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen.Watson

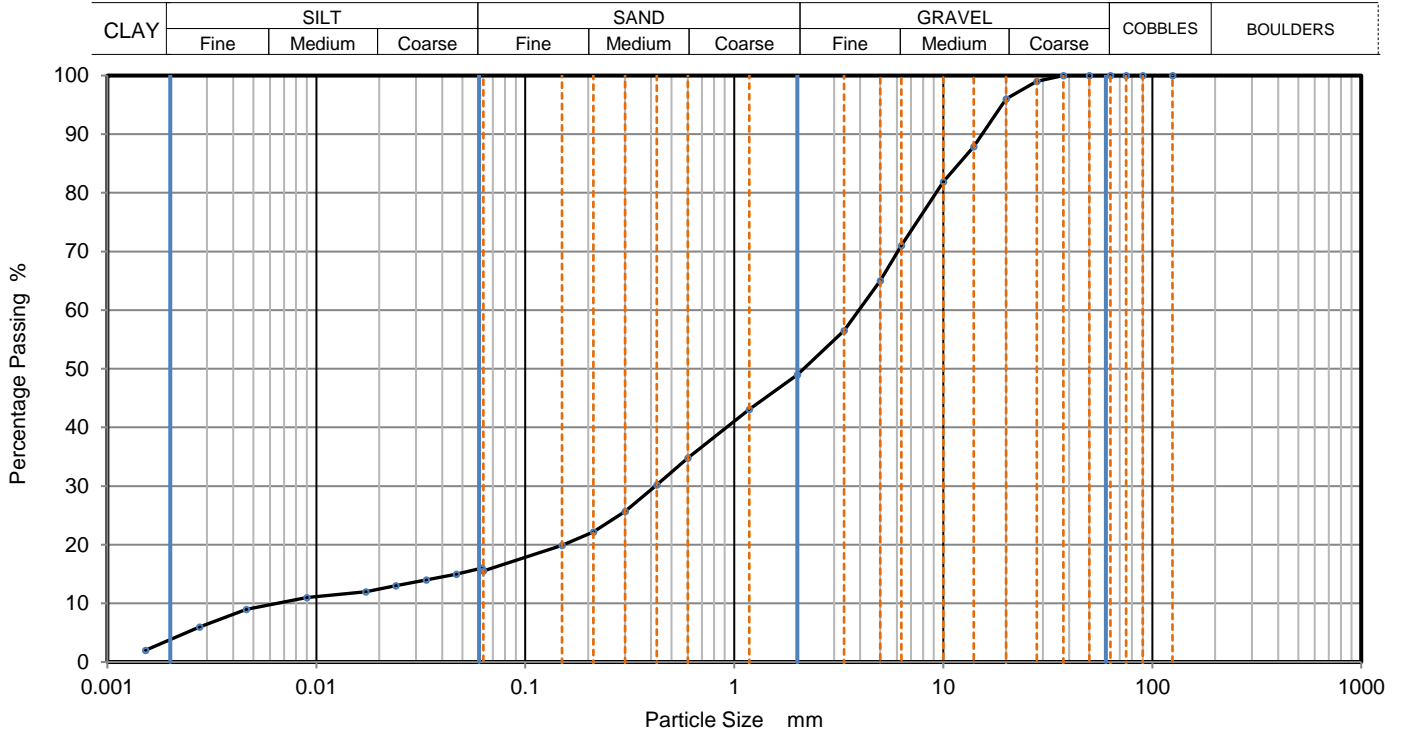




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	LFBH14
Sample No.	4
Depth, m	6.00
Sample Type	B
KeyLAB ID	Caus2021102728

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Grey sandy slightly clayey subangular fine to medium GRAVEL.		
Specimen Reference	3	Specimen Depth	6 m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06199	16
90	100	0.04677	15
75	100	0.03355	14
63	100	0.02405	13
50	100	0.01724	12
37.5	100	0.00902	11
28	99	0.00462	9
20	96	0.00277	6
14	88	0.00152	2
10	82		
6.3	71		
5	65		
3.35	57		
2	49		
1.18	43		
0.6	35		
0.425	30	Particle density (assumed) 2.65 Mg/m3	
0.3	26		
0.212	22		
0.15	20		
0.063	16		

Dry Mass of sample, g 2402

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	51.0
Sand	33.5
Silt	11.4
Clay	4.1

Grading Analysis	
D100	mm
D60	mm 3.95
D30	mm 0.419
D10	mm 0.00678
Uniformity Coefficient	580
Curvature Coefficient	6.5

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson

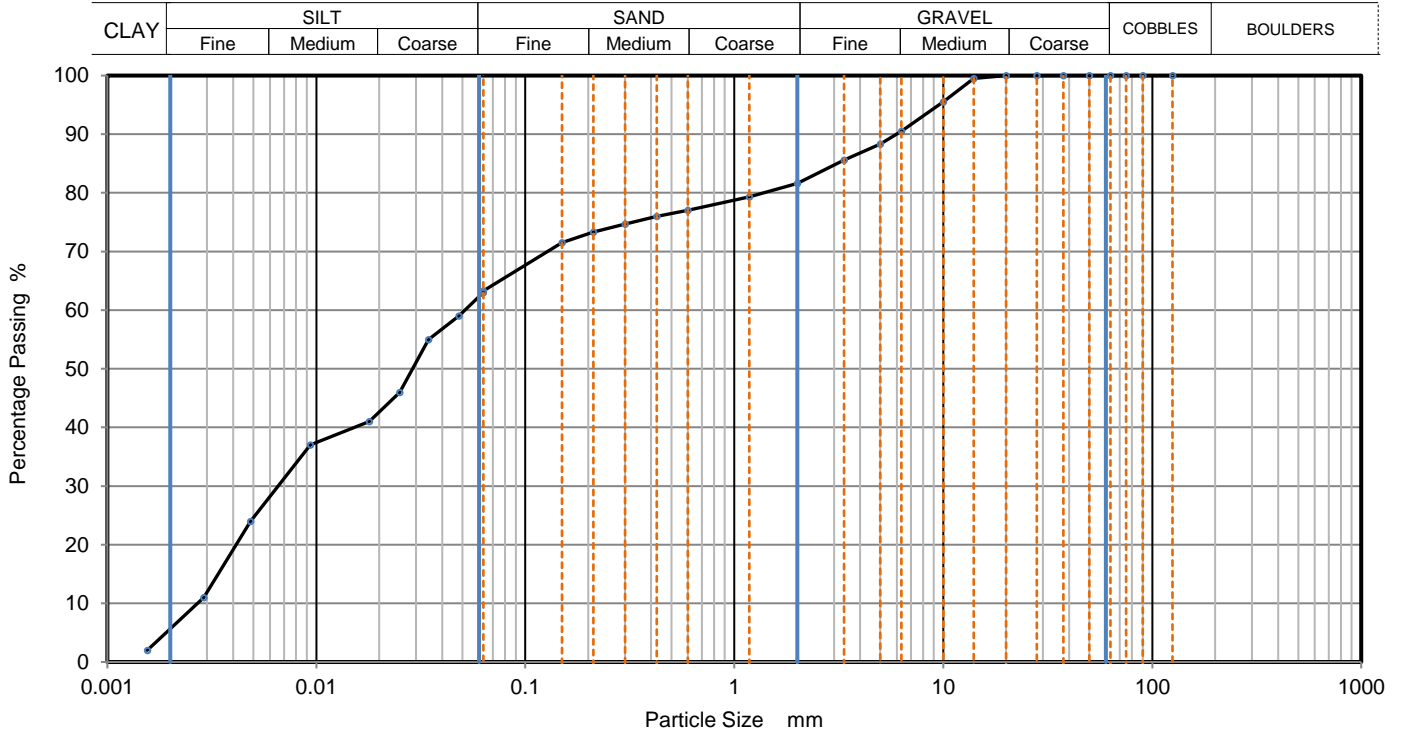




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	LFBH17
Sample No.	4
Depth, m	4.50
Sample Type	B
KeyLAB ID	Caus2021102733

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Greyish brown sandy slightly gravelly silty CLAY.		
Specimen Reference	3	Specimen Depth	4.5 m
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	63
90	100	0.04810	59
75	100	0.03447	55
63	100	0.02501	46
50	100	0.01791	41
37.5	100	0.00936	37
28	100	0.00485	24
20	100	0.00289	11
14	100	0.00155	2
10	96		
6.3	91		
5	88		
3.35	86		
2	82		
1.18	79		
0.6	77		
0.425	76	Particle density (assumed) 2.65 Mg/m3	
0.3	75		
0.212	73		
0.15	72		
0.063	63		

Dry Mass of sample, g 505

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	18.4
Sand	18.3
Silt	57.6
Clay	5.7

Grading Analysis		
D100	mm	
D60	mm	0.0514
D30	mm	0.00655
D10	mm	0.00271
Uniformity Coefficient		19
Curvature Coefficient		0.31

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson





PARTICLE SIZE DISTRIBUTION

Job Ref **21-0709**

Borehole/Pit No. **LFBH17**

Site Name **Drehid Waste Management Facility – Further Landfill Development 2021**

Sample No. **4**

Soil Description **Greyish brown sandy slightly gravelly silty CLAY.**

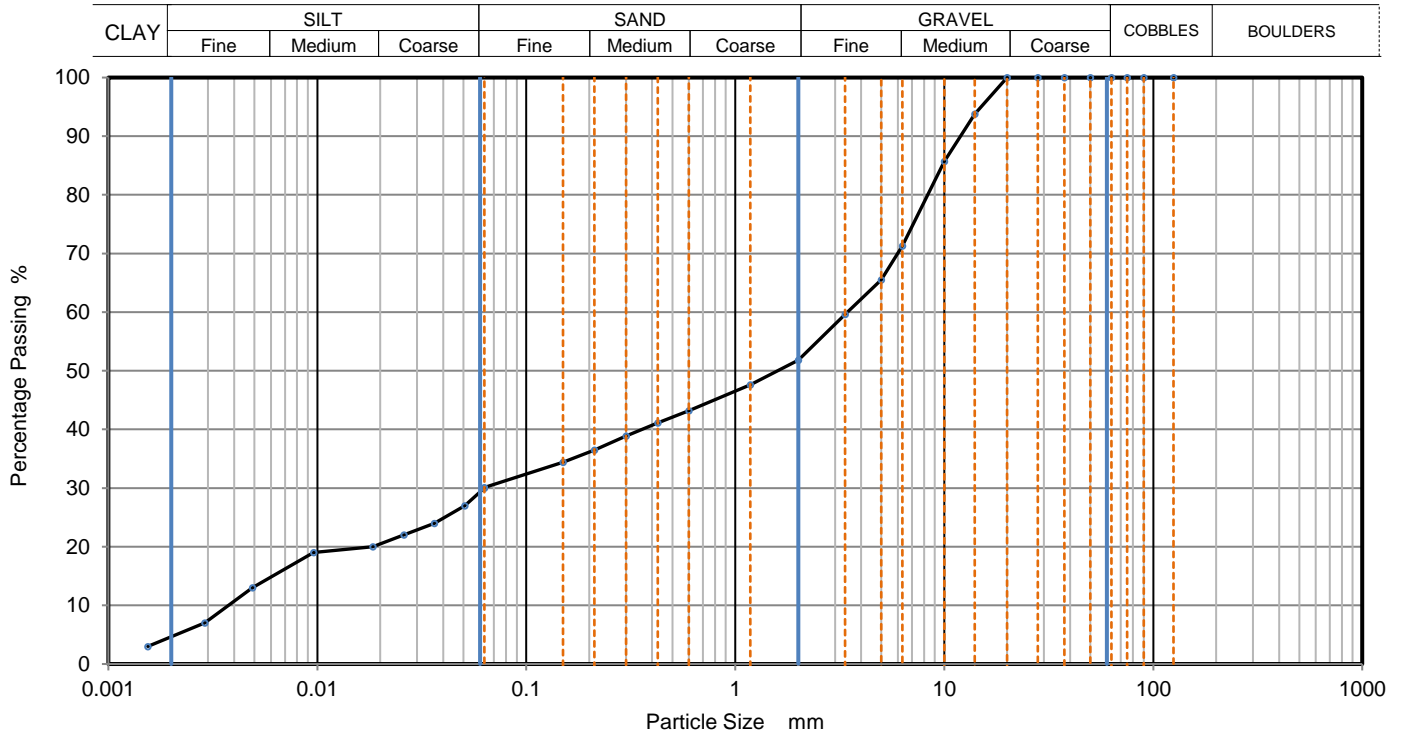
Depth, m **7.00**

Specimen Reference **3** Specimen Depth **7** m

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus2021102734**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	30
90	100	0.05065	27
75	100	0.03625	24
63	100	0.02594	22
50	100	0.01845	20
37.5	100	0.00958	19
28	100	0.00490	13
20	100	0.00289	7
14	94	0.00154	3
10	86		
6.3	71		
5	66		
3.35	60		
2	52		
1.18	48		
0.6	43		
0.425	41	Particle density (assumed) 2.65 Mg/m3	
0.3	39		
0.212	37		
0.15	34		
0.063	30		

Dry Mass of sample, g

502

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	48.2
Sand	21.7
Silt	25.5
Clay	4.6

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	920
Curvature Coefficient	0.3

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen.Watson

LAB 05R Version 4



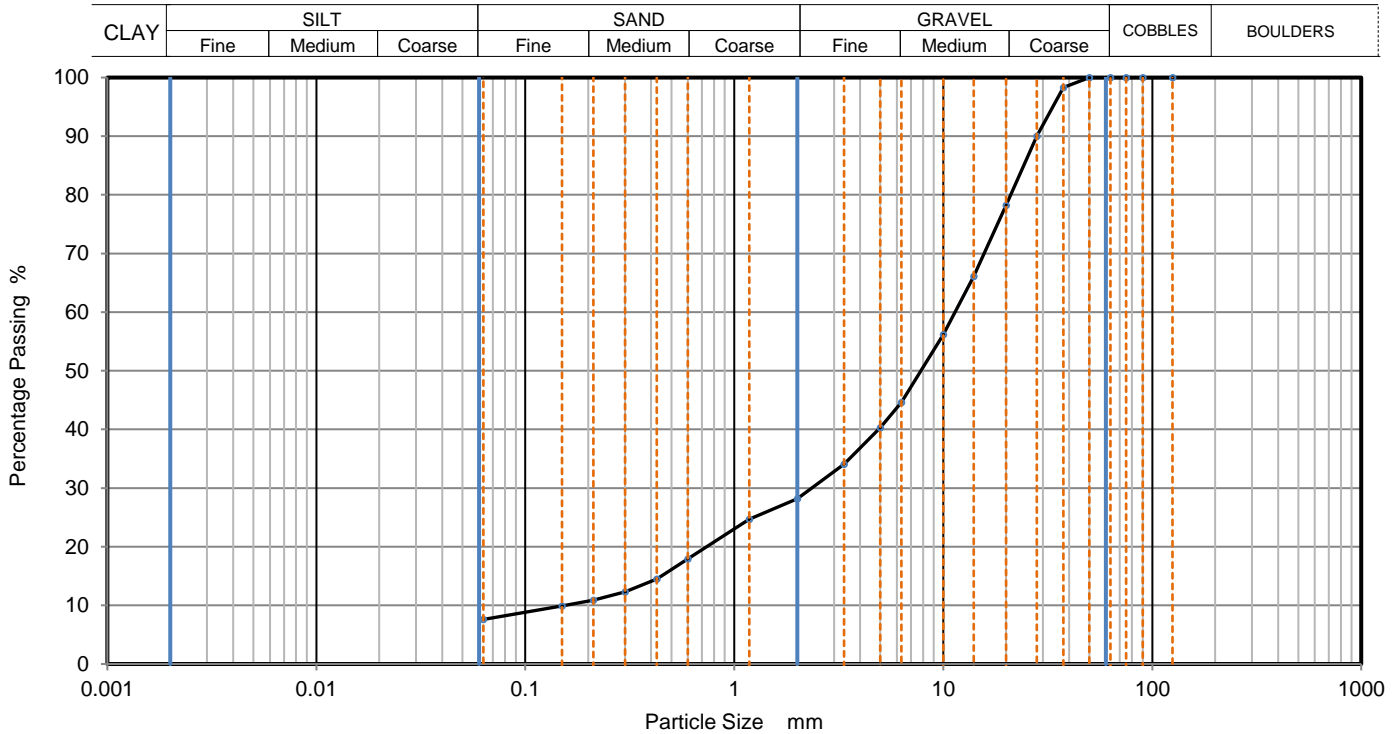
10122



PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	WLMW02W
Sample No.	4
Depth, m	3.85
Sample Type	B
KeyLAB ID	Caus2021102724

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Greyish brown sandy slightly silty subangular fine to coarse GRAVEL.		
Specimen Reference	3	Specimen Depth	3.85 m
Test Method	BS1377:Part 2:1990, clause 9.2		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	98		
28	90		
20	78		
14	66		
10	56		
6.3	45		
5	40		
3.35	34		
2	28		
1.18	25		
0.6	18		
0.425	15		
0.3	12		
0.212	11		
0.15	10		
0.063	8		

Dry Mass of sample, g 2949

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	71.8
Sand	20.6
Fines <0.063mm	8.0

Grading Analysis	
D100	mm
D60	mm 11.4
D30	mm 2.34
D10	mm 0.157
Uniformity Coefficient	73
Curvature Coefficient	3.1

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson

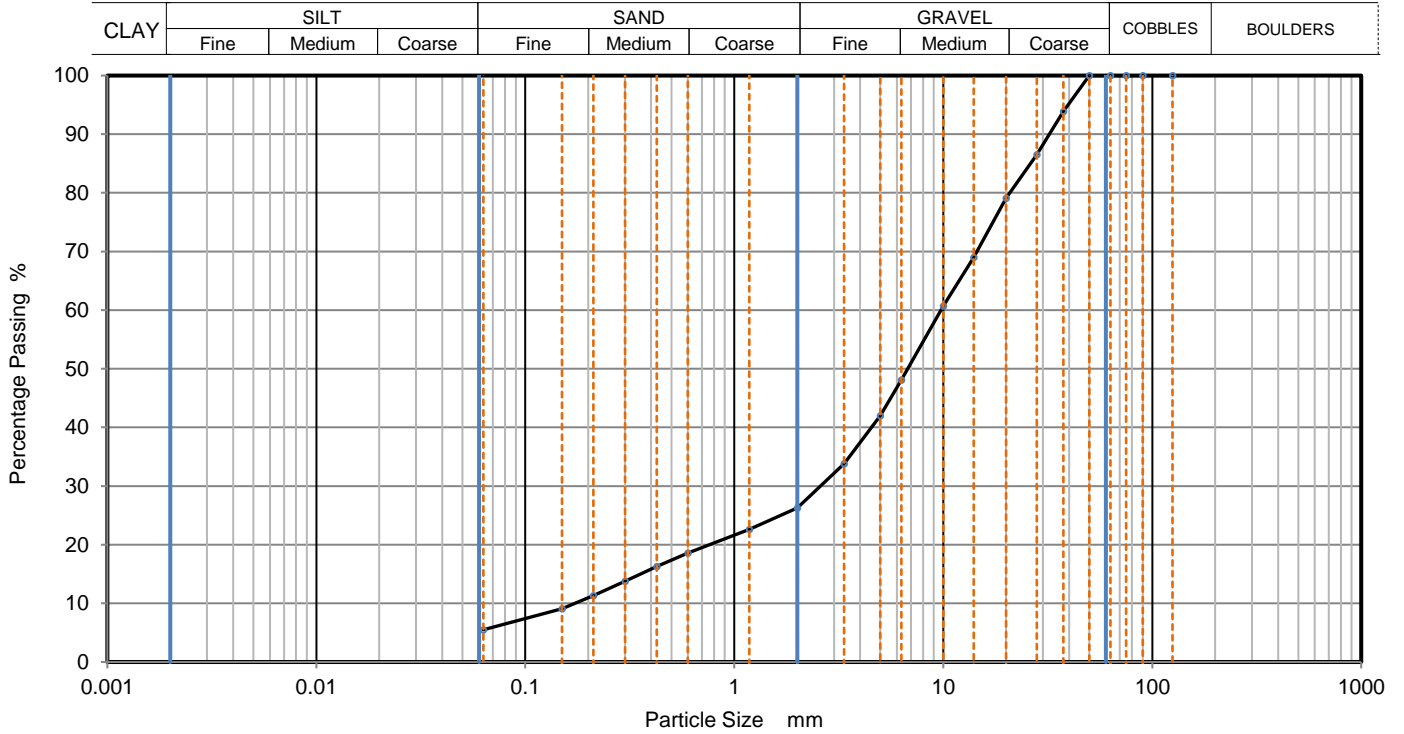




PARTICLE SIZE DISTRIBUTION

Job Ref	21-0709
Borehole/Pit No.	WLMW05W
Sample No.	4
Depth, m	7.50
Sample Type	B
KeyLAB ID	Caus2021102725

Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		
Soil Description	Greyish brown sandy slightly silty subangular fine to coarse GRAVEL.		
Specimen Reference	3	Specimen Depth	7.5 m
Test Method	BS1377:Part 2:1990, clause 9.2		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	94		
28	87		
20	79		
14	69		
10	61		
6.3	48		
5	42		
3.35	34		
2	26		
1.18	23		
0.6	19		
0.425	16		
0.3	14		
0.212	11		
0.15	9		
0.063	6		

Dry Mass of sample, g 3072

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	73.7
Sand	20.8
Fines <0.063mm	6.0

Grading Analysis	
D100	mm
D60	mm 9.74
D30	mm 2.58
D10	mm 0.172
Uniformity Coefficient	57
Curvature Coefficient	4

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved
Stephen.Watson





PARTICLE SIZE DISTRIBUTION

Job Ref

21-0709

Borehole/Pit No.

WLMW06Q

Site Name

Drehid Waste Management Facility – Further Landfill Development
2021

Sample No.

4

Soil Description

Greyish brown sandy slightly gravelly silty CLAY.

Depth, m

9.00

Specimen Reference

3

Specimen
Depth

9

m

Sample Type

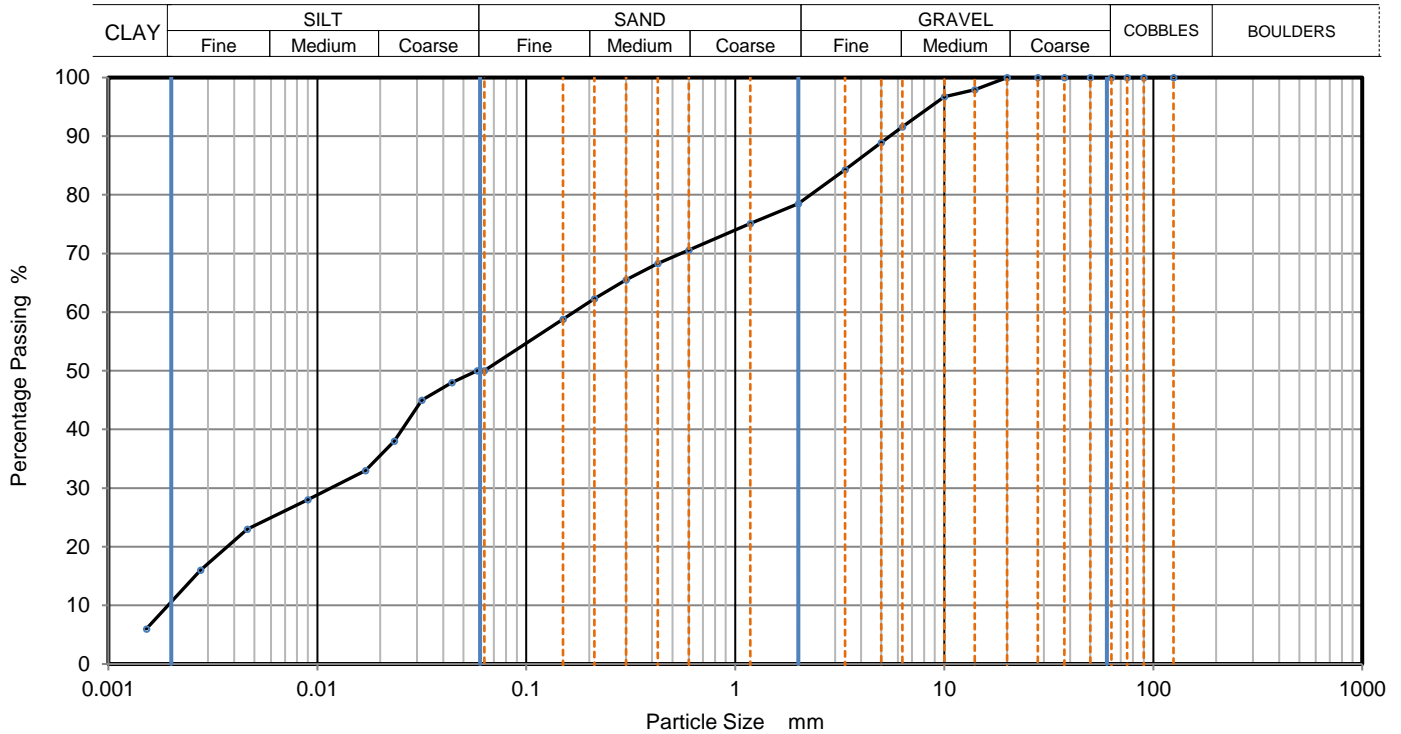
B

Test Method

BS1377:Part 2:1990, clauses 9.2 and 9.5

KeyLAB ID

Caus2021102729



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05820	50
90	100	0.04400	48
75	100	0.03161	45
63	100	0.02339	38
50	100	0.01701	33
37.5	100	0.00902	28
28	100	0.00462	23
20	100	0.00277	16
14	98	0.00152	6
10	97		
6.3	92		
5	89		
3.35	84		
2	79		
1.18	75		
0.6	71		
0.425	68	Particle density (assumed) 2.65 Mg/m3	
0.3	66		
0.212	62		
0.15	59		
0.063	50		

Dry Mass of sample, g

506

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	21.5
Sand	28.5
Silt	39.4
Clay	10.6

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	88
Curvature Coefficient	0.41

Remarks

Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen.Watson





PARTICLE SIZE DISTRIBUTION

Job Ref **21-0709**

Borehole/Pit No. **WLMW07Q**

Site Name **Drehid Waste Management Facility – Further Landfill Development 2021**

Sample No. **4**

Soil Description **Greyish brown sandy slightly gravelly silty CLAY.**

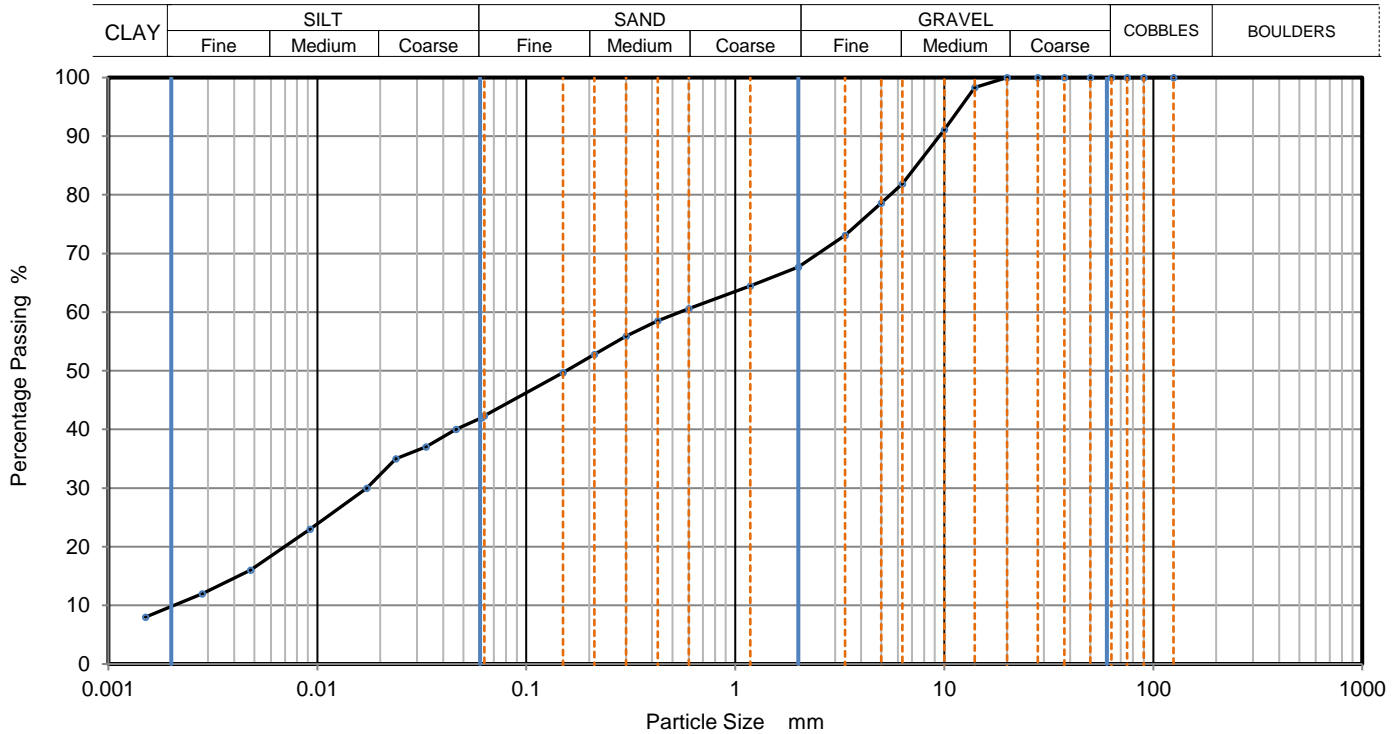
Depth, m **4.95**

Specimen Reference **3** Specimen Depth **4.95** m

Sample Type **B**

Test Method **BS1377:Part 2:1990, clauses 9.2 and 9.5**

KeyLAB ID **Caus2021102730**



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06107	42
90	100	0.04609	40
75	100	0.03307	37
63	100	0.02372	35
50	100	0.01724	30
37.5	100	0.00925	23
28	100	0.00479	16
20	100	0.00281	12
14	98	0.00150	8
10	91		
6.3	82		
5	79		
3.35	73		
2	68		
1.18	65		
0.6	61		
0.425	59	Particle density (assumed) 2.65 Mg/m3	
0.3	56		
0.212	53		
0.15	50		
0.063	42		

Dry Mass of sample, g 507

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	32.3
Sand	25.4
Silt	32.2
Clay	10.1

Grading Analysis	
D100	mm
D60	mm
D30	mm
D10	mm
Uniformity Coefficient	280
Curvature Coefficient	0.27

Remarks
Preparation and testing in accordance with BS1377-2 :1990 unless noted below

Approved

Stephen.Watson





LABORATORY REPORT



4043

Contract Number: PSL21/8716

Report Date: 24 November 2021
Client's Reference: 21-0709
Client Name: Causeway Geotech
8 Drumahiskey Road
Ballymoney
Co. Antrim
BT53 7QL

For the attention of: Stephen Watson

Contract Title: Drehid Waste Management Facility - Further Landfill Development 2021

Date Received: 4/11/2021
Date Commenced: 4/11/2021
Date Completed: 24/11/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:


A Watkins
(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

L Knight
(Senior Technician)

S Eyre
(Senior Technician)


D Burton
(Advanced Testing Manager)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
LFBH16	2	U	4.50		Brownish grey slightly gravelly sandy slightly clayey SILT.
LFBR02	3	U	13.50		Greyish brown very gravelly sandy clayey SILT.
LFBR02	4	U	16.50		Brown very gravelly sandy silty CLAY.
LFBR03	3	U	9.00		Greyish brown very gravelly very sandy SILT.
LFBR03	4	U	10.50		Greyish brown very gravelly very sandy CLAY.
LFBR09		U	4.50		Greyish brown very gravelly sandy silty CLAY.
LFBH10		U	6.00		Greyish brown very gravelly sandy SILT.
LFBR01		B	4.00		Brownish grey very gravelly slightly sandy SILT.
LFBR01		B	4.25		Brownish grey very gravelly slightly sandy SILT.
WLMW07W		B	4.30		Greyish brown very gravelly slightly sandy clayey SILT.
WLMW02W		B	7.00		Greyish brown gravelly SILT.
WLMW06W		B	7.25		Greyish brown very gravelly sandy very silty CLAY.
LFBR01		B	8.05		Greyish brown very gravelly slightly sandy silty CLAY.
WLMW06W		B	8.75		Brown gravelly slightly sandy silty CLAY.
WLMW03W		B	7.00		Greyish brown very gravelly sandy SILT.
WLMW02W		B	9.95		Greyish brown very gravelly sandy slightly clayey SILT.



4043

PSL

Professional Soils Laboratory

Drehid Waste Management Facility - Further Landfill
Development 2021

Contract No:

PSL21/8716

Client Ref:

21-0709

SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377 : PART 2 & 4 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m ³	Dry Density Mg/m ³	Retained 20mm %	Retained 37.5mm %	Method of compaction kg	Maximum Dry Density Mg/m ³	Minimum Dry Density Mg/m ³	Remarks
LFBH16	2	U	4.5	4.95	13	2.23	1.97						
LFBR02	3	U	13.50	13.95	12	2.25	2.01						
LFBR02	4	U	16.50	16.95	12.0	2.25	2.01						
LFBR03	3	U	9.00	9.25	9	2.32	2.13						
LFBR03	4	U	10.50	10.95	10	2.22	2.02						
LFBH09		U	4.50	4.95	11	2.25	2.03						
LFBH10		U	6.00	6.27	9	2.33	2.14						
LFBR01		B	4.00	4.00	10	2.30	2.09						
LFBR01		B	4.25	4.25	10	2.30	2.09						
WLMW07W		B	4.30	4.30	15	2.15	1.87						
WLMW02W		B	7.00	7.00	11	2.27	2.05						
WLMW06W		B	7.25	7.25	9	2.33	2.14						
LFBR01		B	8.05	8.05	8	2.34	2.17						
WLMW06W		B	8.75	8.75	12	2.27	2.03						
WLMW03W		B	7.00	7.00	8	2.36	2.19						
WLMW02W		B	9.95	9.95	7	2.39	2.23						



Drehid Waste Management Facility - Further Landfill
Development 2021

Contract No:

PSL21/8716

Client Ref:

21-0709

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBH16 **Top Depth (m) :** 4.50

Sample Number: 2 **Base Depth (m) :** 4.95

Sample Type: U **Lift Number:**

Date **Grid Reference:**

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.18
Diameter	mm	102.81
Area	mm ²	8301.58
Volume	cm ³	839.95
Mass	g	1871
Dry Mass	g	1653
Bulk Density	Mg/m ³	2.23
Dry Density	Mg/m ³	1.97
Moisture Content	%	13
Voids Ratio	-	0.347
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	11
Bulk Density	Mg/m ³	2.18
Dry Density	Mg/m ³	1.97

Test Setup		
Date Started		15/11/2021
Date Finished		19/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



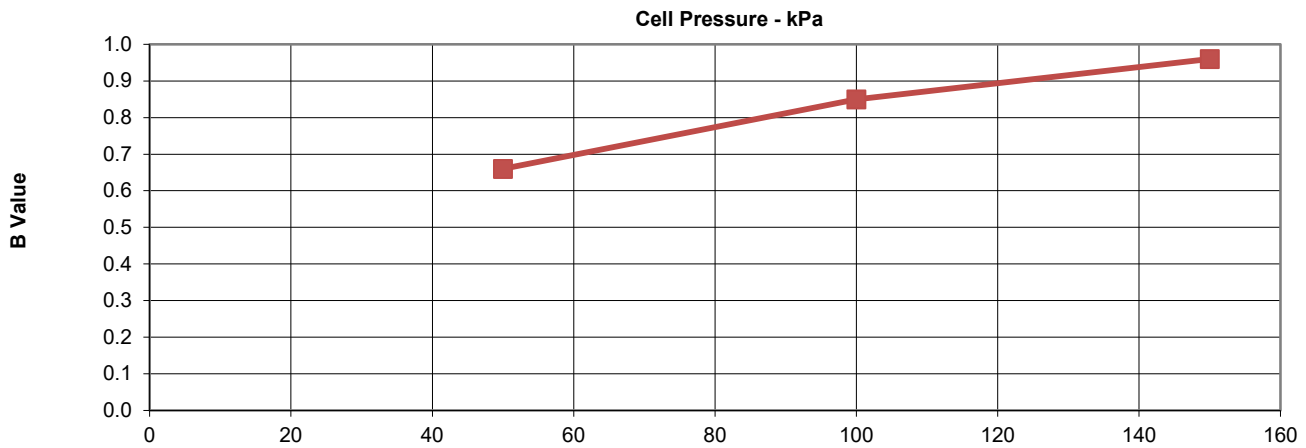
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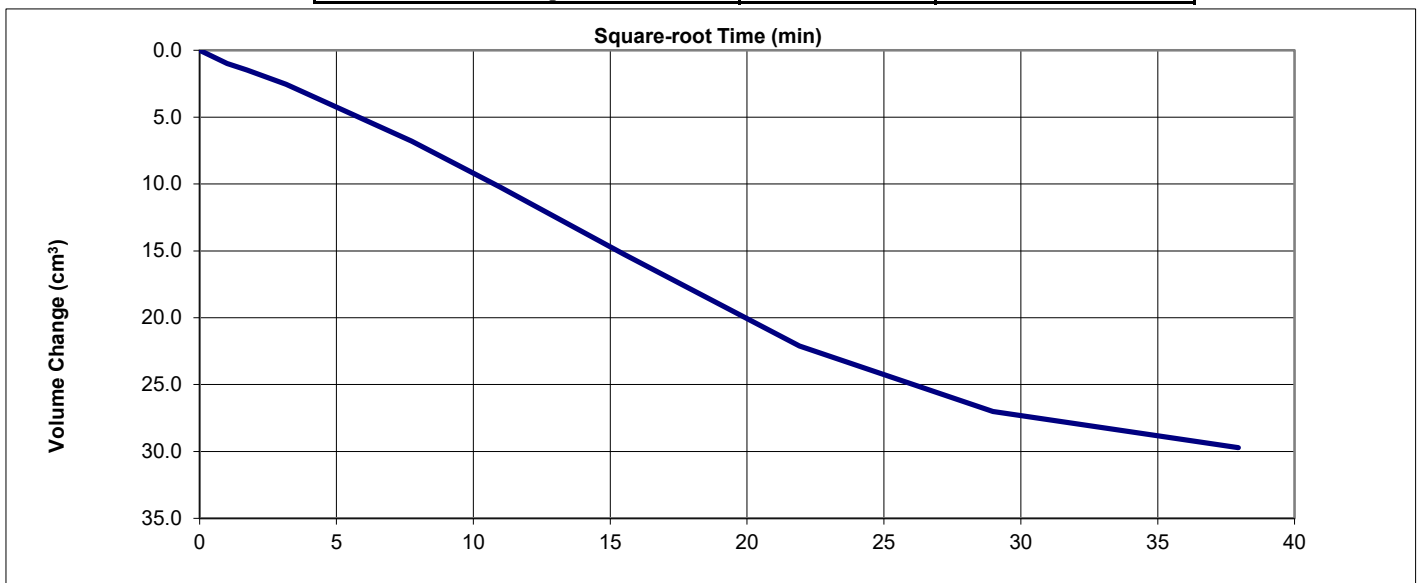
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBH16
Sample Depth	m	4.50
Sample No,		2
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	150
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	90
Cell Pressure	kPa	390
Back Pressure	kPa	300
Final PWP	kPa	306
PWP dissipation	%	95



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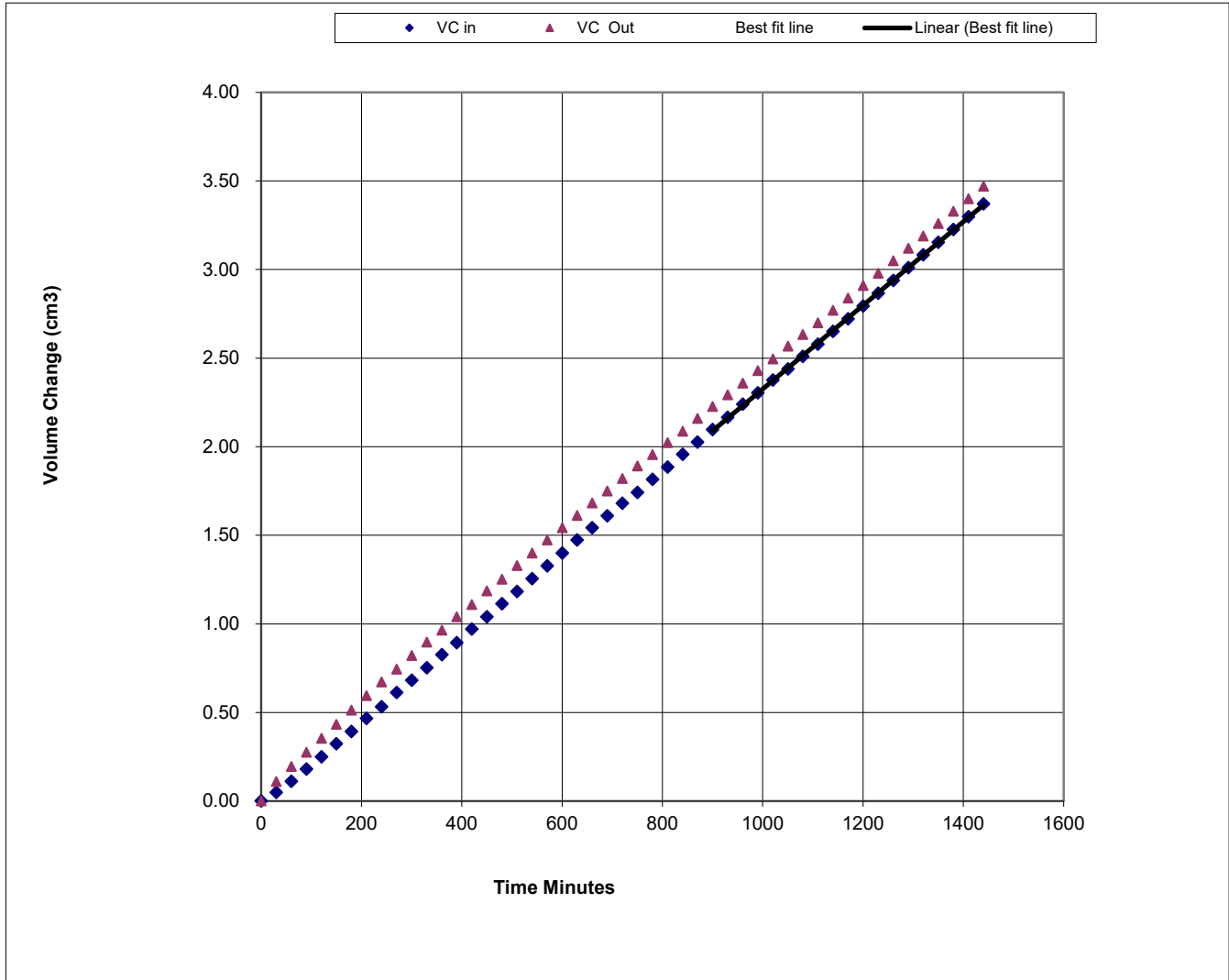
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBH16
Sample Depth	m	4.50
Sample No.		2
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	390
Mean Effective Stress	kPa	90
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0024
Average Temperature	'C	20
Vertical Permeability K_v	m/s	2.3E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBR02 Top Depth (m) : 13.50

Sample Number: 3 Base Depth (m) : 13.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	99.01
Diameter	mm	104.57
Area	mm ²	8588.24
Volume	cm ³	850.32
Mass	g	1913
Dry Mass	g	1709
Bulk Density	Mg/m ³	2.25
Dry Density	Mg/m ³	2.01
Moisture Content	%	12
Voids Ratio	-	0.319
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	11
Bulk Density	Mg/m ³	2.23
Dry Density	Mg/m ³	2.01

Test Setup		
Date Started		15/11/2021
Date Finished		19/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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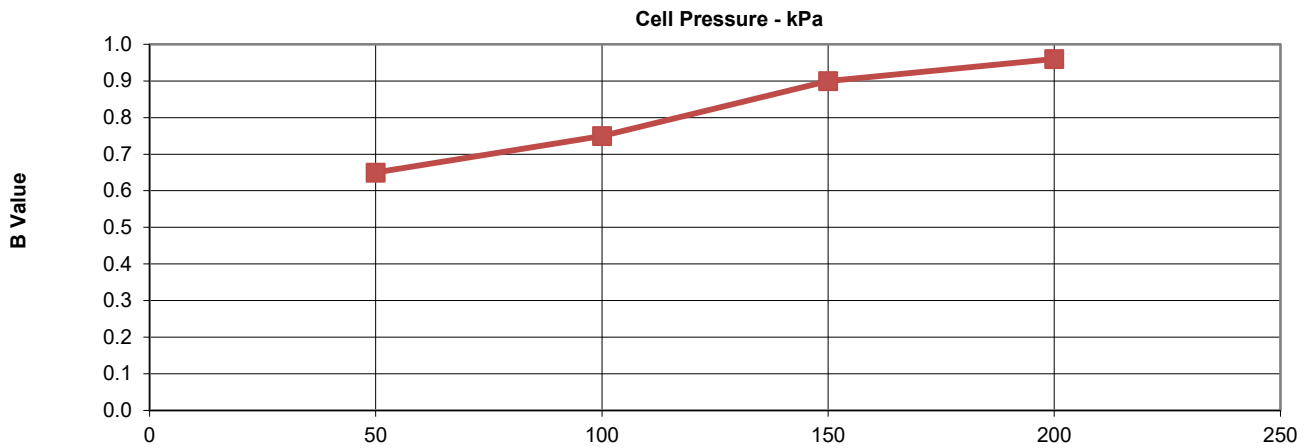
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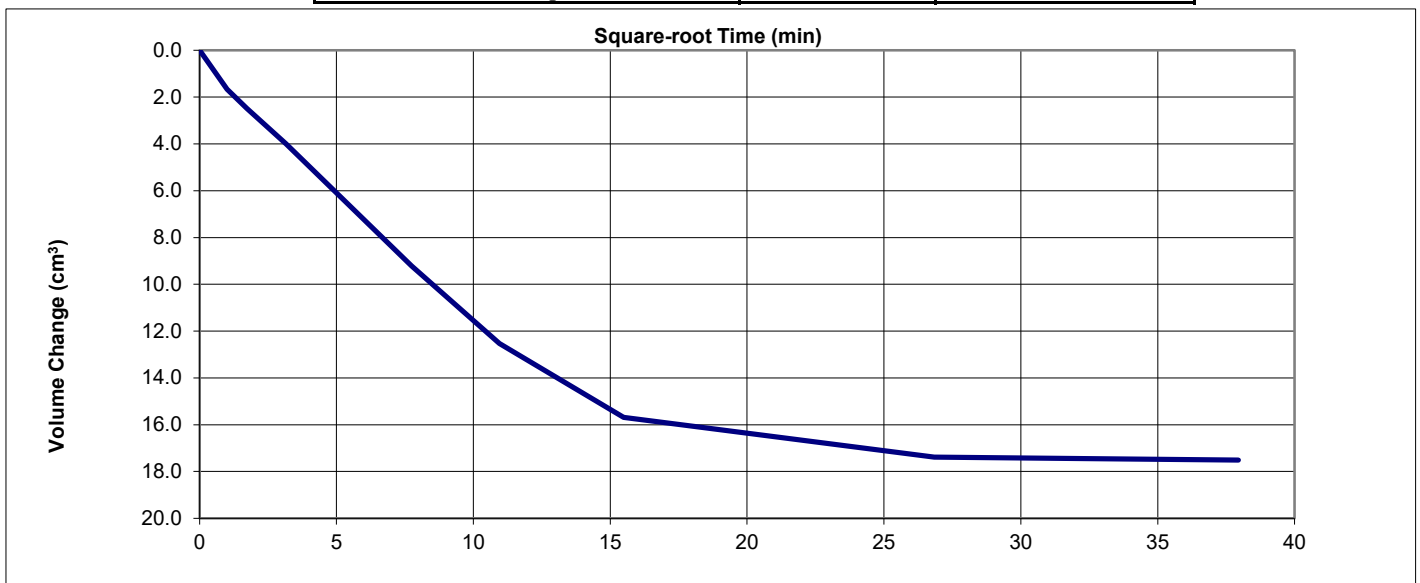
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR02
Sample Depth	m	13.50
Sample No,		3
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	200
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	270
Cell Pressure	kPa	570
Back Pressure	kPa	300
Final PWP	kPa	300
PWP dissipation	%	100



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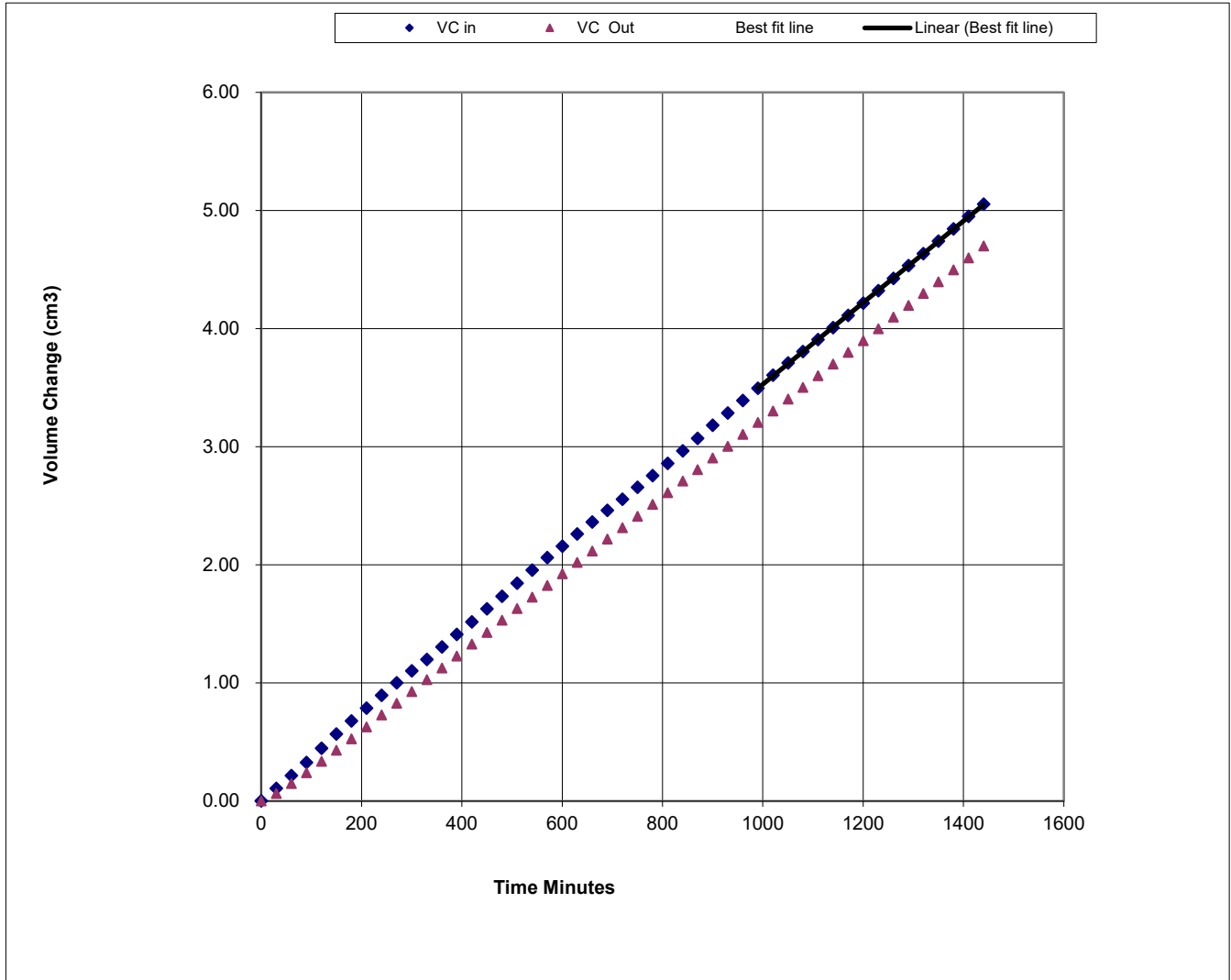
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR02
Sample Depth	m	13.50
Sample No.		3
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	570
Mean Effective Stress	kPa	270
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0034
Average Temperature	'C	20
Vertical Permeability K _v	m/s	3.2E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBR02 Top Depth (m) : 16.50

Sample Number: 4 Base Depth (m) : 16.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.19
Diameter	mm	104.18
Area	mm ²	8524.30
Volume	cm ³	862.57
Mass	g	1942
Dry Mass	g	1735
Bulk Density	Mg/m ³	2.25
Dry Density	Mg/m ³	2.01
Moisture Content	%	12
Voids Ratio	-	0.318
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	10
Bulk Density	Mg/m ³	2.21
Dry Density	Mg/m ³	2.01

Test Setup		
Date Started		15/11/2021
Date Finished		19/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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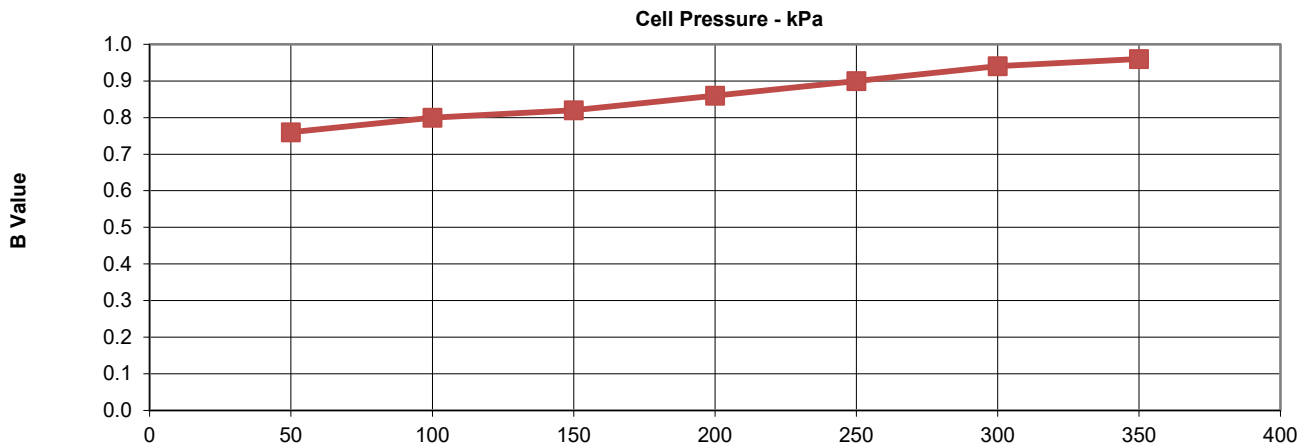
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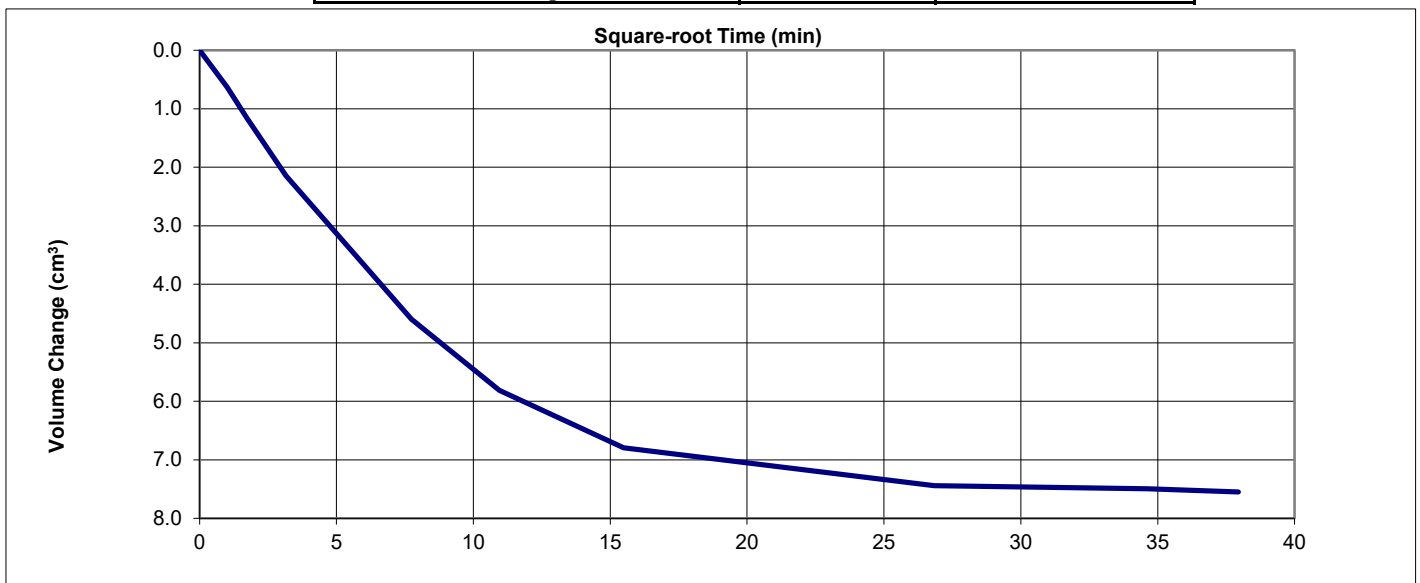
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR02
Sample Depth	m	16.50
Sample No,		4
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	330
Cell Pressure	kPa	630
Back Pressure	kPa	300
Final PWP	kPa	307
PWP dissipation	%	98



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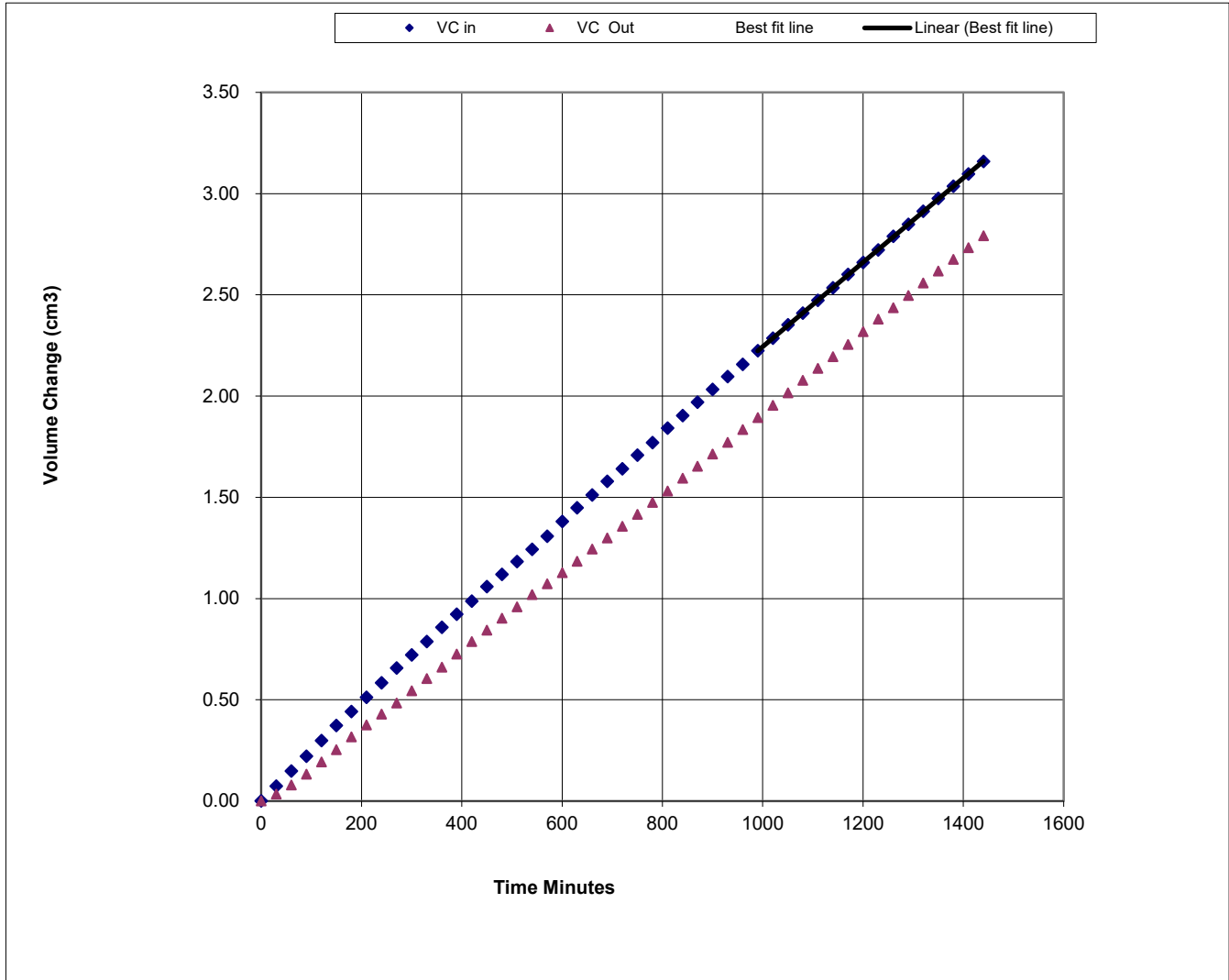
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR02
Sample Depth	m	16.50
Sample No.		4
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	630
Mean Effective Stress	kPa	330
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0021
Average Temperature	'C	20
Vertical Permeability Kv	m/s	2.0E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBR03 **Top Depth (m) :** 9.00
Sample Number: 3 **Base Depth (m) :** 9.25
Sample Type: U **Lift Number:**
Date **Grid Reference:**

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.22
Diameter	mm	101.18
Area	mm ²	8040.43
Volume	cm ³	813.85
Mass	g	1892
Dry Mass	g	1736
Bulk Density	Mg/m ³	2.32
Dry Density	Mg/m ³	2.13
Moisture Content	%	9.0
Voids Ratio	-	0.242
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	8.6
Bulk Density	Mg/m ³	2.32
Dry Density	Mg/m ³	2.13

Test Setup		
Date Started		14/11/2021
Date Finished		18/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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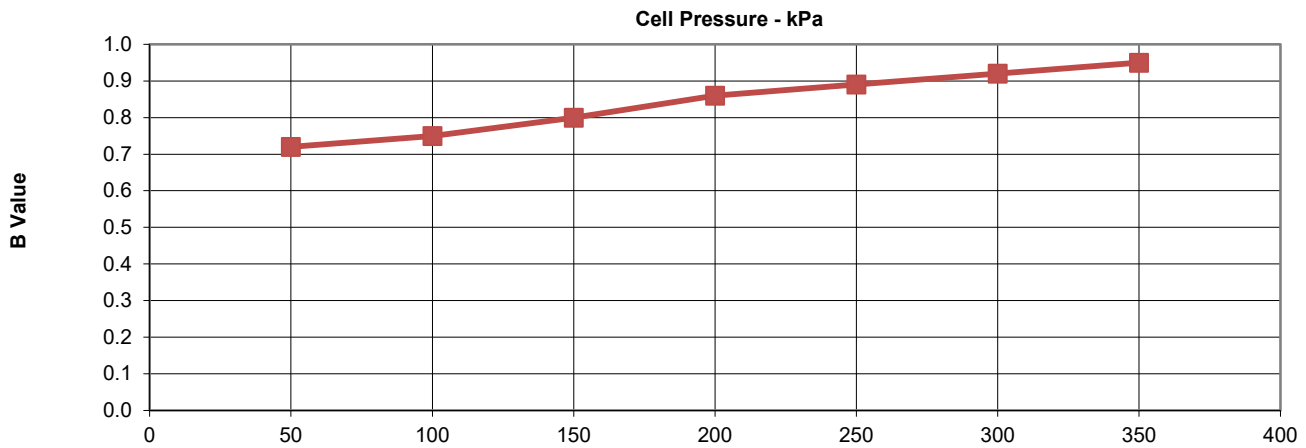
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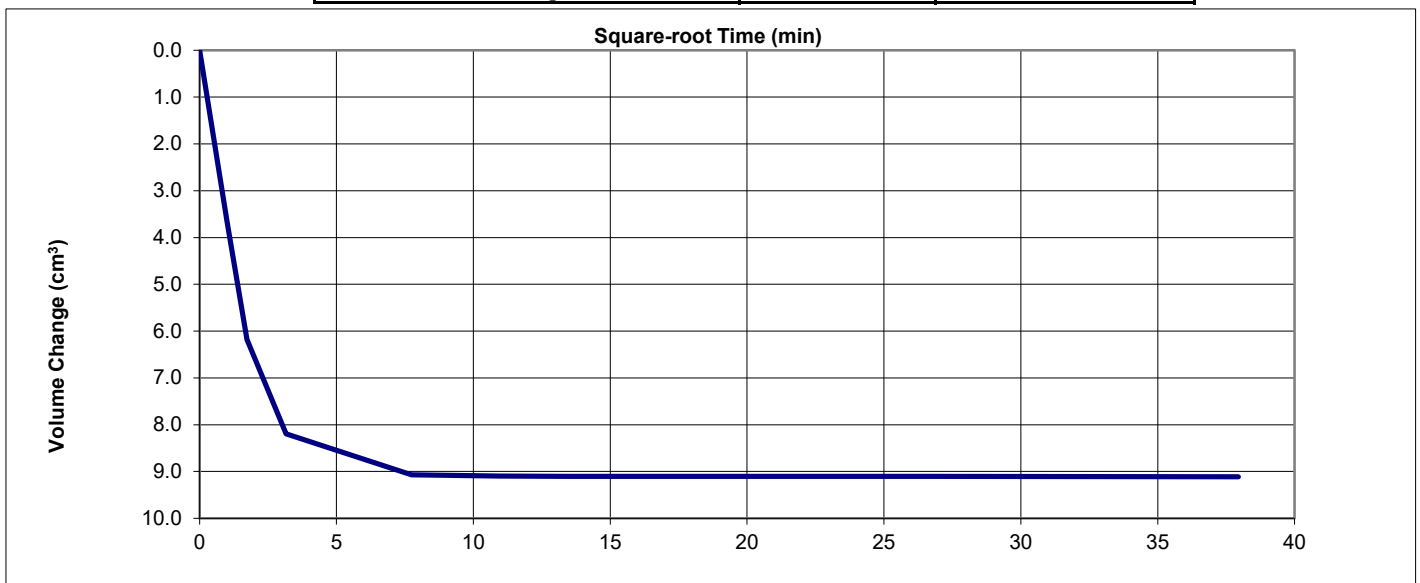
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR03
Sample Depth	m	9.00
Sample No,		3
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.95



Consolidation		
Effective Pressure	kPa	180
Cell Pressure	kPa	480
Back Pressure	kPa	300
Final PWP	kPa	307
PWP dissipation	%	96



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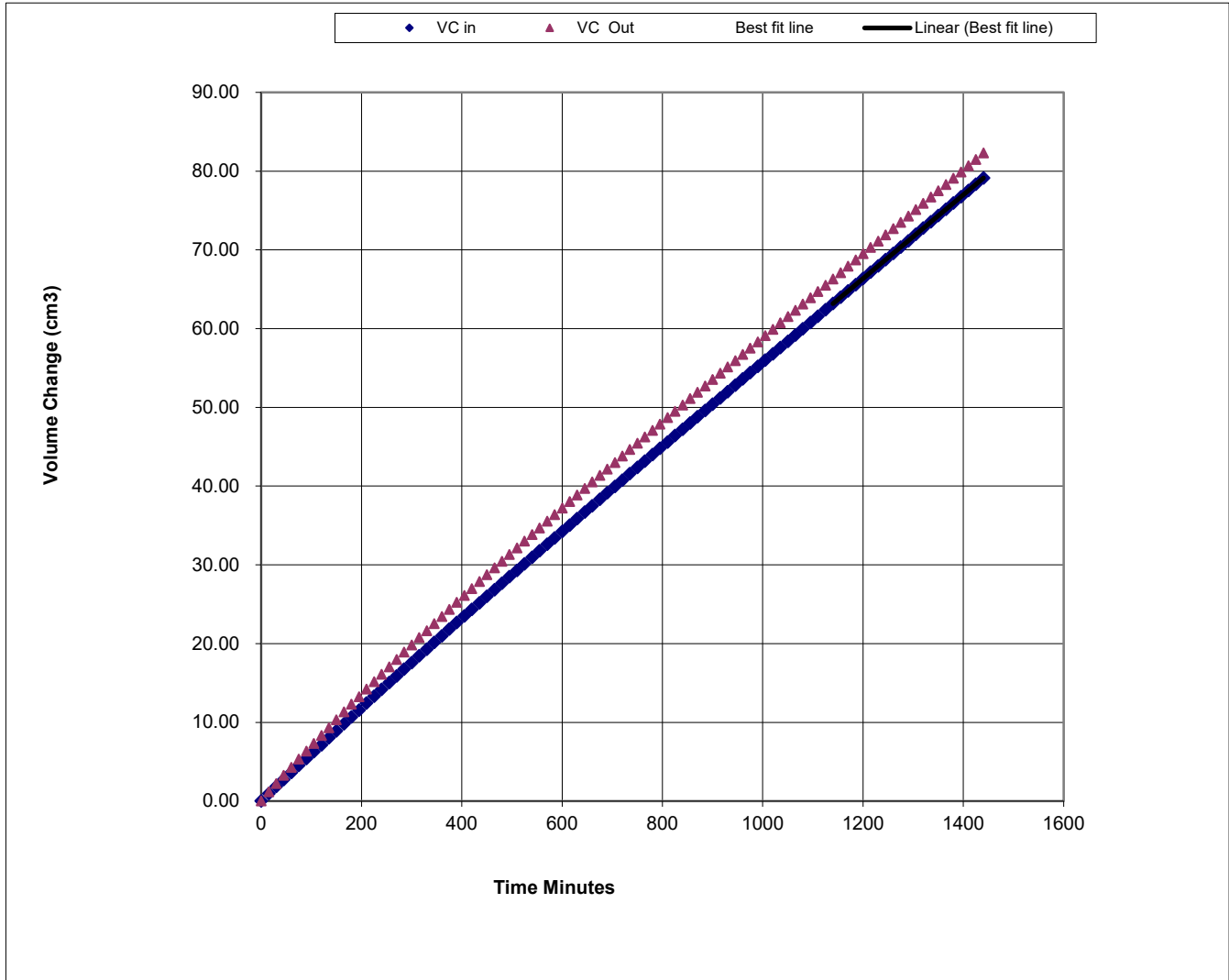
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR03
Sample Depth	m	9.00
Sample No.		3
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	480
Mean Effective Stress	kPa	180
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0532
Average Temperature	'C	20
Vertical Permeability K _v	m/s	5.5E-09



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBR03 Top Depth (m) : 10.50

Sample Number: 4 Base Depth (m) : 10.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	99.28
Diameter	mm	103.65
Area	mm ²	8437.79
Volume	cm ³	837.70
Mass	g	1856
Dry Mass	g	1689
Bulk Density	Mg/m ³	2.22
Dry Density	Mg/m ³	2.02
Moisture Content	%	9.9
Voids Ratio	-	0.314
Specific Gravity (assumed/measured)	Mg/m ³ -	2.65 assumed

Final Specimen Conditions		
Moisture Content	%	11
Bulk Density	Mg/m ³	2.24
Dry Density	Mg/m ³	2.02

Test Setup		
Date Started		14/11/2021
Date Finished		18/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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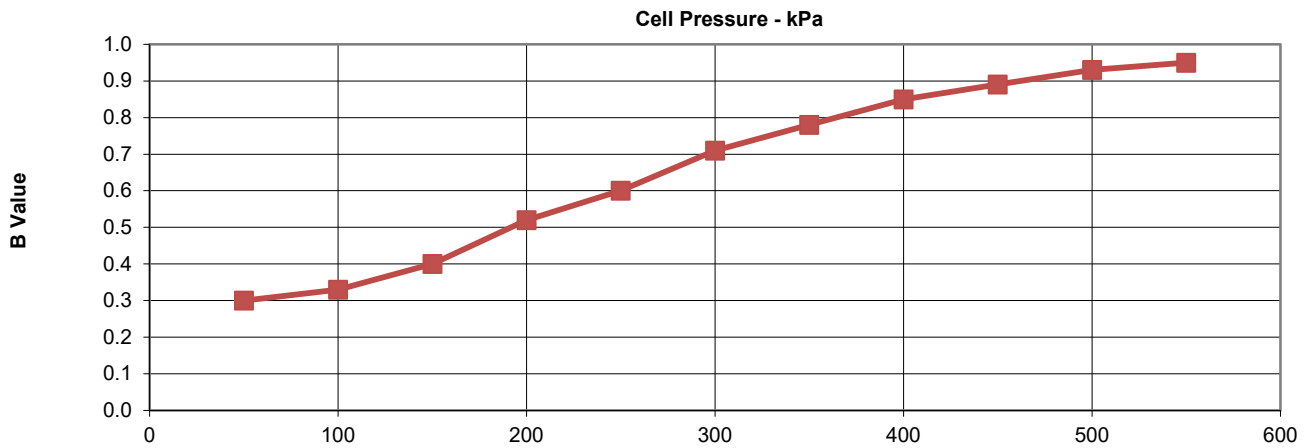
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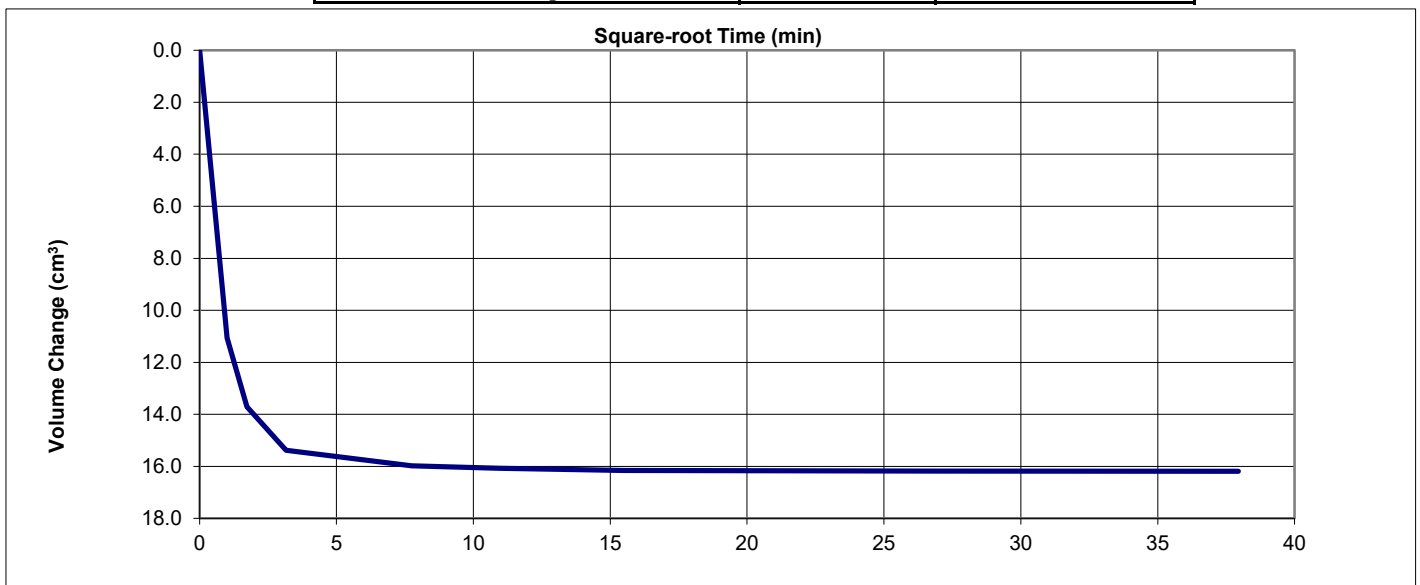
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR03
Sample Depth	m	10.50
Sample No,		4
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	550
Final B Value	-	0.95



Consolidation		
Effective Pressure	kPa	210
Cell Pressure	kPa	710
Back Pressure	kPa	500
Final PWP	kPa	507
PWP dissipation	%	96



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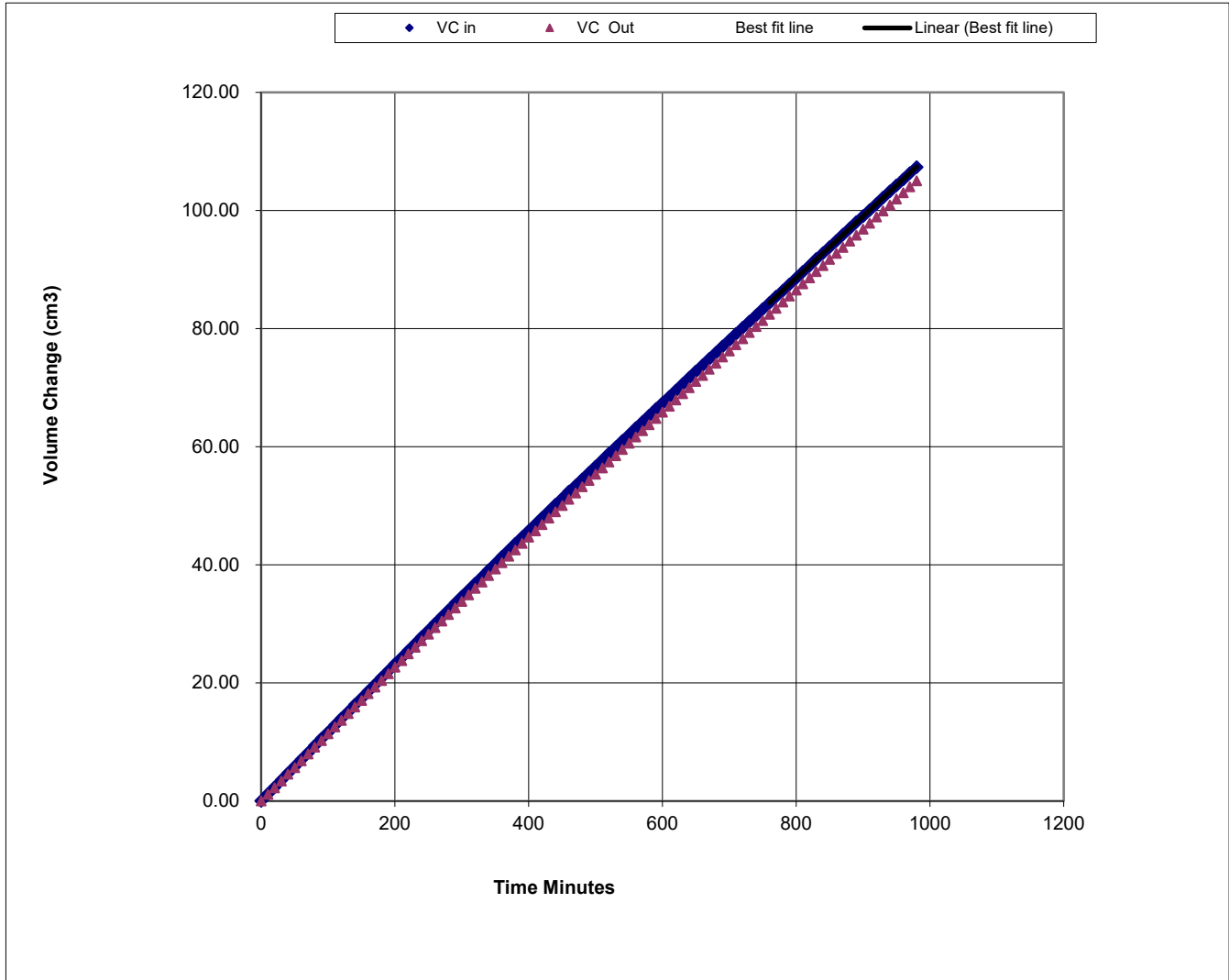
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR03
Sample Depth	m	10.50
Sample No.		4
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	710
Mean Effective Stress	kPa	210
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.1046
Average Temperature	'C	20
Vertical Permeability K _v	m/s	1.0E-08



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBH09 Top Depth (m) : 4.50

Sample Number: Base Depth (m) : 4.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	100.20
Diameter	mm	104.49
Area	mm ²	8575.10
Volume	cm ³	859.23
Mass	g	1931
Dry Mass	g	1736
Bulk Density	Mg/m ³	2.25
Dry Density	Mg/m ³	2.02
Moisture Content	%	11
Voids Ratio	-	0.312
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	10
Bulk Density	Mg/m ³	2.23
Dry Density	Mg/m ³	2.02

Test Setup		
Date Started		16/11/2021
Date Finished		20/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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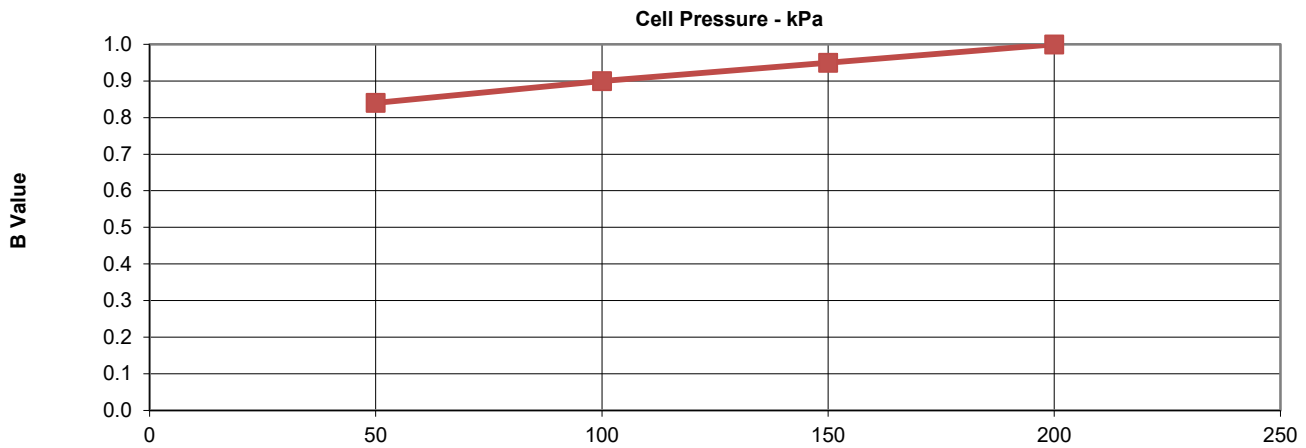
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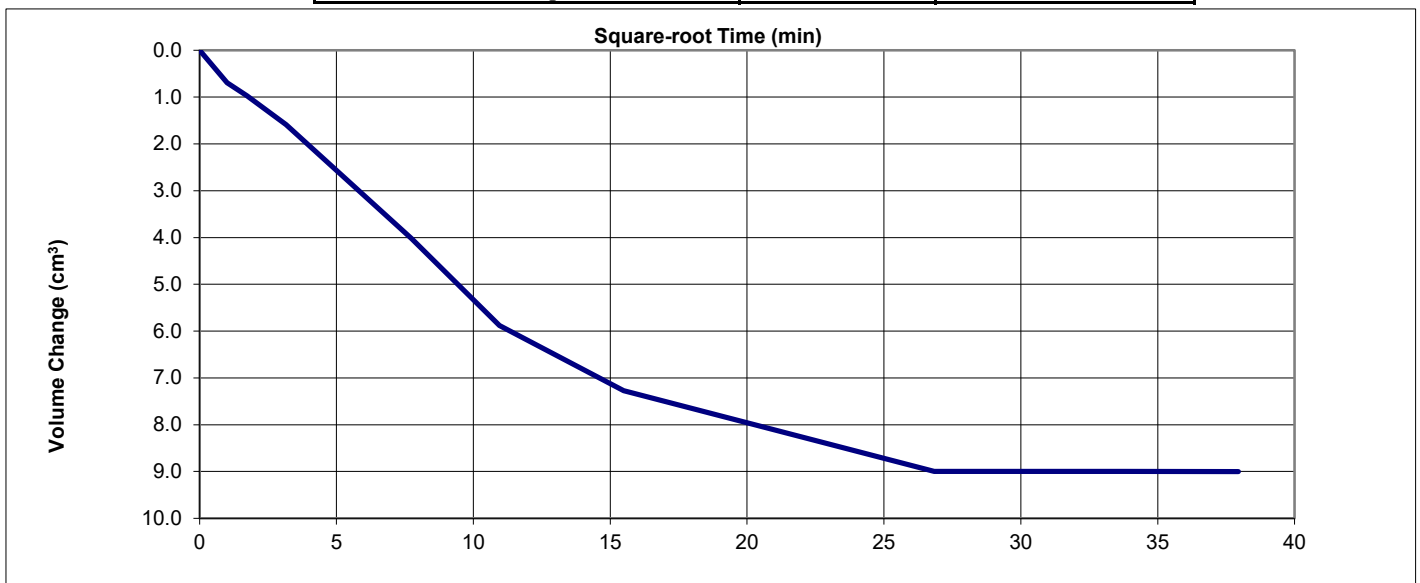
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBH09
Sample Depth	m	4.50
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	200
Final B Value	-	1.00



Consolidation		
Effective Pressure	kPa	90
Cell Pressure	kPa	390
Back Pressure	kPa	300
Final PWP	kPa	300
PWP dissipation	%	100



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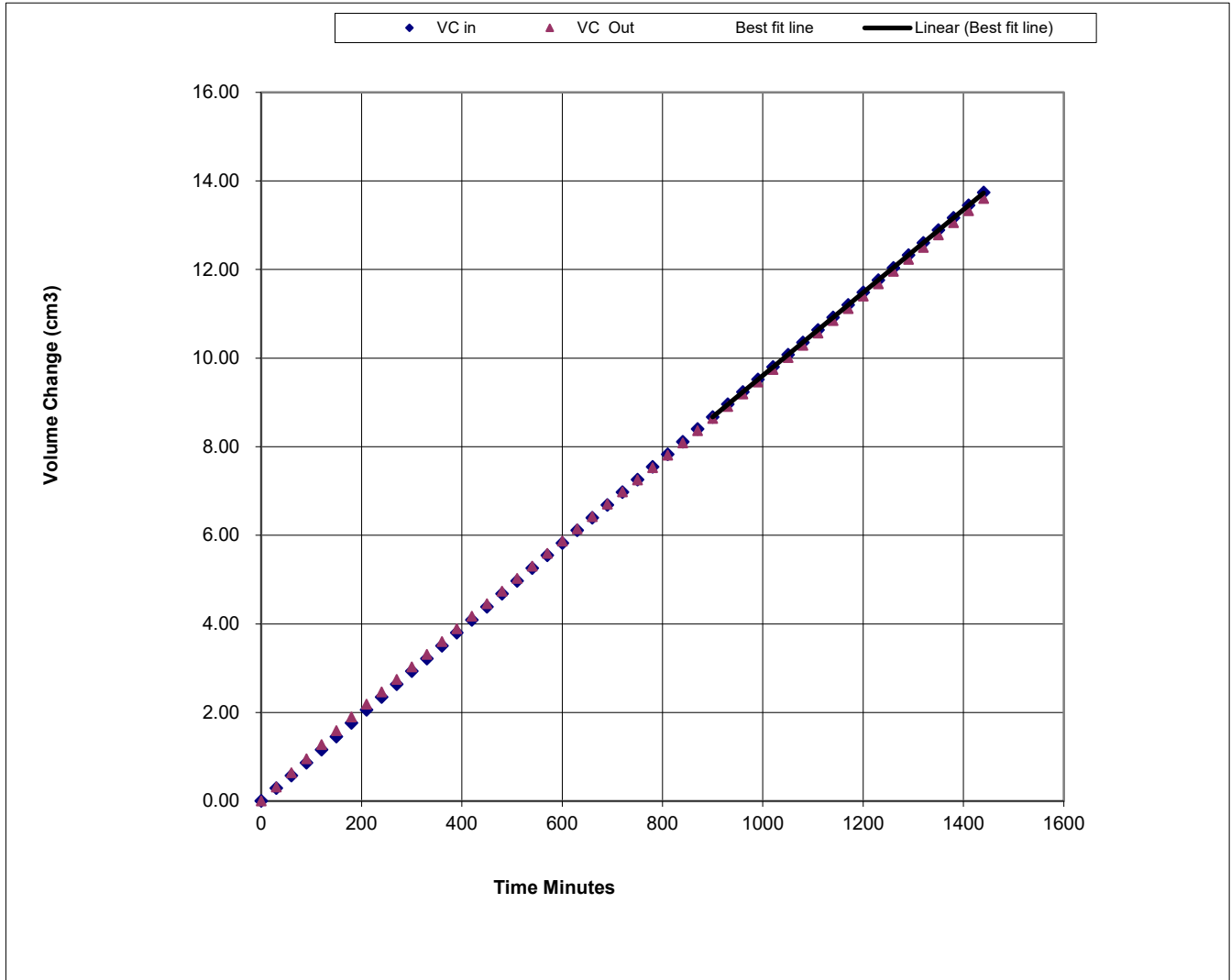
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBH09
Sample Depth	m	4.50
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	390
Mean Effective Stress	kPa	90
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0094
Average Temperature	'C	20
Vertical Permeability Kv	m/s	8.9E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBH10 Top Depth (m) : 6.00

Sample Number: Base Depth (m) : 6.27

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	99.99
Diameter	mm	104.51
Area	mm ²	8578.39
Volume	cm ³	857.75
Mass	g	2000
Dry Mass	g	1835
Bulk Density	Mg/m ³	2.33
Dry Density	Mg/m ³	2.14
Moisture Content	%	8.9
Voids Ratio	-	0.238
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	8.6
Bulk Density	Mg/m ³	2.32
Dry Density	Mg/m ³	2.14

Test Setup		
Date Started		16/11/2021
Date Finished		20/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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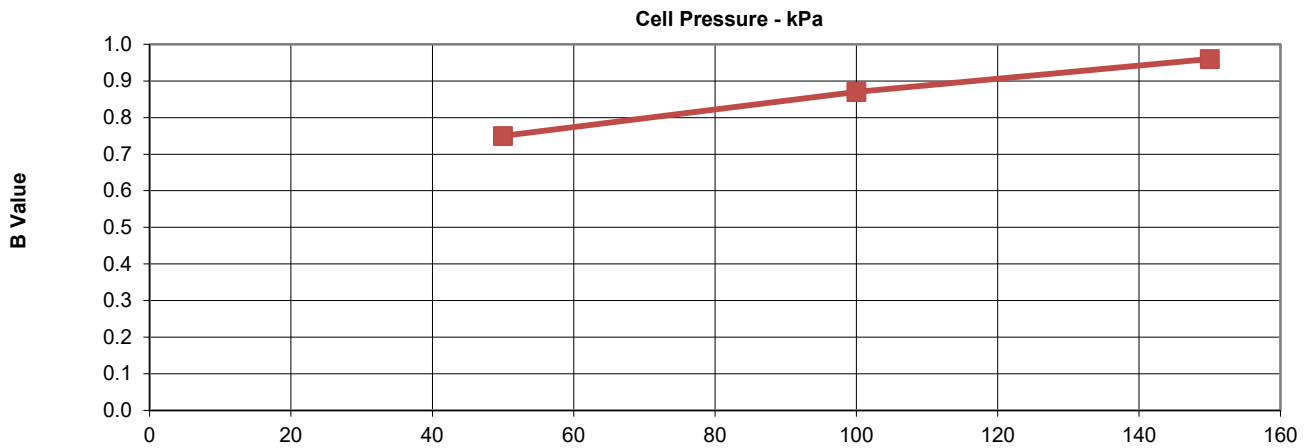
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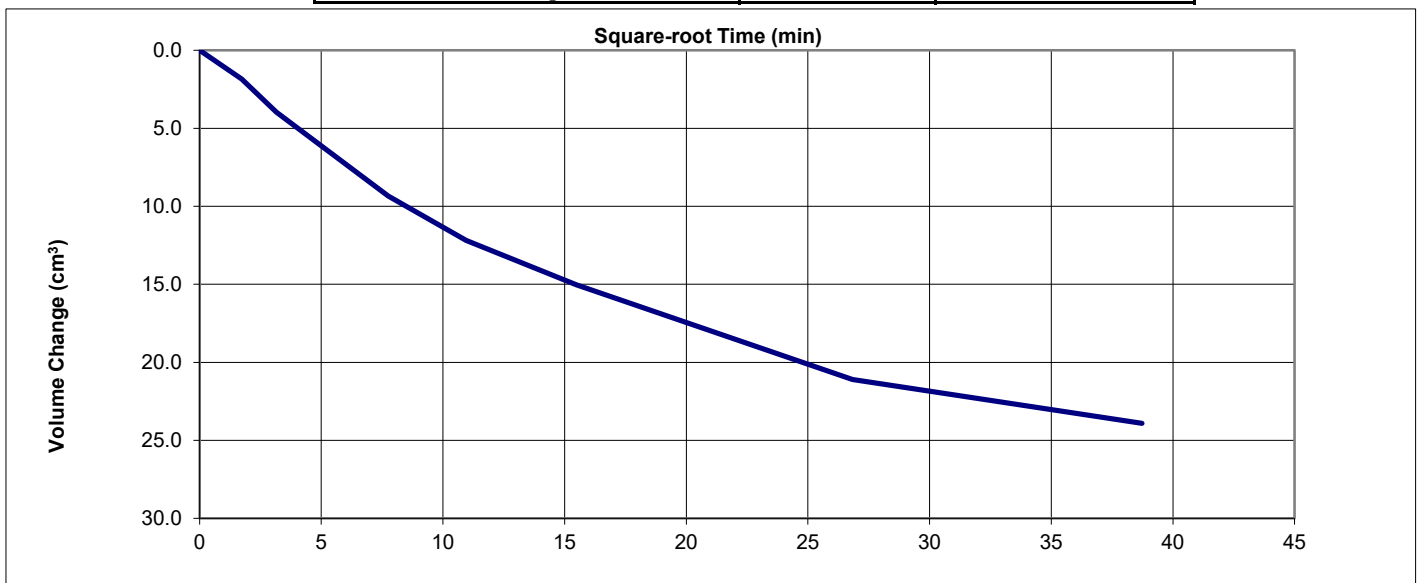
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBH10
Sample Depth	m	6.00
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	150
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	120
Cell Pressure	kPa	420
Back Pressure	kPa	300
Final PWP	kPa	306
PWP dissipation	%	95



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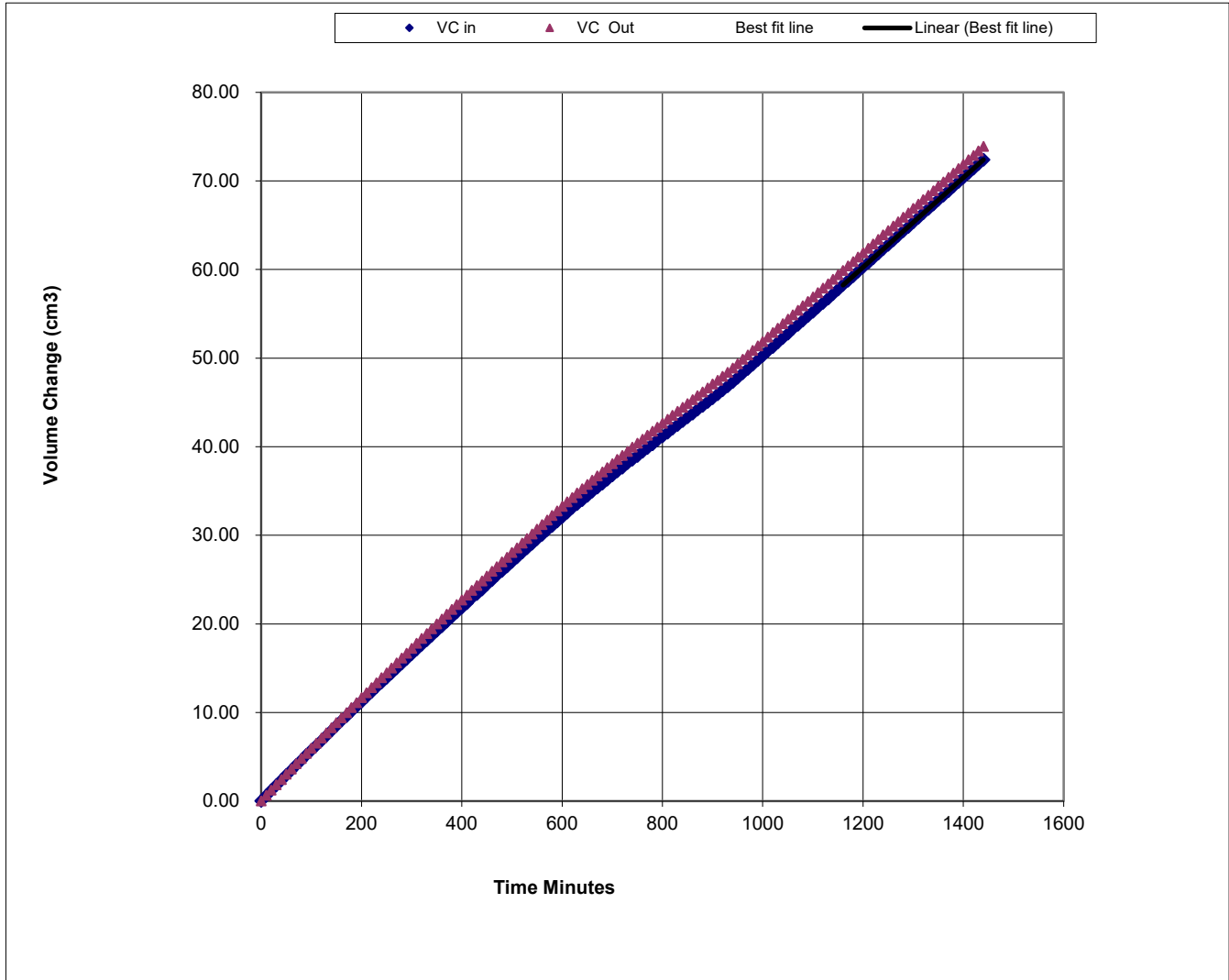
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBH10
Sample Depth	m	6.00
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	420
Mean Effective Stress	kPa	120
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0505
Average Temperature	'C	20
Vertical Permeability K_v	m/s	4.8E-09



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBR01 Top Depth (m) : 4.00

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.47
Diameter	mm	101.98
Area	mm ²	8168.08
Volume	cm ³	828.81
Mass	g	1908
Dry Mass	g	1740
Bulk Density	Mg/m ³	2.30
Dry Density	Mg/m ³	2.10
Moisture Content	%	9.7
Voids Ratio	-	0.262
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	8.5
Bulk Density	Mg/m ³	2.28
Dry Density	Mg/m ³	2.10

Test Setup		
Date Started		09/11/2021
Date Finished		14/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	2



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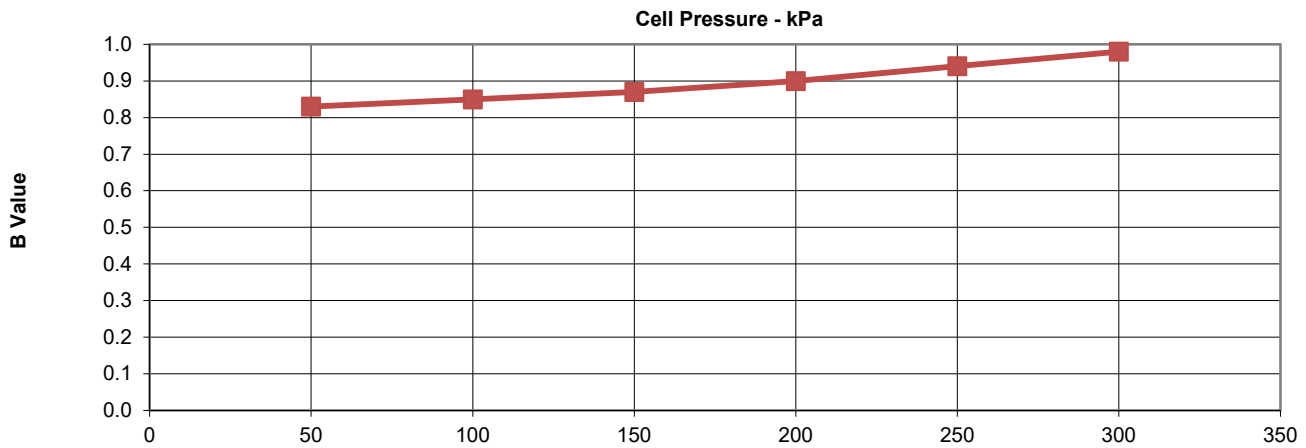
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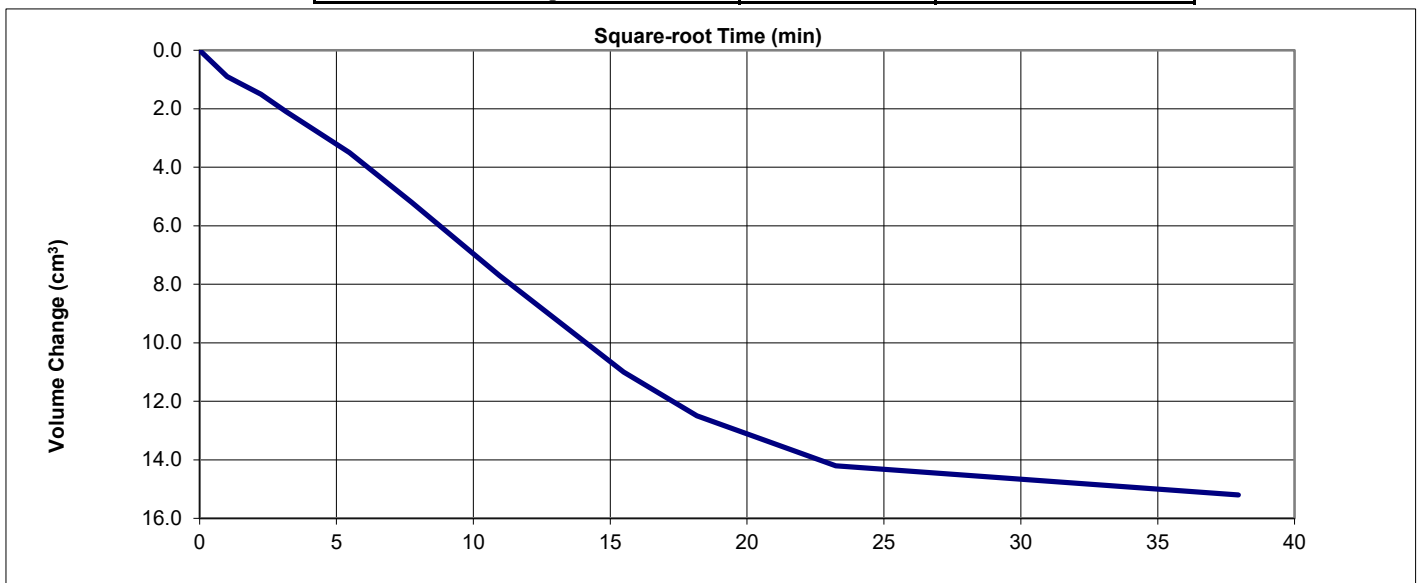
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR01
Sample Depth	m	4.00
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	300
Final B Value	-	0.98



Consolidation		
Effective Pressure	kPa	80
Cell Pressure	kPa	380
Back Pressure	kPa	300
Final PWP	kPa	300
PWP dissipation	%	100



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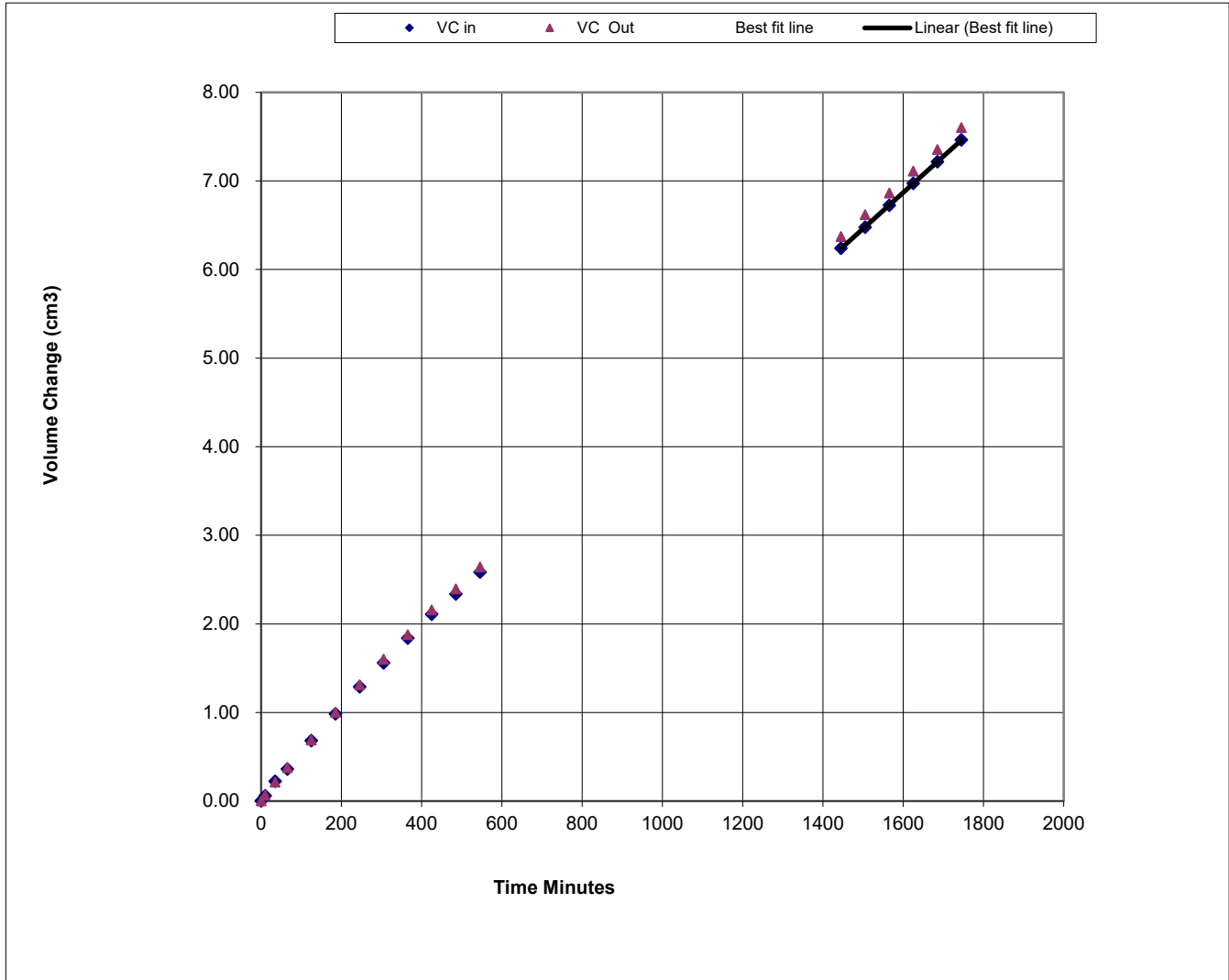
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR01
Sample Depth	m	4.00
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	380
Mean Effective Stress	kPa	80
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0041
Average Temperature	'C	20
Vertical Permeability K _v	m/s	4.1E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBR01 Top Depth (m) : 4.25

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.27
Diameter	mm	103.00
Area	mm ²	8332.29
Volume	cm ³	843.81
Mass	g	1939
Dry Mass	g	1768
Bulk Density	Mg/m ³	2.30
Dry Density	Mg/m ³	2.10
Moisture Content	%	9.6
Voids Ratio	-	0.264
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	8.3
Bulk Density	Mg/m ³	2.27
Dry Density	Mg/m ³	2.10

Test Setup		
Date Started		09/11/2021
Date Finished		13/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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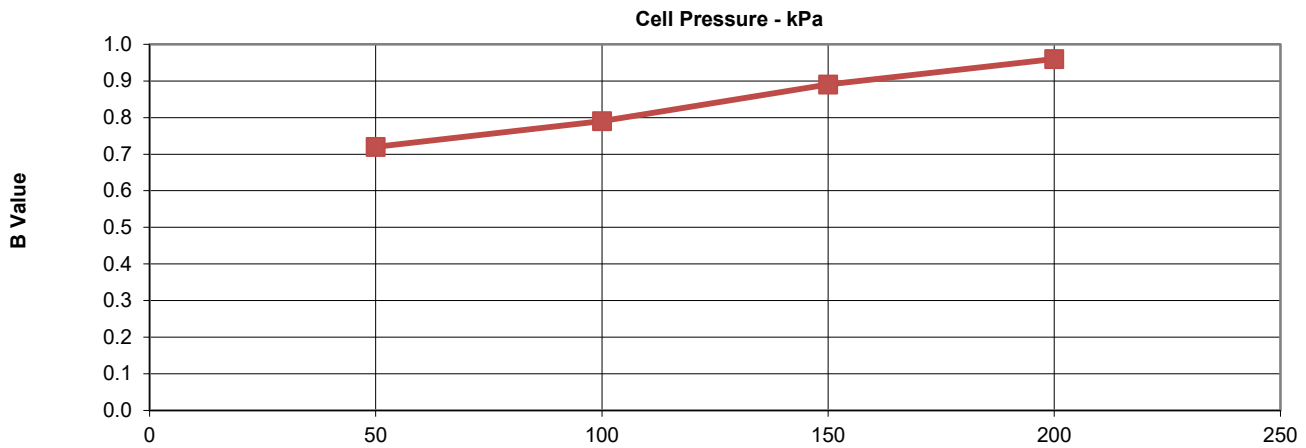
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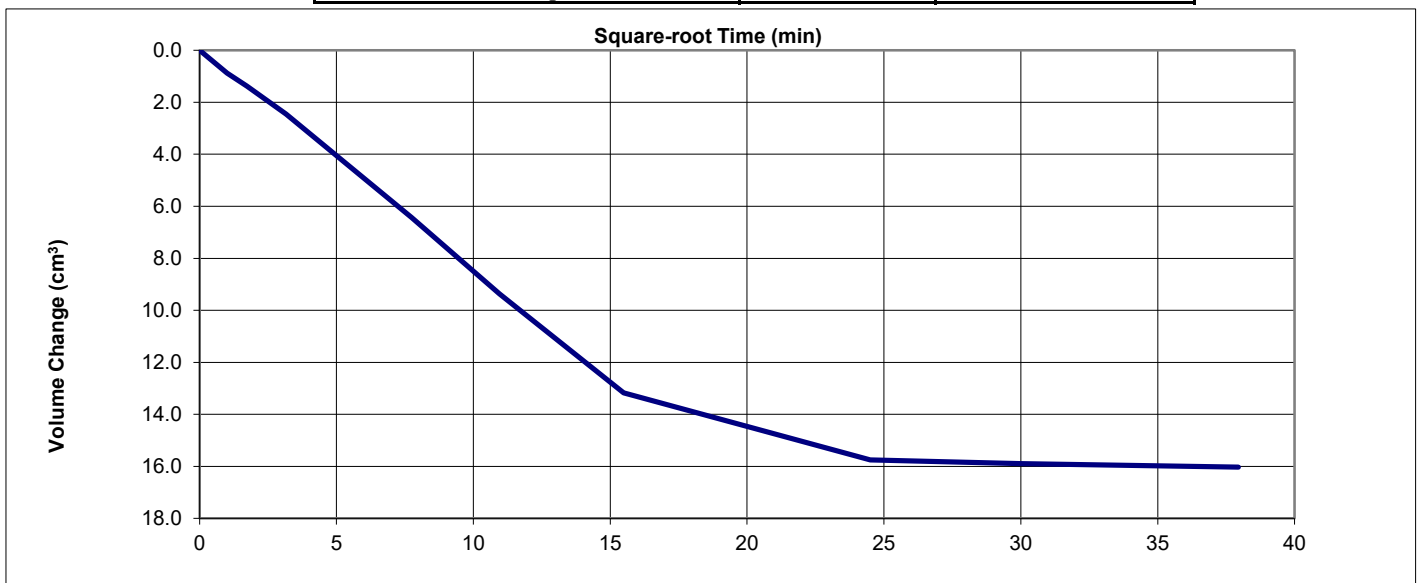
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR01
Sample Depth	m	4.25
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	200
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	85
Cell Pressure	kPa	385
Back Pressure	kPa	300
Final PWP	kPa	304
PWP dissipation	%	96



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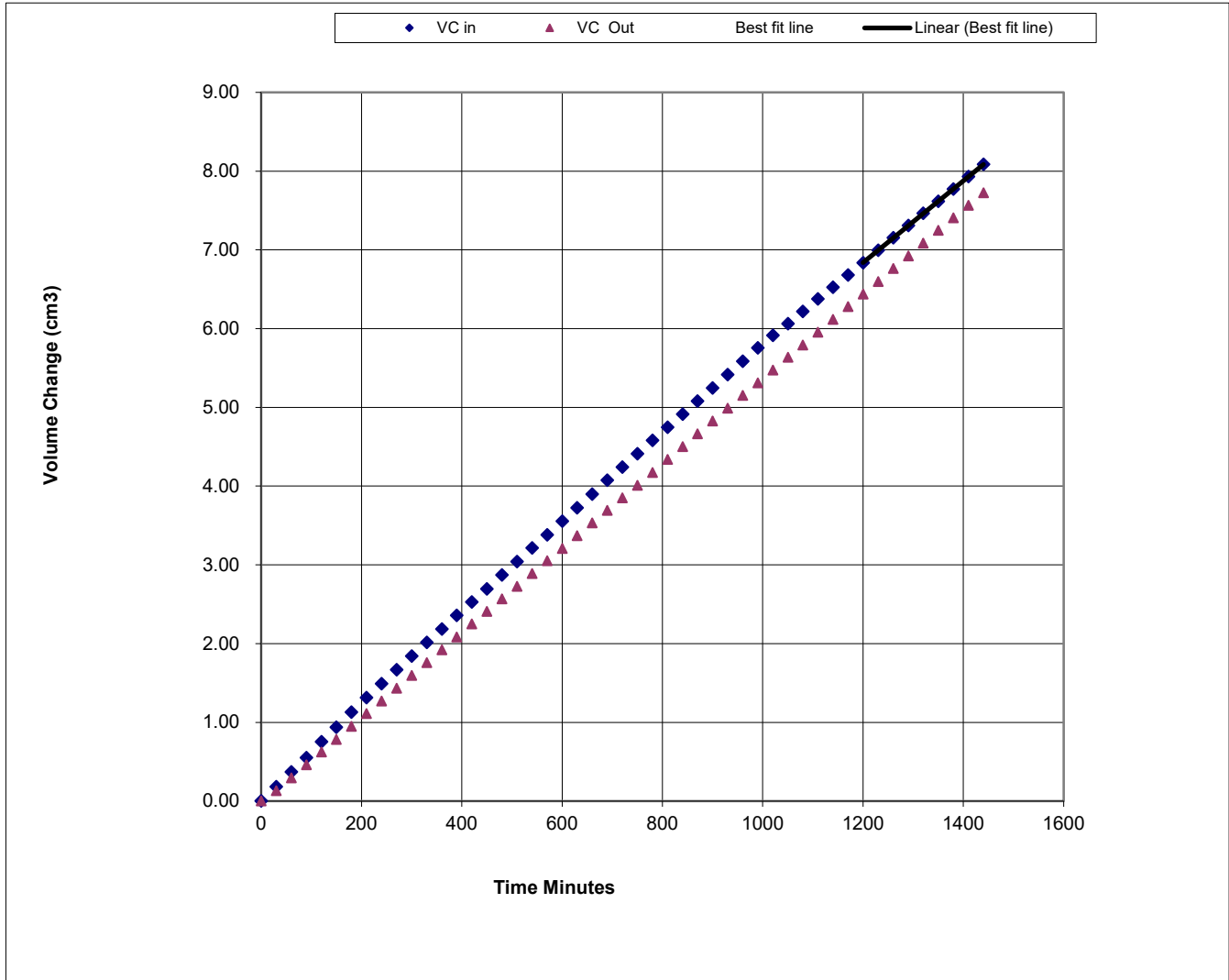
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR01
Sample Depth	m	4.25
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	385
Mean Effective Stress	kPa	85
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0052
Average Temperature	'C	20
Vertical Permeability K _v	m/s	5.1E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: WLMW07W Top Depth (m) : 4.30

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.73
Diameter	mm	103.93
Area	mm ²	8483.43
Volume	cm ³	863.02
Mass	g	1857
Dry Mass	g	1614
Bulk Density	Mg/m ³	2.15
Dry Density	Mg/m ³	1.87
Moisture Content	%	15
Voids Ratio	-	0.417
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	14
Bulk Density	Mg/m ³	2.13
Dry Density	Mg/m ³	1.87

Test Setup		
Date Started		10/11/2021
Date Finished		14/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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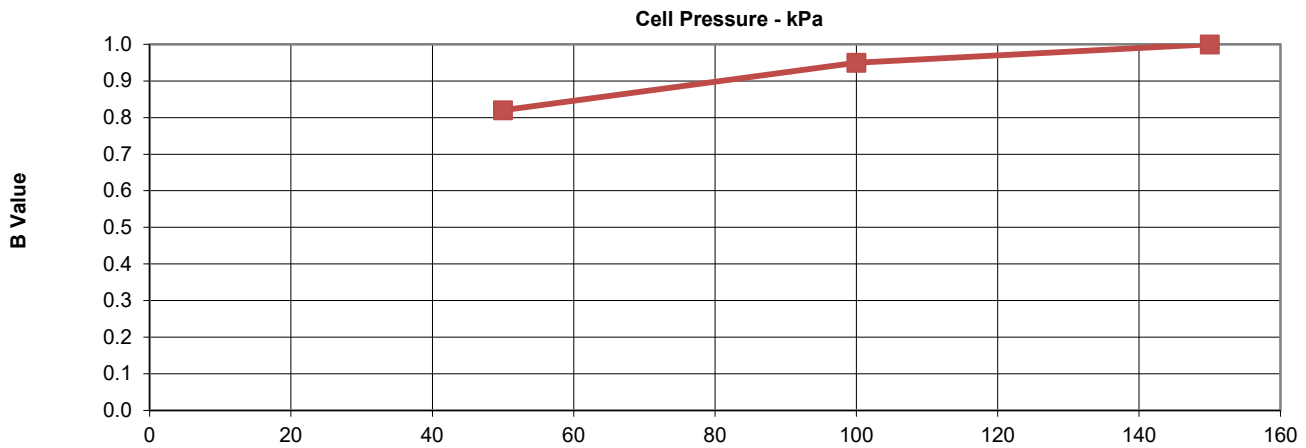
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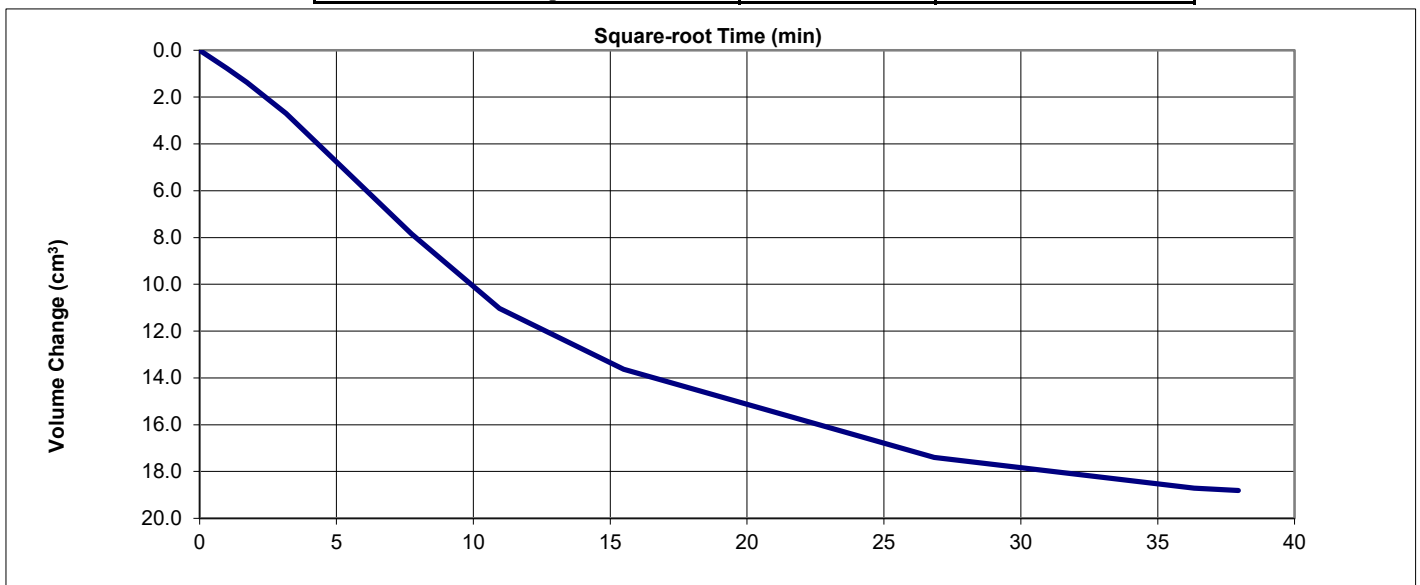
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW07W
Sample Depth	m	4.30
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	150
Final B Value	-	1.00



Consolidation		
Effective Pressure	kPa	86
Cell Pressure	kPa	386
Back Pressure	kPa	300
Final PWP	kPa	304
PWP dissipation	%	95



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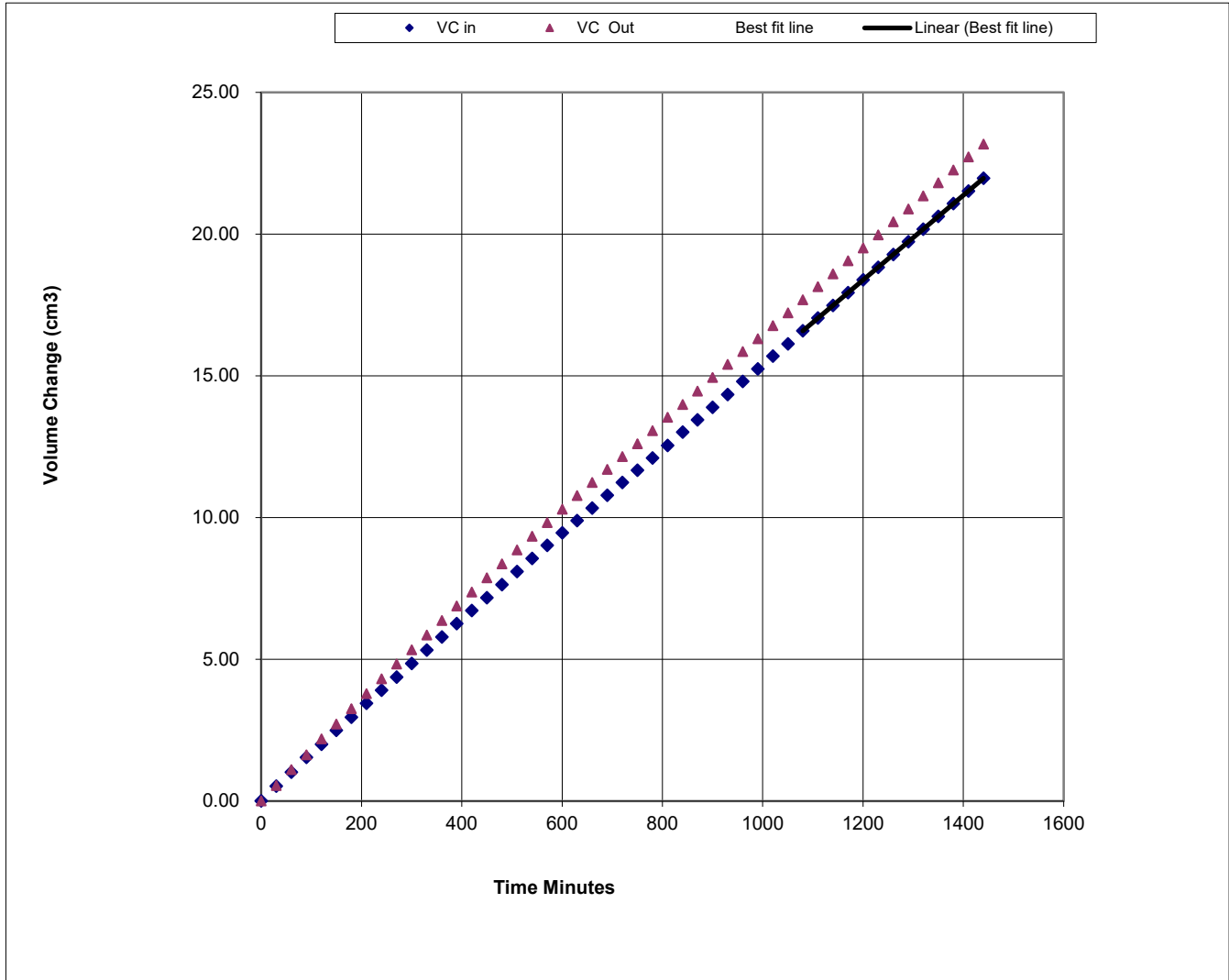
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW07W
Sample Depth	m	4.30
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	386
Mean Effective Stress	kPa	86
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0149
Average Temperature	'C	20
Vertical Permeability K _v	m/s	1.5E-09



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: WLMW02W Top Depth (m) : 7.00

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.20
Diameter	mm	102.41
Area	mm ²	8237.11
Volume	cm ³	833.60
Mass	g	1894
Dry Mass	g	1704
Bulk Density	Mg/m ³	2.27
Dry Density	Mg/m ³	2.04
Moisture Content	%	11
Voids Ratio	-	0.297
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	10
Bulk Density	Mg/m ³	2.25
Dry Density	Mg/m ³	2.04

Test Setup		
Date Started		10/11/2021
Date Finished		14/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	2



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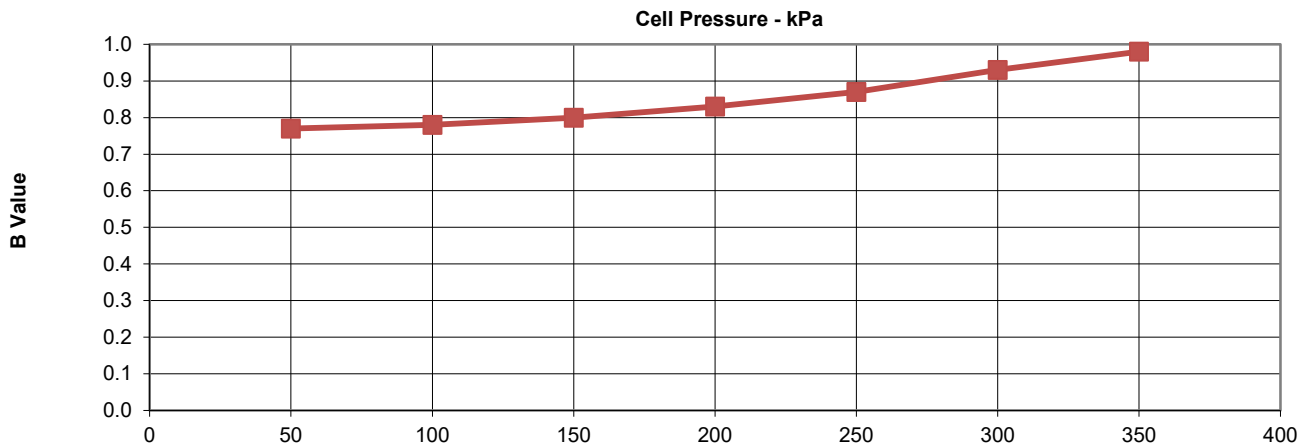
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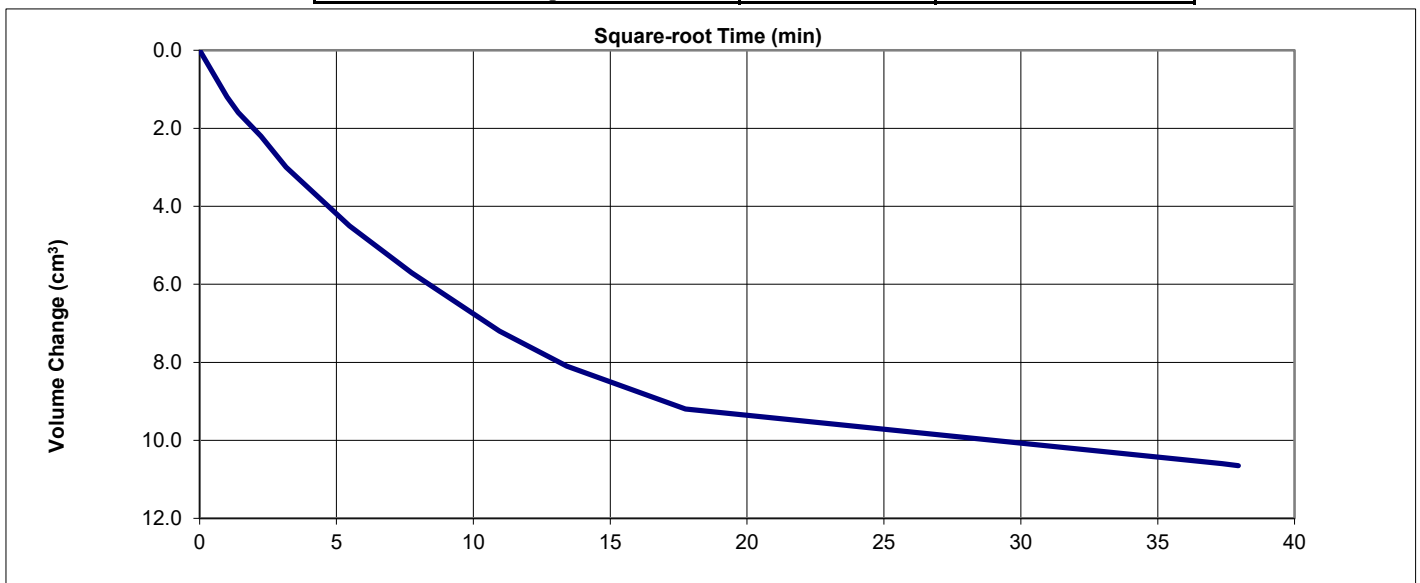
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW02W
Sample Depth	m	7.00
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.98



Consolidation		
Effective Pressure	kPa	140
Cell Pressure	kPa	440
Back Pressure	kPa	300
Final PWP	kPa	305
PWP dissipation	%	96



**Drehid Waste Management Facility - Further
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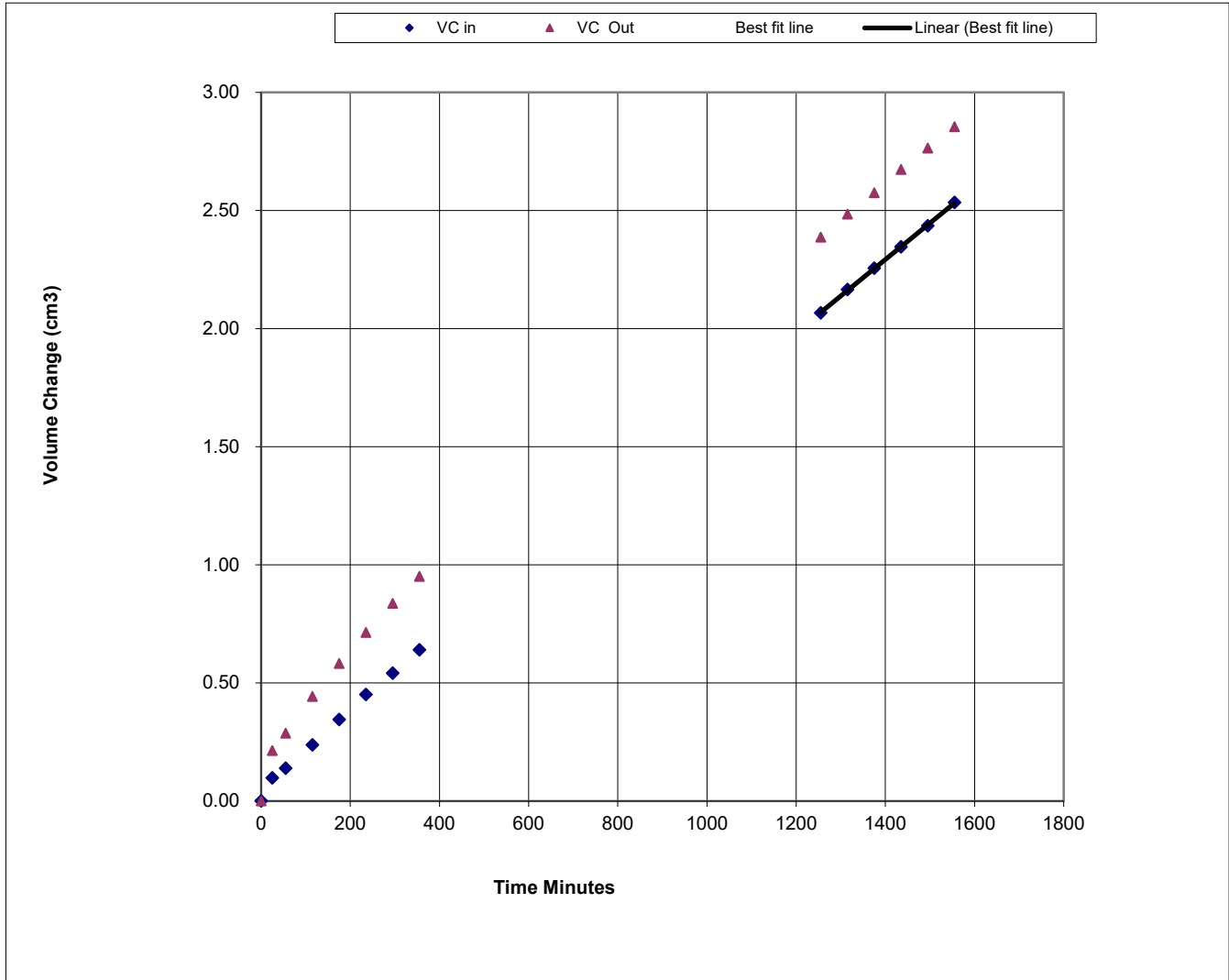
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW02W
Sample Depth	m	7.00
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	440
Mean Effective Stress	kPa	140
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0015
Average Temperature	'C	20
Vertical Permeability K _v	m/s	1.5E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: WLMW06W Top Depth (m) : 7.25

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	99.99
Diameter	mm	105.35
Area	mm ²	8716.84
Volume	cm ³	871.60
Mass	g	2034
Dry Mass	g	1863
Bulk Density	Mg/m ³	2.33
Dry Density	Mg/m ³	2.14
Moisture Content	%	9.2
Voids Ratio	-	0.240
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	8.8
Bulk Density	Mg/m ³	2.32
Dry Density	Mg/m ³	2.14

Test Setup		
Date Started		10/11/2021
Date Finished		14/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	2



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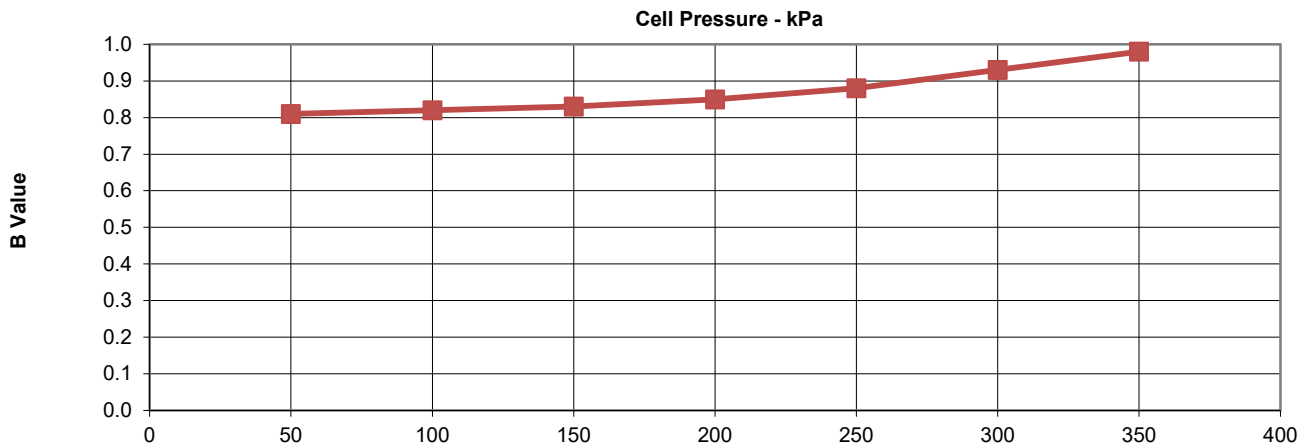
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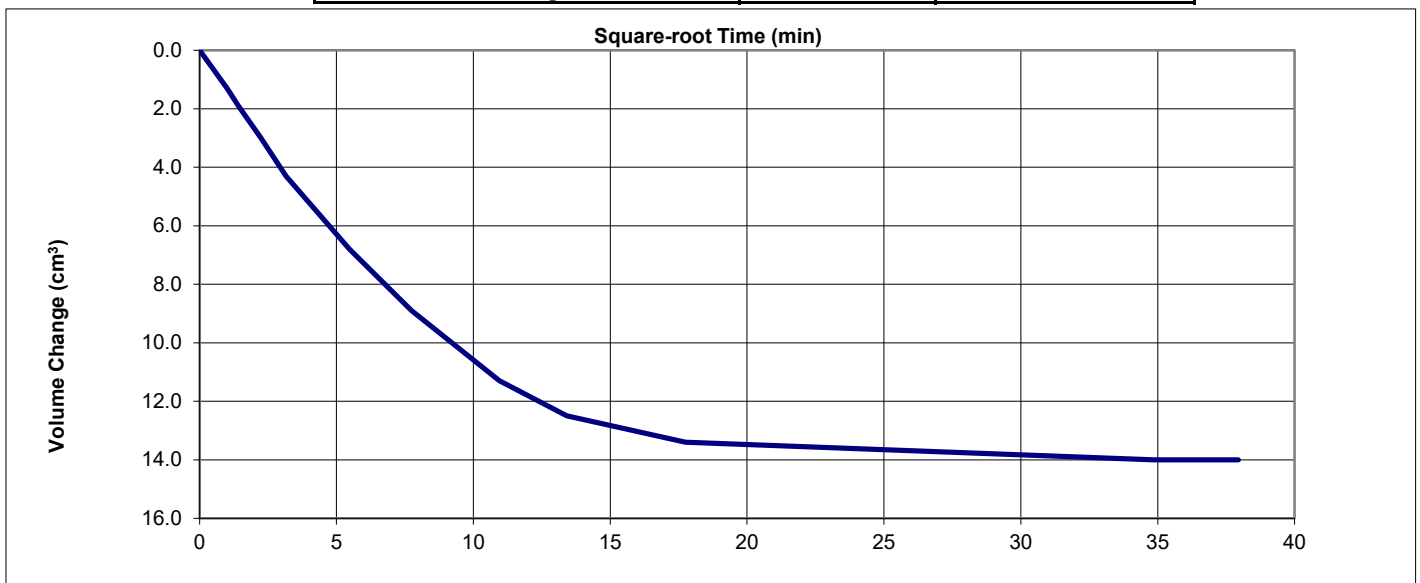
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW06W
Sample Depth	m	7.25
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.98



Consolidation		
Effective Pressure	kPa	145
Cell Pressure	kPa	445
Back Pressure	kPa	300
Final PWP	kPa	301
PWP dissipation	%	99



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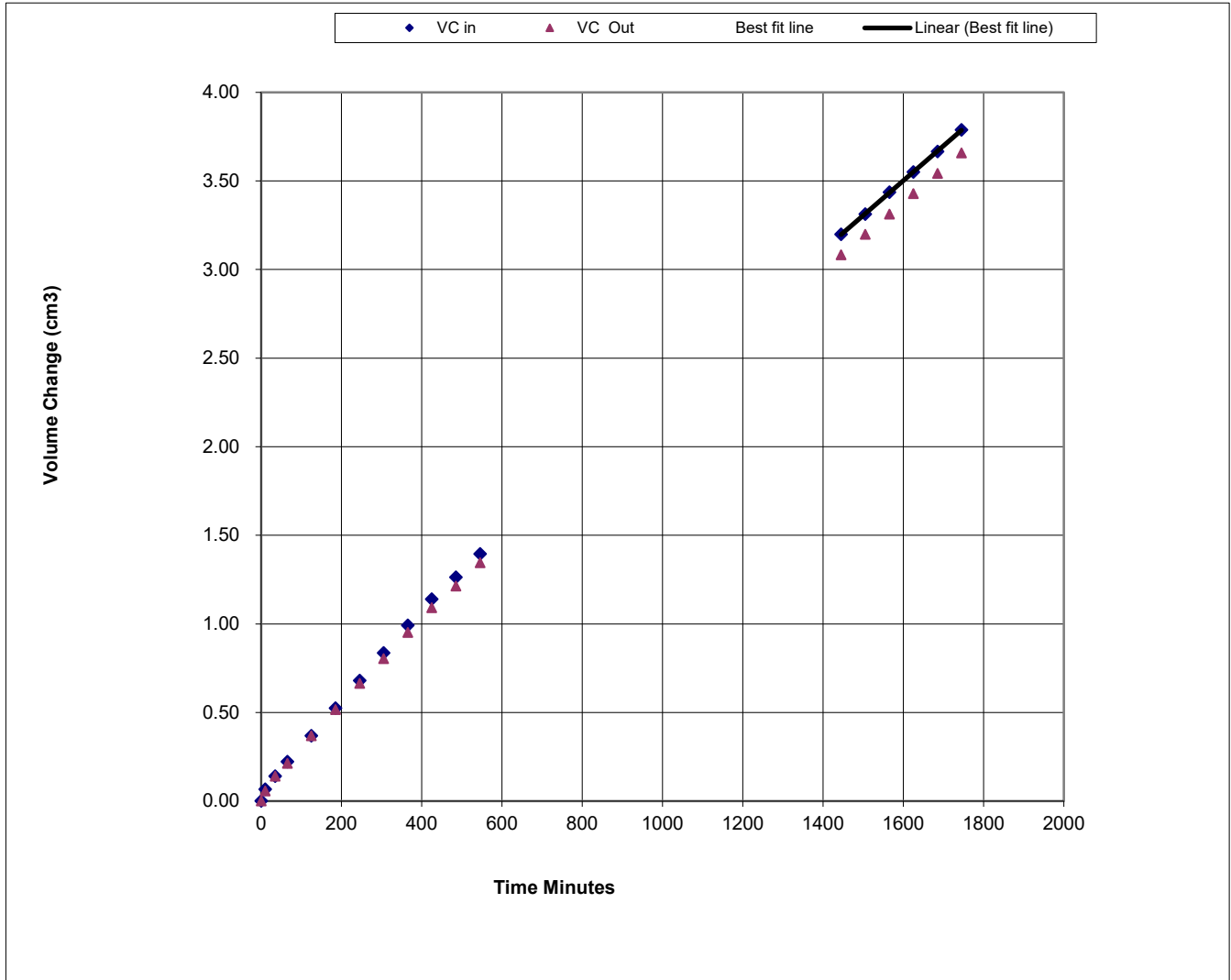
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW06W
Sample Depth	m	7.25
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	445
Mean Effective Stress	kPa	145
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0020
Average Temperature	'C	20
Vertical Permeability K _v	m/s	1.8E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: LFBR01 Top Depth (m) : 8.05

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	99.19
Diameter	mm	104.44
Area	mm ²	8566.90
Volume	cm ³	849.75
Mass	g	1985
Dry Mass	g	1836
Bulk Density	Mg/m ³	2.34
Dry Density	Mg/m ³	2.16
Moisture Content	%	8.1
Voids Ratio	-	0.227
Specific Gravity (assumed/measured)	Mg/m ³ -	2.65 assumed

Final Specimen Conditions		
Moisture Content	%	8.5
Bulk Density	Mg/m ³	2.34
Dry Density	Mg/m ³	2.16

Test Setup		
Date Started		09/11/2021
Date Finished		14/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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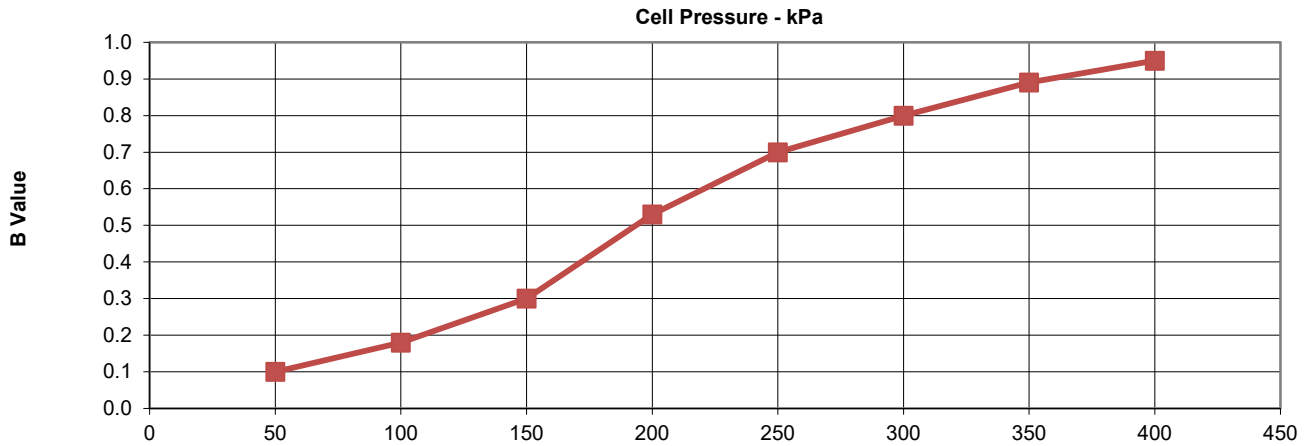
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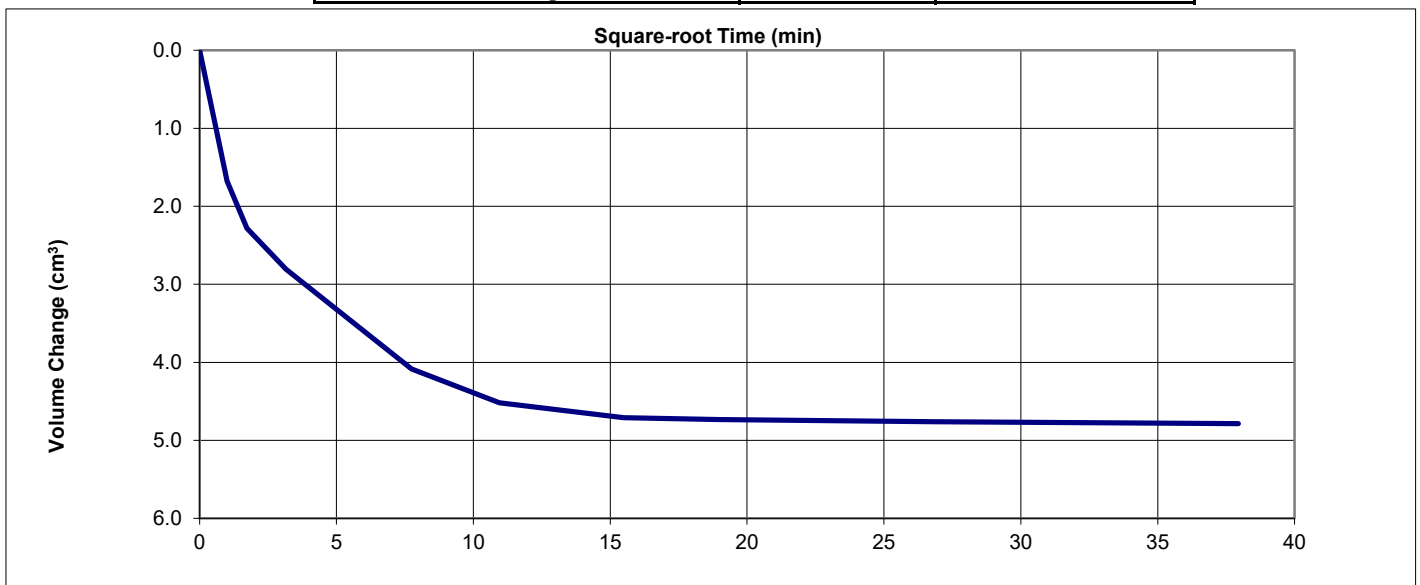
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR01
Sample Depth	m	8.05
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	400
Final B Value	-	0.95



Consolidation		
Effective Pressure	kPa	161
Cell Pressure	kPa	561
Back Pressure	kPa	400
Final PWP	kPa	402
PWP dissipation	%	99



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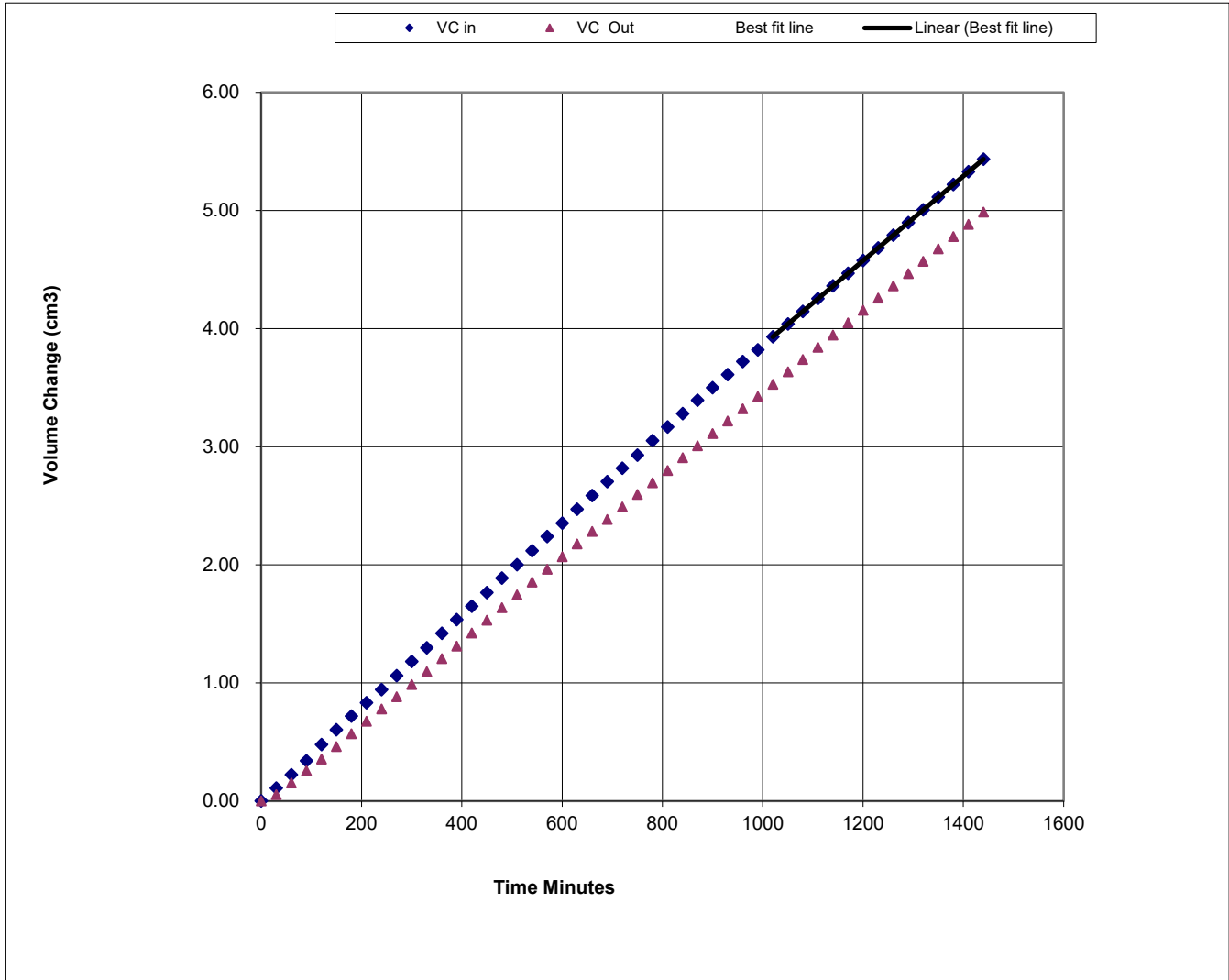
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR01
Sample Depth	m	8.05
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	561
Mean Effective Stress	kPa	161
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0036
Average Temperature	'C	20
Vertical Permeability K _v	m/s	3.4E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: WLMW06W Top Depth (m) : 8.75

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	100.65
Diameter	mm	103.99
Area	mm ²	8493.23
Volume	cm ³	854.84
Mass	g	1941
Dry Mass	g	1726
Bulk Density	Mg/m ³	2.27
Dry Density	Mg/m ³	2.02
Moisture Content	%	12
Voids Ratio	-	0.312
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	12
Bulk Density	Mg/m ³	2.27
Dry Density	Mg/m ³	2.02

Test Setup		
Date Started		09/11/2021
Date Finished		13/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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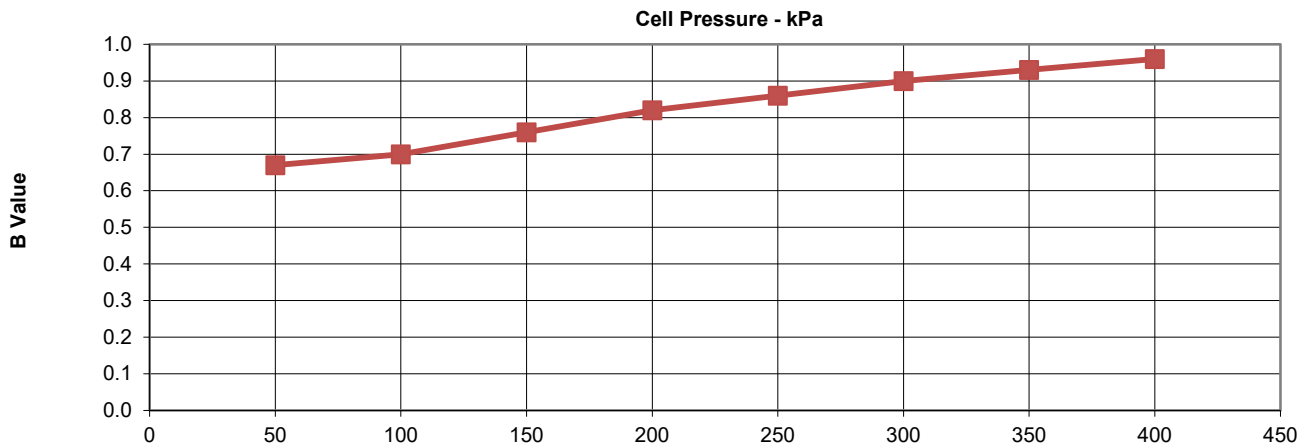
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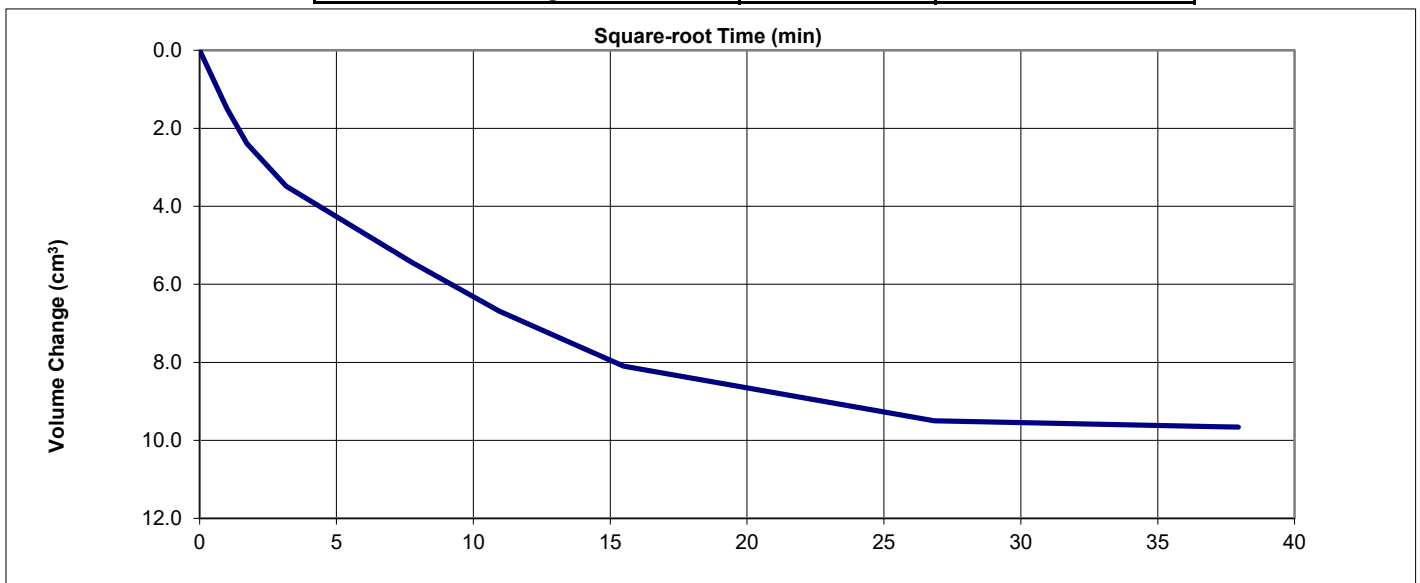
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW06W
Sample Depth	m	8.75
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	400
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	175
Cell Pressure	kPa	575
Back Pressure	kPa	400
Final PWP	kPa	400
PWP dissipation	%	100



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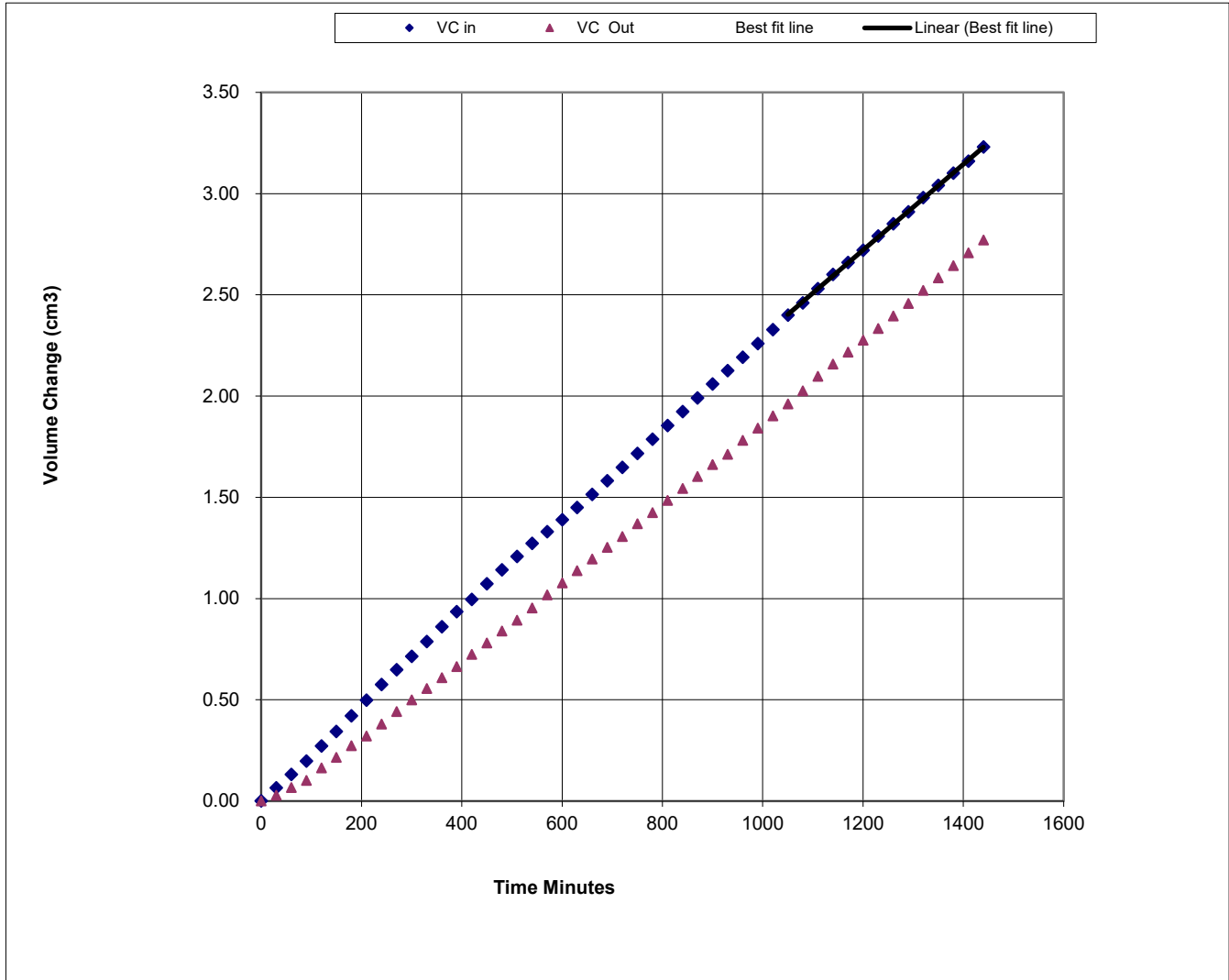
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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW06W
Sample Depth	m	8.75
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	575
Mean Effective Stress	kPa	175
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0021
Average Temperature	'C	20
Vertical Permeability K _v	m/s	2.1E-10



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PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: WLMW02W Top Depth (m) : 9.95

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	99.44
Diameter	mm	103.67
Area	mm ²	8441.04
Volume	cm ³	839.38
Mass	g	1982
Dry Mass	g	1832
Bulk Density	Mg/m ³	2.36
Dry Density	Mg/m ³	2.18
Moisture Content	%	8.2
Voids Ratio	-	0.214
Specific Gravity	Mg/m ³	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	7.8
Bulk Density	Mg/m ³	2.35
Dry Density	Mg/m ³	2.18

Test Setup		
Date Started		10/11/2021
Date Finished		14/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



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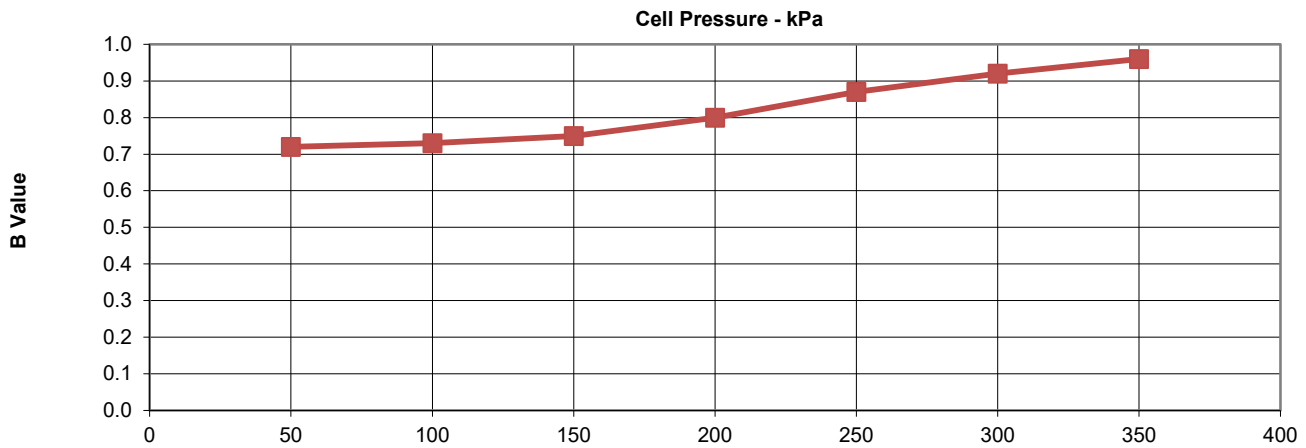
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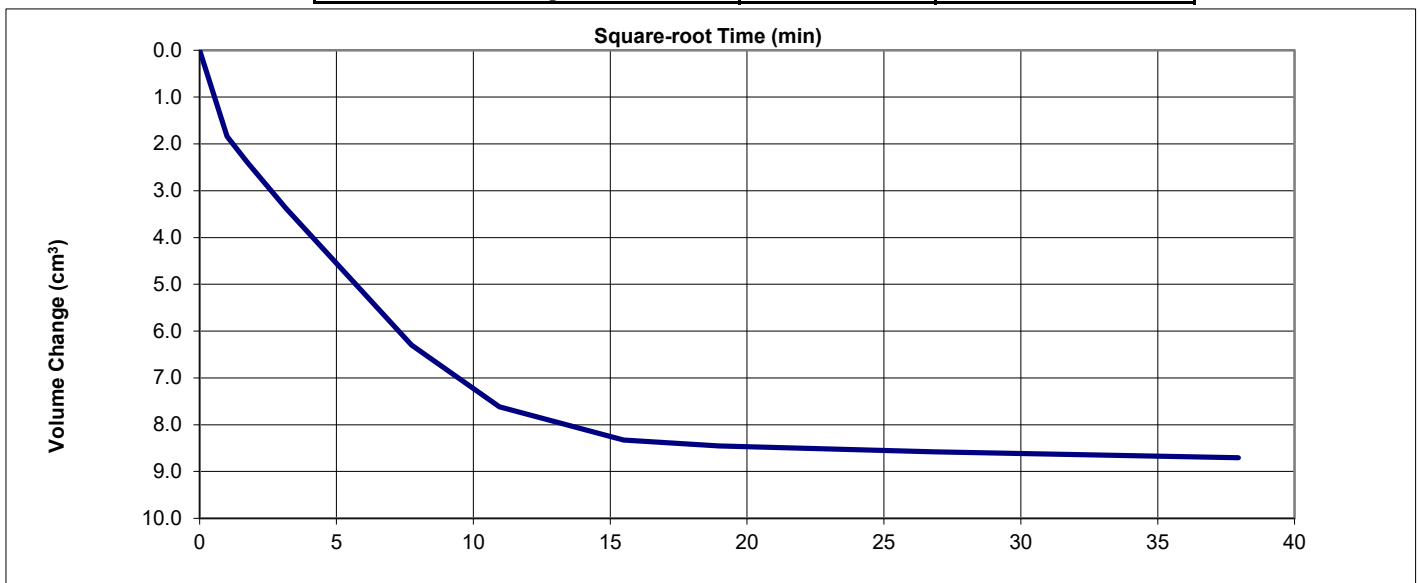
PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW02W
Sample Depth	m	9.95
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.96



Consolidation		
Effective Pressure	kPa	199
Cell Pressure	kPa	499
Back Pressure	kPa	300
Final PWP	kPa	303
PWP dissipation	%	98



**Drehid Waste Management Facility - Further
Landfill Development 2021**

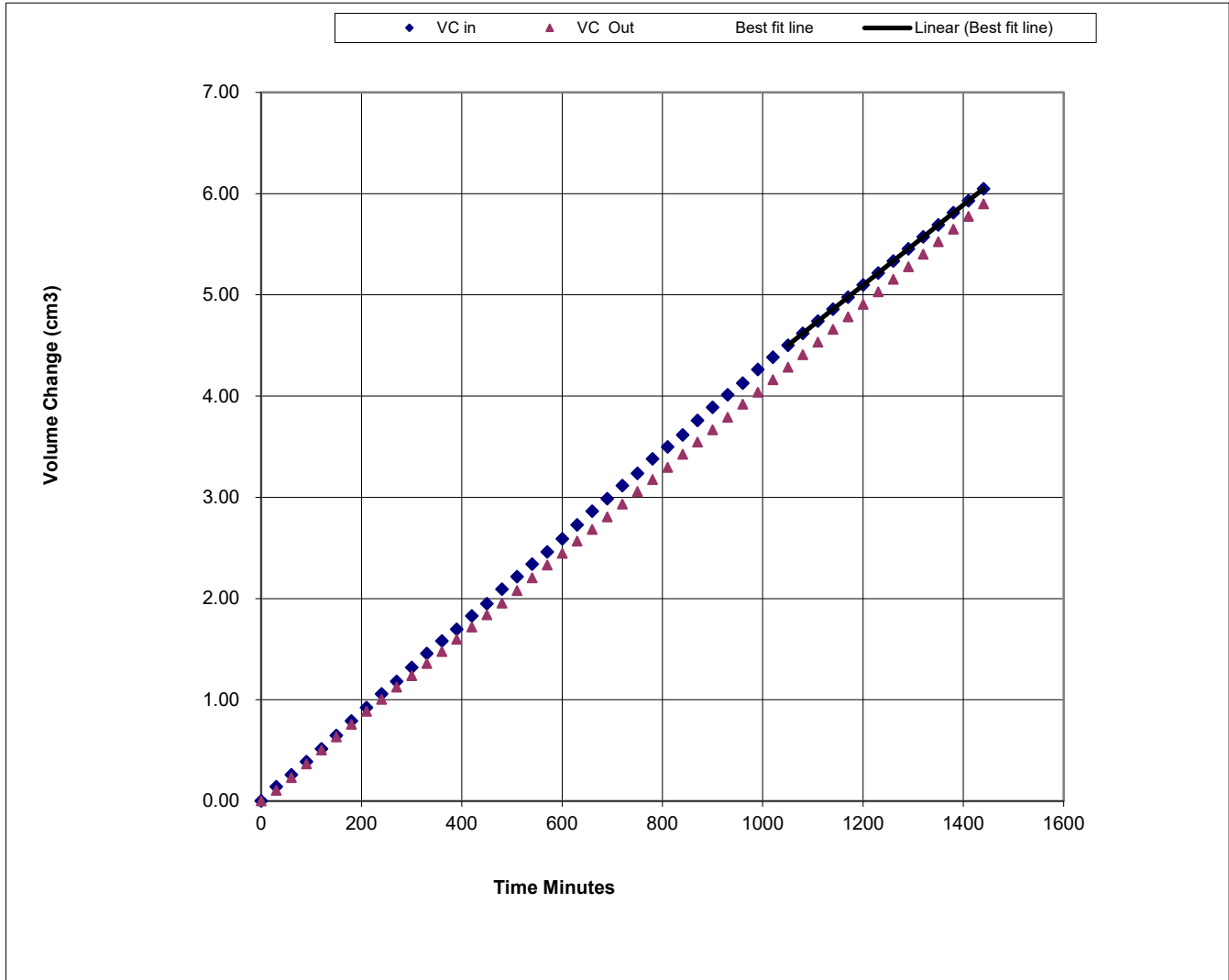
Contract No.
PSL21/8716
Client Ref
21-0709

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW02W
Sample Depth	m	9.95
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	499
Mean Effective Stress	kPa	199
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0040
Average Temperature	'C	20
Vertical Permeability K _v	m/s	3.8E-10



PSL
Professional Soils Laboratory

Drehid Waste Management Facility - Further
Landfill Development 2021

Contract No.
PSL21/8716
Client Ref
21-0709

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990: Clause 6

Hole Number: WLMW03W Top Depth (m) : 7.00

Sample Number: Base Depth (m) :

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Remoulded with 2.5Kg effort, natural moisture content.	

Initial Specimen Conditions		
Height	mm	101.17
Diameter	mm	101.51
Area	mm ²	8092.96
Volume	cm ³	818.77
Mass	g	1955
Dry Mass	g	1818
Bulk Density	Mg/m ³	2.39
Dry Density	Mg/m ³	2.22
Moisture Content	%	7.5
Voids Ratio	-	0.193
Specific Gravity (assumed/measured)	Mg/m ³ -	2.65 assumed

Final Specimen Conditions		
Moisture Content	%	7.0
Bulk Density	Mg/m ³	2.38
Dry Density	Mg/m ³	2.22

Test Setup		
Date Started		12/11/2021
Date Finished		16/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



PSL
Professional Soils Laboratory

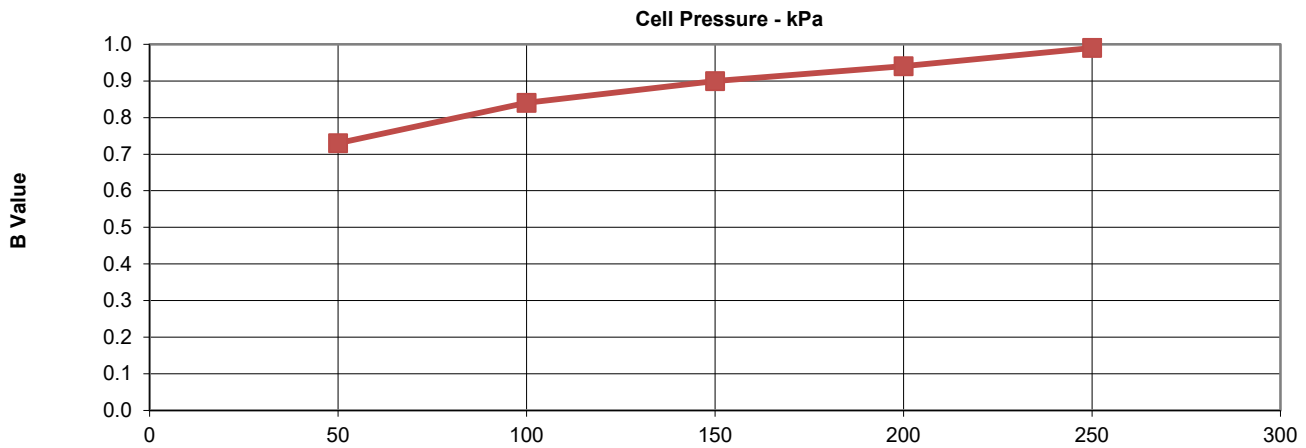
Drehid Waste Management Facility - Further
Landfill Development 2021

Contract No.
PSL21/8716
Client Ref
21-0709

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW03W
Sample Depth	m	7.00
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	250
Final B Value	-	0.99



Consolidation		
Effective Pressure	kPa	140
Cell Pressure	kPa	440
Back Pressure	kPa	300
Final PWP	kPa	302
PWP dissipation	%	98



Drehid Waste Management Facility - Further
Landfill Development 2021

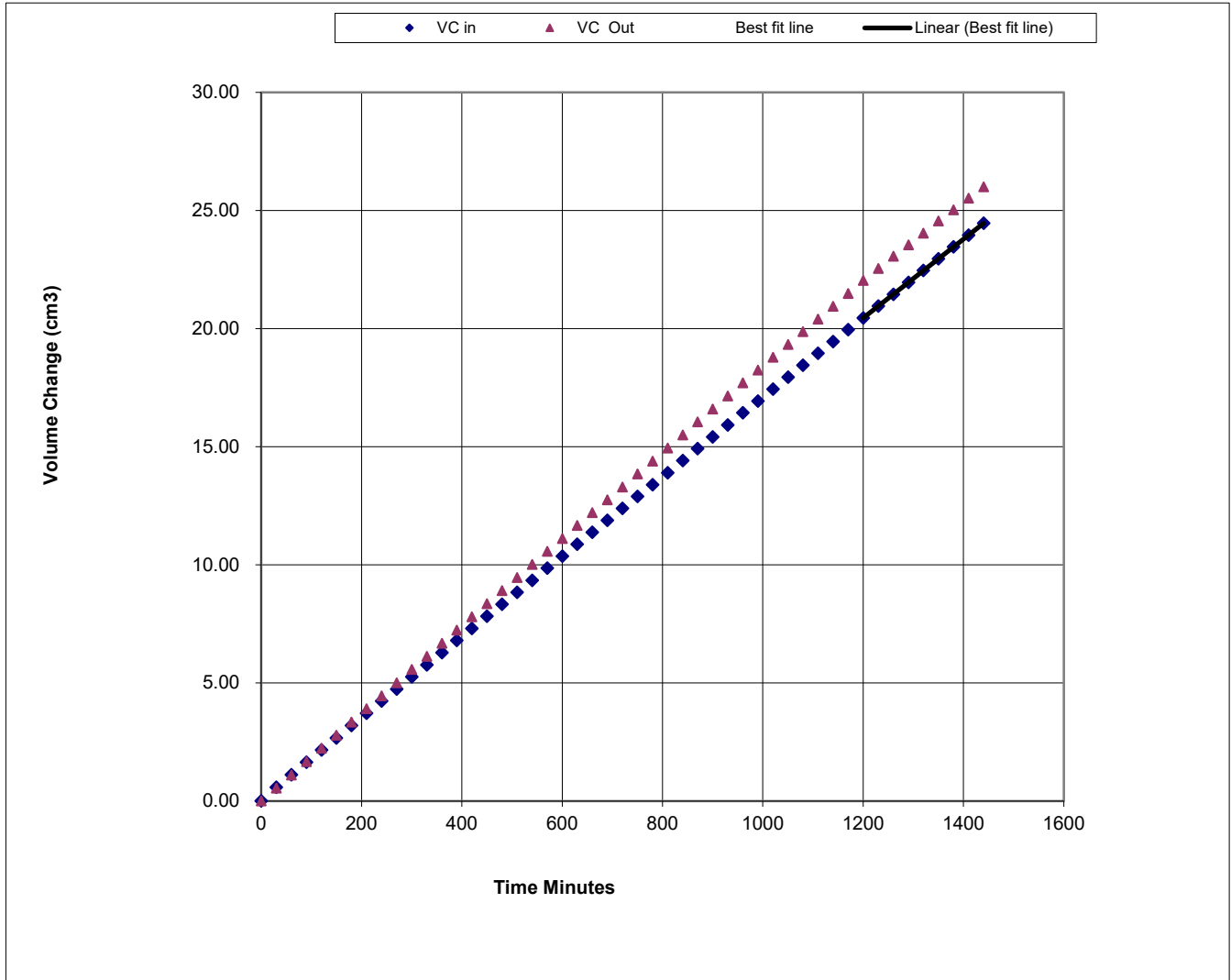
Contract No.
PSL21/8716
Client Ref
21-0709

PERMEABILITY IN A TRIAXIAL CELL

BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		WLMW03W
Sample Depth	m	7.00
Sample No.		
Grid Reference		
Lift Number		

Permeability Stage



Permeability Stage		
Cell Pressure	kPa	440
Mean Effective Stress	kPa	140
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0167
Average Temperature	'C	20
Vertical Permeability K _v	m/s	1.7E-09



PSL
Professional Soils Laboratory

Drehid Waste Management Facility - Further
Landfill Development 2021

Contract No.
PSL21/8716
Client Ref
21-0709



Final Report

Report No.: 21-39383-1
Initial Date of Issue: 15-Nov-2021
Client Causeway Geotech Ltd
Client Address: 8 Drumahiskey Road
Balnamore
Ballymoney
County Antrim
BT53 7QL
Contact(s): Carin Cornwall
Colm Hurley
Darren O'Mahony
Gabiella Horan
Joe Gervin
John Cameron
Lucy Newland
Martin Gardiner
Matthew Gilbert
Michelle Gaffney
Neil Haggan
Paul Dunlop
Sean Ross
Stephen Franey
Stephen Watson
Stuart Abraham
Thomas McAllist
Project 21-0709 Drehid Waste Management
Facility

Quotation No.:		Date Received:	10-Nov-2021
Order No.:		Date Instructed:	10-Nov-2021
No. of Samples:	7		
Turnaround (Wkdays):	7	Results Due:	18-Nov-2021
Date Approved:	15-Nov-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: 21-0709 Dredged Waste Management Facility

Client: Causeway Geotech Ltd		Chemtest Job No.:		21-39383	21-39383	21-39383	21-39383	21-39383	21-39383	21-39383	
Quotation No.:		Chemtest Sample ID.:		1316767	1316768	1316769	1316770	1316771	1316772	1316773	
		Sample Location:		WLMW02W	WLMW05W	LFBH12	LFBH14	WLMW06Q	WLMW07Q	LFBH17	
		Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	
		Top Depth (m):		3.85	7.50	3.00	6.00	9.00	4.95	4.50	
		Date Sampled:		08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	08-Nov-2021	
Determinand	Accred.	SOP	Units	LOD							
Moisture	N	2030	%	0.020	6.3	3.4	2.2	7.4	7.8	6.9	11
pH	U	2010		4.0	8.7	8.7	8.7	8.8	8.5	8.6	8.6
Fraction of Organic Carbon	U	2625		0.0010	0.0050	0.0020	0.0020	0.0010	0.0050	0.0020	0.0040

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

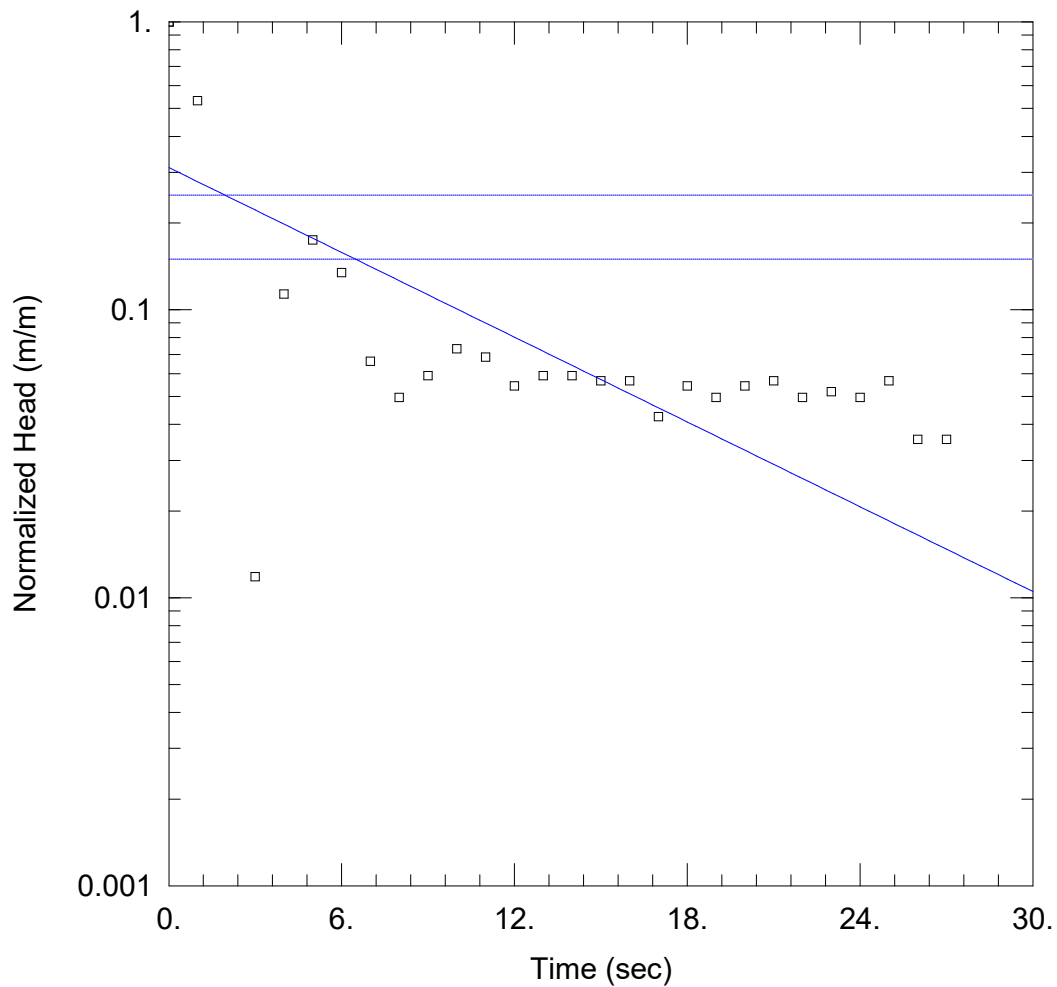
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:

customerservices@chemtest.com

Appendix E

Hydraulic Conductivity Tests – Data Plots



WELL TEST ANALYSIS

Data Set: LFBH04 FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:10:38

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH04 FHT1)

Initial Displacement: 0.423 m

Static Water Column Height: 6.81 m

Total Well Penetration Depth: 7.701 m

Screen Length: 3 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

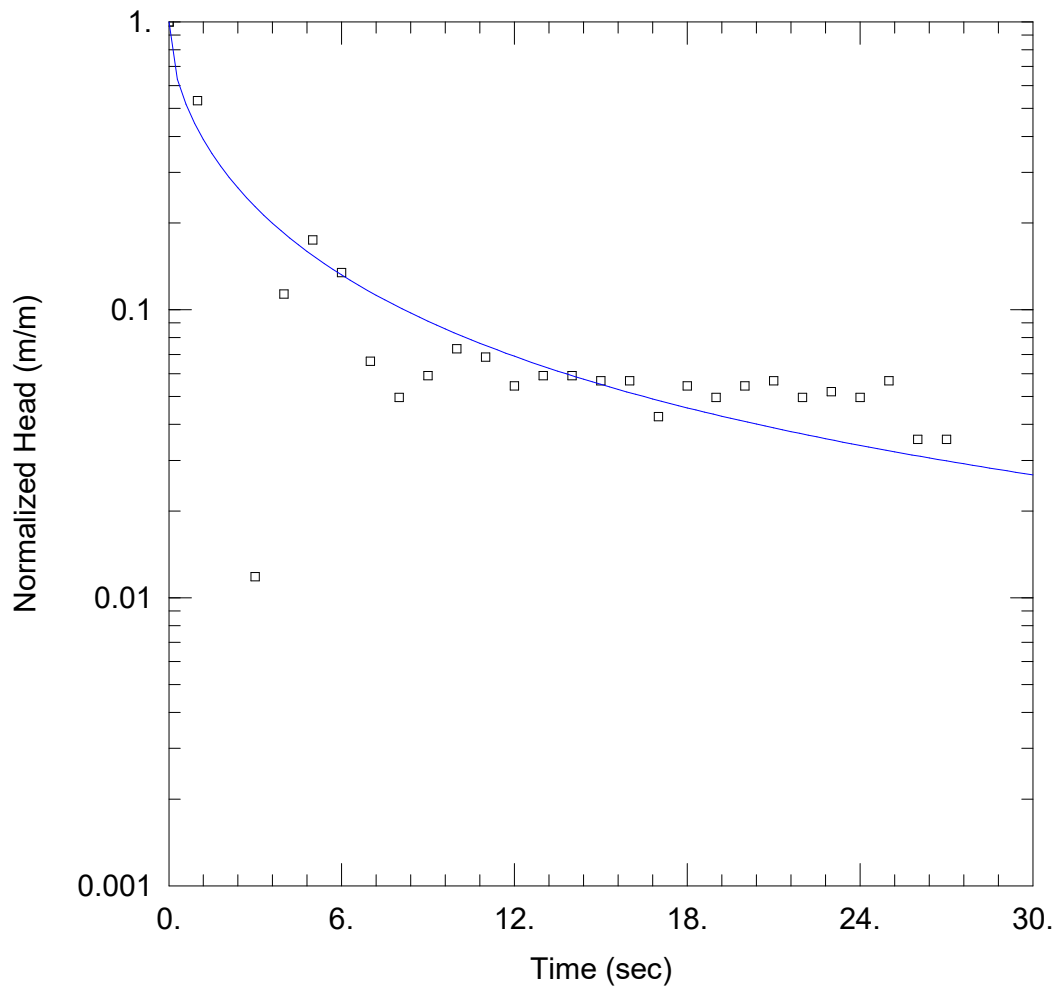
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 5.084 m/day

y0 = 0.1319 m



WELL TEST ANALYSIS

Data Set: LFBH04 FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:11:23

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

WELL DATA (LFBH04 FHT1)

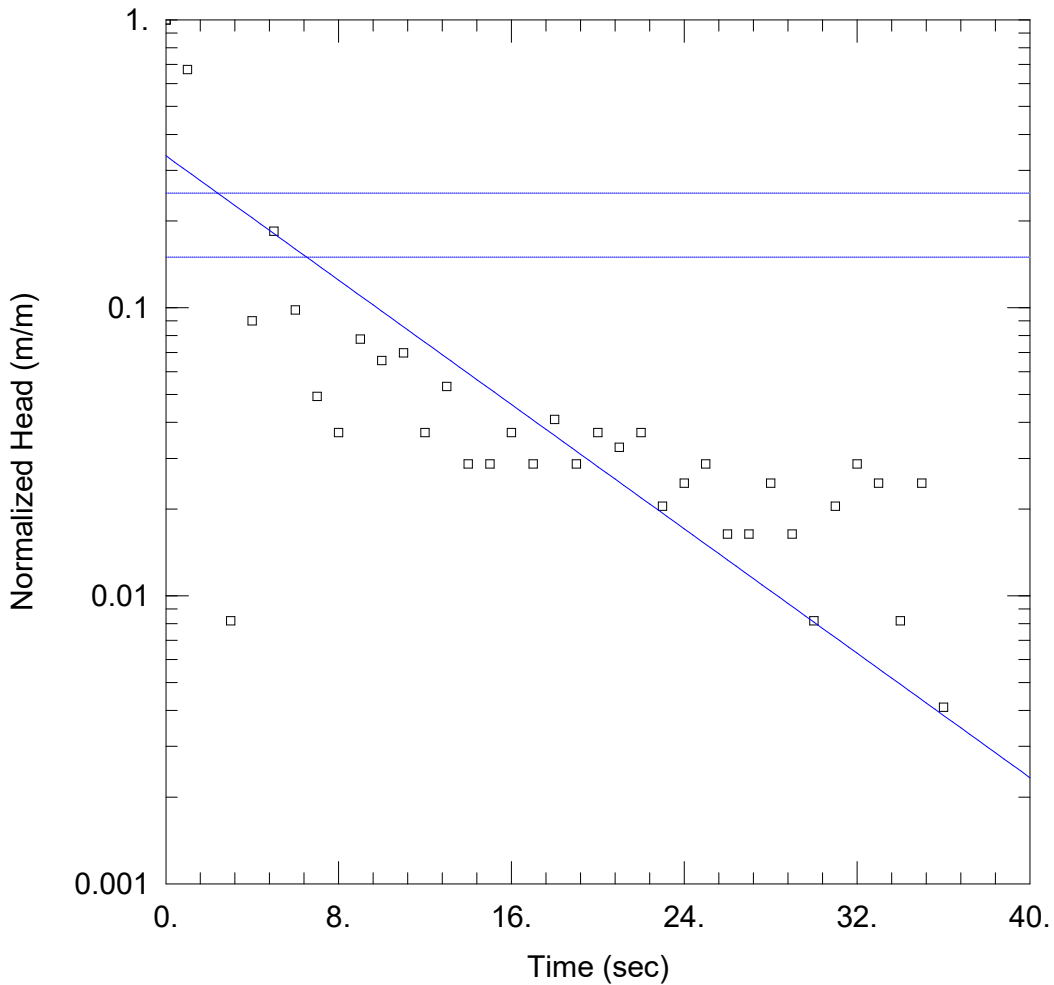
Initial Displacement: 0.423 m
 Total Well Penetration Depth: 7.701 m
 Casing Radius: 0.025 m

Static Water Column Height: 6.81 m
 Screen Length: 3 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 5.833 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH04 FHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:11:27

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH04 FHT2)

Initial Displacement: 0.244 m

Static Water Column Height: 6.81 m

Total Well Penetration Depth: 7.701 m

Screen Length: 3 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

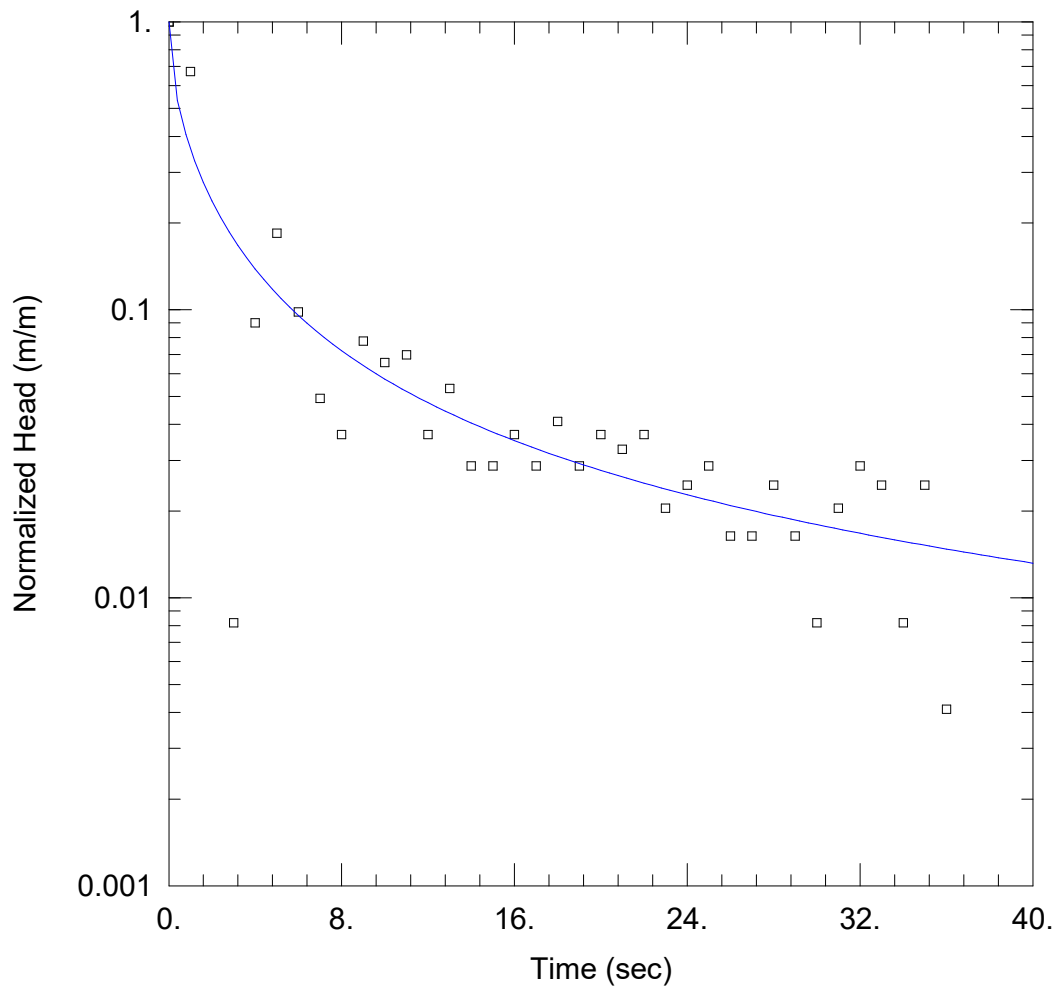
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 5.592 m/day

y0 = 0.08229 m



WELL TEST ANALYSIS

Data Set: LFBH04 FHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:11:30

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

WELL DATA (LFBH04 FHT2)

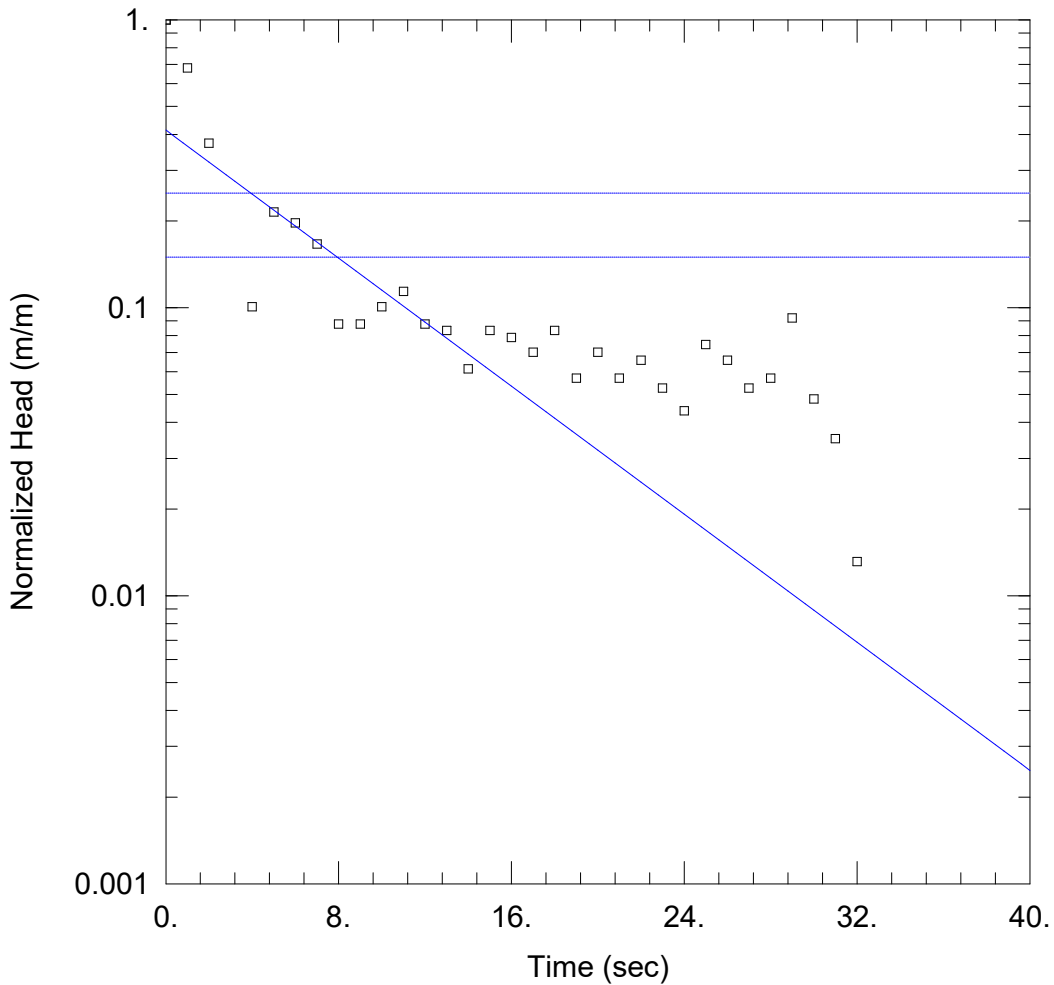
Initial Displacement: 0.244 m
 Total Well Penetration Depth: 7.701 m
 Casing Radius: 0.025 m

Static Water Column Height: 6.81 m
 Screen Length: 3 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 8.536 \text{ m/day}$
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 0.01679 \text{ m}^{-1}$



WELL TEST ANALYSIS

Data Set: LFBH04 FHT3 - Hvorslev.aqt
 Date: 08/26/22

Time: 15:11:33

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

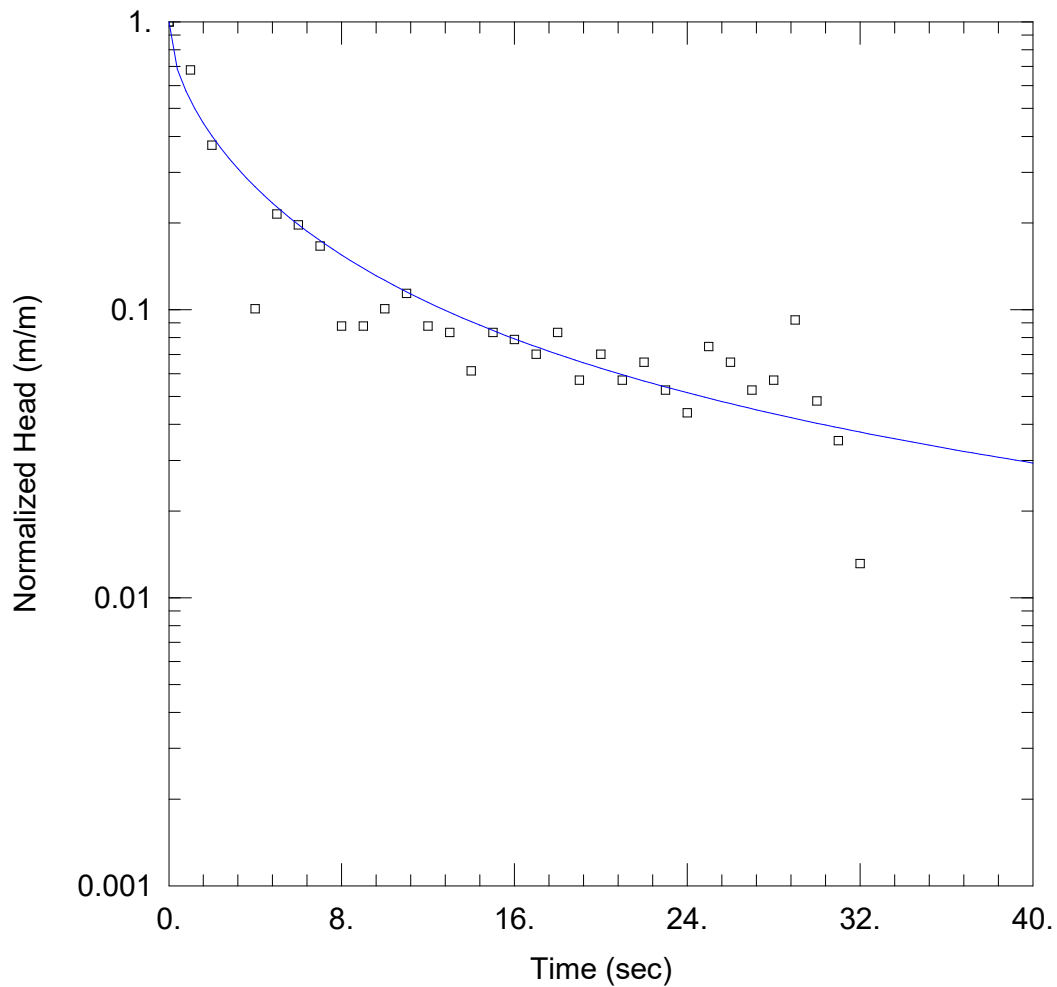
Saturated Thickness: 10.2 m Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH04 FHT3)

Initial Displacement: 0.228 m Static Water Column Height: 6.81 m
 Total Well Penetration Depth: 7.701 m Screen Length: 3 m
 Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 K = 5.756 m/day y0 = 0.09441 m



WELL TEST ANALYSIS

Data Set: LFBH04 FHT3 - KGS.aqt
 Date: 08/26/22

Time: 15:11:36

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

WELL DATA (LFBH04 FHT3)

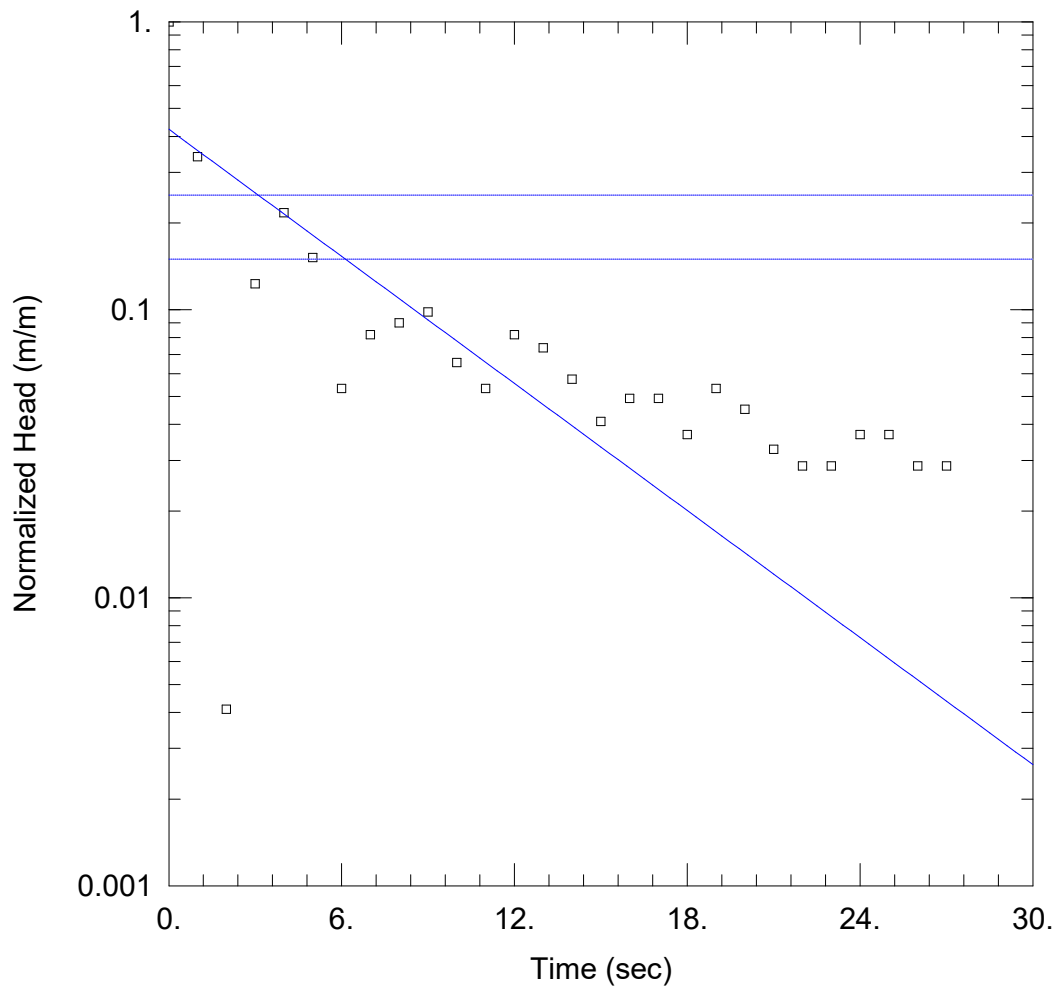
Initial Displacement: 0.228 m
 Total Well Penetration Depth: 7.701 m
 Casing Radius: 0.025 m

Static Water Column Height: 6.81 m
 Screen Length: 3 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 4.161 \text{ m/day}$
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 0.01175 \text{ m}^{-1}$



WELL TEST ANALYSIS

Data Set: LFBH04 RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:14:52

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH04 RHT1)

Initial Displacement: -0.244 m

Static Water Column Height: 6.81 m

Total Well Penetration Depth: 7.701 m

Screen Length: 3 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

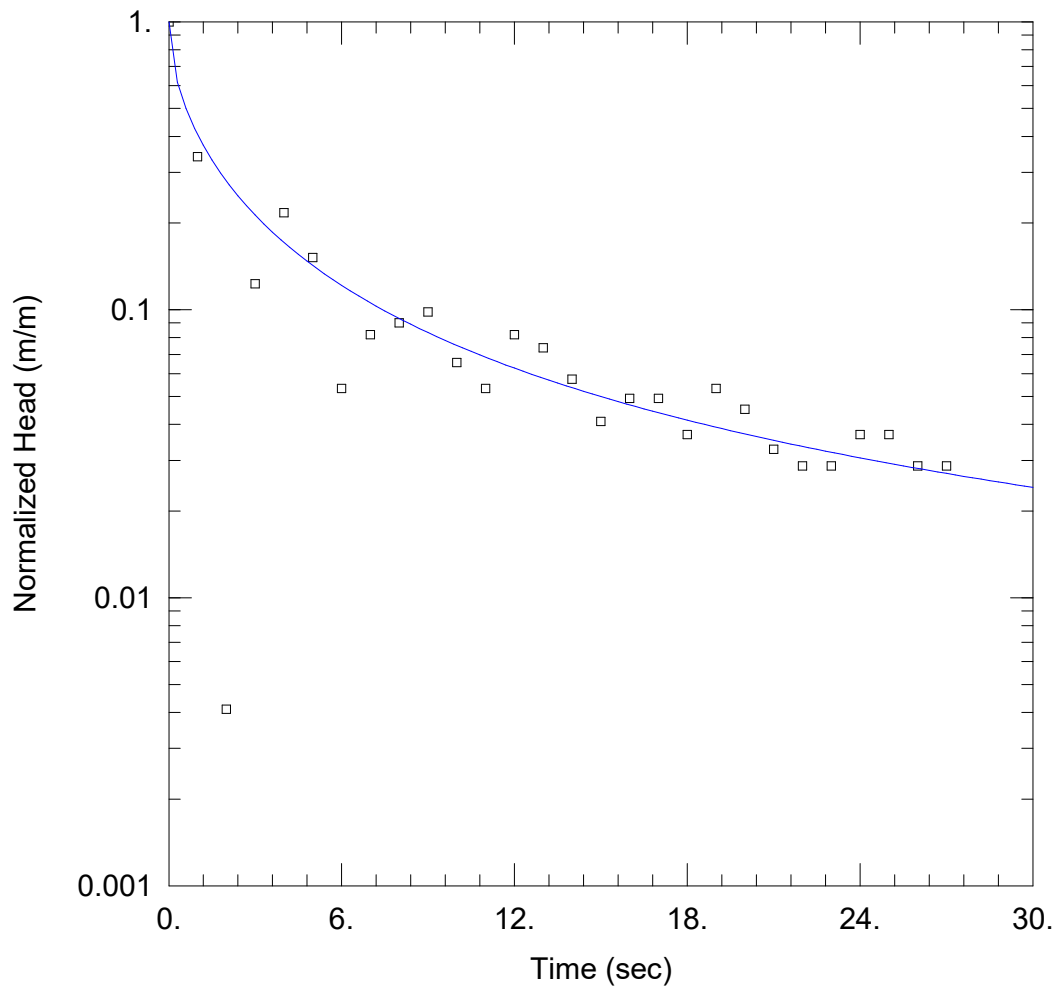
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 7.619 m/day

y0 = -0.1033 m



WELL TEST ANALYSIS

Data Set: LFBH04 RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:14:54

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

WELL DATA (LFBH04 RHT1)

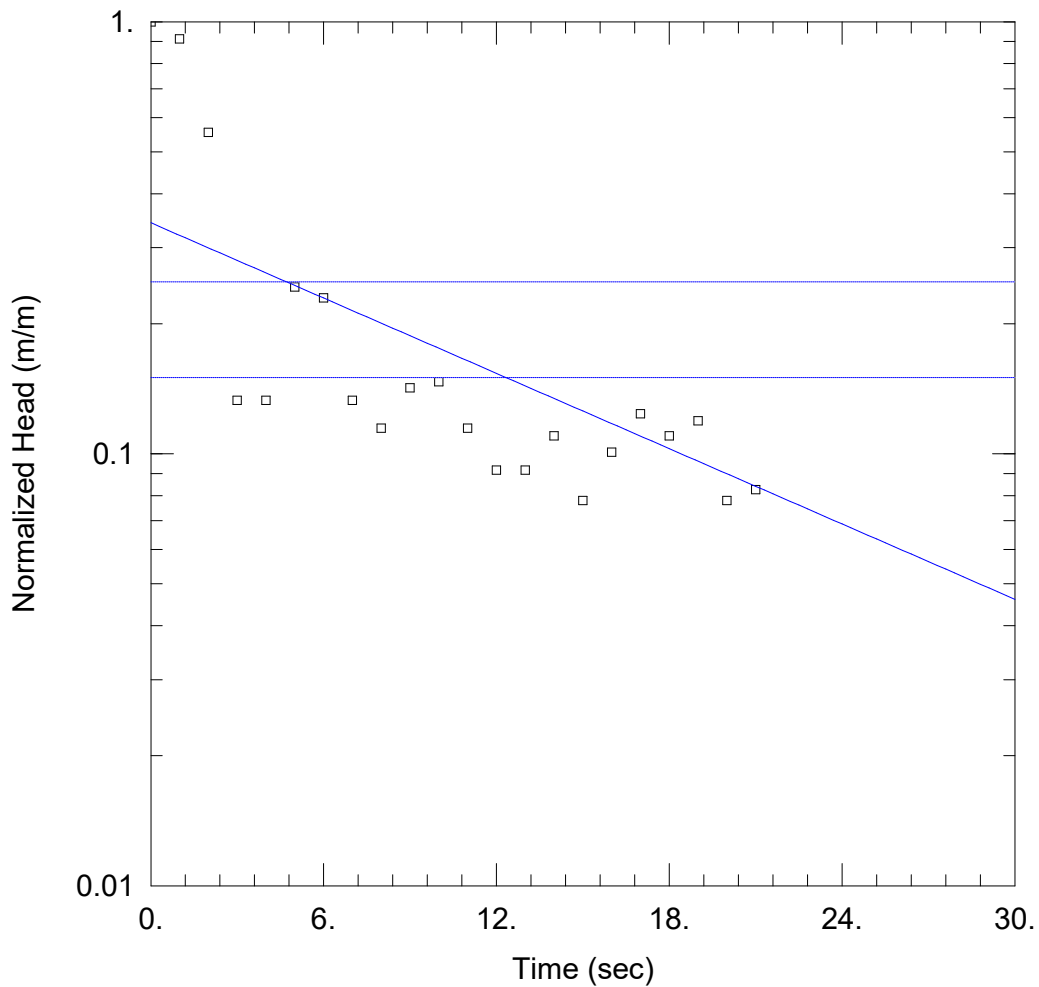
Initial Displacement: -0.244 m
 Total Well Penetration Depth: 7.701 m
 Casing Radius: 0.025 m

Static Water Column Height: 6.81 m
 Screen Length: 3 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 6.413 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH04 RHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:14:57

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH04 RHT2)

Initial Displacement: -0.218 m

Static Water Column Height: 6.81 m

Total Well Penetration Depth: 7.701 m

Screen Length: 3 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

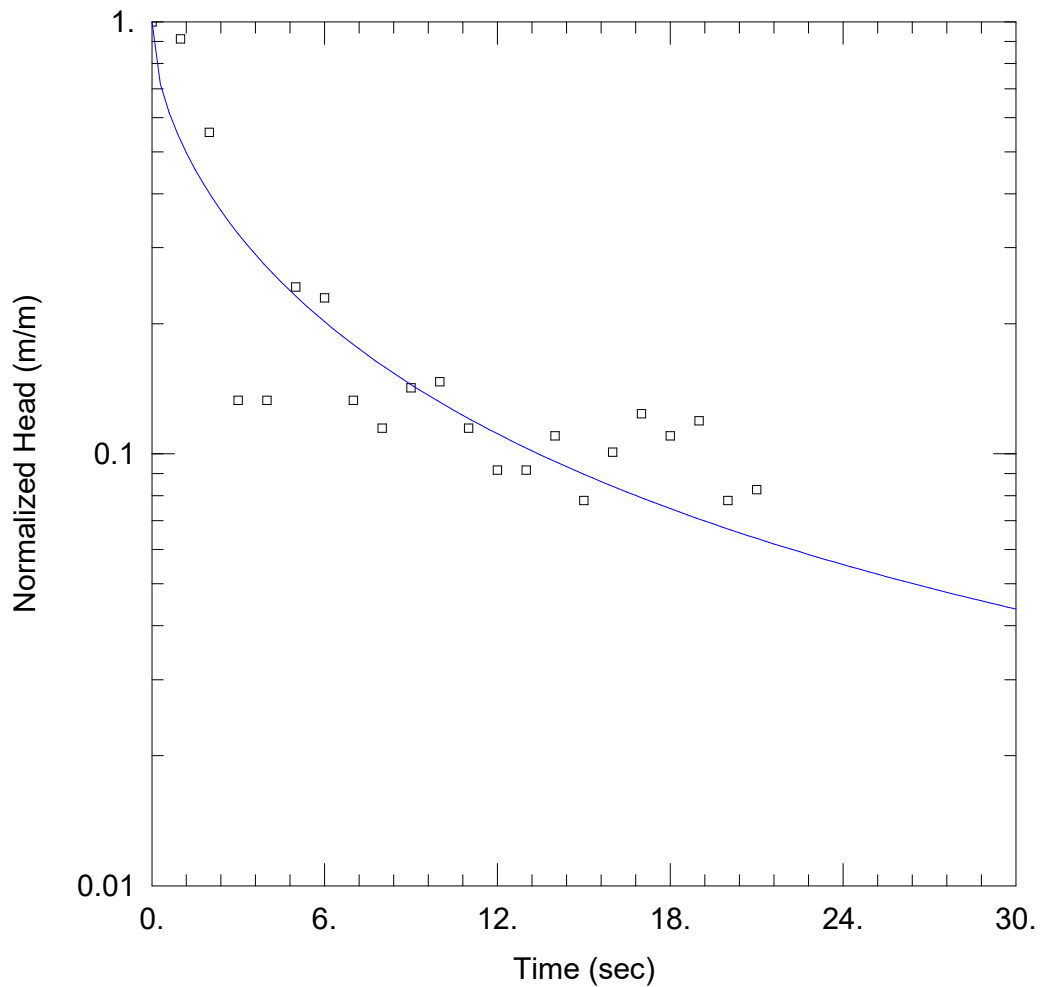
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.01 m/day

y0 = -0.0747 m



WELL TEST ANALYSIS

Data Set: LFBH04 RHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:14:59

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

WELL DATA (LFBH04 RHT2)

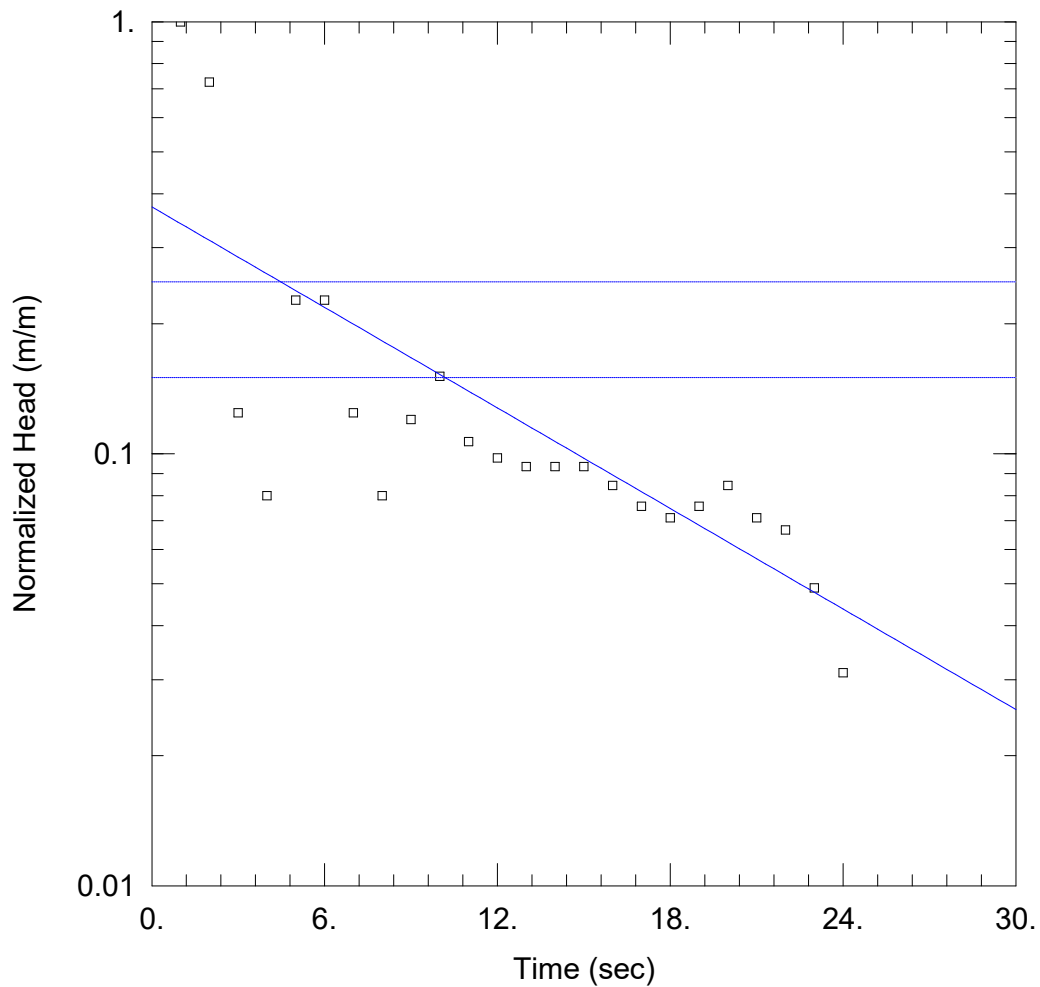
Initial Displacement: -0.218 m
 Total Well Penetration Depth: 7.701 m
 Casing Radius: 0.025 m

Static Water Column Height: 6.81 m
 Screen Length: 3 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 3.774 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01446 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH04 RHT3 - Hvorslev.aqt
 Date: 08/26/22

Time: 15:15:02

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH04 RHT3)

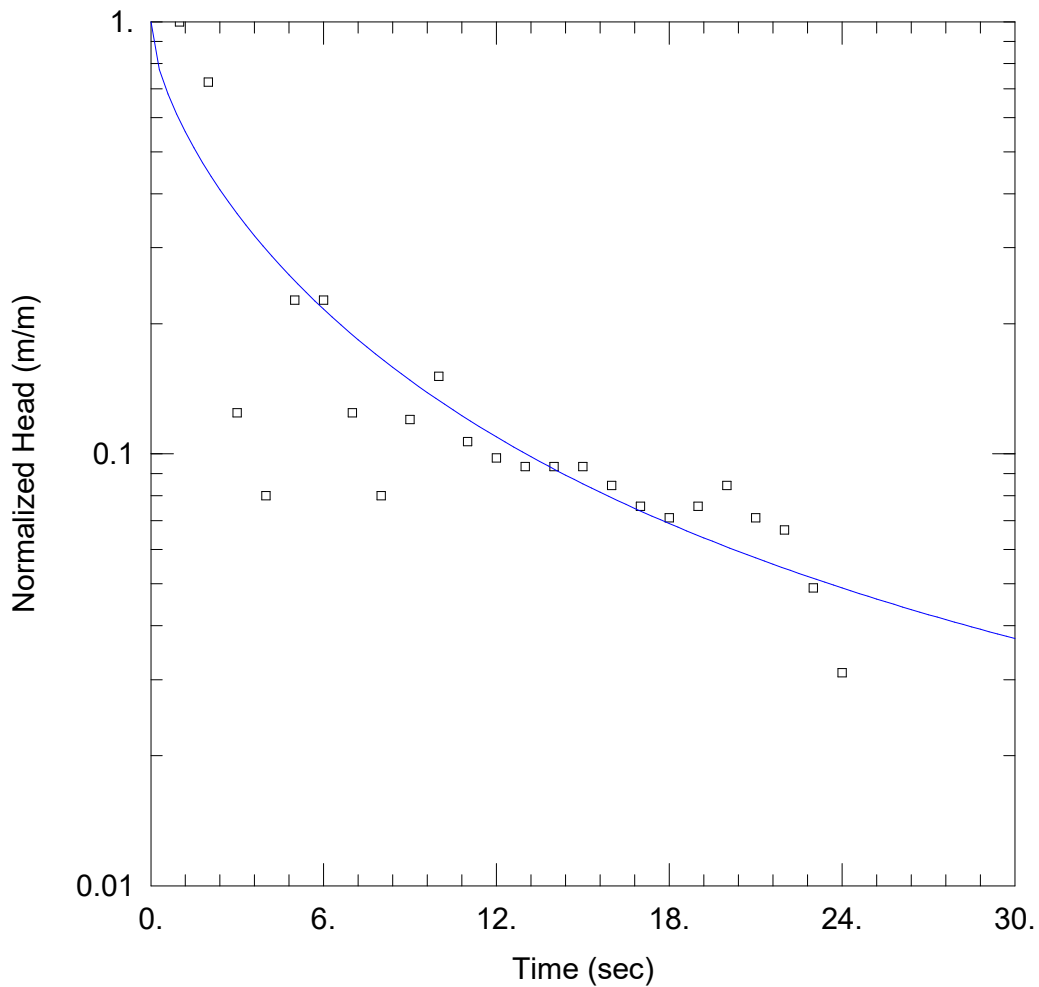
Initial Displacement: -0.225 m
 Total Well Penetration Depth: 7.701 m
 Casing Radius: 0.025 m

Static Water Column Height: 6.81 m
 Screen Length: 3 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 K = 4.019 m/day

Solution Method: Hvorslev
 y0 = -0.08392 m



WELL TEST ANALYSIS

Data Set: LFBH04 RHT3 - KGS.aqt
 Date: 08/26/22

Time: 15:15:05

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10.2 m

WELL DATA (LFBH04 RHT3)

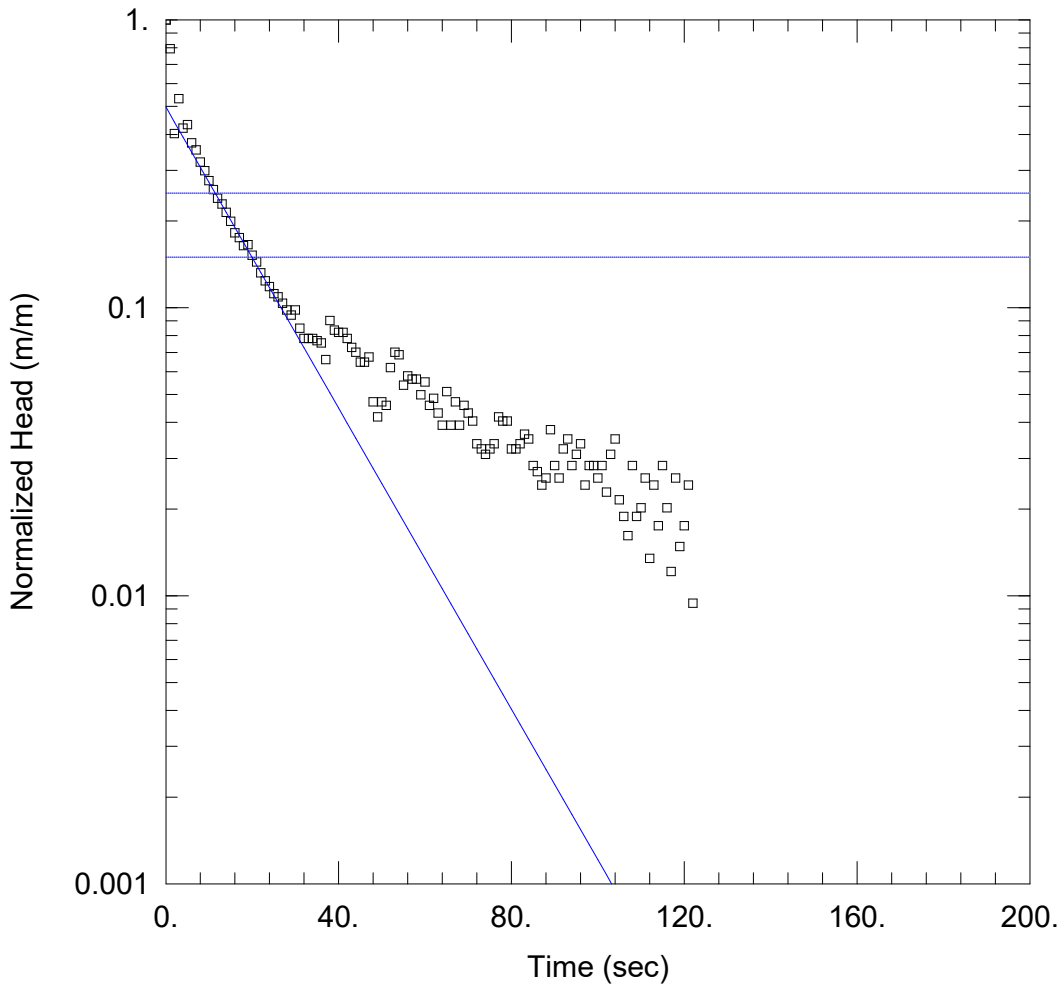
Initial Displacement: -0.225 m
 Total Well Penetration Depth: 7.701 m
 Casing Radius: 0.025 m

Static Water Column Height: 6.81 m
 Screen Length: 3 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 4.812 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.004842 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH05 FHT1 - Hvorslev.aqt
 Date: 08/26/22

Time: 15:25:59

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH05 FHT1)

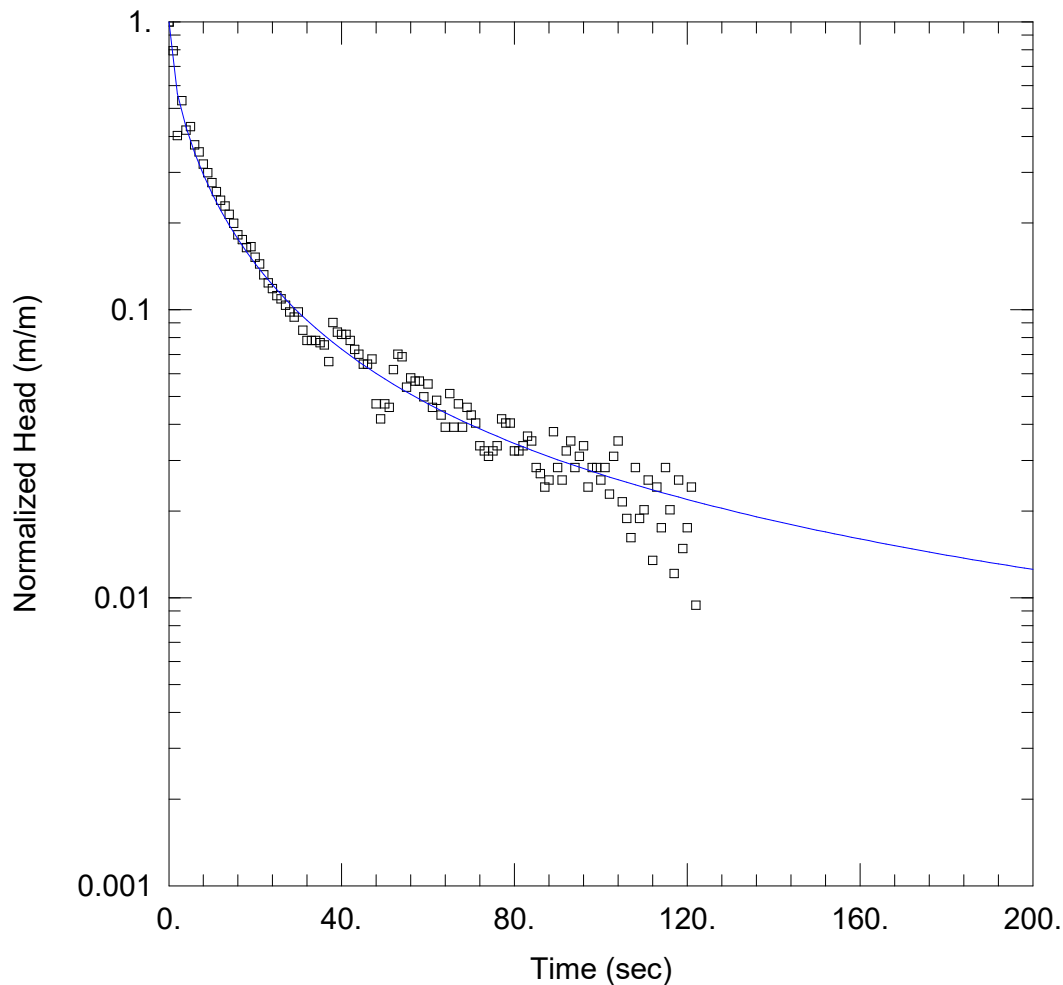
Initial Displacement: 0.742 m
 Total Well Penetration Depth: 4.39 m
 Casing Radius: 0.025 m

Static Water Column Height: 4.45 m
 Screen Length: 2 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 K = 3.732 m/day

Solution Method: Hvorslev
 y0 = 0.3695 m



WELL TEST ANALYSIS

Data Set: LFBH05 FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:26:03

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

WELL DATA (LFBH05 FHT1)

Initial Displacement: 0.742 m

Total Well Penetration Depth: 4.39 m

Casing Radius: 0.025 m

Static Water Column Height: 4.45 m

Screen Length: 2 m

Well Radius: 0.064 m

SOLUTION

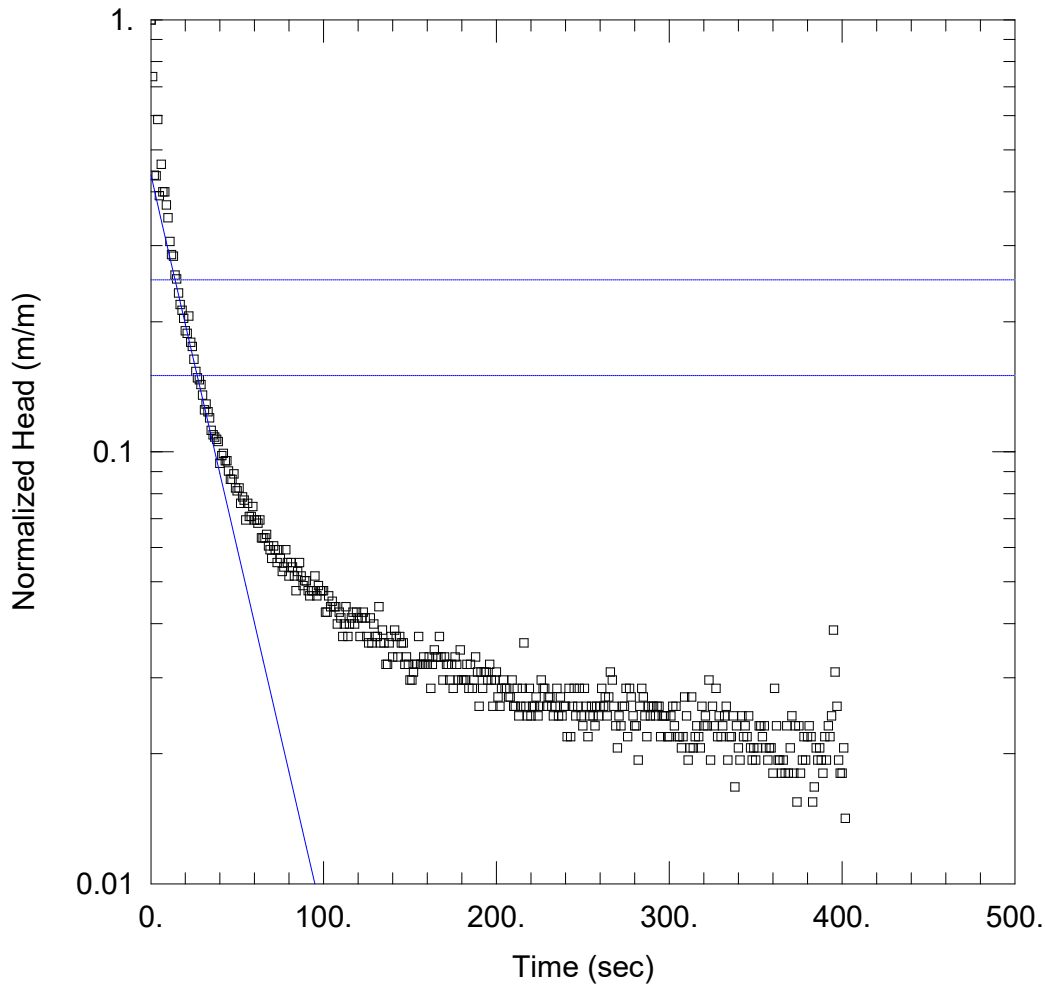
Aquifer Model: Unconfined

Kr = 2.685 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.01744 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH05 FHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:26:09

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH05 FHT2)

Initial Displacement: 0.776 m

Static Water Column Height: 4.45 m

Total Well Penetration Depth: 4.39 m

Screen Length: 2 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

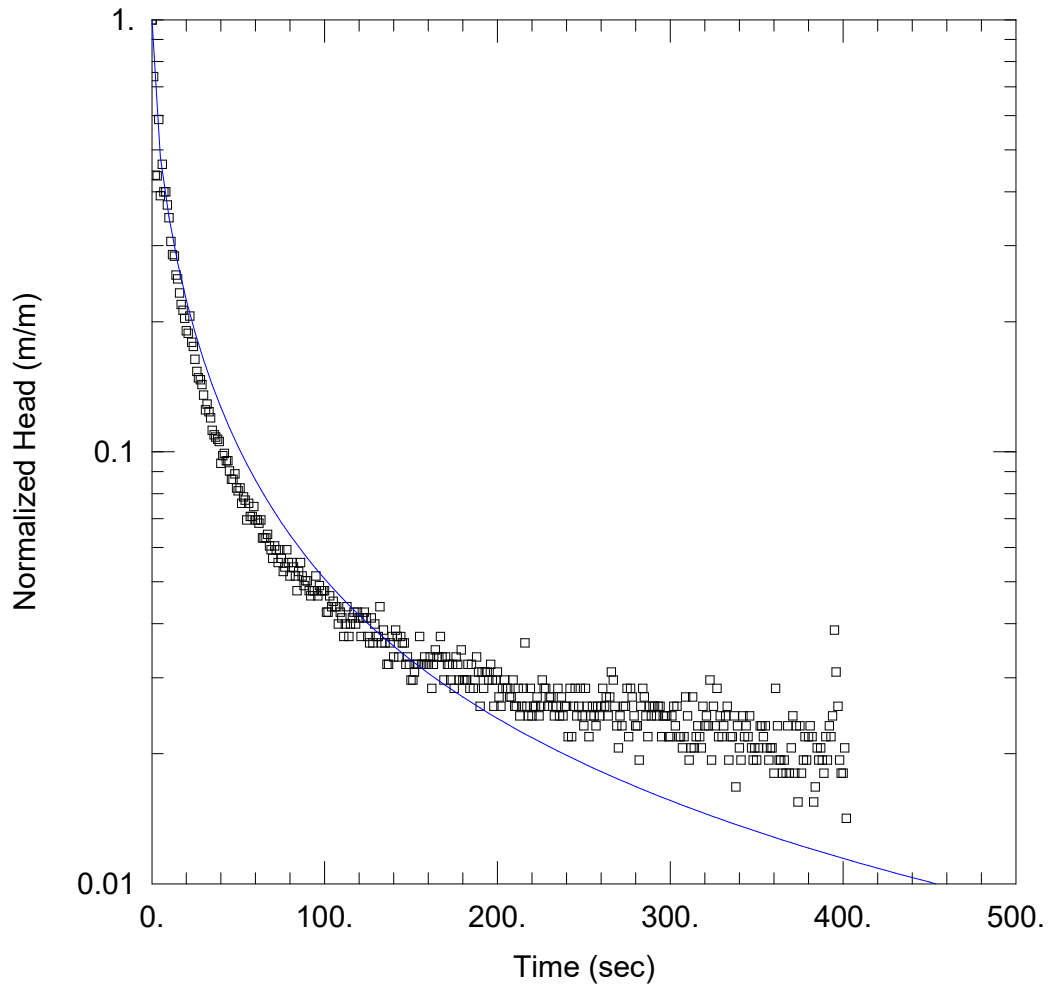
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 2.468 m/day

y0 = 0.3398 m



WELL TEST ANALYSIS

Data Set: LFBH05 FHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:26:13

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

WELL DATA (LFBH05 FHT2)

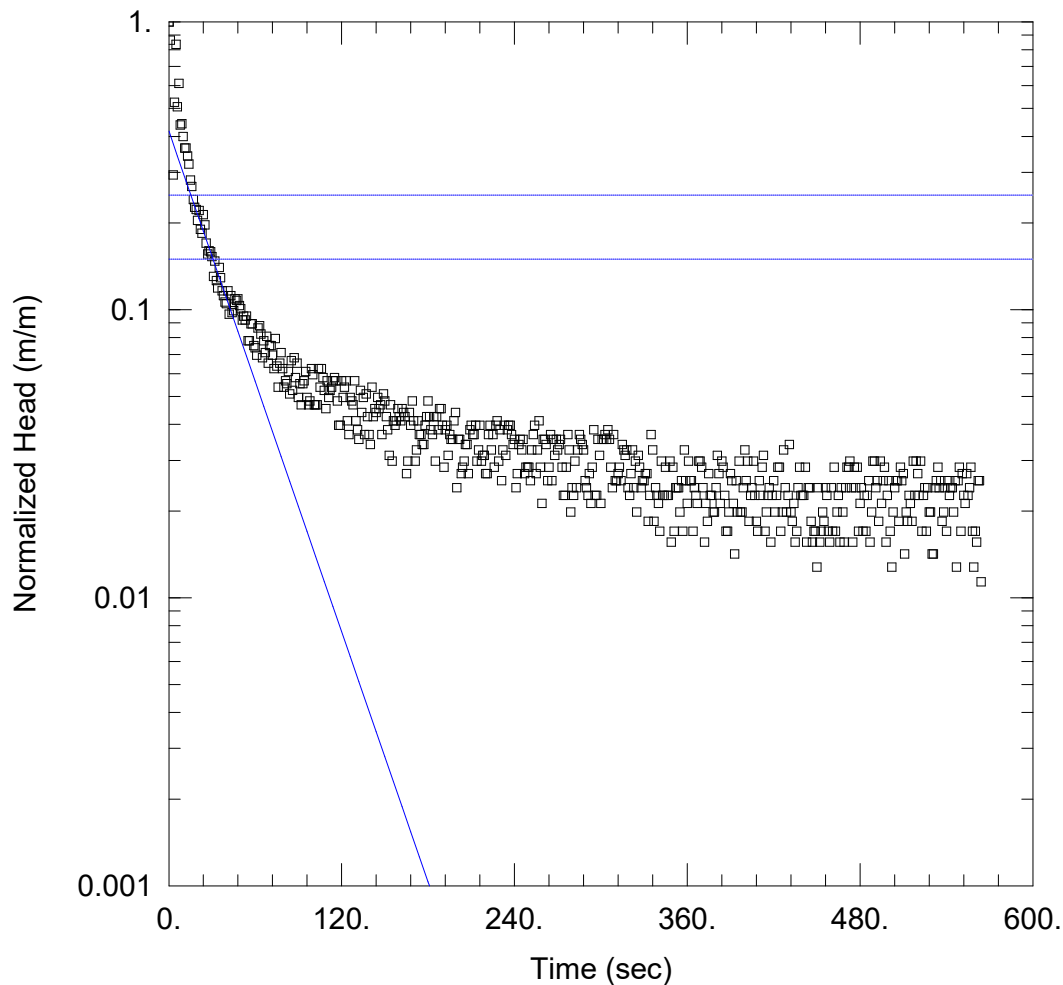
Initial Displacement: 0.776 m
 Total Well Penetration Depth: 4.39 m
 Casing Radius: 0.025 m

Static Water Column Height: 4.45 m
 Screen Length: 2 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 1.452 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH05 FHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:26:21

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH05 FHT3)

Initial Displacement: 0.705 m

Static Water Column Height: 4.45 m

Total Well Penetration Depth: 4.39 m

Screen Length: 2 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

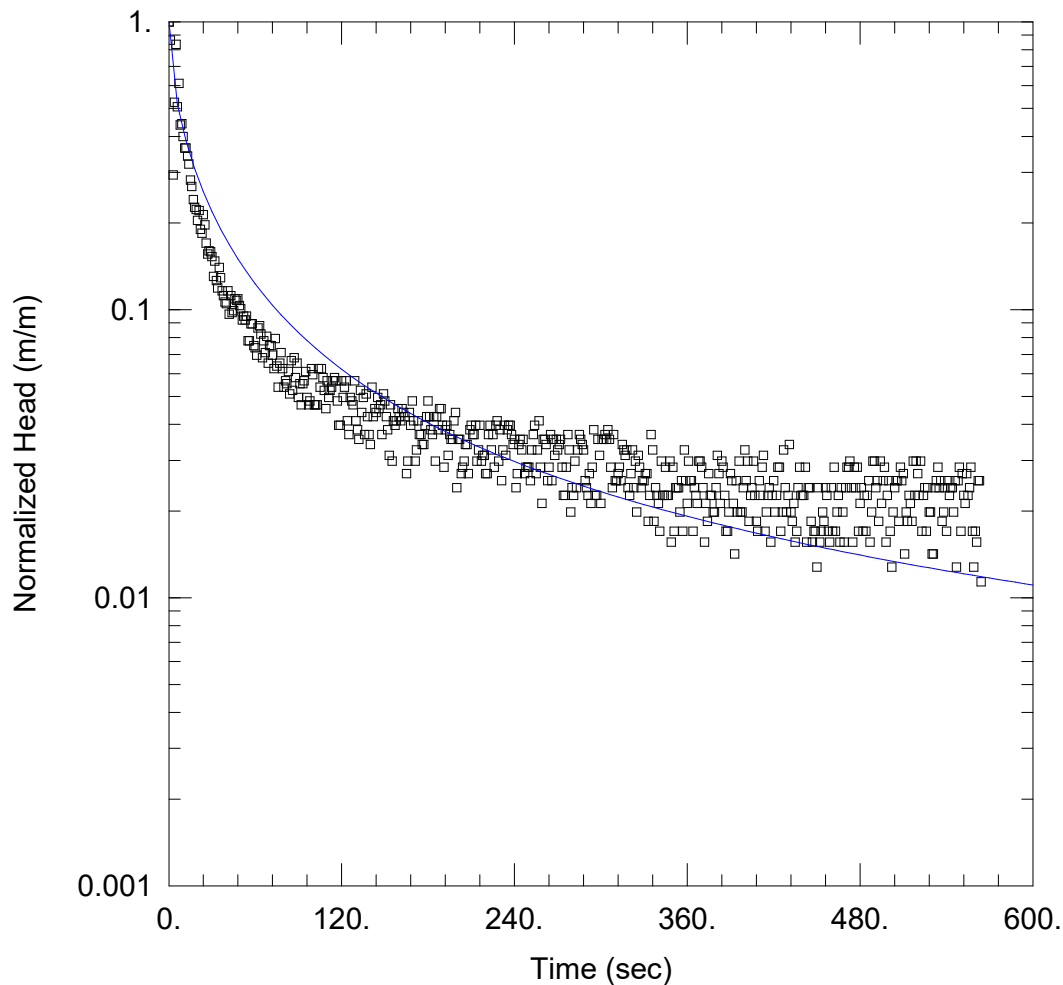
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 2.068 m/day

y0 = 0.2945 m



WELL TEST ANALYSIS

Data Set: LFBH05 FHT3 - KGS.aqt

Date: 08/26/22

Time: 15:26:25

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

WELL DATA (LFBH05 FHT3)

Initial Displacement: 0.705 m

Total Well Penetration Depth: 4.39 m

Casing Radius: 0.025 m

Static Water Column Height: 4.45 m

Screen Length: 2 m

Well Radius: 0.064 m

SOLUTION

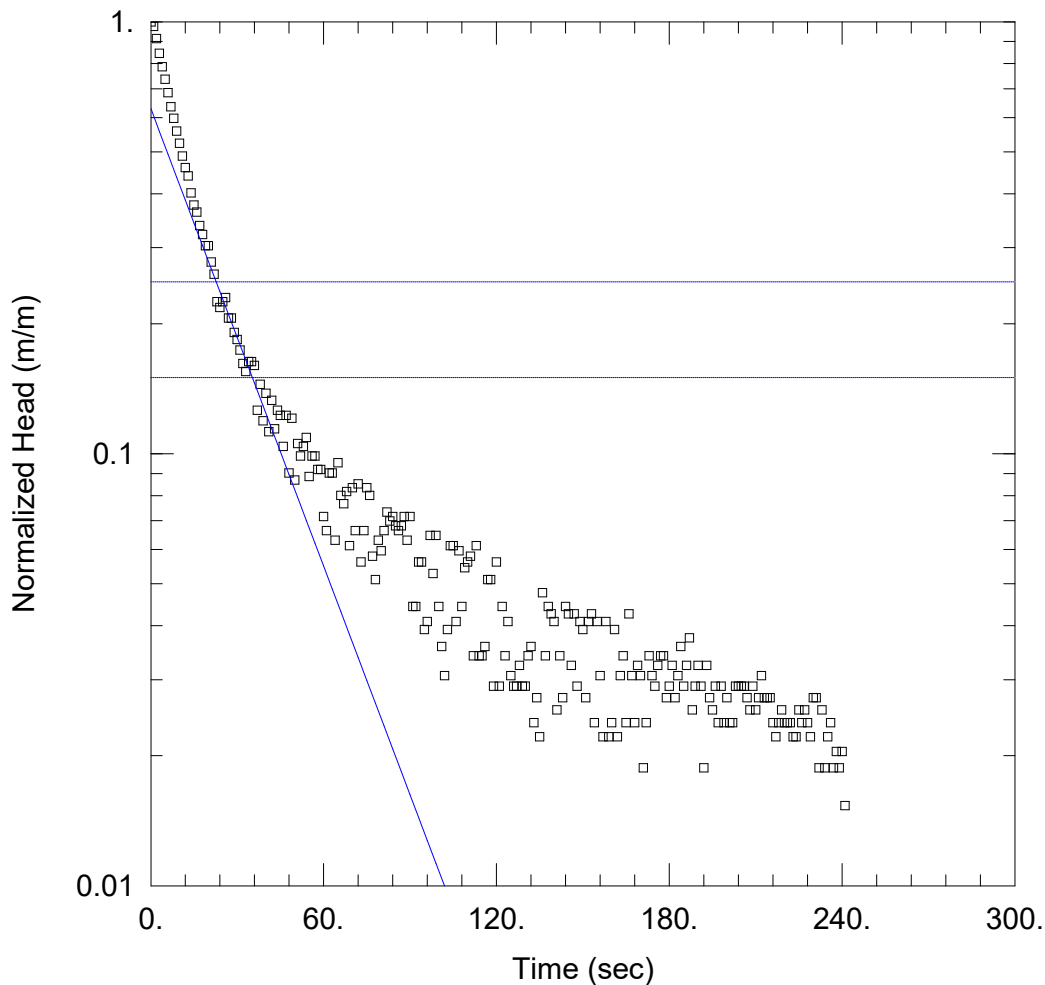
Aquifer Model: Unconfined

Kr = 0.9983 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH05 RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:27:03

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH05 RHT1)

Initial Displacement: -0.587 m

Static Water Column Height: 4.45 m

Total Well Penetration Depth: 4.39 m

Screen Length: 2 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

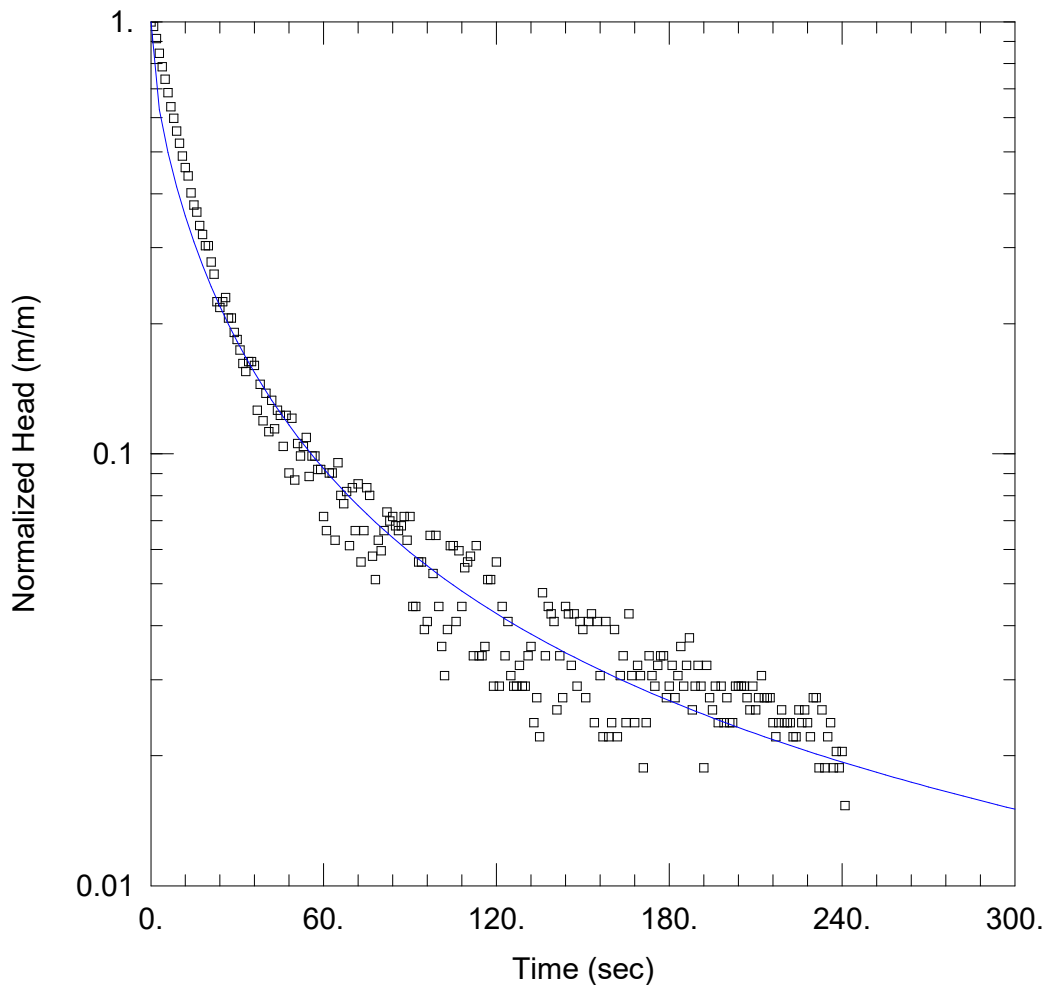
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 2.52 m/day

y0 = -0.3696 m



WELL TEST ANALYSIS

Data Set: LFBH05 RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:27:05

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

WELL DATA (LFBH05 RHT1)

Initial Displacement: -0.587 m

Total Well Penetration Depth: 4.39 m

Casing Radius: 0.025 m

Static Water Column Height: 4.45 m

Screen Length: 2 m

Well Radius: 0.064 m

SOLUTION

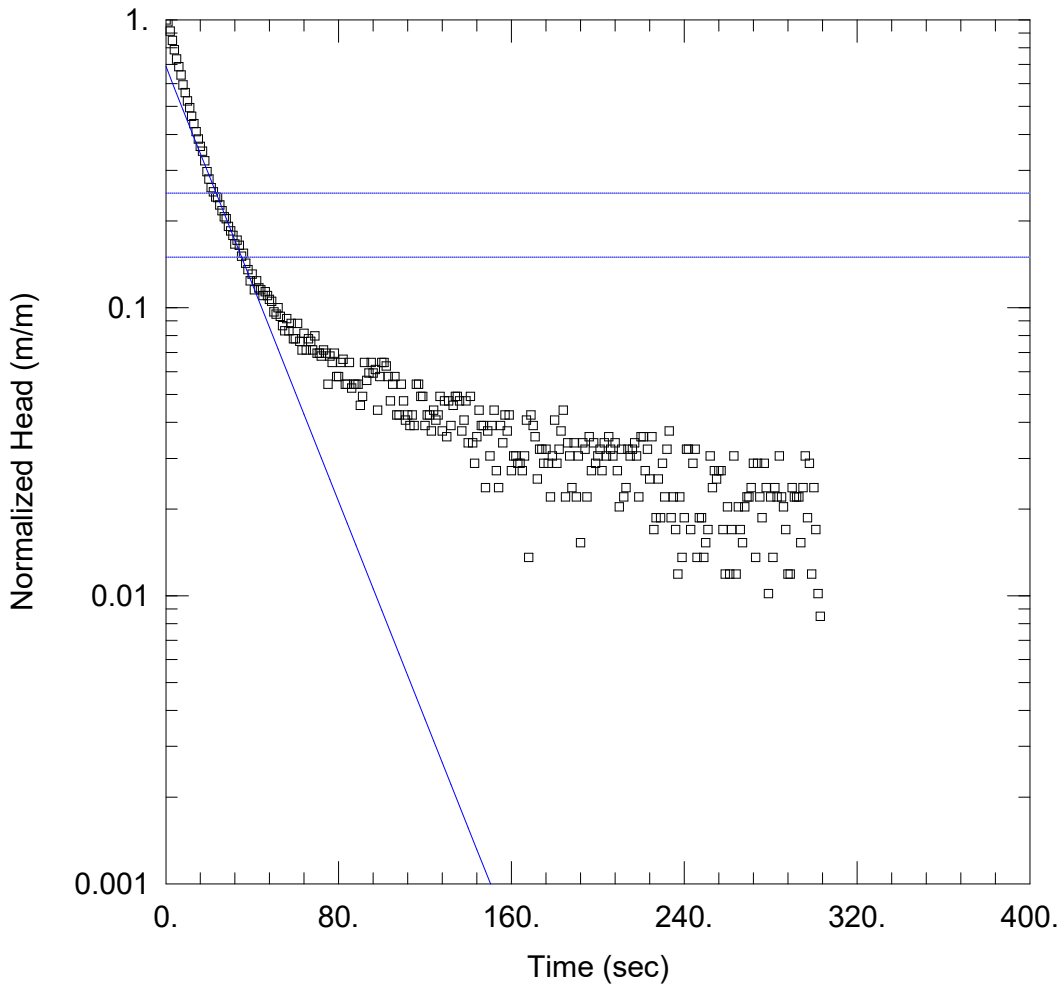
Aquifer Model: Unconfined

Kr = 1.529 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.01207 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH05 RHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:27:08

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH05 RHT2)

Initial Displacement: -0.589 m

Static Water Column Height: 4.45 m

Total Well Penetration Depth: 4.39 m

Screen Length: 2 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

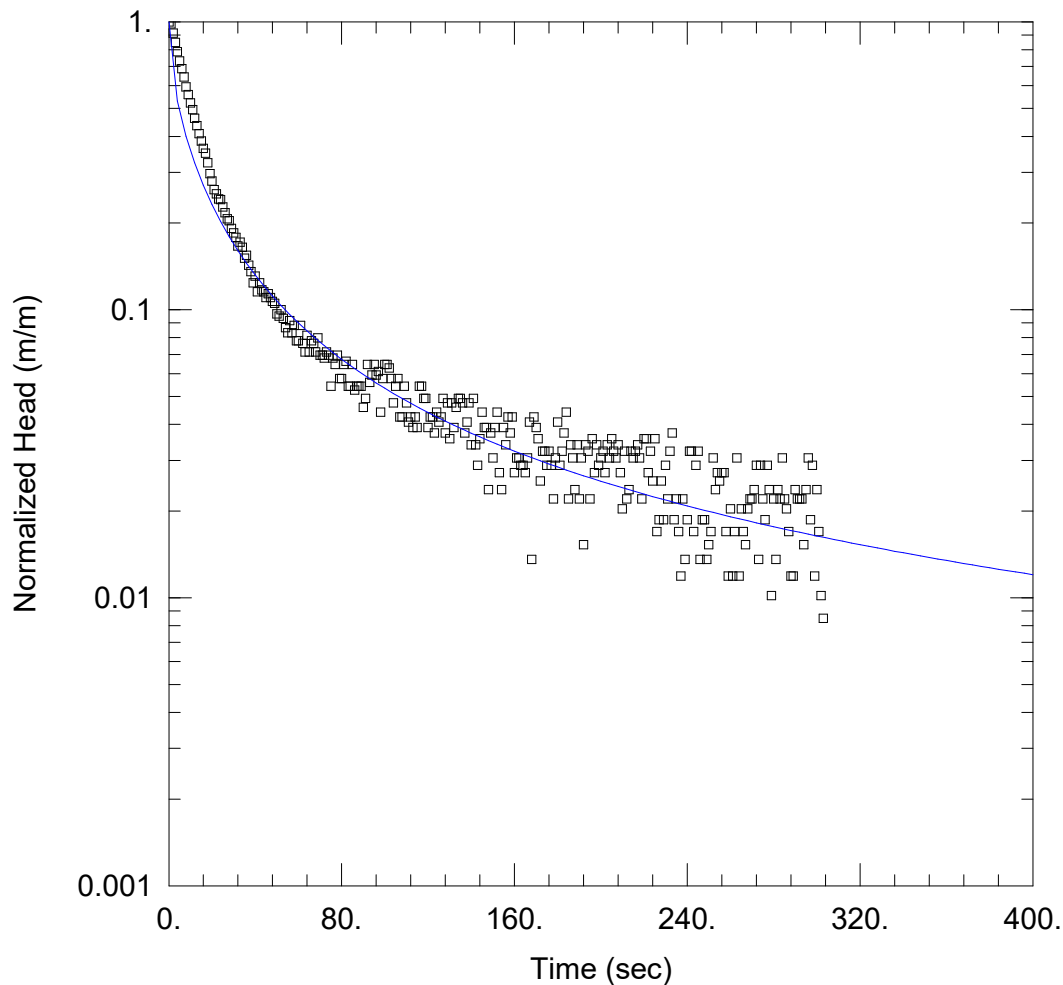
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 2.697 m/day

y0 = -0.4062 m



WELL TEST ANALYSIS

Data Set: LFBH05 RHT2 - KGS.aqt

Date: 08/26/22

Time: 15:27:10

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

WELL DATA (LFBH05 RHT2)

Initial Displacement: -0.589 m

Total Well Penetration Depth: 4.39 m

Casing Radius: 0.025 m

Static Water Column Height: 4.45 m

Screen Length: 2 m

Well Radius: 0.064 m

SOLUTION

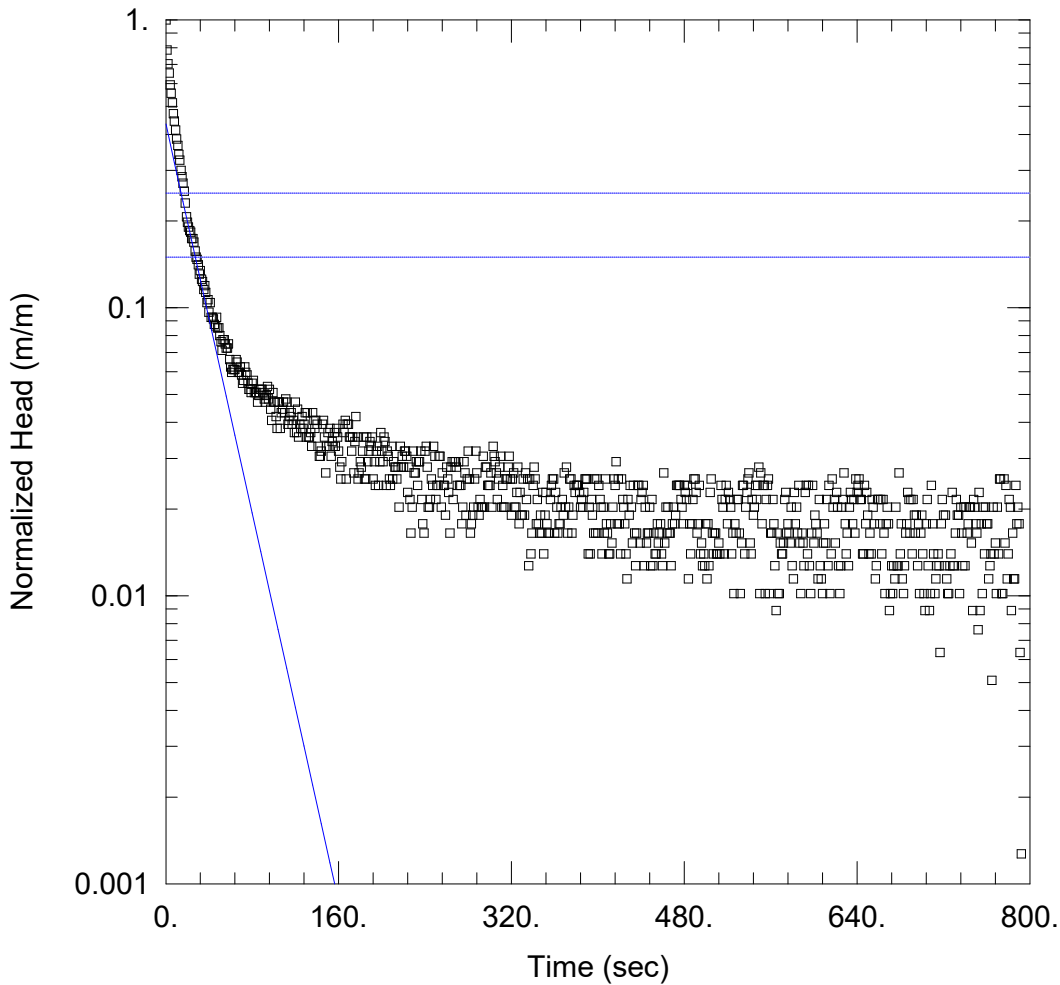
Aquifer Model: Unconfined

Kr = 1.387 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH05 RHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:27:12

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH05 RHT3)

Initial Displacement: -0.787 m

Static Water Column Height: 4.45 m

Total Well Penetration Depth: 4.39 m

Screen Length: 2 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

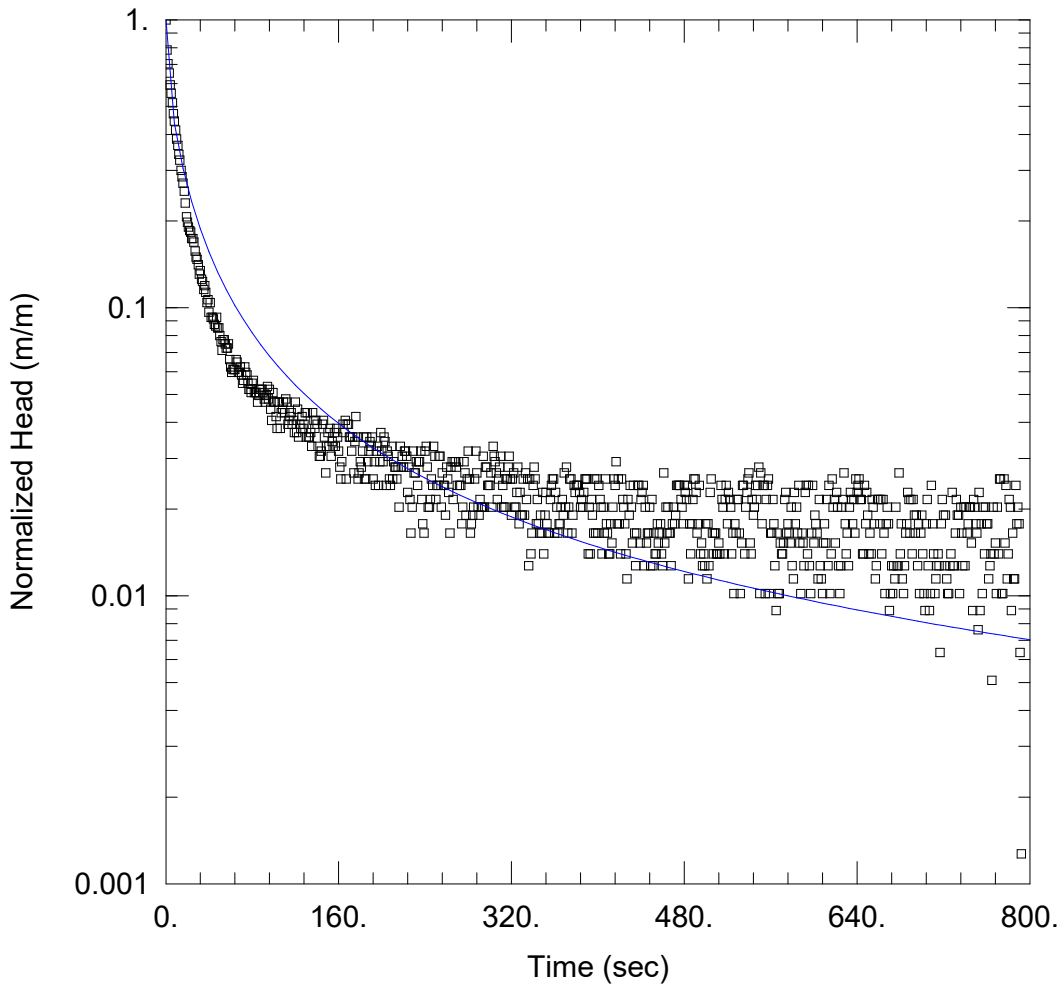
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 2.41 m/day

y0 = -0.3423 m



WELL TEST ANALYSIS

Data Set: LFBH05 RHT3 - KGS.aqt
 Date: 08/26/22

Time: 15:27:16

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 4.45 m

WELL DATA (LFBH05 RHT3)

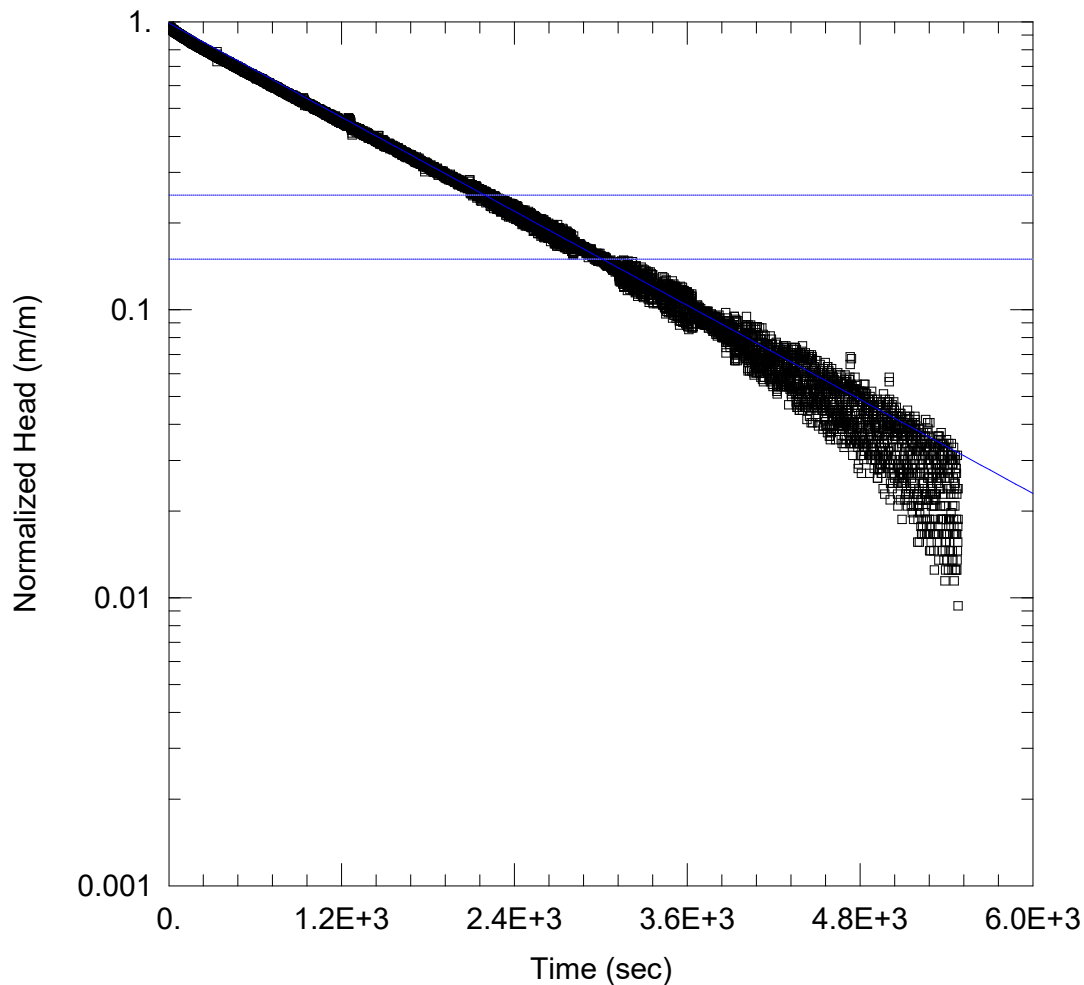
Initial Displacement: -0.787 m
 Total Well Penetration Depth: 4.39 m
 Casing Radius: 0.025 m

Static Water Column Height: 4.45 m
 Screen Length: 2 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 1.145 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH10A FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:28:14

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LFBH10A

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 5.5 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH10A)

Initial Displacement: 0.961 m

Static Water Column Height: 5.5 m

Total Well Penetration Depth: 5.77 m

Screen Length: 1.6 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

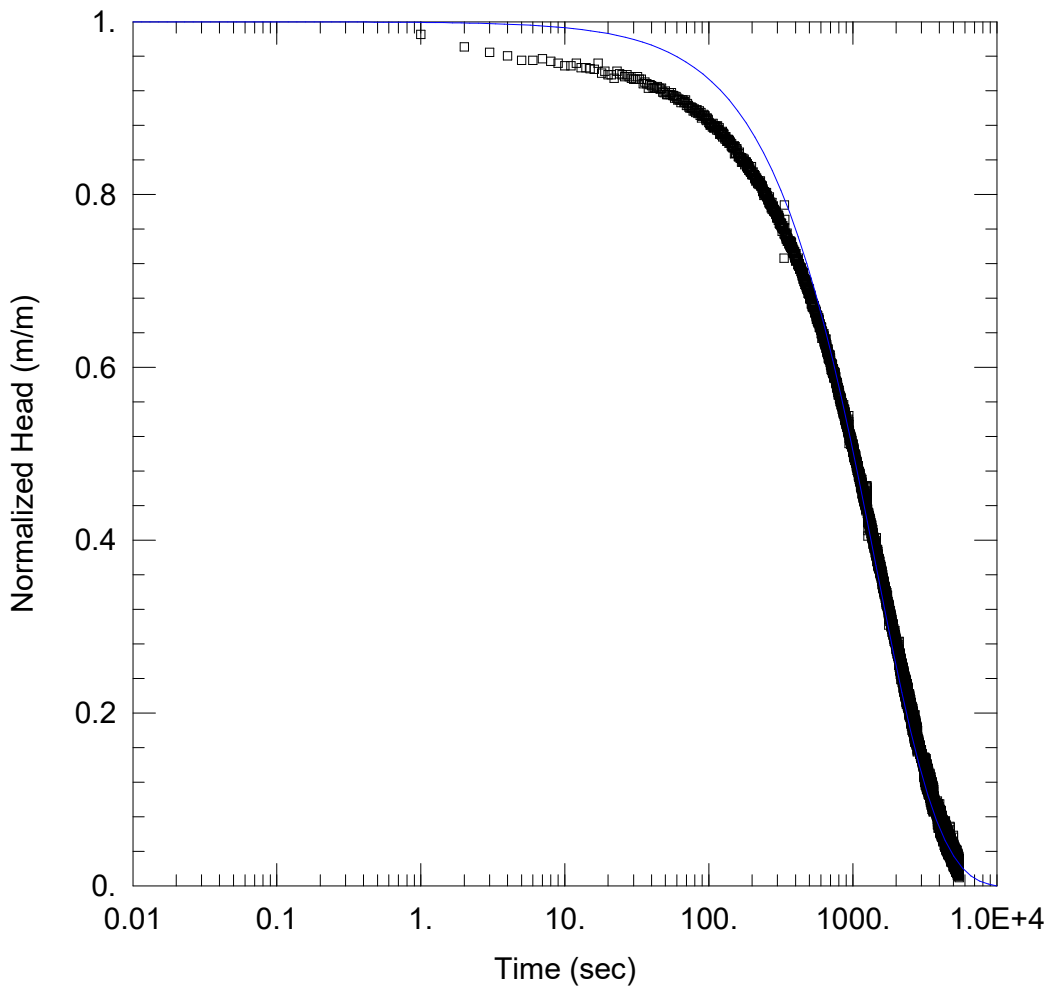
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.05006 m/day

y0 = 0.9505 m



WELL TEST ANALYSIS

Data Set: LFBH10A FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:28:20

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LFBH10A

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 5.5 m

WELL DATA (LFBH10A)

Initial Displacement: 0.961 m

Total Well Penetration Depth: 5.77 m

Casing Radius: 0.025 m

Static Water Column Height: 5.5 m

Screen Length: 1.6 m

Well Radius: 0.089 m

SOLUTION

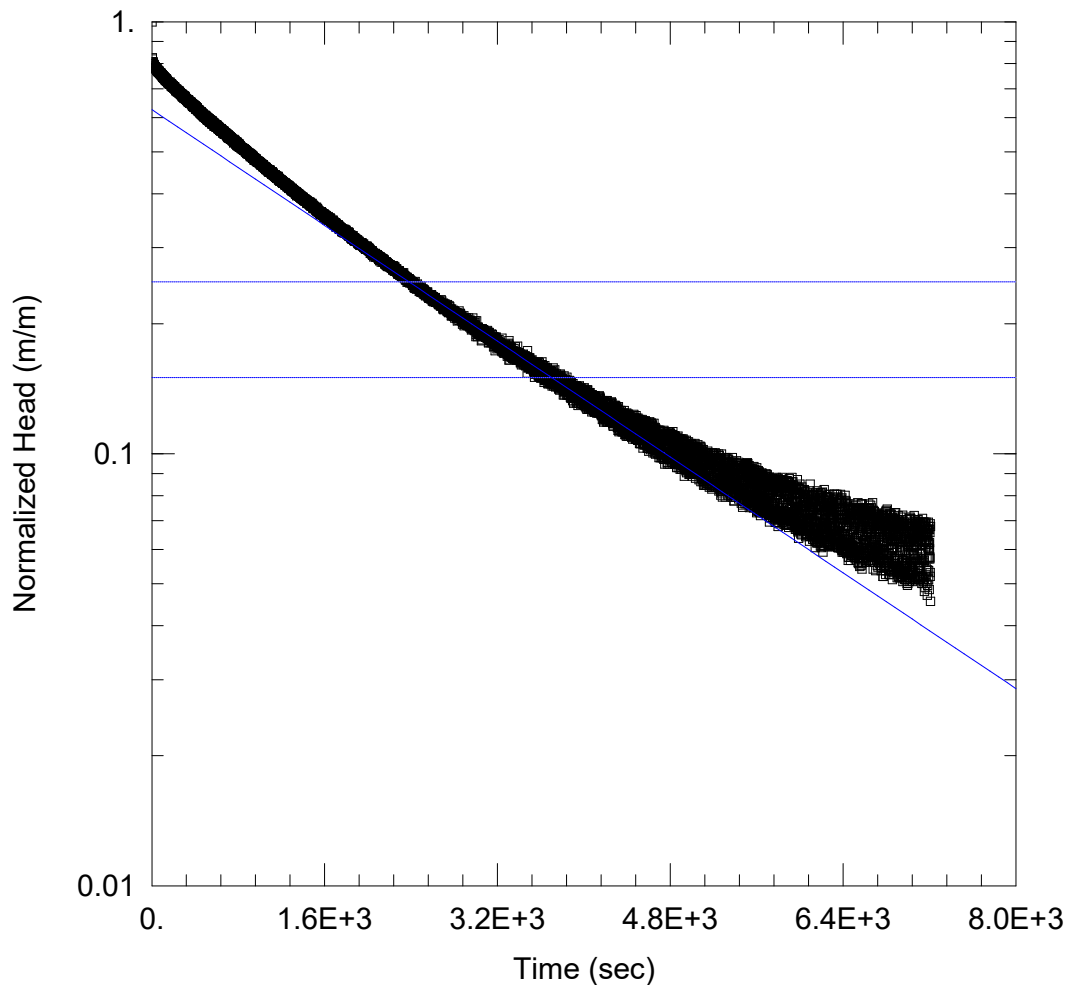
Aquifer Model: Unconfined

Kr = 0.06168 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 1.379E-8 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH10A RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:28:25

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LFBH10A

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 5.5 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH10A RHT1)

Initial Displacement: -1.183 m

Static Water Column Height: 5.5 m

Total Well Penetration Depth: 5.77 m

Screen Length: 1.6 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

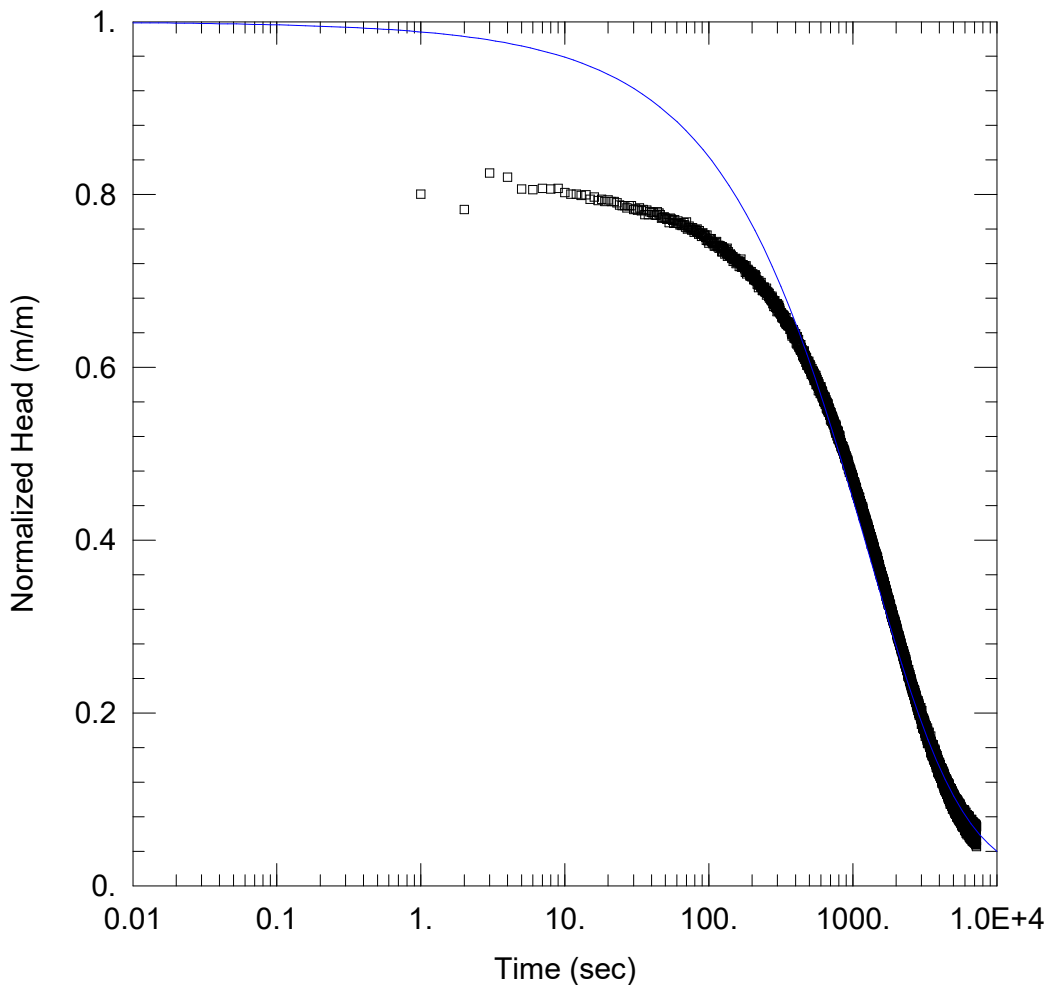
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03082 m/day

y0 = -0.7409 m



WELL TEST ANALYSIS

Data Set: LFBH10A RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:28:31

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LFBH10A

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 5.5 m

WELL DATA (LFBH10A RHT1)

Initial Displacement: -1.183 m

Total Well Penetration Depth: 5.77 m

Casing Radius: 0.025 m

Static Water Column Height: 5.5 m

Screen Length: 1.6 m

Well Radius: 0.089 m

SOLUTION

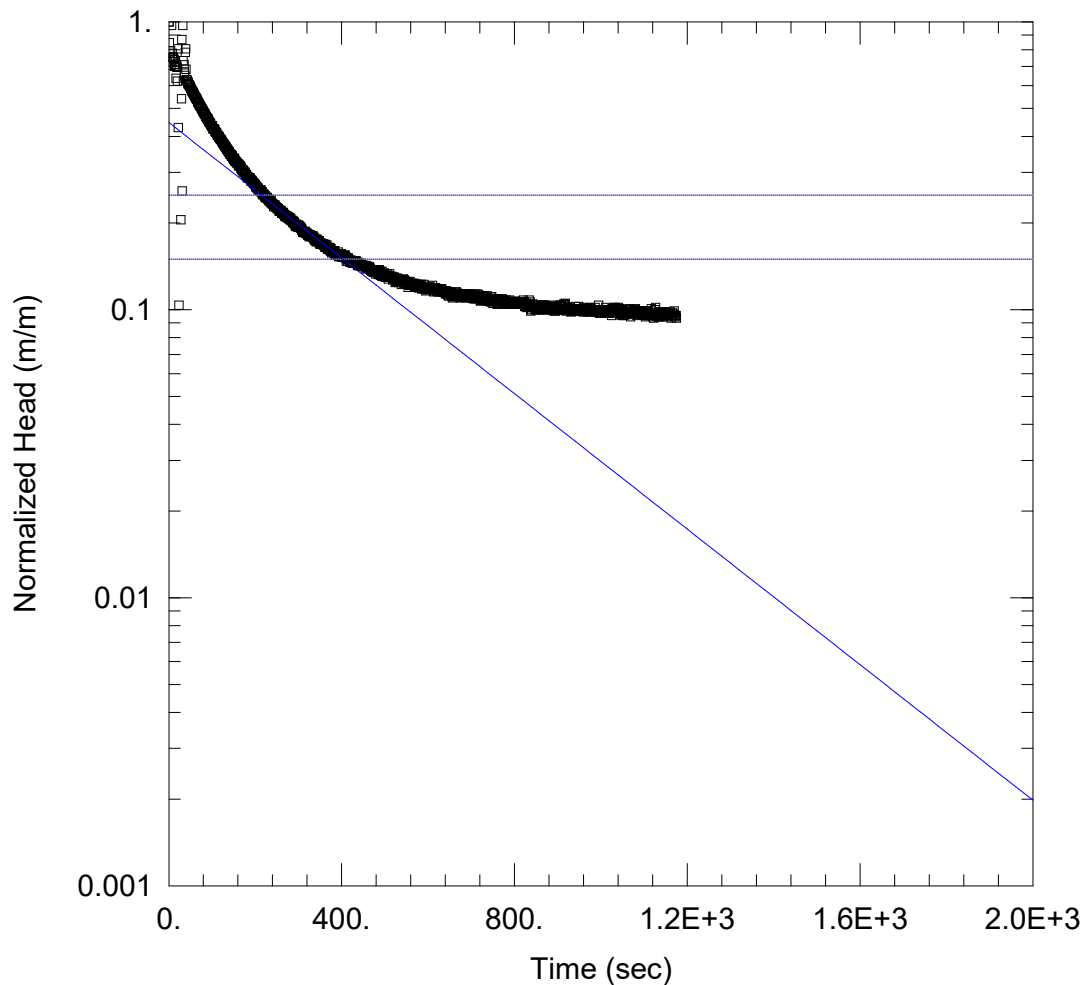
Aquifer Model: Unconfined

Kr = 0.03439 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.002064 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH13 FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:28:38

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.75 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH13 FHT1)

Initial Displacement: 1.11 m

Static Water Column Height: 2.06 m

Total Well Penetration Depth: 3. m

Screen Length: 1.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

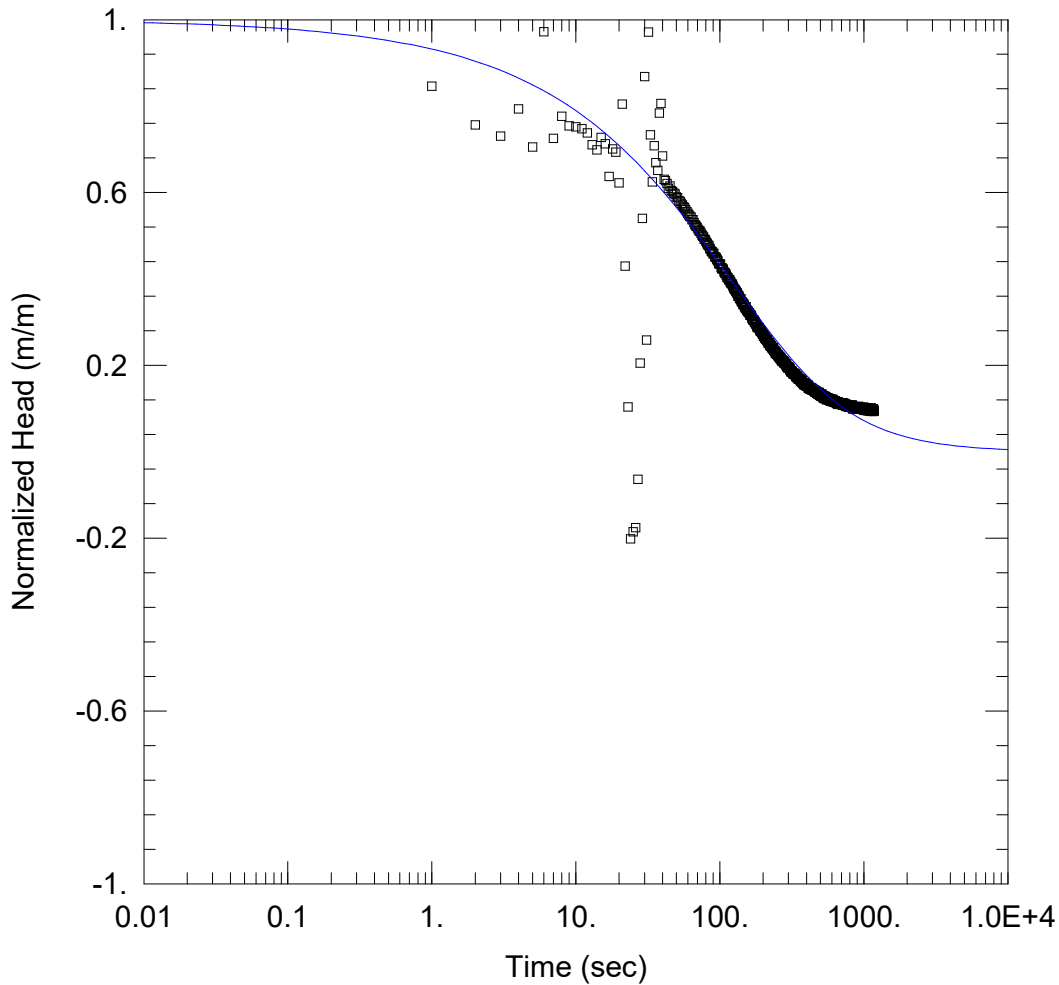
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.21 m/day

y0 = 0.4962 m



WELL TEST ANALYSIS

Data Set: LFBH13 FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:28:42

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.75 m

WELL DATA (LFBH13 FHT1)

Initial Displacement: 1.11 m

Total Well Penetration Depth: 3 m

Casing Radius: 0.025 m

Static Water Column Height: 2.06 m

Screen Length: 1.5 m

Well Radius: 0.064 m

SOLUTION

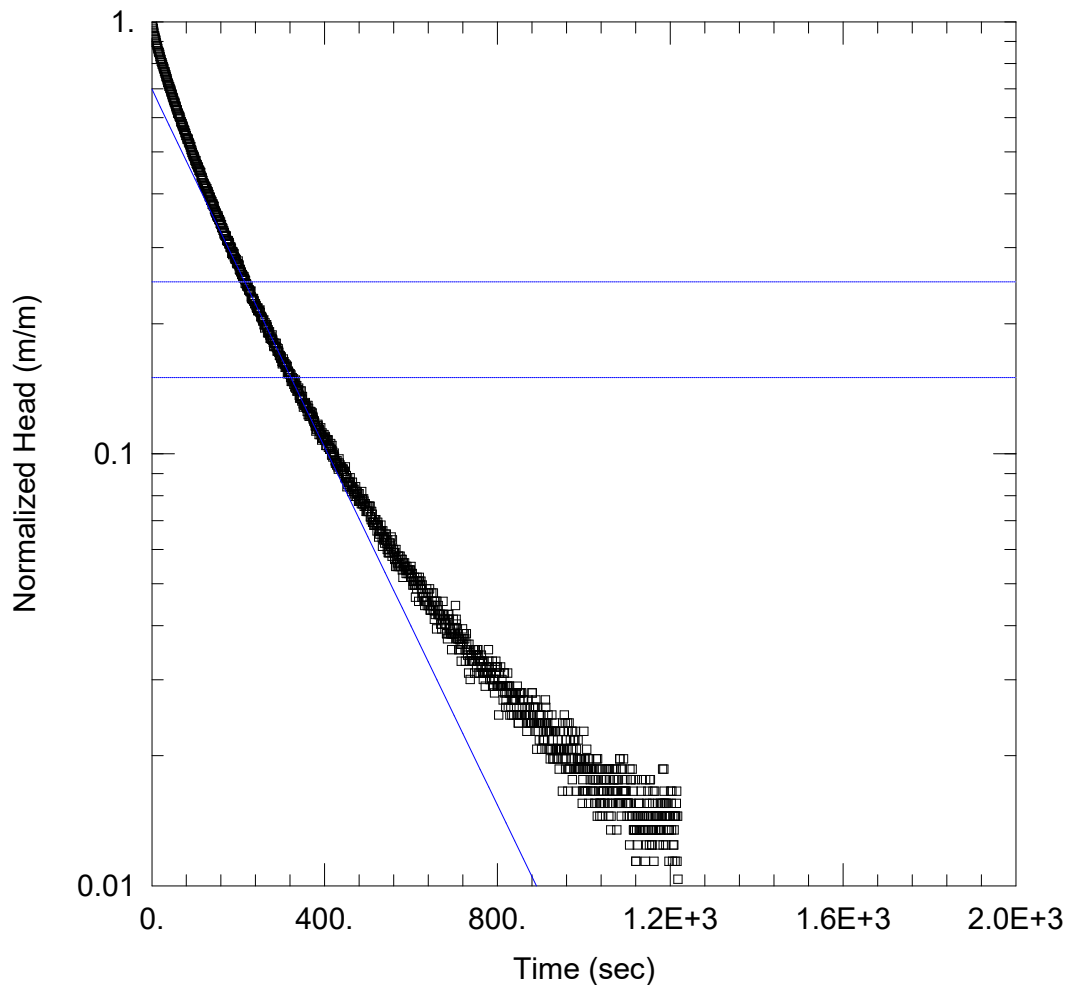
Aquifer Model: Unconfined

Kr = 0.1433 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH13 RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:28:45

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.75 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH13 RHT1)

Initial Displacement: -0.966 m

Static Water Column Height: 2.06 m

Total Well Penetration Depth: 3. m

Screen Length: 1.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

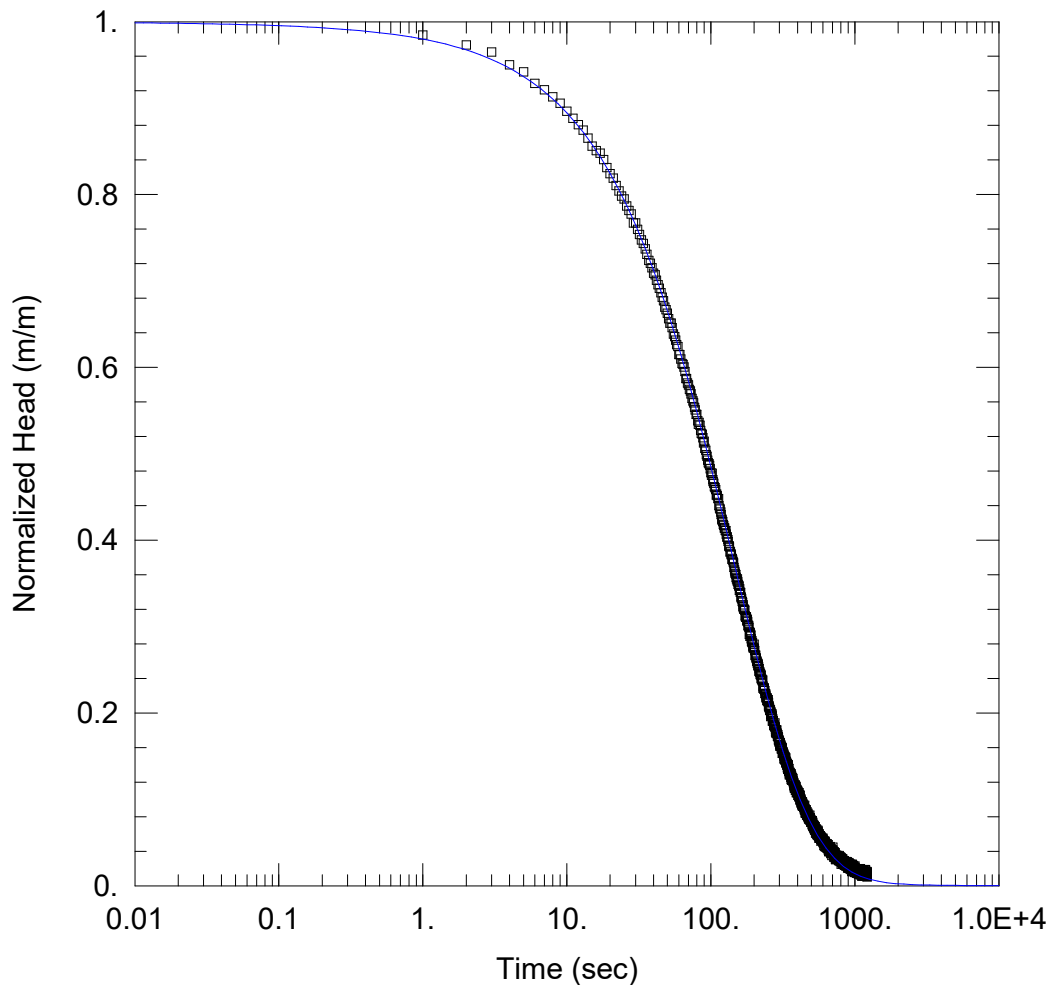
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.3696 m/day

y0 = -0.674 m



WELL TEST ANALYSIS

Data Set: LFBH13 RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:28:48

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.75 m

WELL DATA (LFBH13 RHT1)

Initial Displacement: -0.966 m

Total Well Penetration Depth: 3. m

Casing Radius: 0.025 m

Static Water Column Height: 2.06 m

Screen Length: 1.5 m

Well Radius: 0.064 m

SOLUTION

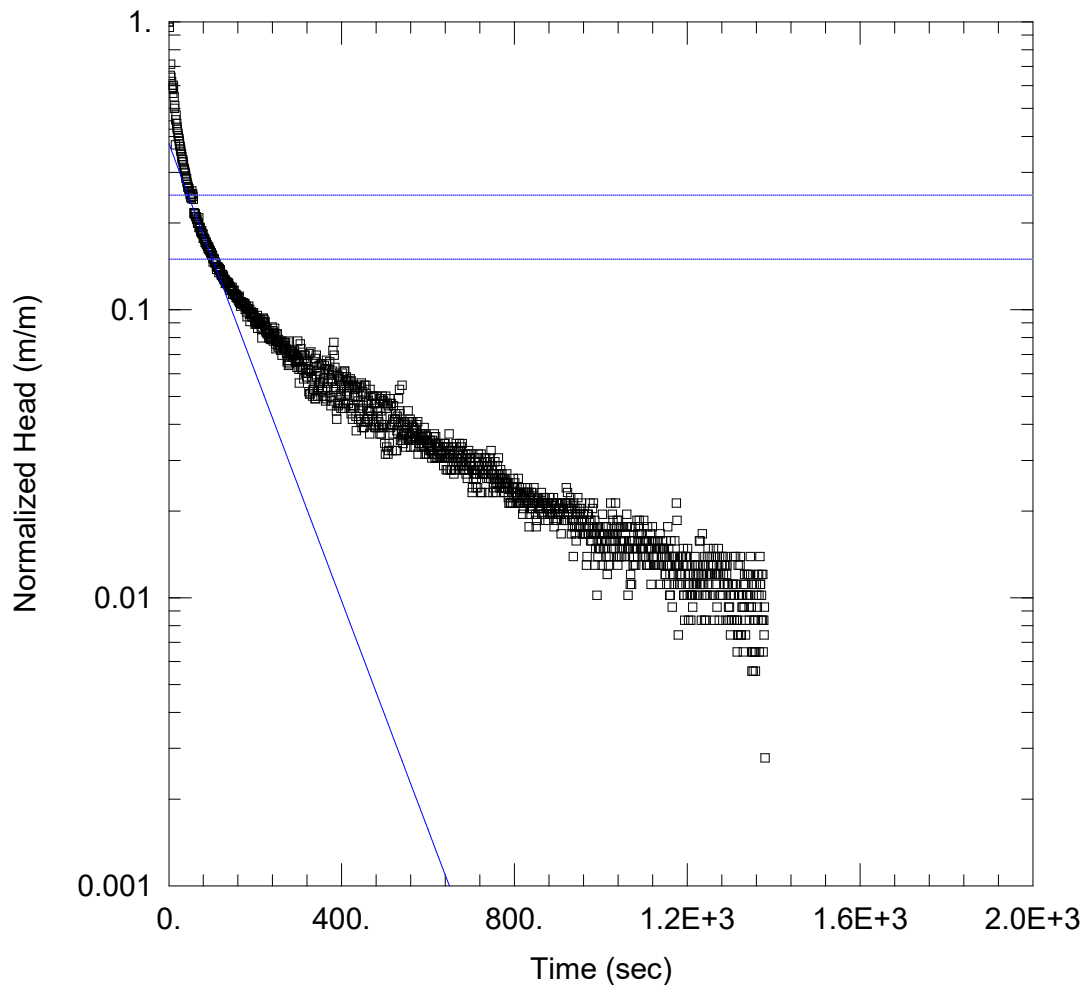
Aquifer Model: Unconfined

Kr = 0.3954 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.0002247 m⁻¹



WELL TEST ANALYSIS

Data Set: LFBH14 FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:29:35

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.79 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH14 FHT1)

Initial Displacement: 1.078 m

Static Water Column Height: 6.79 m

Total Well Penetration Depth: 6.73 m

Screen Length: 2.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

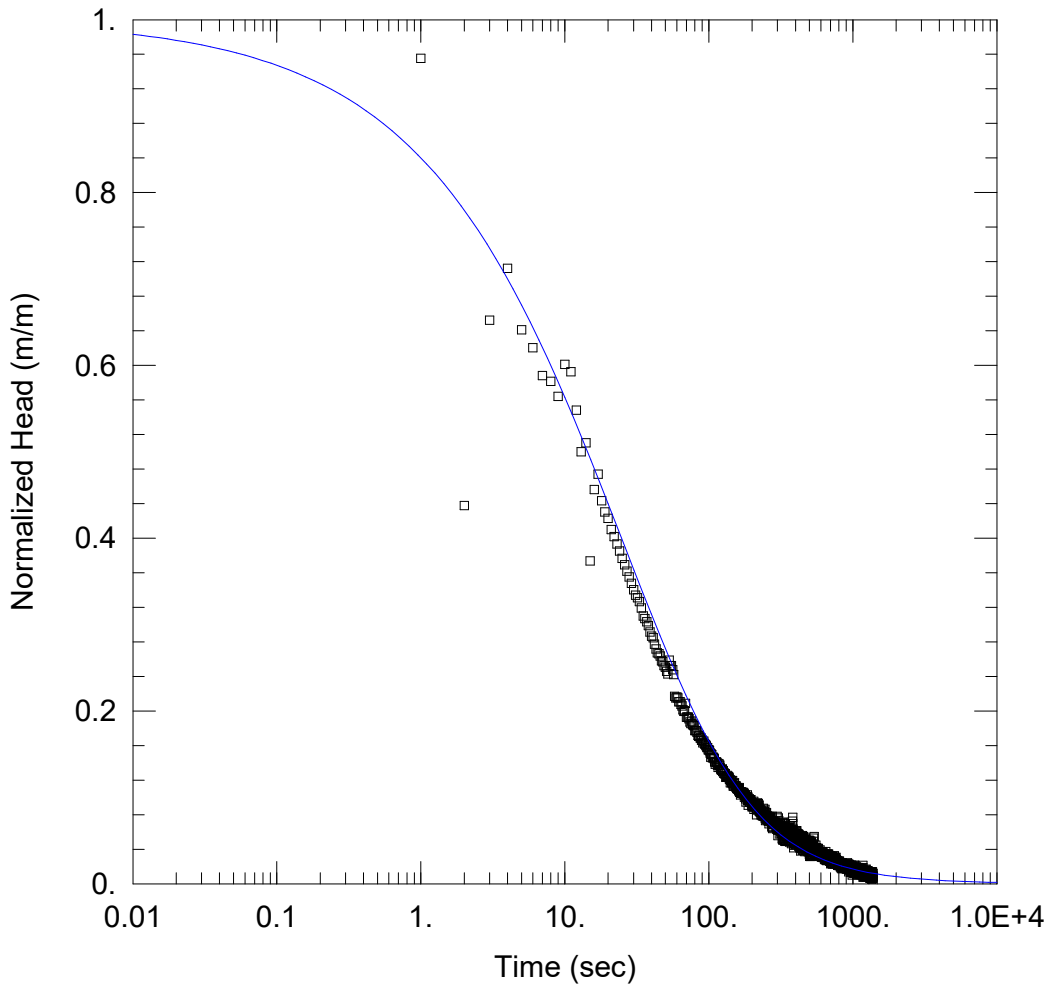
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.4754 m/day

y0 = 0.4072 m



WELL TEST ANALYSIS

Data Set: LFBH14 FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:29:38

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.79 m

WELL DATA (LFBH14 FHT1)

Initial Displacement: 1.078 m

Total Well Penetration Depth: 6.73 m

Casing Radius: 0.025 m

Static Water Column Height: 6.79 m

Screen Length: 2.5 m

Well Radius: 0.064 m

SOLUTION

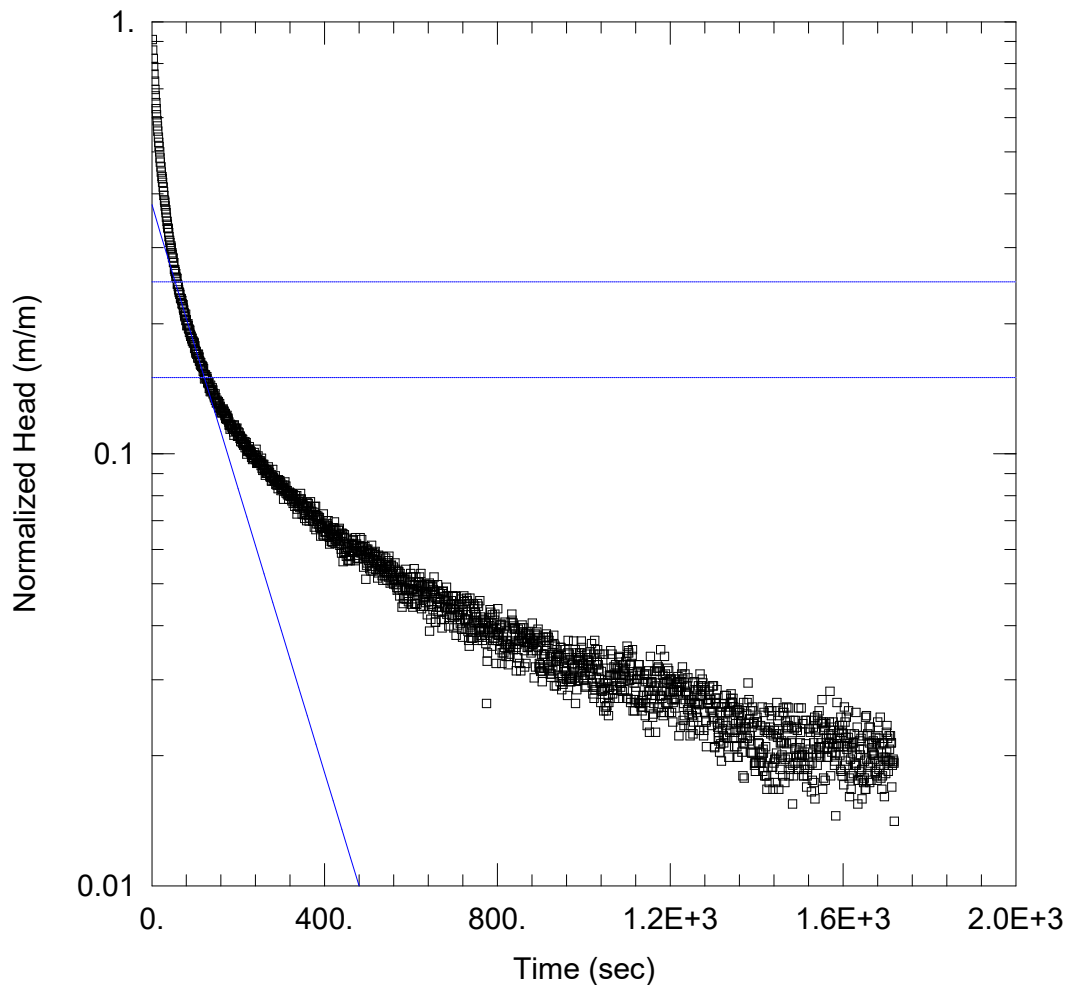
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 0.3216 m/day

Ss = 0.02247 m⁻¹

Kz/Kr = 0.1



WELL TEST ANALYSIS

Data Set: LFBH14 RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:29:41

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.79 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LFBH14 RHT1)

Initial Displacement: -0.976 m

Static Water Column Height: 6.79 m

Total Well Penetration Depth: 6.73 m

Screen Length: 2.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

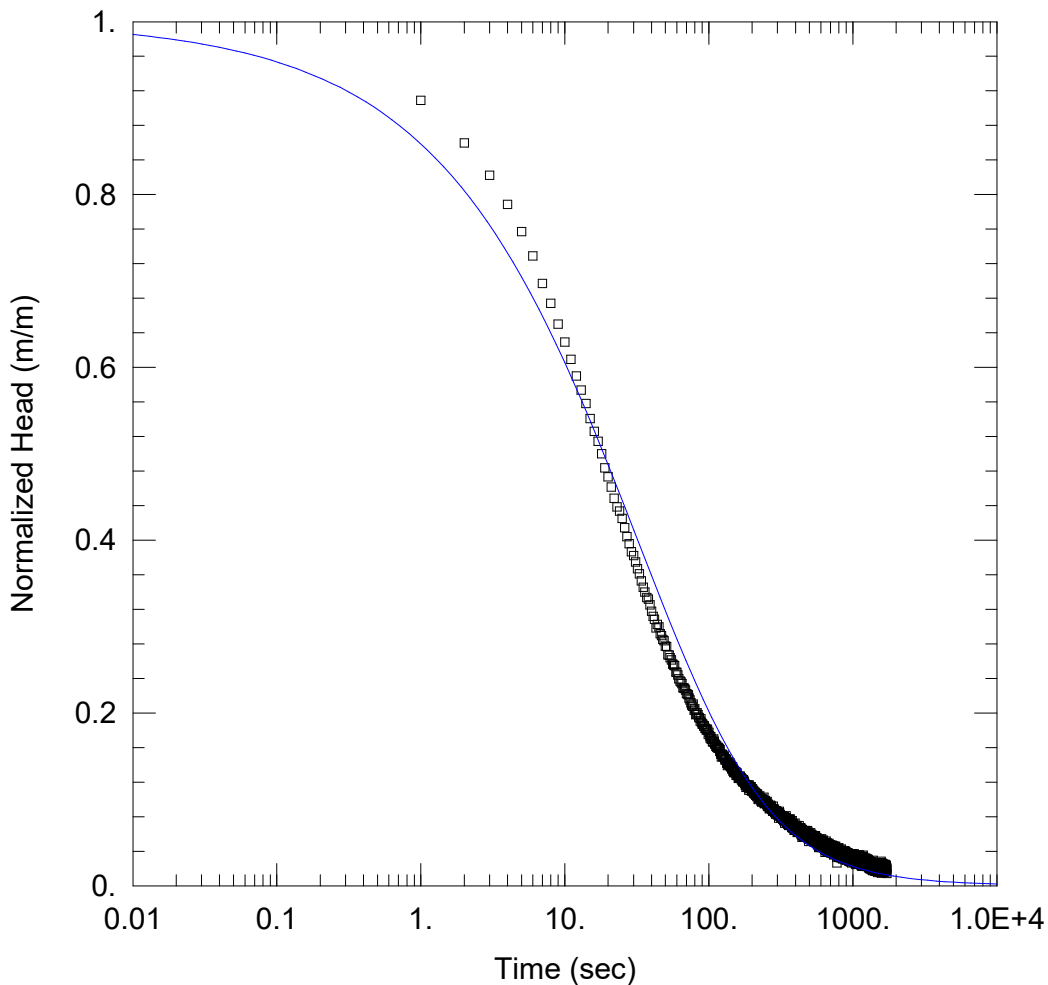
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.3936 m/day

y0 = -0.3682 m



WELL TEST ANALYSIS

Data Set: LFBH14 RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:29:44

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.79 m

WELL DATA (LFBH14 RHT1)

Initial Displacement: -0.976 m

Total Well Penetration Depth: 6.73 m

Casing Radius: 0.025 m

Static Water Column Height: 6.79 m

Screen Length: 2.5 m

Well Radius: 0.064 m

SOLUTION

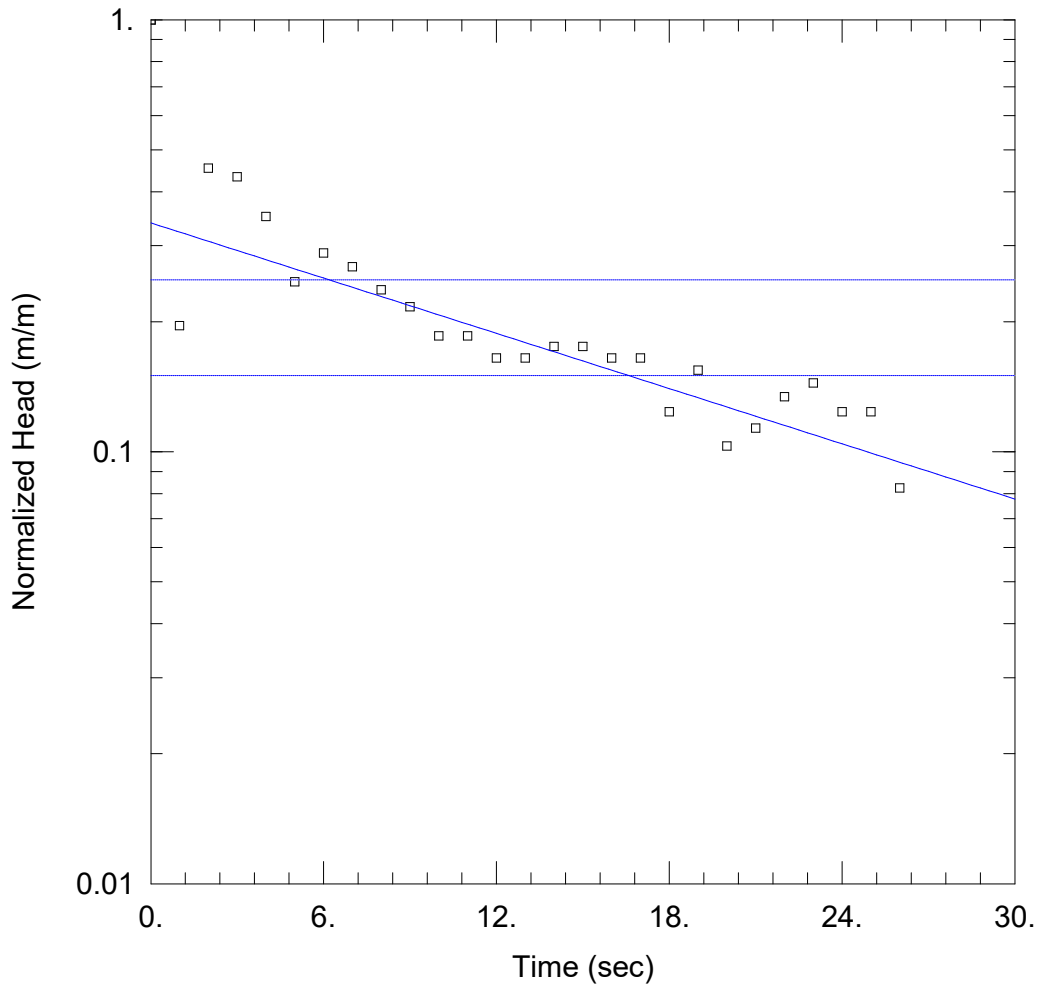
Aquifer Model: Unconfined

Kr = 0.2481 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: LW01 FHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:29:50

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.42 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW01 FHT2)

Initial Displacement: 0.097 m

Static Water Column Height: 8.42 m

Total Well Penetration Depth: 8.97 m

Screen Length: 3 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

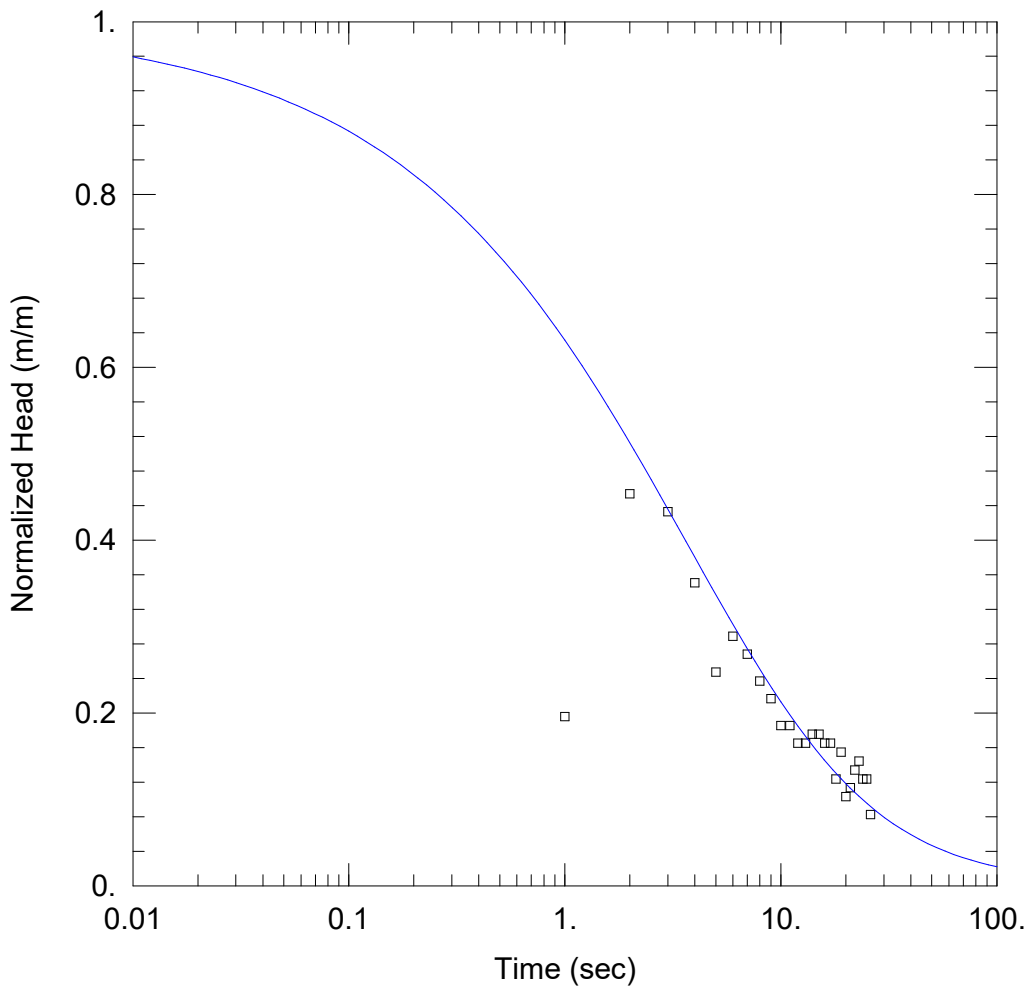
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 2.514 m/day

y0 = 0.03286 m



WELL TEST ANALYSIS

Data Set: LW01 FHT2 - KGS.aqt

Date: 08/26/22

Time: 15:29:52

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.42 m

WELL DATA (LW01 FHT2)

Initial Displacement: 0.097 m

Total Well Penetration Depth: 8.97 m

Casing Radius: 0.025 m

Static Water Column Height: 8.42 m

Screen Length: 3 m

Well Radius: 0.064 m

SOLUTION

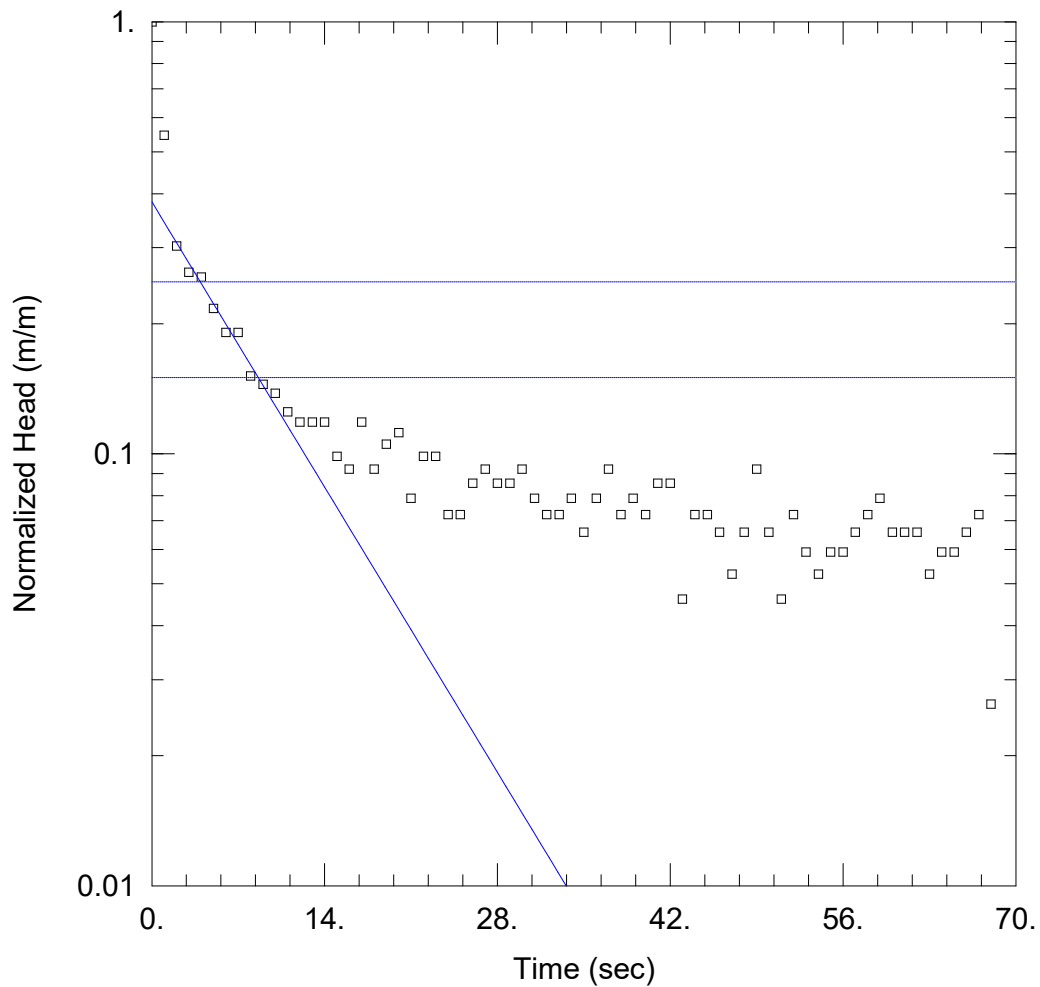
Aquifer Model: Unconfined

Kr = 2.962 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: LW01 RHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:29:55

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.42 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW01 RHT2)

Initial Displacement: -0.152 m

Static Water Column Height: 8.42 m

Total Well Penetration Depth: 8.97 m

Screen Length: 3 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

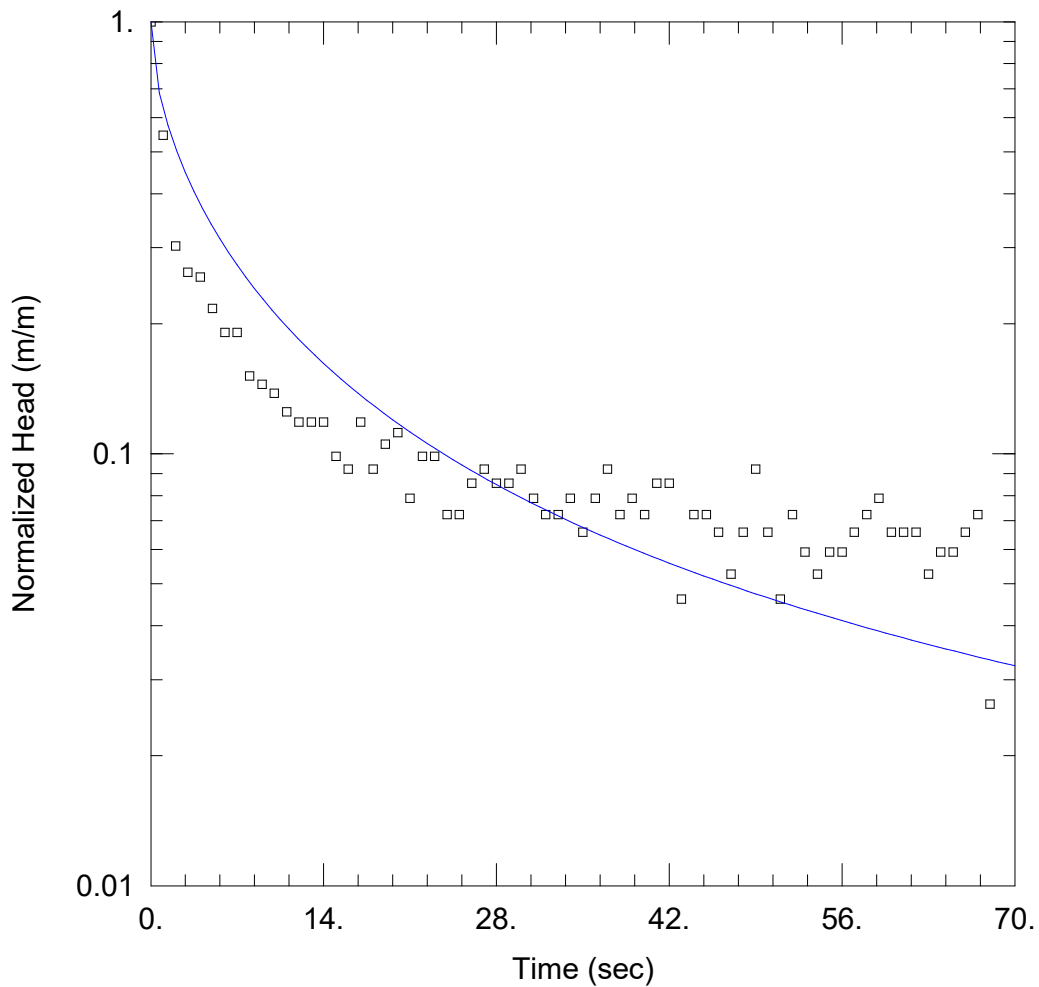
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 5.564 m/day

y0 = -0.05825 m



WELL TEST ANALYSIS

Data Set: LW01 RHT2 - KGS.aqt

Date: 08/26/22

Time: 15:29:58

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.42 m

WELL DATA (LW01 RHT2)

Initial Displacement: -0.152 m

Total Well Penetration Depth: 8.97 m

Casing Radius: 0.025 m

Static Water Column Height: 8.42 m

Screen Length: 3 m

Well Radius: 0.064 m

SOLUTION

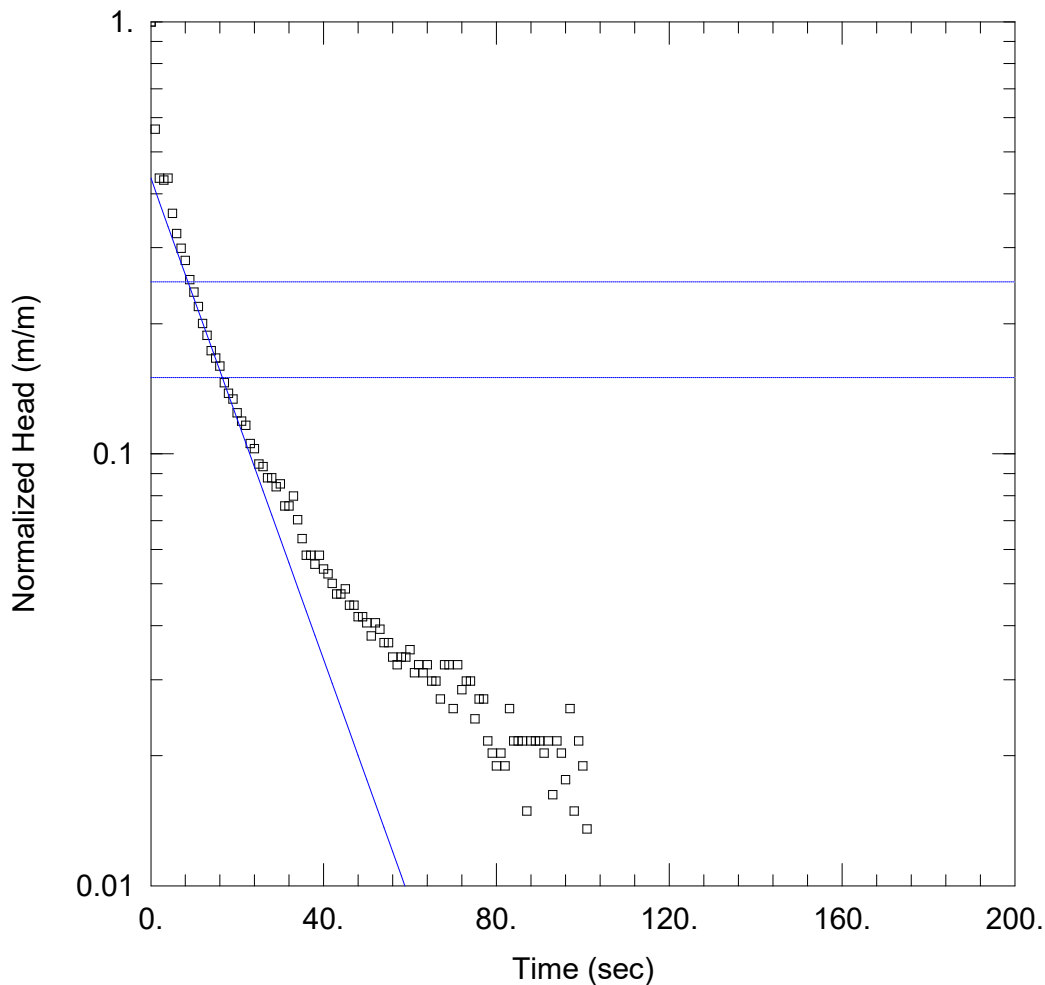
Aquifer Model: Unconfined

Kr = 2.974 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: LW02D FHT1 - Hvorslev.agt

Date: 08/26/22

Time: 15:30:41

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LW02S

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 10. m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW02D FHT1)

Initial Displacement: 0.739 m

Static Water Column Height: 9.18 m

Total Well Penetration Depth: 8.9 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

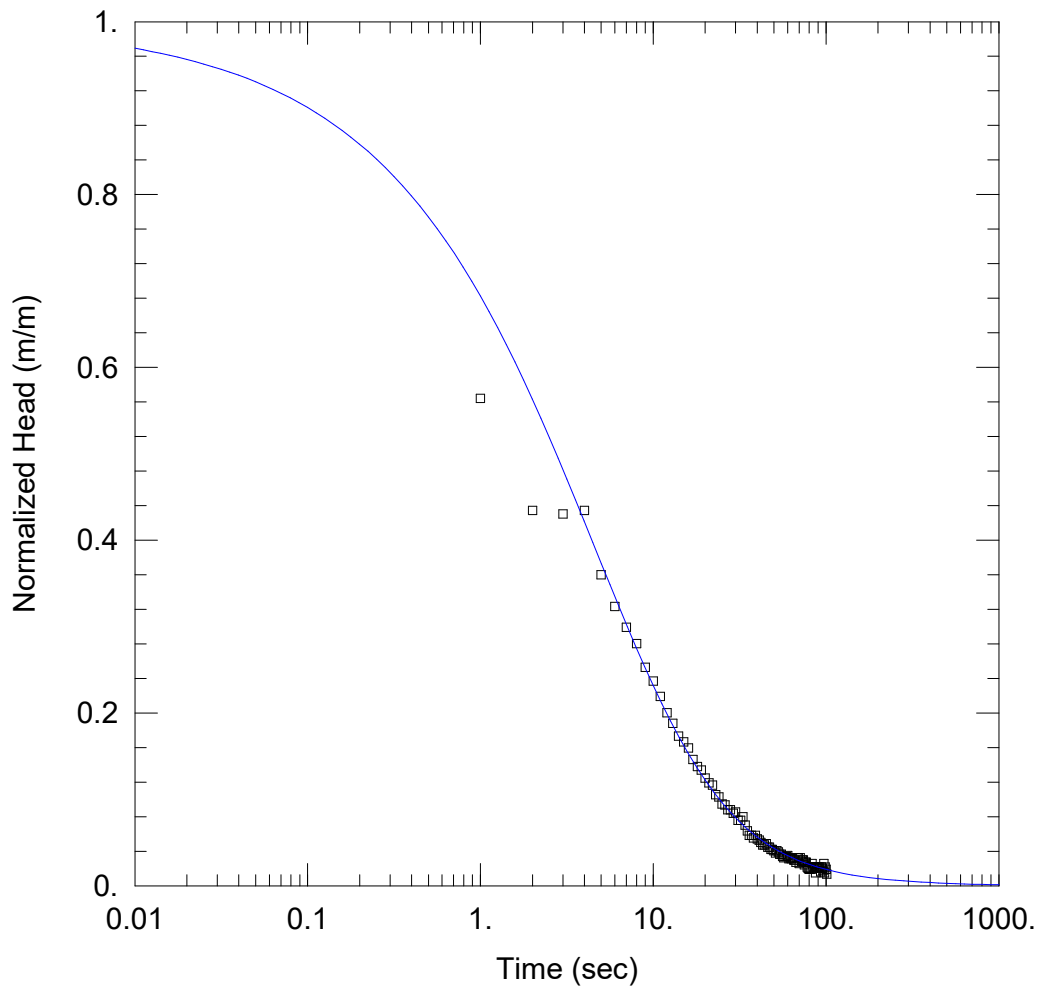
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.975 m/day

y0 = 0.3209 m



WELL TEST ANALYSIS

Data Set: LW02D FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:30:44

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: LW02S
 Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 10. m

WELL DATA (LW02D FHT1)

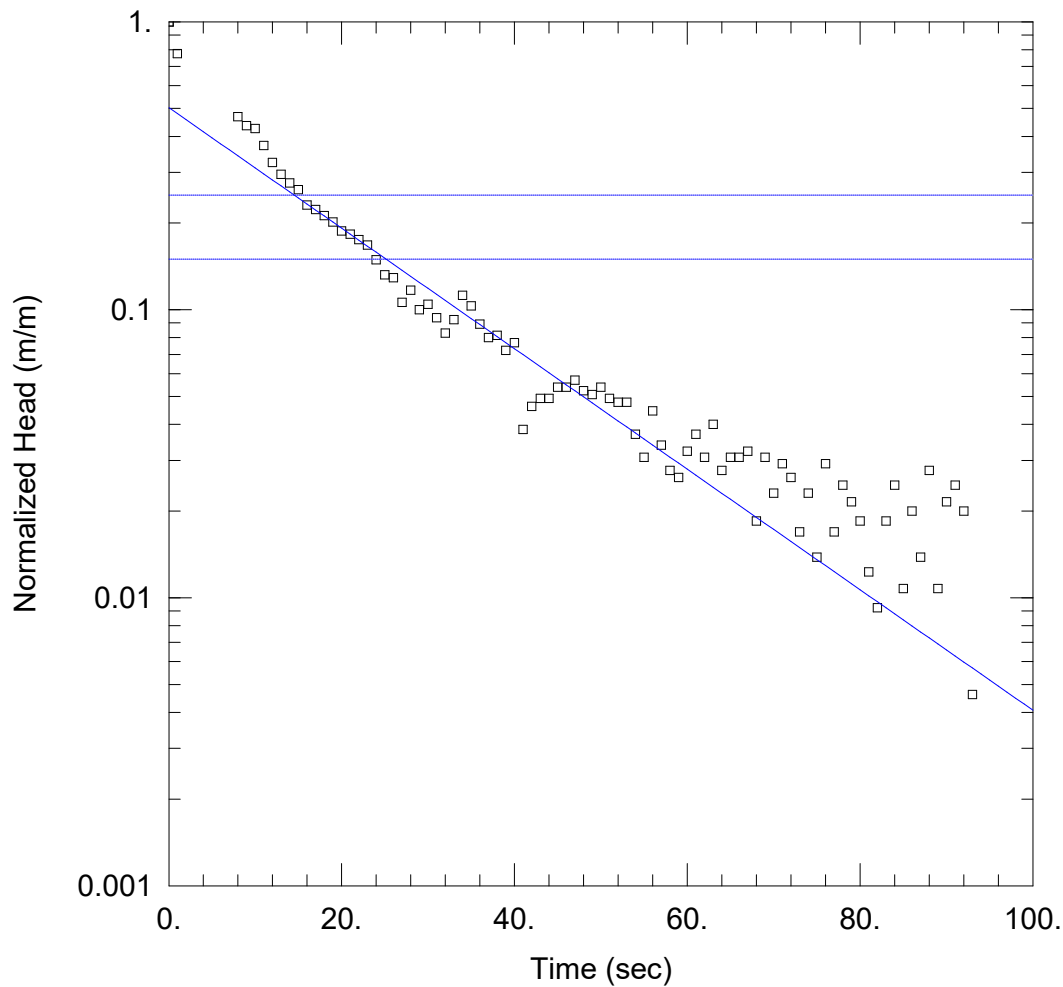
Initial Displacement: 0.739 m
 Total Well Penetration Depth: 8.9 m
 Casing Radius: 0.025 m

Static Water Column Height: 9.18 m
 Screen Length: 2. m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 3.669 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.00955 m⁻¹



WELL TEST ANALYSIS

Data Set: LW02D FHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:30:48

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LW02S

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 10. m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW02D FHT2)

Initial Displacement: 0.65 m

Static Water Column Height: 9.18 m

Total Well Penetration Depth: 8.9 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

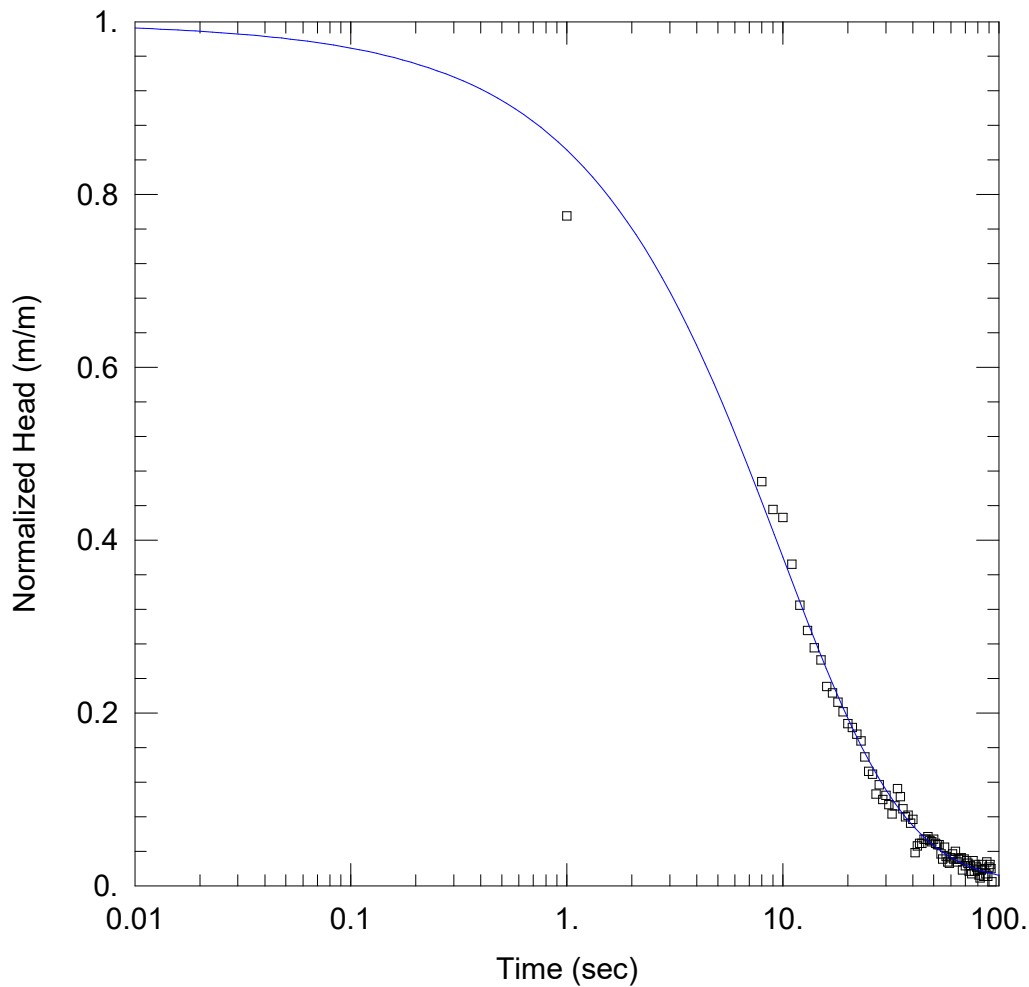
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 2.988 m/day

y0 = 0.3273 m



WELL TEST ANALYSIS

Data Set: LW02D FHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:30:50

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: LW02S
 Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 10. m

WELL DATA (LW02D FHT2)

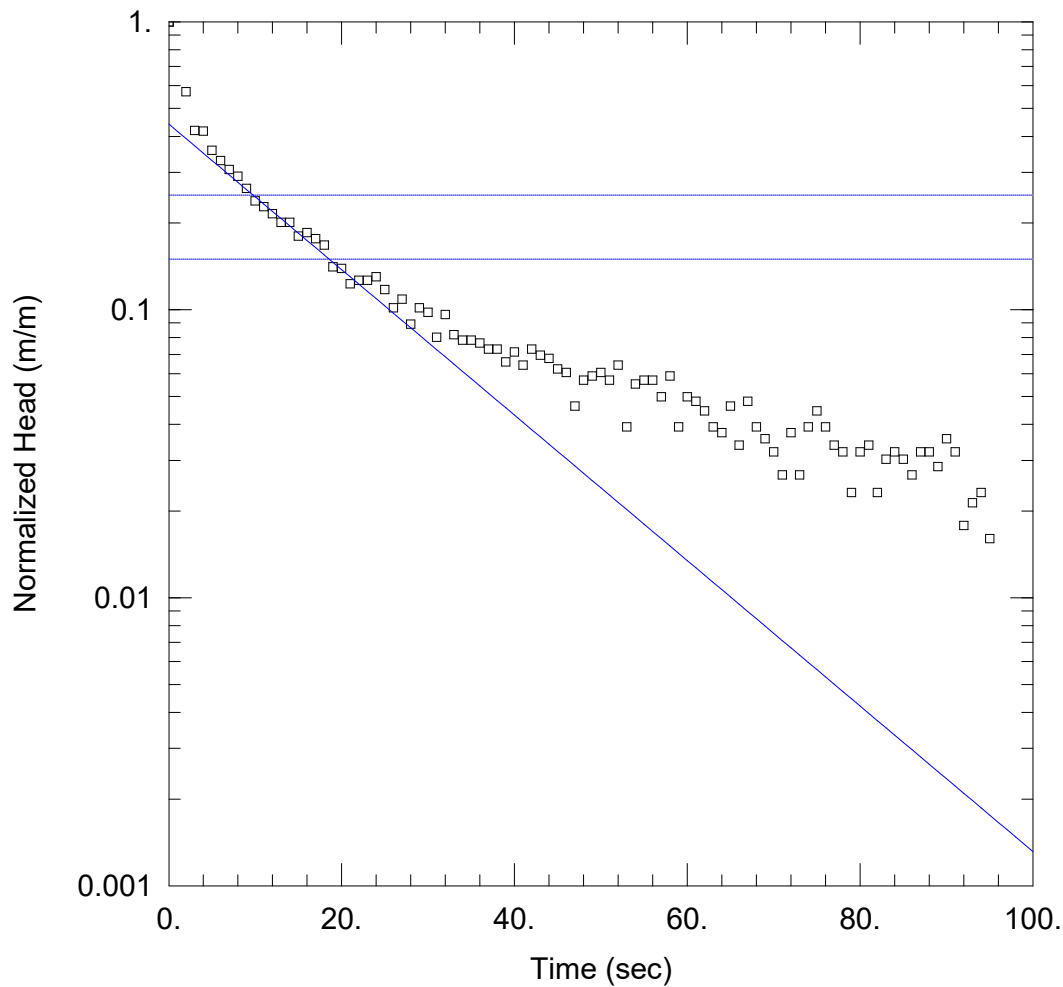
Initial Displacement: 0.65 m
 Total Well Penetration Depth: 8.9 m
 Casing Radius: 0.025 m

Static Water Column Height: 9.18 m
 Screen Length: 2. m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 3.941 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.0003468 m⁻¹



WELL TEST ANALYSIS

Data Set: LW02D FHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:30:53

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 10. m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW02D FHT3)

Initial Displacement: 0.561 m

Static Water Column Height: 9.18 m

Total Well Penetration Depth: 8.9 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

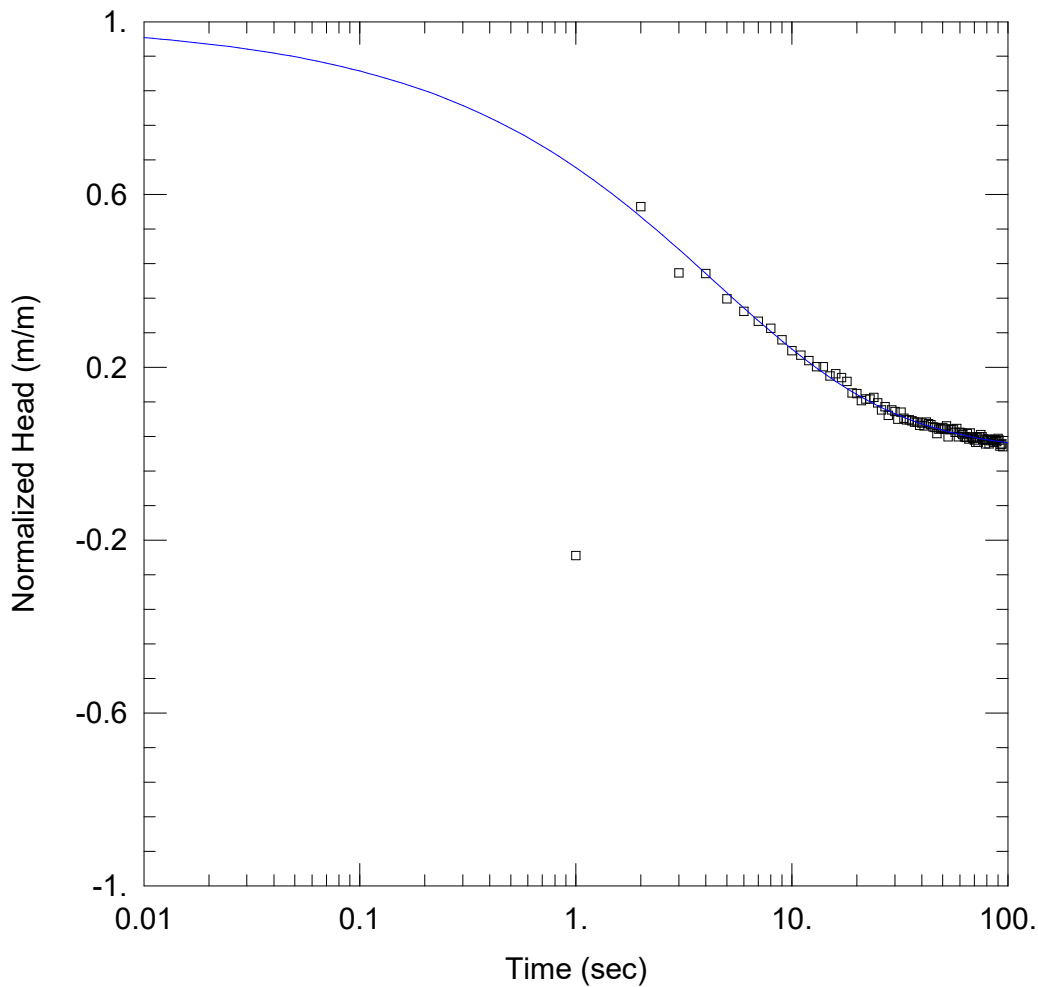
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.607 m/day

y0 = 0.2476 m



WELL TEST ANALYSIS

Data Set: LW02D FHT3 - KGS.aqt
 Date: 08/26/22

Time: 15:30:56

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10. m

WELL DATA (LW02D FHT3)

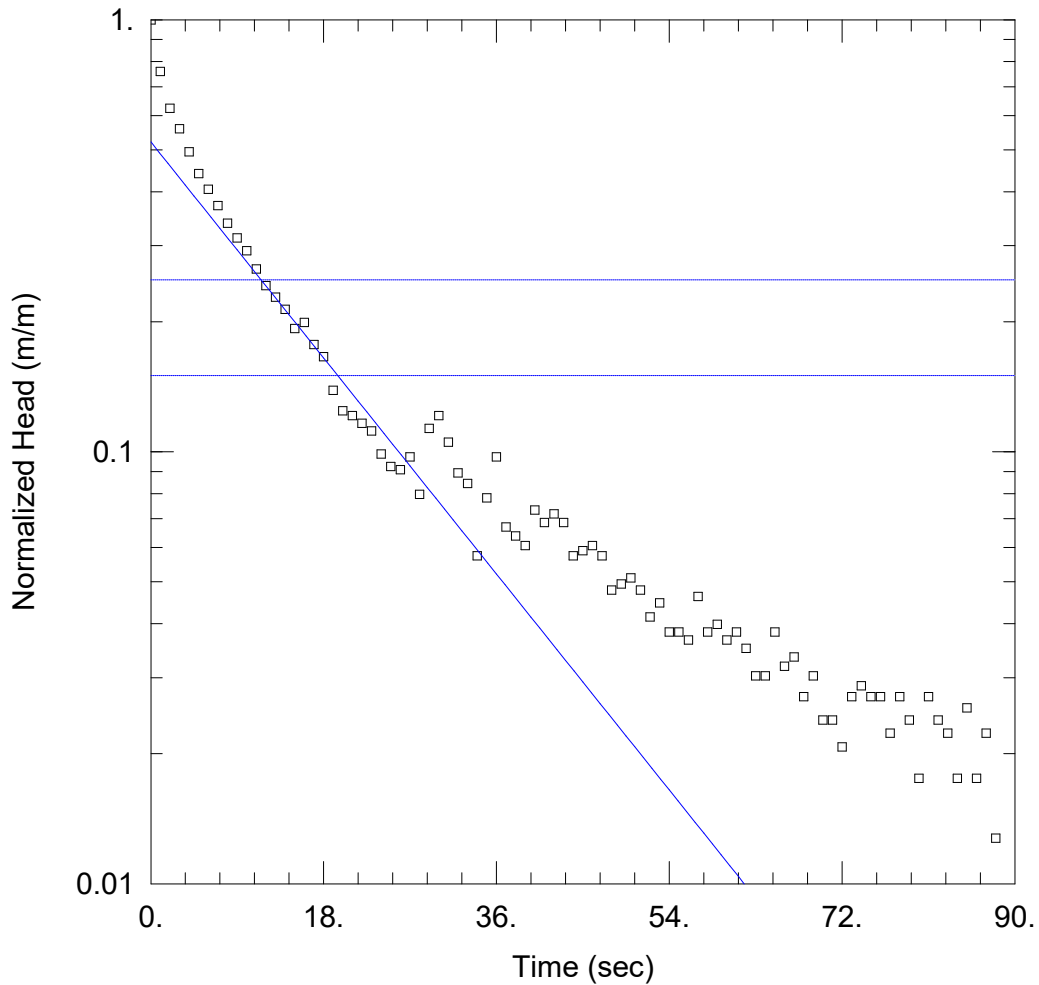
Initial Displacement: 0.561 m
 Total Well Penetration Depth: 8.9 m
 Casing Radius: 0.025 m

Static Water Column Height: 9.18 m
 Screen Length: 2. m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 2.796 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: LW02D RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:35:03

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LW02S

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 10. m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW02D RHT1)

Initial Displacement: -0.627 m

Static Water Column Height: 9.18 m

Total Well Penetration Depth: 8.9 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

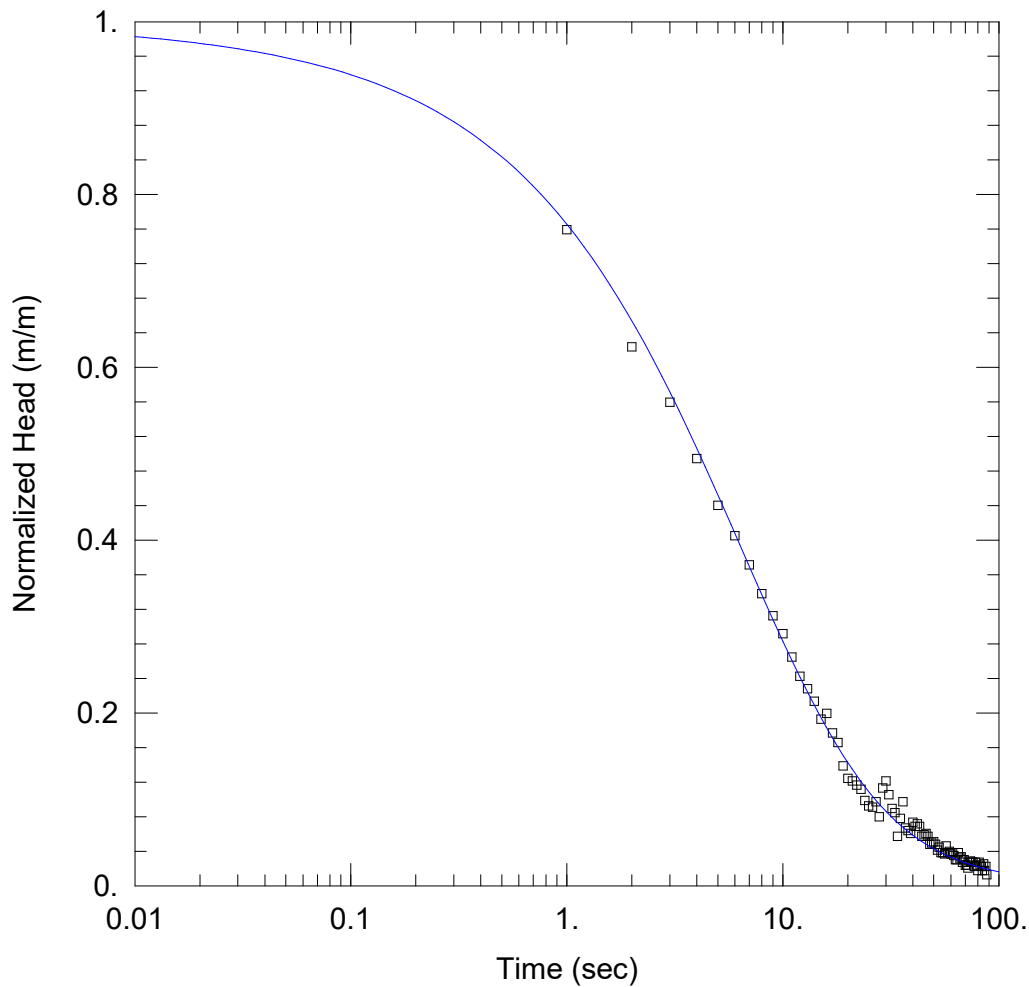
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.967 m/day

y0 = -0.3271 m



WELL TEST ANALYSIS

Data Set: LW02D RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:35:07

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LW02S

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 10. m

WELL DATA (LW02D RHT1)

Initial Displacement: -0.627 m

Total Well Penetration Depth: 8.9 m

Casing Radius: 0.025 m

Static Water Column Height: 9.18 m

Screen Length: 2. m

Well Radius: 0.064 m

SOLUTION

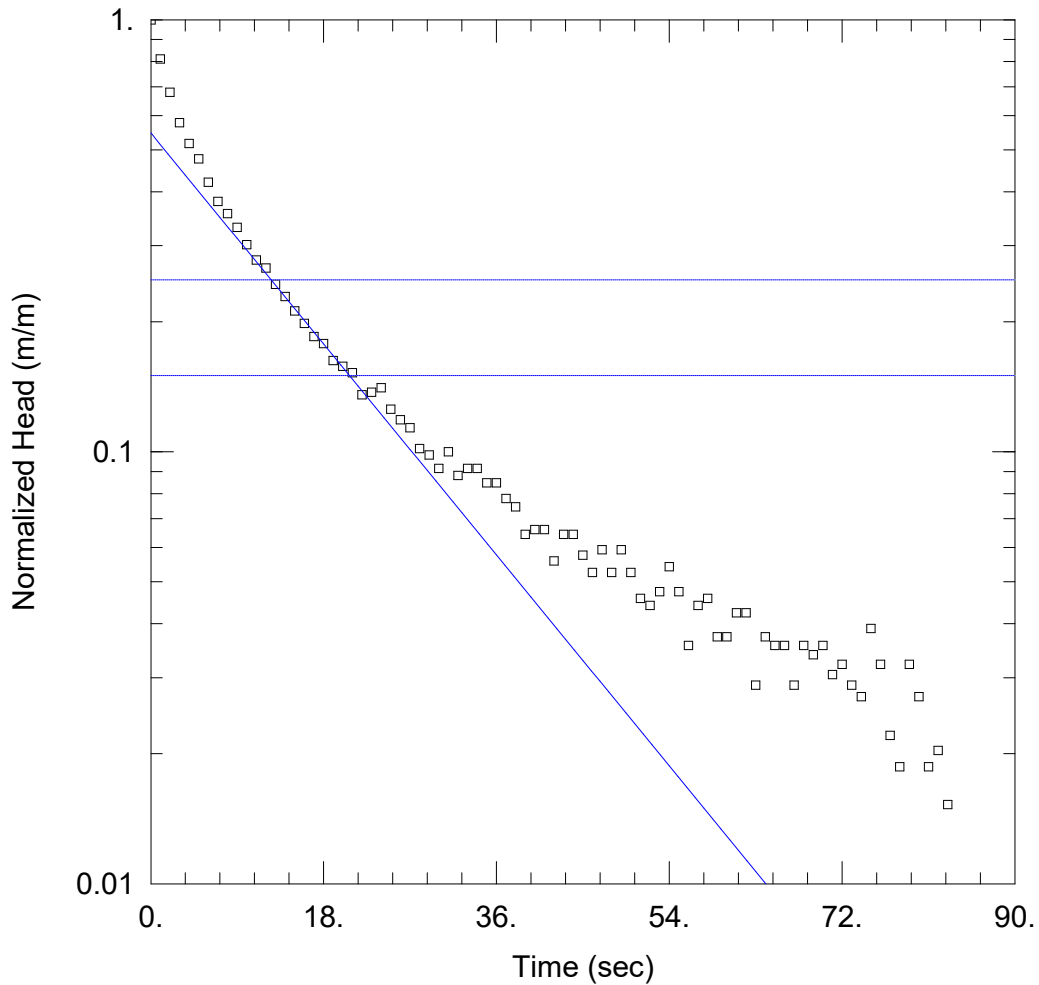
Aquifer Model: Unconfined

Kr = 4.013 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.002483 m⁻¹



WELL TEST ANALYSIS

Data Set: LW02D RHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:35:09

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 10. m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW02D RHT2)

Initial Displacement: -0.59 m

Static Water Column Height: 9.18 m

Total Well Penetration Depth: 8.9 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

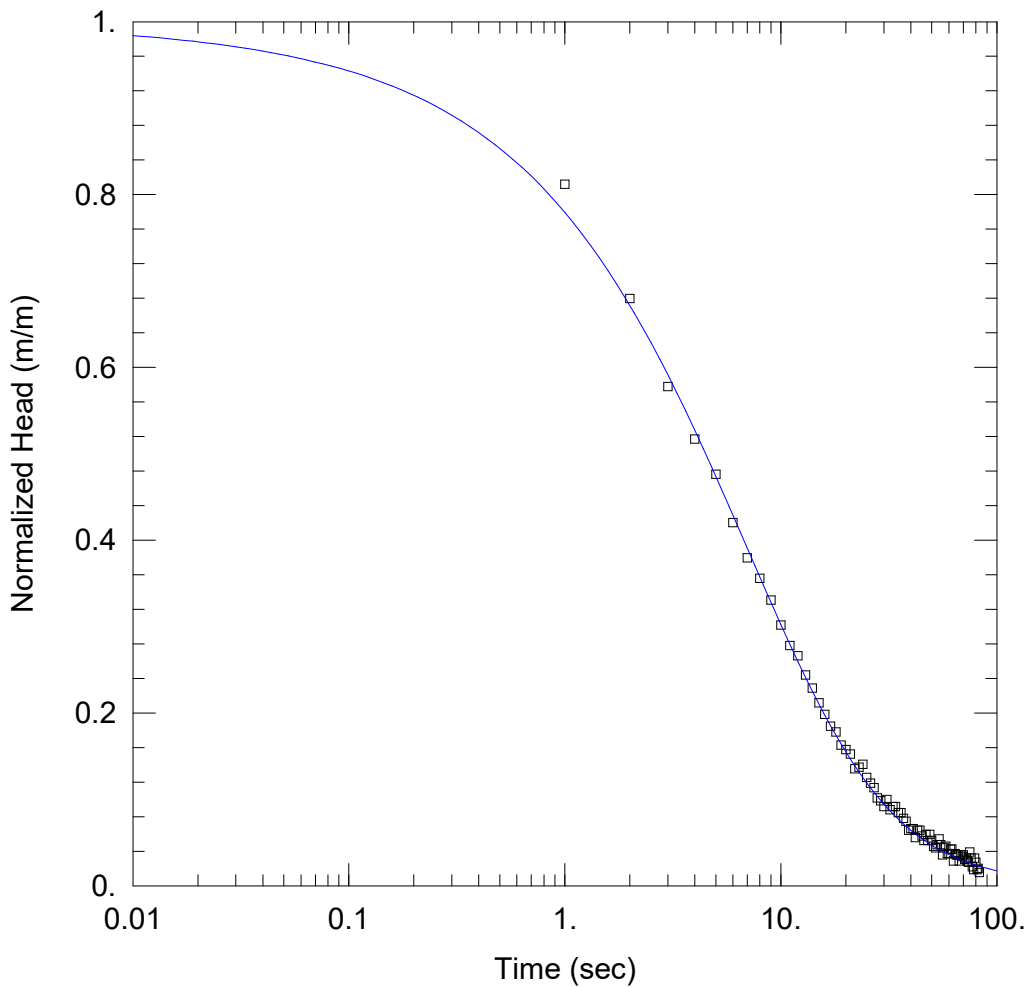
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.874 m/day

y0 = -0.3228 m



WELL TEST ANALYSIS

Data Set: LW02D RHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:35:12

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 10. m

WELL DATA (LW02D RHT2)

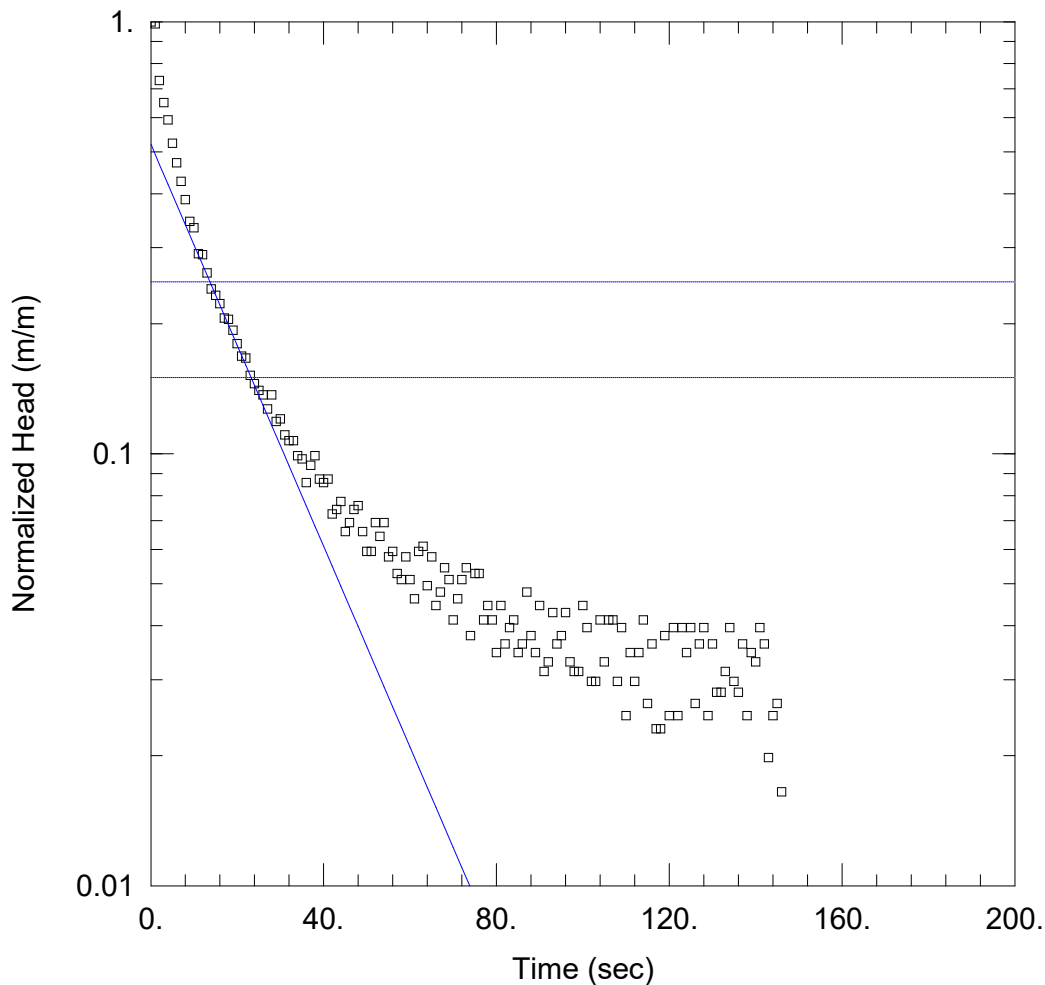
Initial Displacement: -0.59 m
 Total Well Penetration Depth: 8.9 m
 Casing Radius: 0.025 m

Static Water Column Height: 9.18 m
 Screen Length: 2. m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 3.786 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.002239 m⁻¹



WELL TEST ANALYSIS

Data Set: LW02D RHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:35:14

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 10. m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW02D RHT3)

Initial Displacement: -0.606 m

Static Water Column Height: 9.18 m

Total Well Penetration Depth: 8.9 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

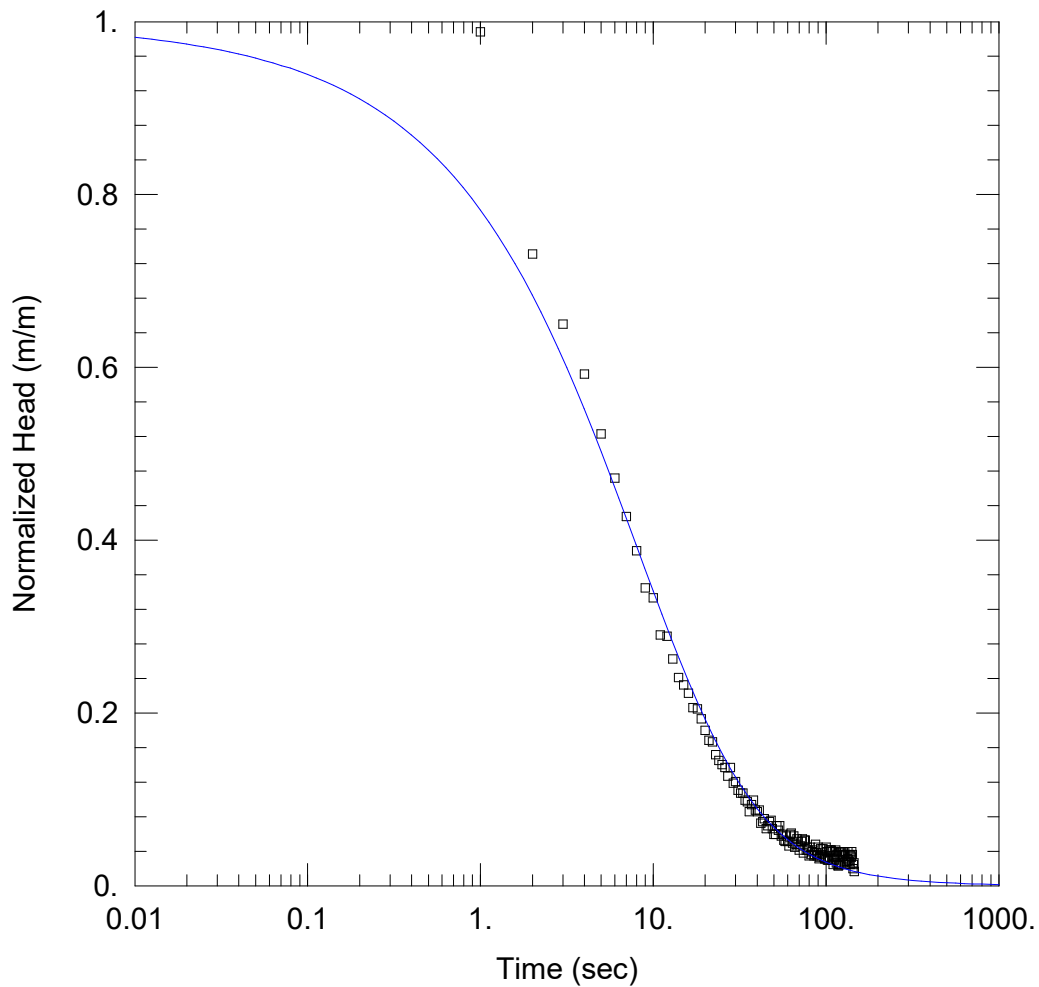
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.321 m/day

y0 = -0.3157 m



WELL TEST ANALYSIS

Data Set: LW02D RHT3 - KGS.aqt

Date: 08/26/22

Time: 15:35:17

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 10. m

WELL DATA (LW02D RHT3)

Initial Displacement: -0.606 m

Total Well Penetration Depth: 8.9 m

Casing Radius: 0.025 m

Static Water Column Height: 9.18 m

Screen Length: 2. m

Well Radius: 0.064 m

SOLUTION

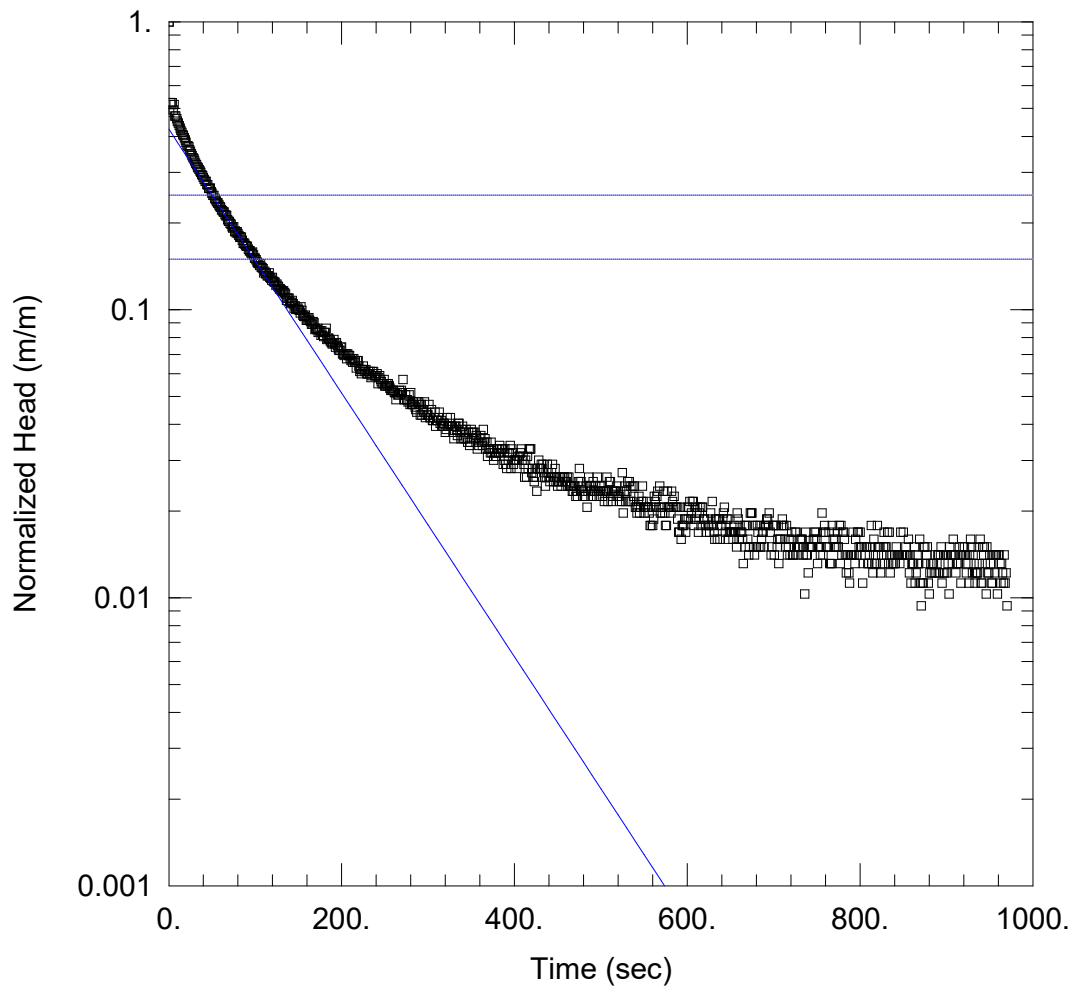
Aquifer Model: Unconfined

Kr = 2.763 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.004169 m⁻¹



WELL TEST ANALYSIS

Data Set: LW02S FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:36:10

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LW02S

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 5.37 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW02S FHT1)

Initial Displacement: 1.066 m

Static Water Column Height: 5.07 m

Total Well Penetration Depth: 4.57 m

Screen Length: 1.2 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

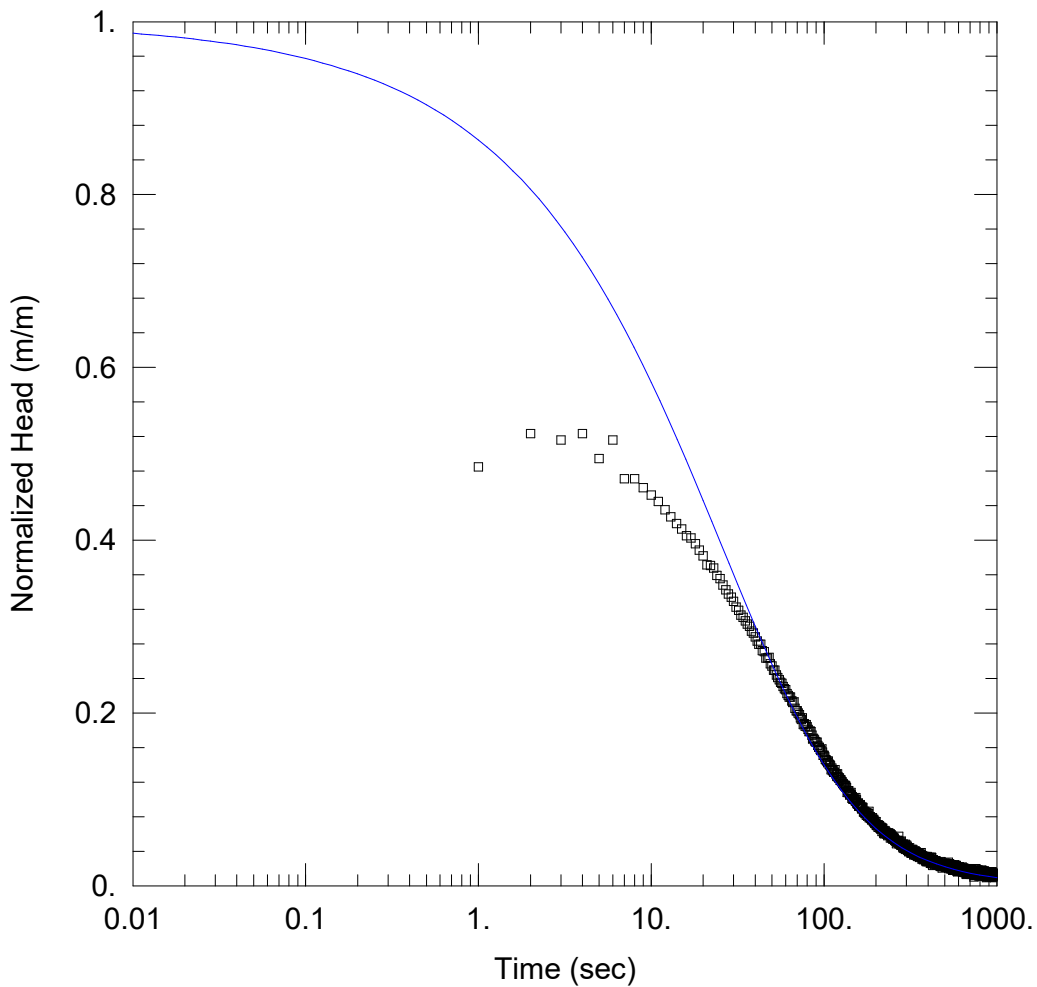
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.9687 m/day

y0 = 0.452 m



WELL TEST ANALYSIS

Data Set: LW02S FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:36:13

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LW02S

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 5.37 m

WELL DATA (LW02S FHT1)

Initial Displacement: 1.066 m

Total Well Penetration Depth: 4.57 m

Casing Radius: 0.025 m

Static Water Column Height: 5.07 m

Screen Length: 1.2 m

Well Radius: 0.064 m

SOLUTION

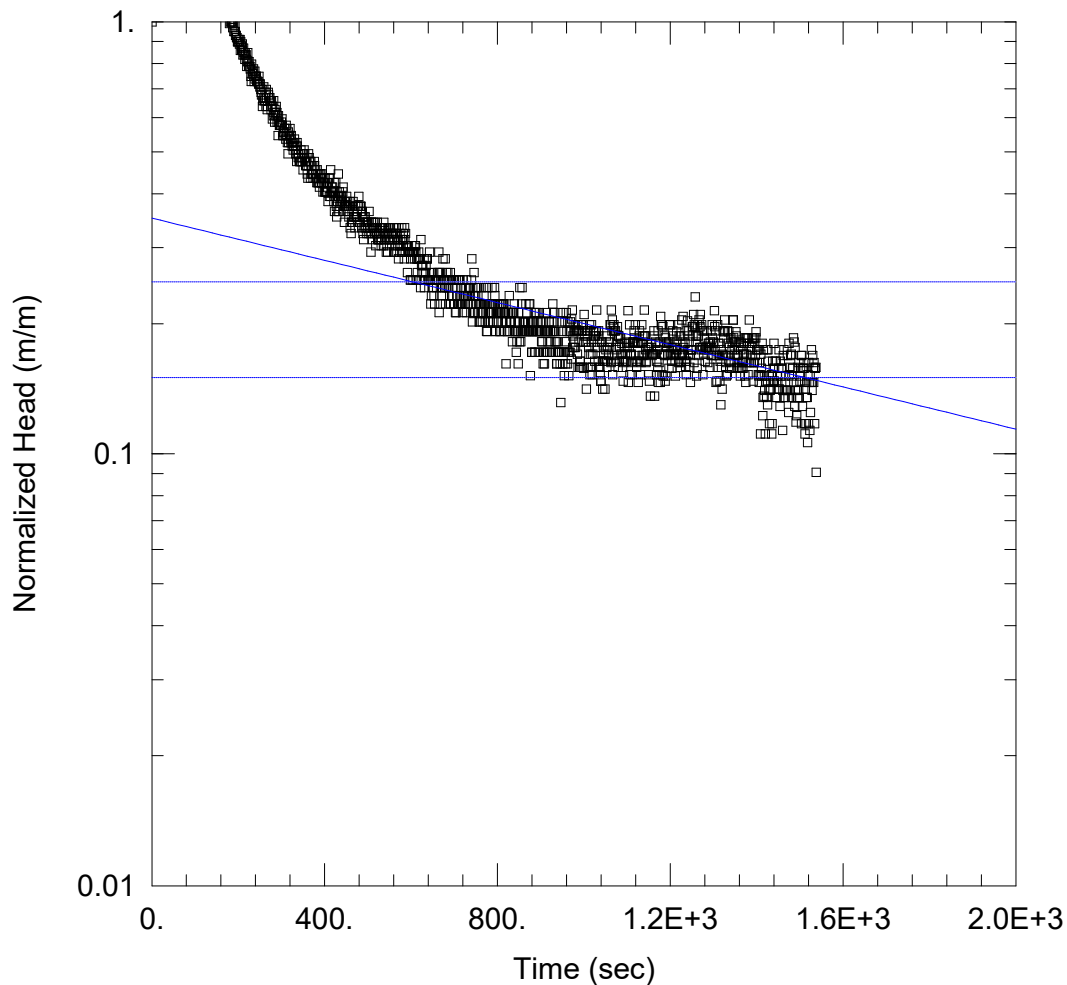
Aquifer Model: Unconfined

Kr = 1.014 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: LW02S RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:36:16

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LW02S

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 5.37 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (LW02S RHT1)

Initial Displacement: -0.099 m

Static Water Column Height: 5.07 m

Total Well Penetration Depth: 4.57 m

Screen Length: 1.2 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

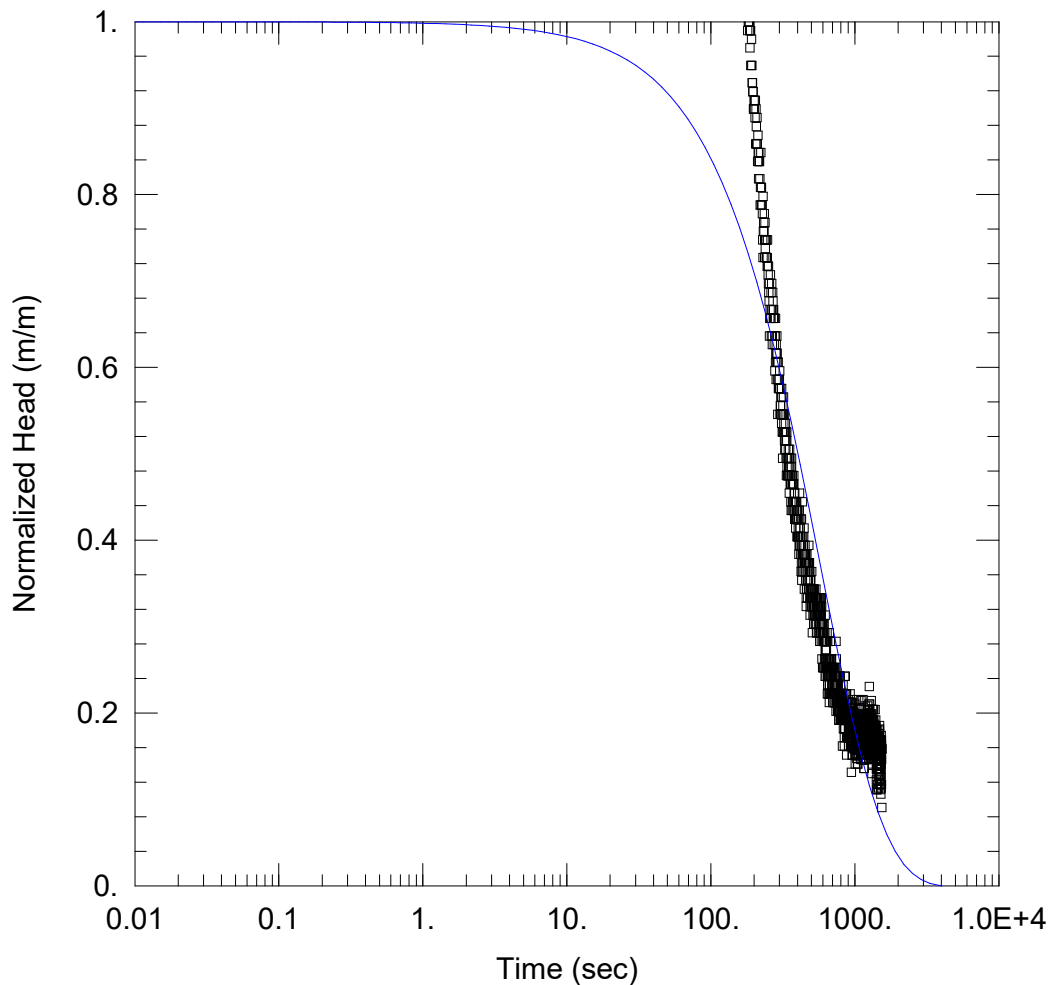
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.05167 m/day

y0 = -0.03476 m



WELL TEST ANALYSIS

Data Set: LW02S RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:36:19

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: LW02S

Test Date: 29/10/2022

AQUIFER DATA

Saturated Thickness: 5.37 m

WELL DATA (LW02S RHT1)

Initial Displacement: -0.099 m

Total Well Penetration Depth: 4.57 m

Casing Radius: 0.025 m

Static Water Column Height: 5.07 m

Screen Length: 1.2 m

Well Radius: 0.064 m

SOLUTION

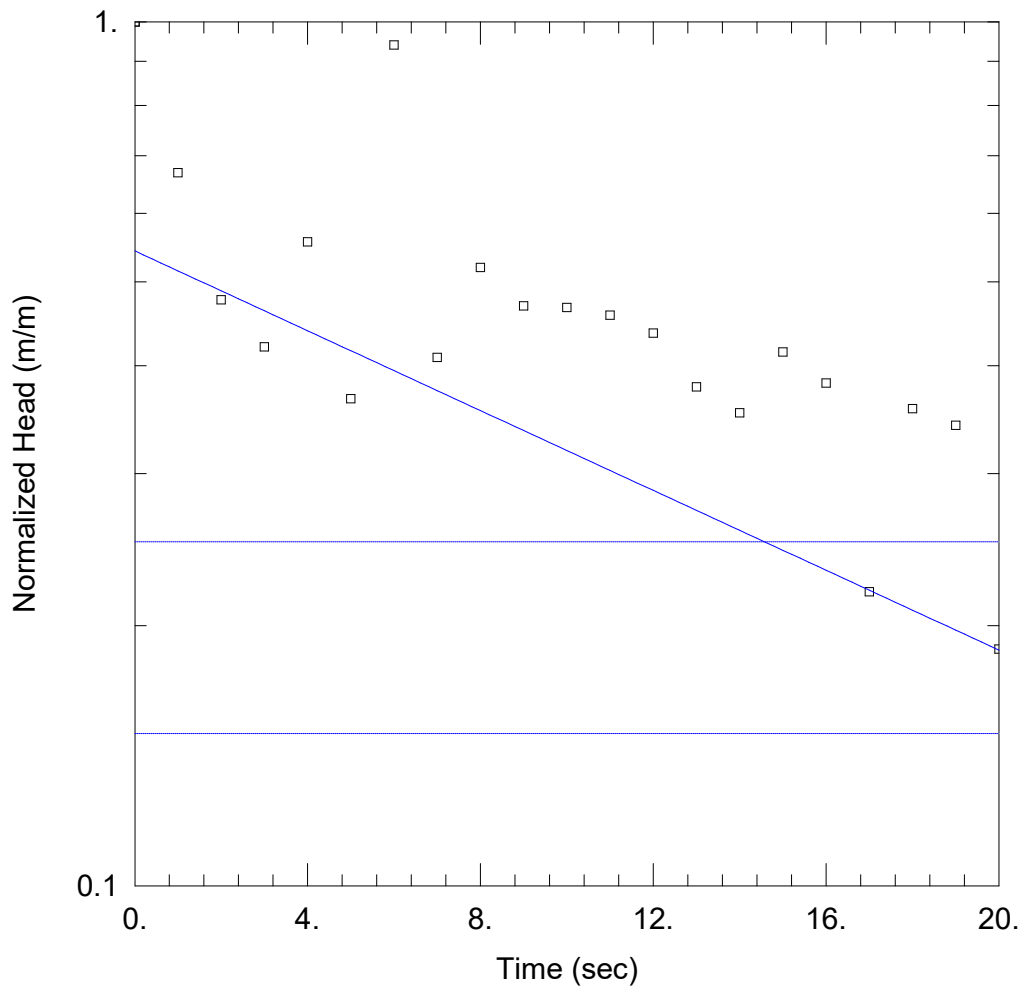
Aquifer Model: Unconfined

Kr = 0.1495 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 1.862E-11 m⁻¹



MW02B

Data Set: MW02B FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:36:22

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: MW02B

Test Date: 26/10/2022

AQUIFER DATA

Saturated Thickness: 32.8 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW02B FHT1)

Initial Displacement: 0.516 m

Static Water Column Height: 32.8 m

Total Well Penetration Depth: 37.5 m

Screen Length: 5 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

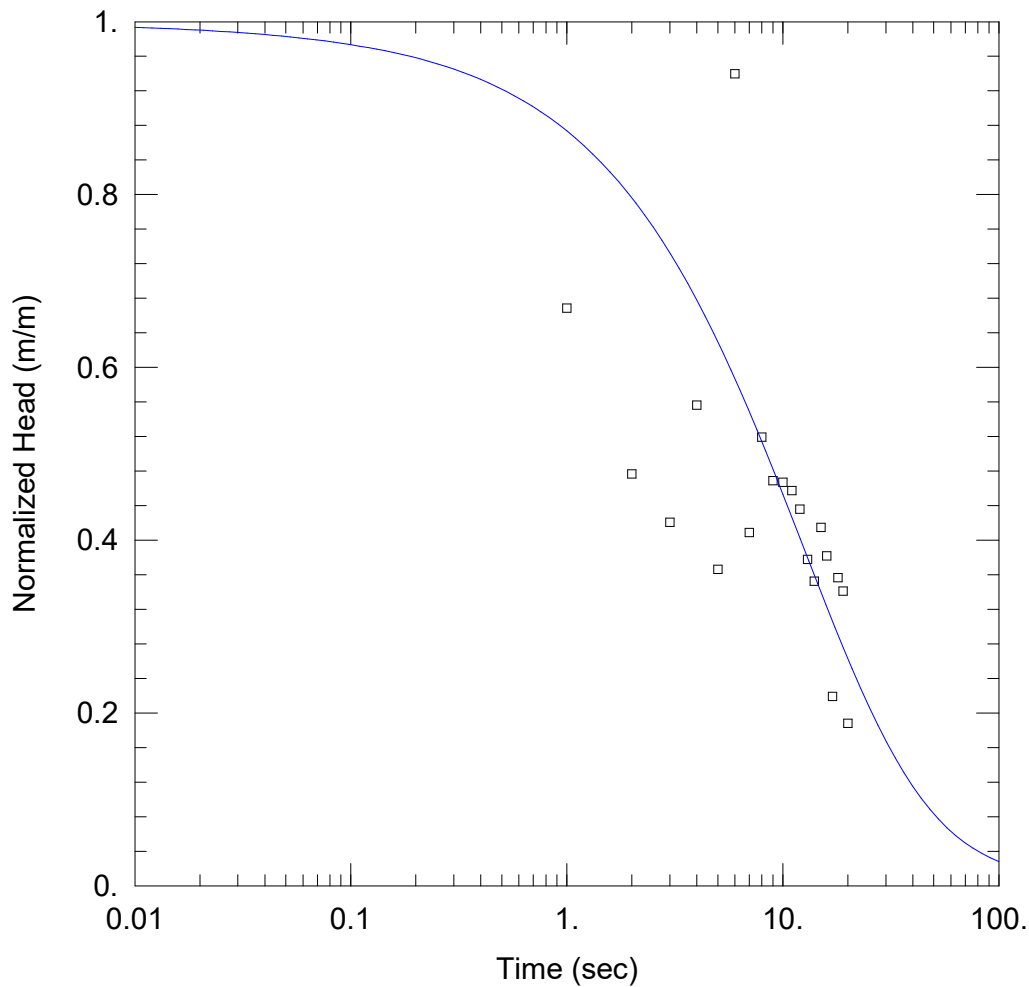
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 1.744 m/day

y0 = 0.2802 m



MW02B

Data Set: MW02B FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:36:25

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: MW02B

Test Date: 26/10/2022

AQUIFER DATA

Saturated Thickness: 32.8 m

WELL DATA (MW02B FHT1)

Initial Displacement: 0.516 m

Total Well Penetration Depth: 37.5 m

Casing Radius: 0.025 m

Static Water Column Height: 32.8 m

Screen Length: 5 m

Well Radius: 0.073 m

SOLUTION

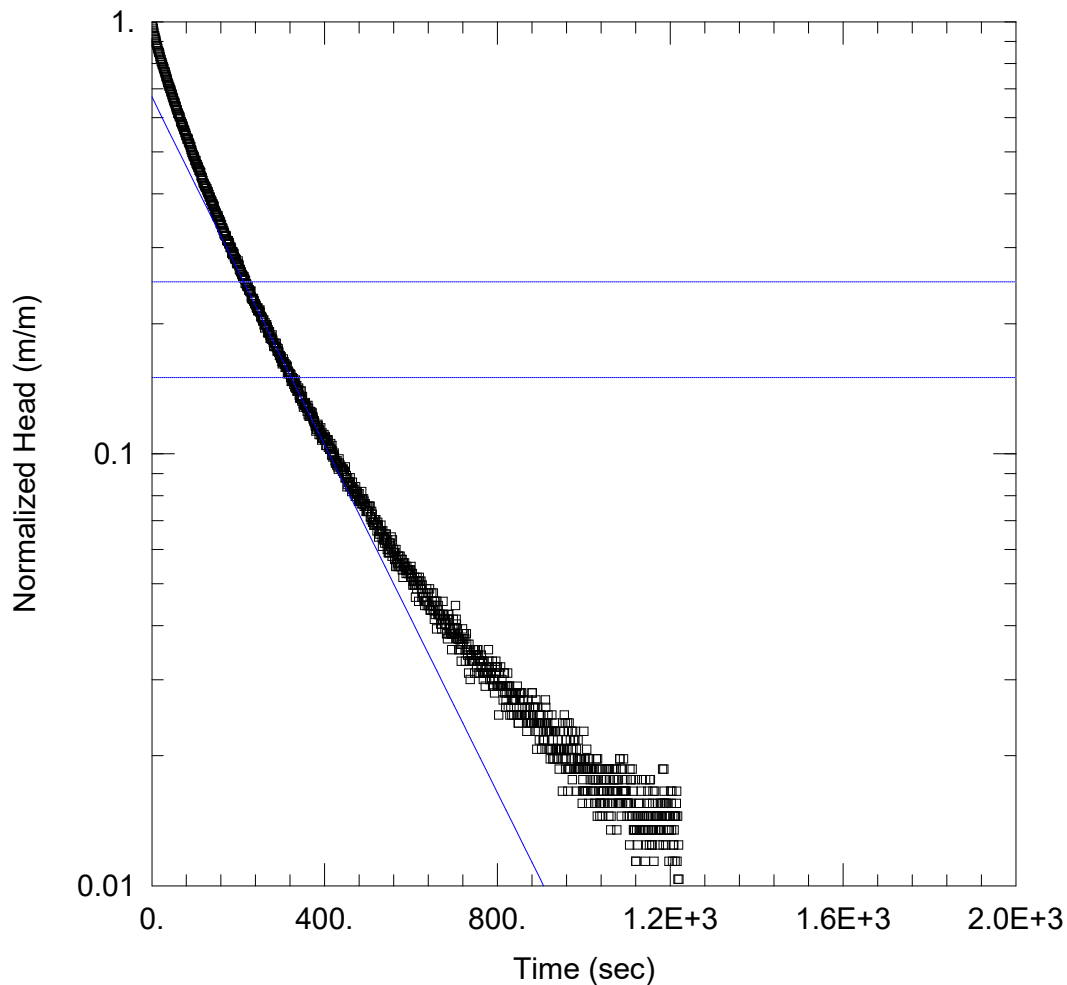
Aquifer Model: Unconfined

Kr = 1.408 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.0001228 m⁻¹



WELL TEST ANALYSIS

Data Set: MW02B RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:36:28

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: MW02B

Test Date: 27/10/2022

AQUIFER DATA

Saturated Thickness: 32.8 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW02B RHT1)

Initial Displacement: -0.966 m

Static Water Column Height: 32.8 m

Total Well Penetration Depth: 34.6 m

Screen Length: 5 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

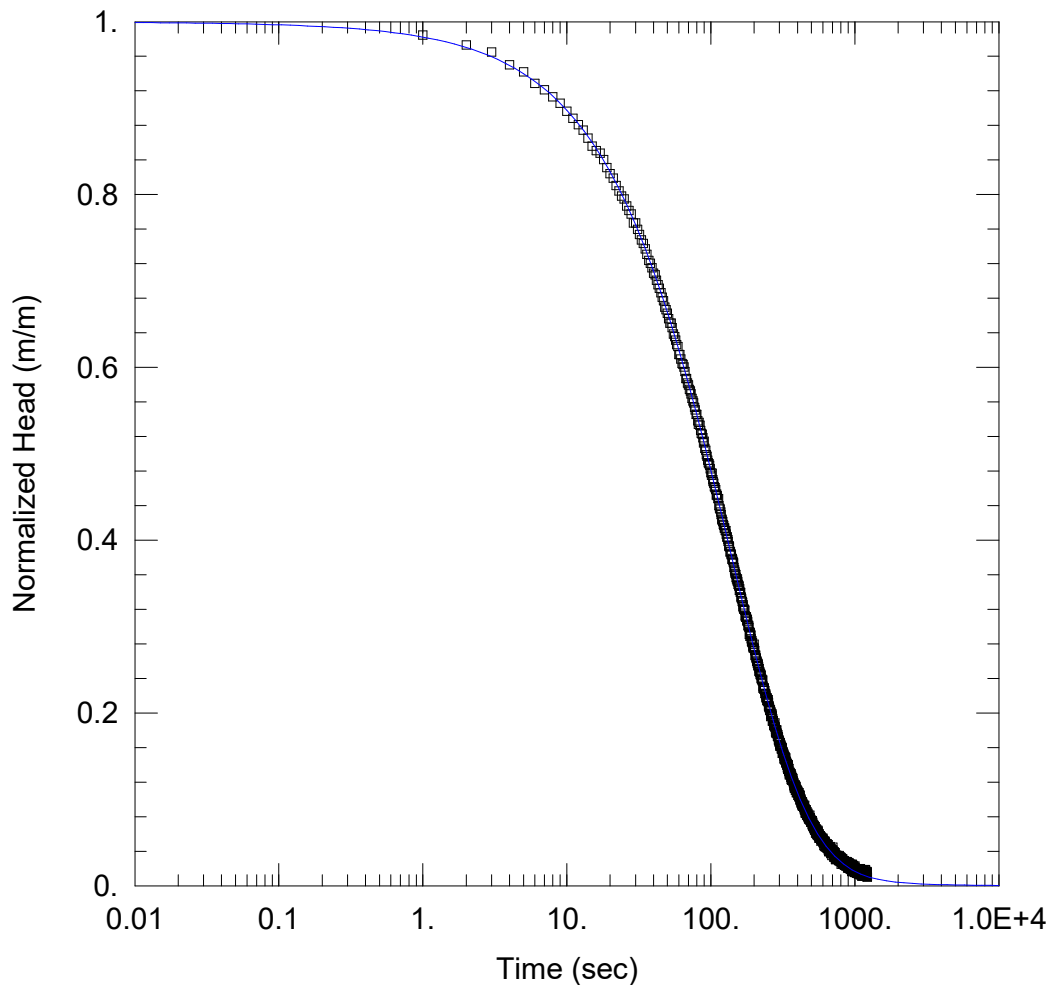
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.152 m/day

y0 = -0.6475 m



WELL TEST ANALYSIS

Data Set: MW02B RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:36:31

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: MW02B
 Test Date: 27/10/2022

AQUIFER DATA

Saturated Thickness: 32.8 m

WELL DATA (MW02B RHT1)

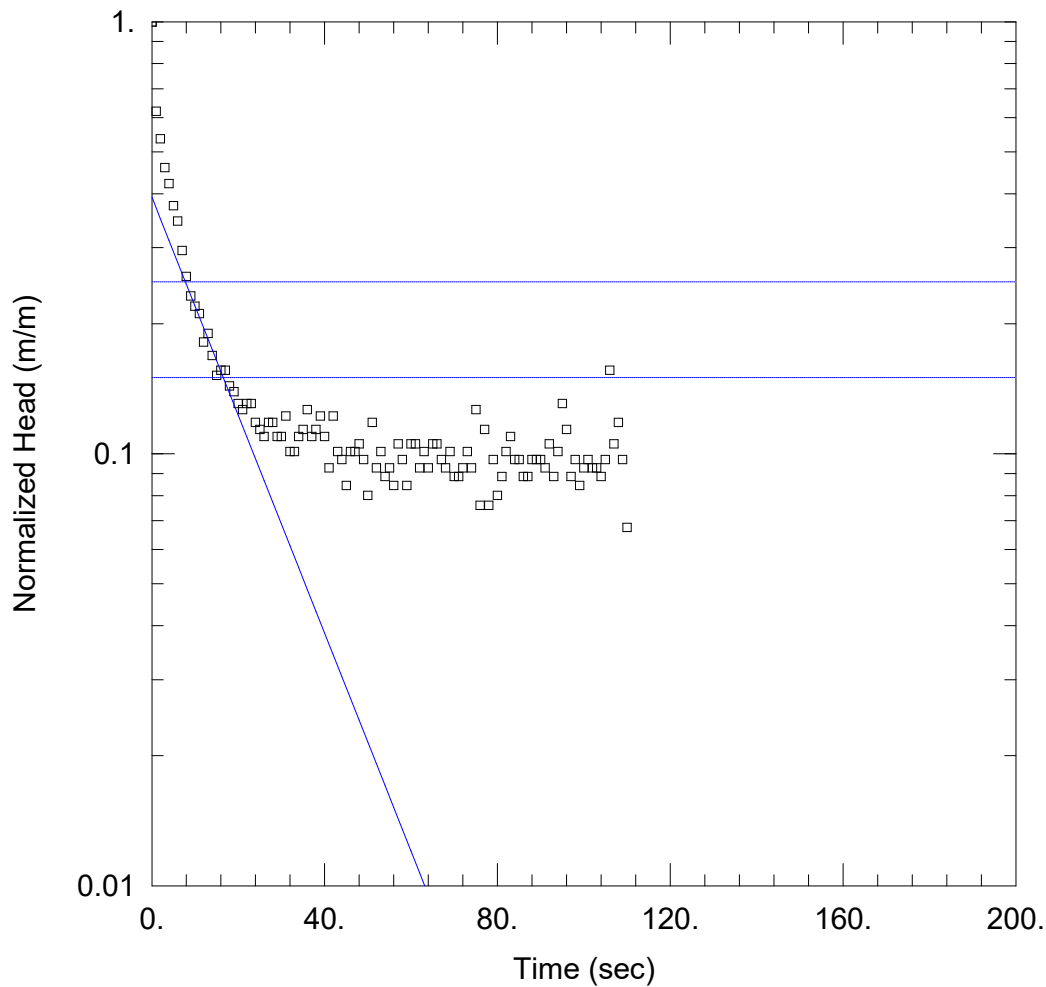
Initial Displacement: -0.966 m
 Total Well Penetration Depth: 34.6 m
 Casing Radius: 0.025 m

Static Water Column Height: 32.8 m
 Screen Length: 5 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 0.2608 \text{ m/day}$
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 3.049E-5 \text{ m}^{-1}$



WELL TEST ANALYSIS

Data Set: MW02Q FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:37:26

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW02Q FHT1)

Initial Displacement: 0.237 m

Static Water Column Height: 1.58 m

Total Well Penetration Depth: 1.45 m

Screen Length: 1 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

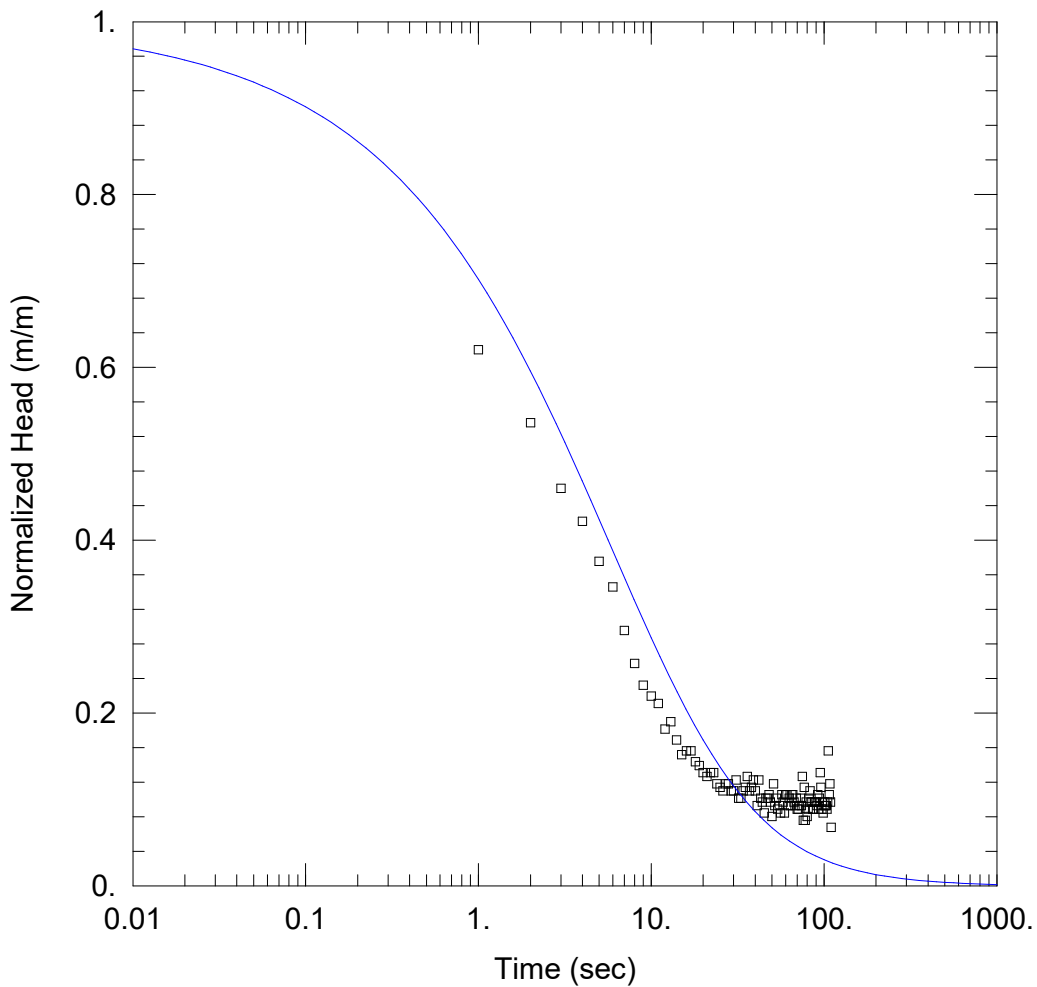
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 5.602 m/day

y0 = 0.09316 m



WELL TEST ANALYSIS

Data Set: MW02Q FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:37:29

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

WELL DATA (MW02Q FHT1)

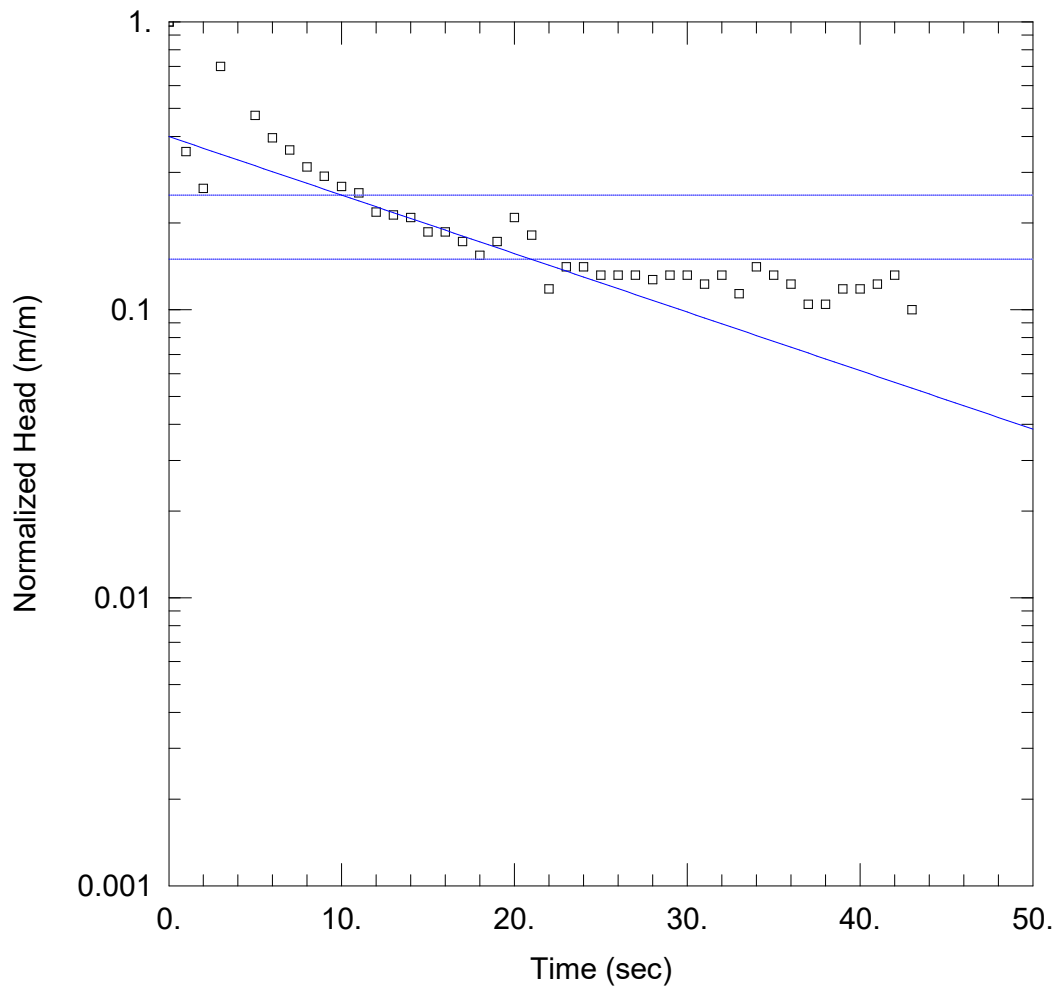
Initial Displacement: 0.237 m
 Total Well Penetration Depth: 1.45 m
 Casing Radius: 0.025 m

Static Water Column Height: 1.58 m
 Screen Length: 1. m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 4.317 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: MW02Q FHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:37:31

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW02Q FHT2)

Initial Displacement: 0.22 m

Static Water Column Height: 1.58 m

Total Well Penetration Depth: 1.45 m

Screen Length: 1 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

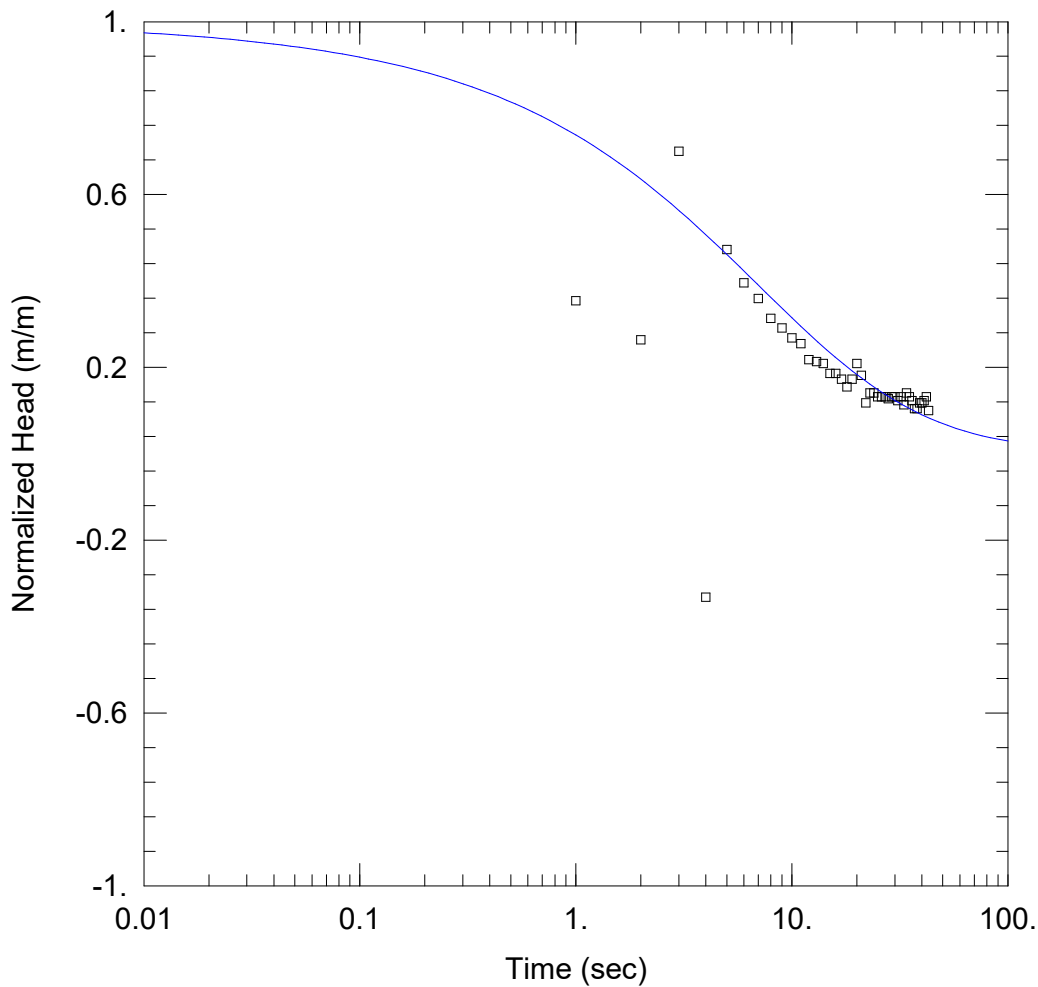
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 4.512 m/day

y0 = 0.0879 m



WELL TEST ANALYSIS

Data Set: MW02Q FHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:37:34

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

WELL DATA (MW02Q FHT2)

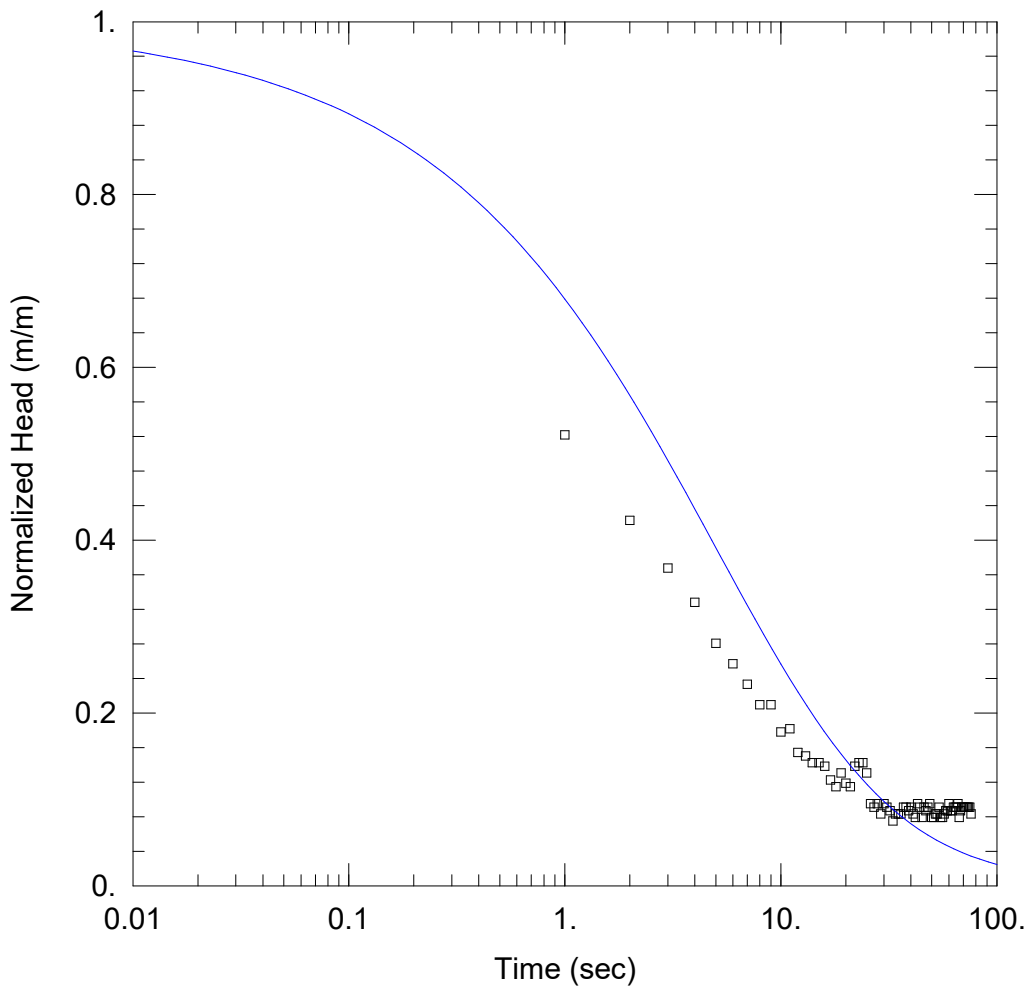
Initial Displacement: 0.22 m
 Total Well Penetration Depth: 1.45 m
 Casing Radius: 0.025 m

Static Water Column Height: 1.58 m
 Screen Length: 1 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 4.425 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01175 m⁻¹



WELL TEST ANALYSIS

Data Set: MW02Q FHT3 - KGS.aqt
 Date: 08/26/22

Time: 15:37:39

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

WELL DATA (MW02Q FHT3)

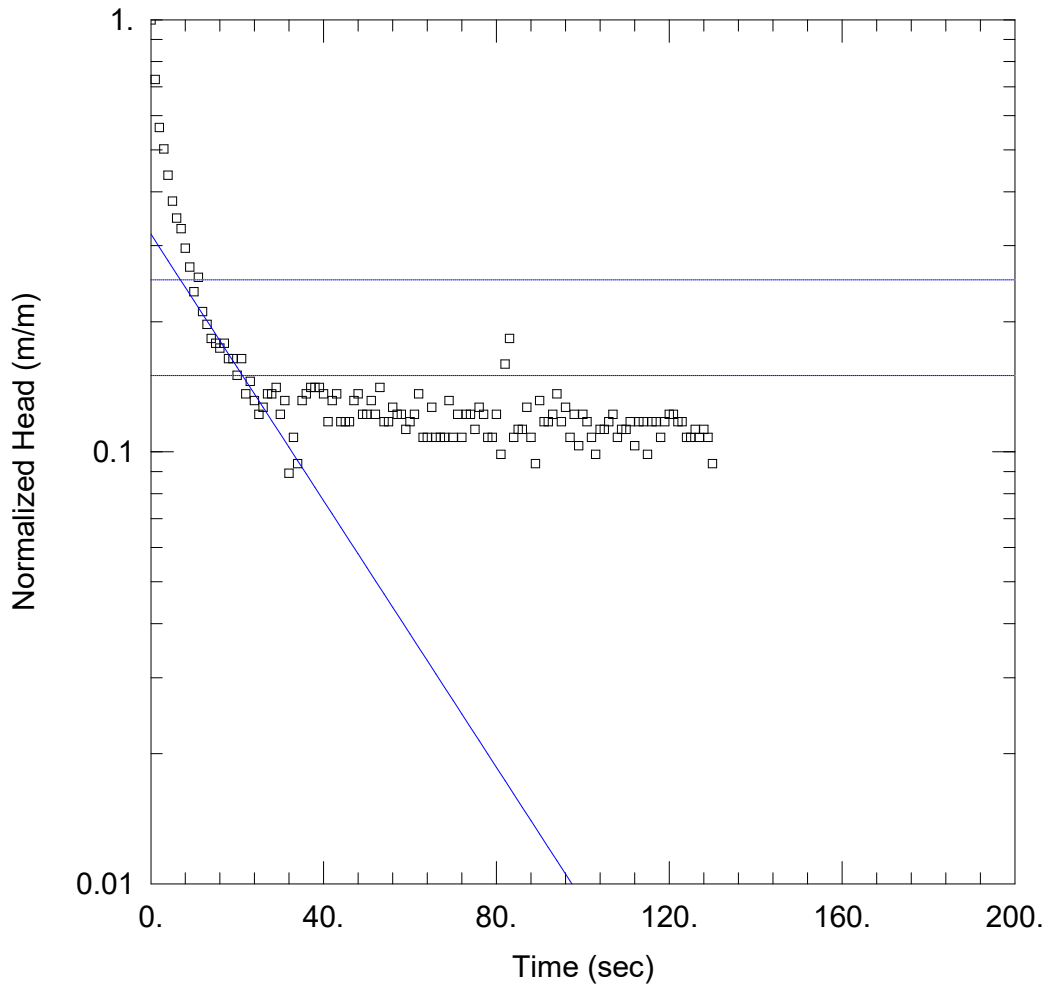
Initial Displacement: 0.253 m
 Total Well Penetration Depth: 1.45 m
 Casing Radius: 0.025 m

Static Water Column Height: 1.58 m
 Screen Length: 1 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 5.08 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: MW02Q RHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:38:49

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW02Q RHT2)

Initial Displacement: -0.213 m

Static Water Column Height: 1.58 m

Total Well Penetration Depth: 1.45 m

Screen Length: 1 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

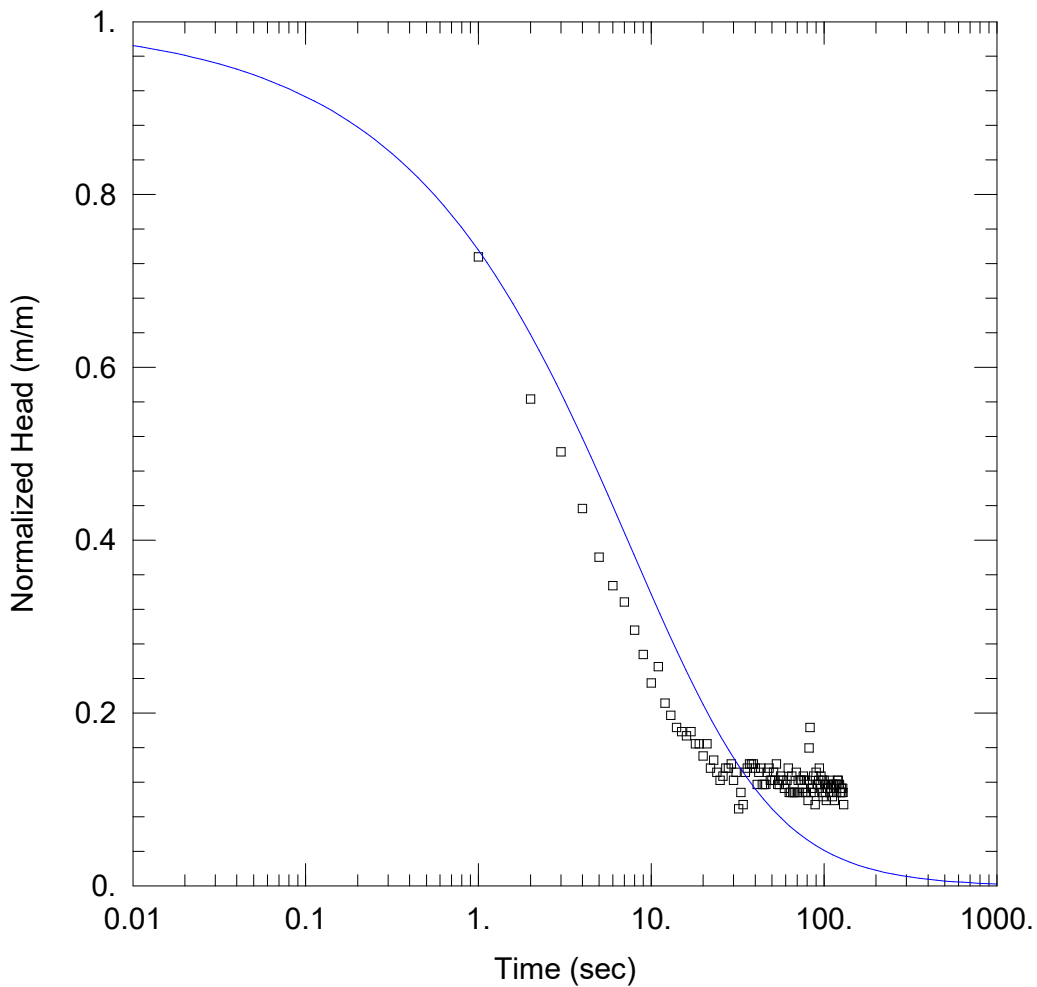
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.426 m/day

y0 = -0.068 m



WELL TEST ANALYSIS

Data Set: MW02Q RHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:38:51

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

WELL DATA (MW02Q RHT2)

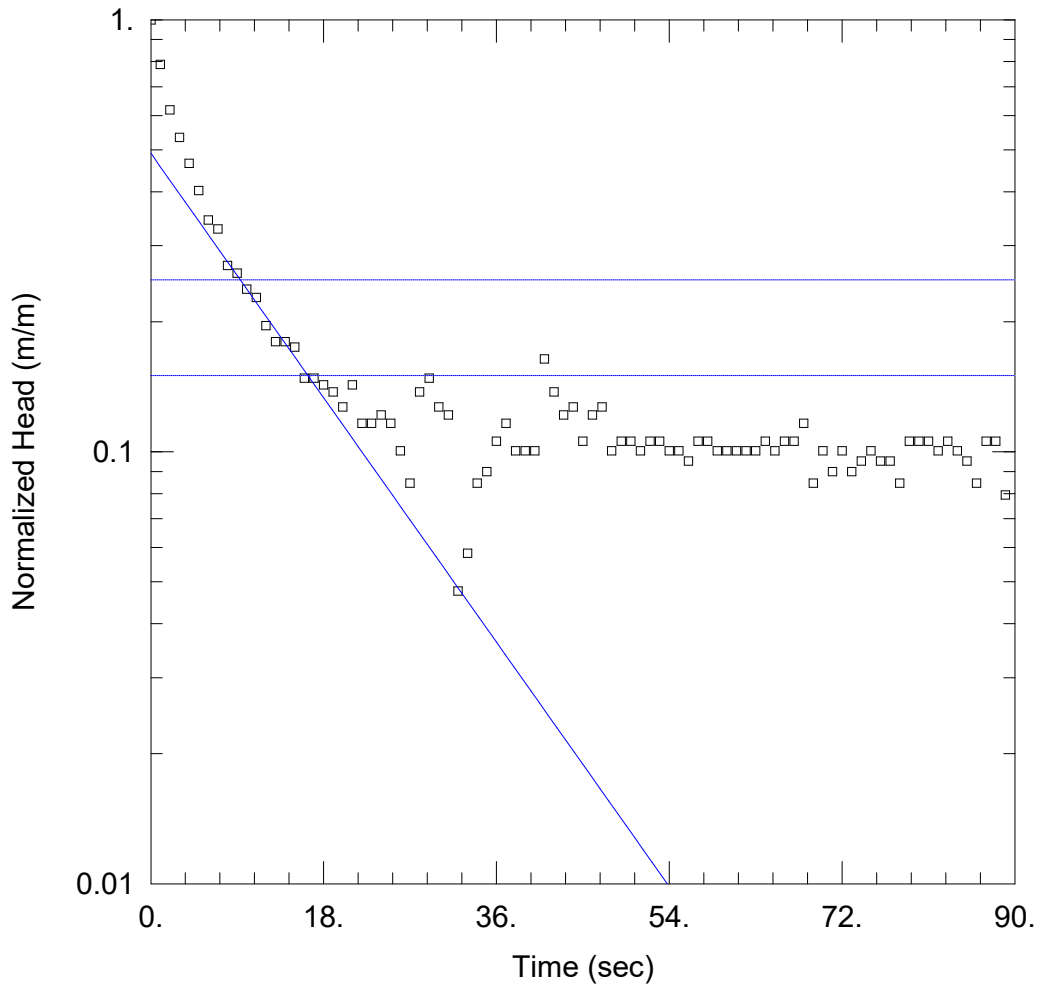
Initial Displacement: -0.213 m
 Total Well Penetration Depth: 1.45 m
 Casing Radius: 0.025 m

Static Water Column Height: 1.58 m
 Screen Length: 1 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 3.329 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: MW02Q RHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:38:54

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW02Q RHT3)

Initial Displacement: -0.189 m

Static Water Column Height: 1.58 m

Total Well Penetration Depth: 1.45 m

Screen Length: 1 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

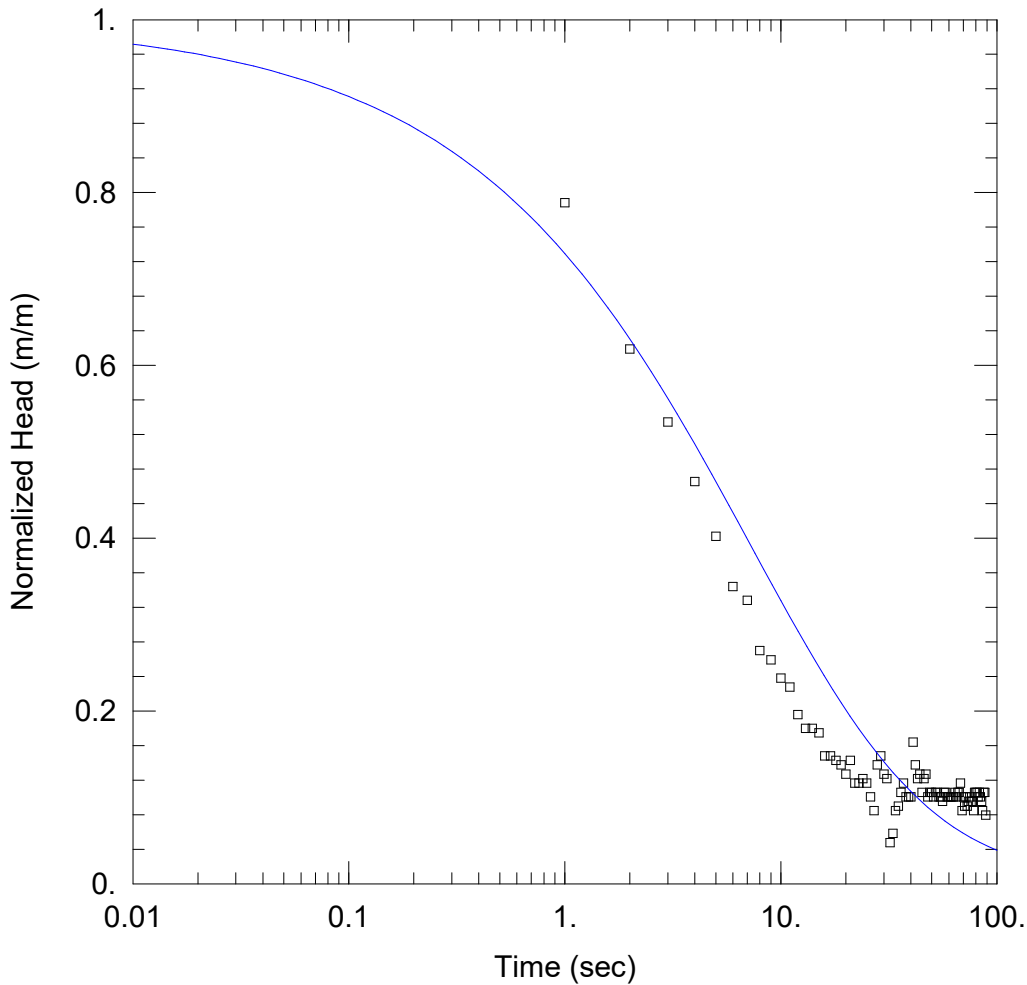
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 6.979 m/day

y0 = -0.0928 m



WELL TEST ANALYSIS

Data Set: MW02Q RHT3 - KGS.aqt

Date: 08/26/22

Time: 15:38:56

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 2.4 m

WELL DATA (MW02Q RHT3)

Initial Displacement: -0.189 m

Static Water Column Height: 1.58 m

Total Well Penetration Depth: 1.45 m

Screen Length: 1 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

SOLUTION

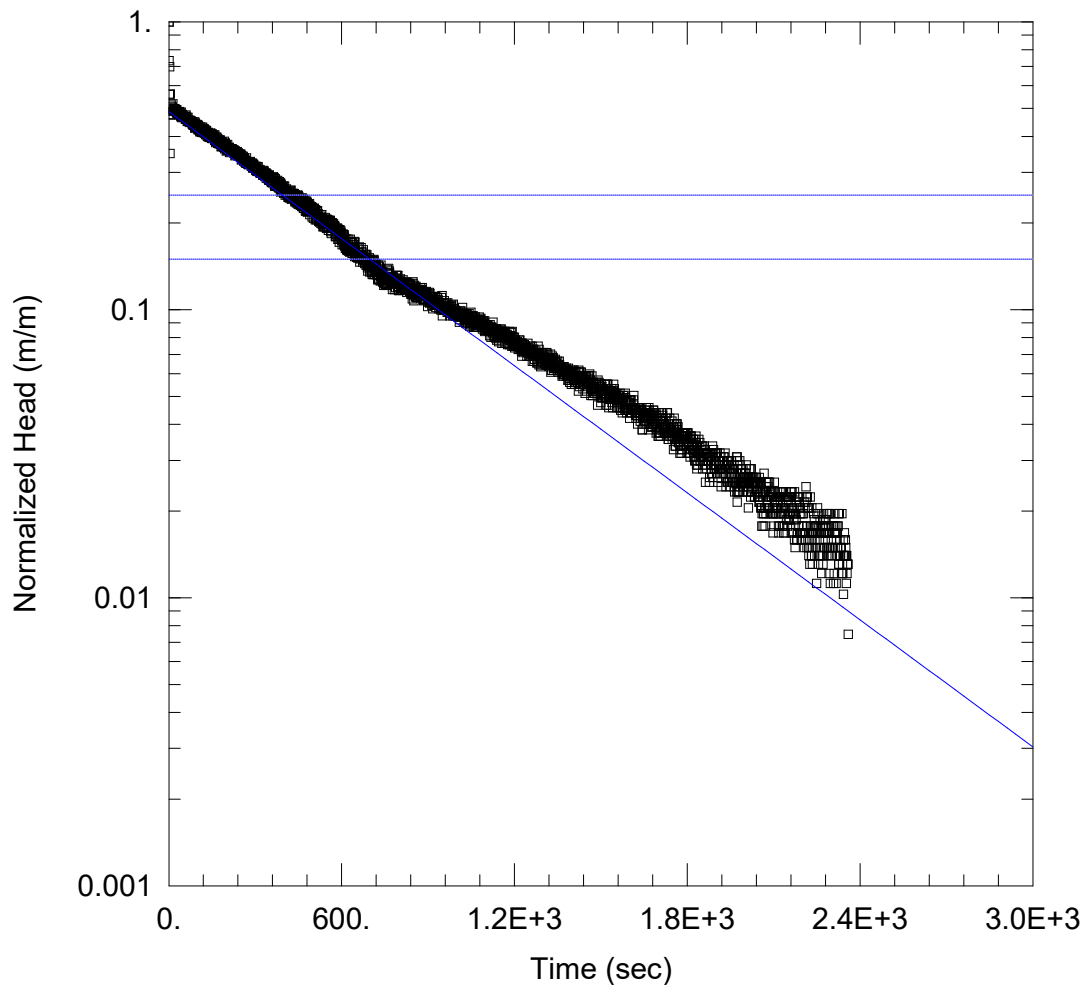
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 3.497 m/day

Ss = 0.01862 m⁻¹

Kz/Kr = 0.1



WELL TEST ANALYSIS

Data Set: MW03B FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:38:59

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 16.41 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW03B FHT1)

Initial Displacement: 1.071 m

Static Water Column Height: 16.41 m

Total Well Penetration Depth: 16.56 m

Screen Length: 5 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

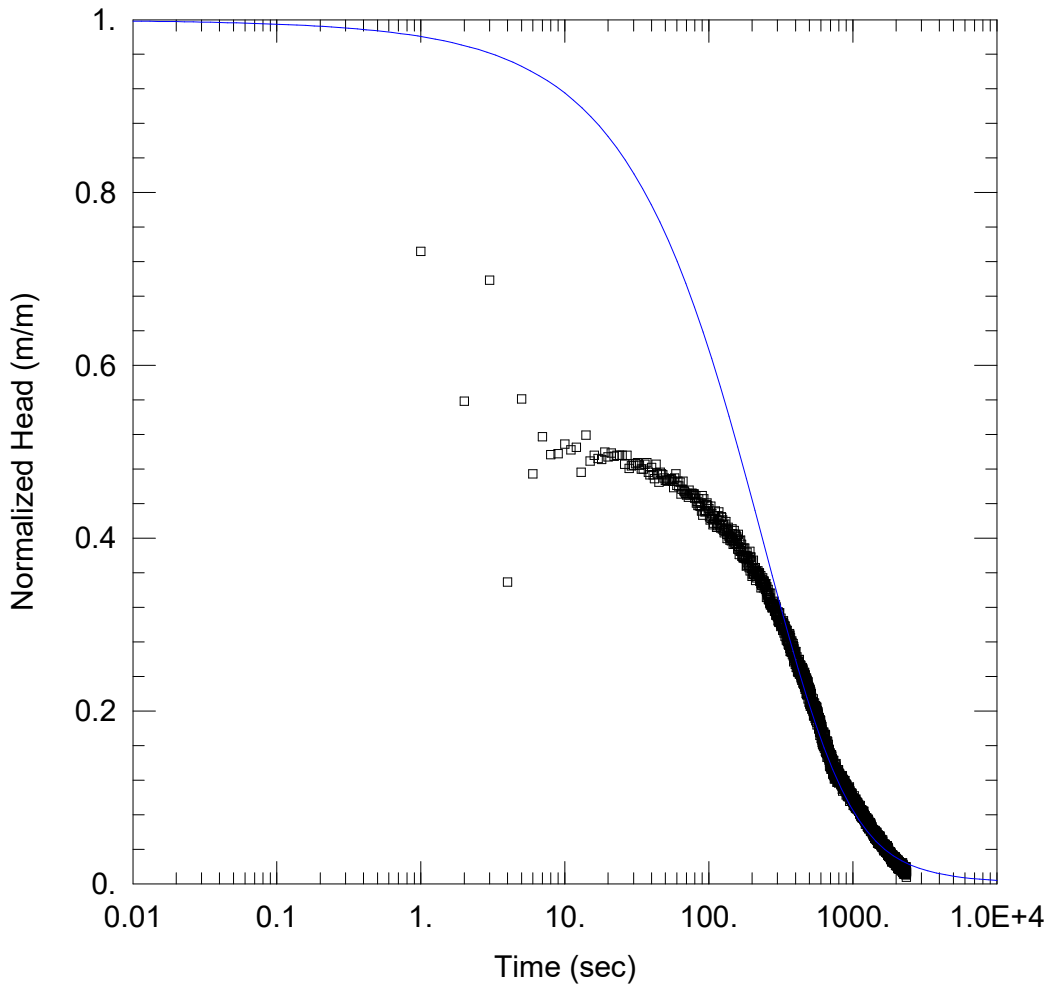
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.05552 m/day

y0 = 0.5227 m



WELL TEST ANALYSIS

Data Set: MW03B FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:39:04

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 16.41 m

WELL DATA (MW03B FHT1)

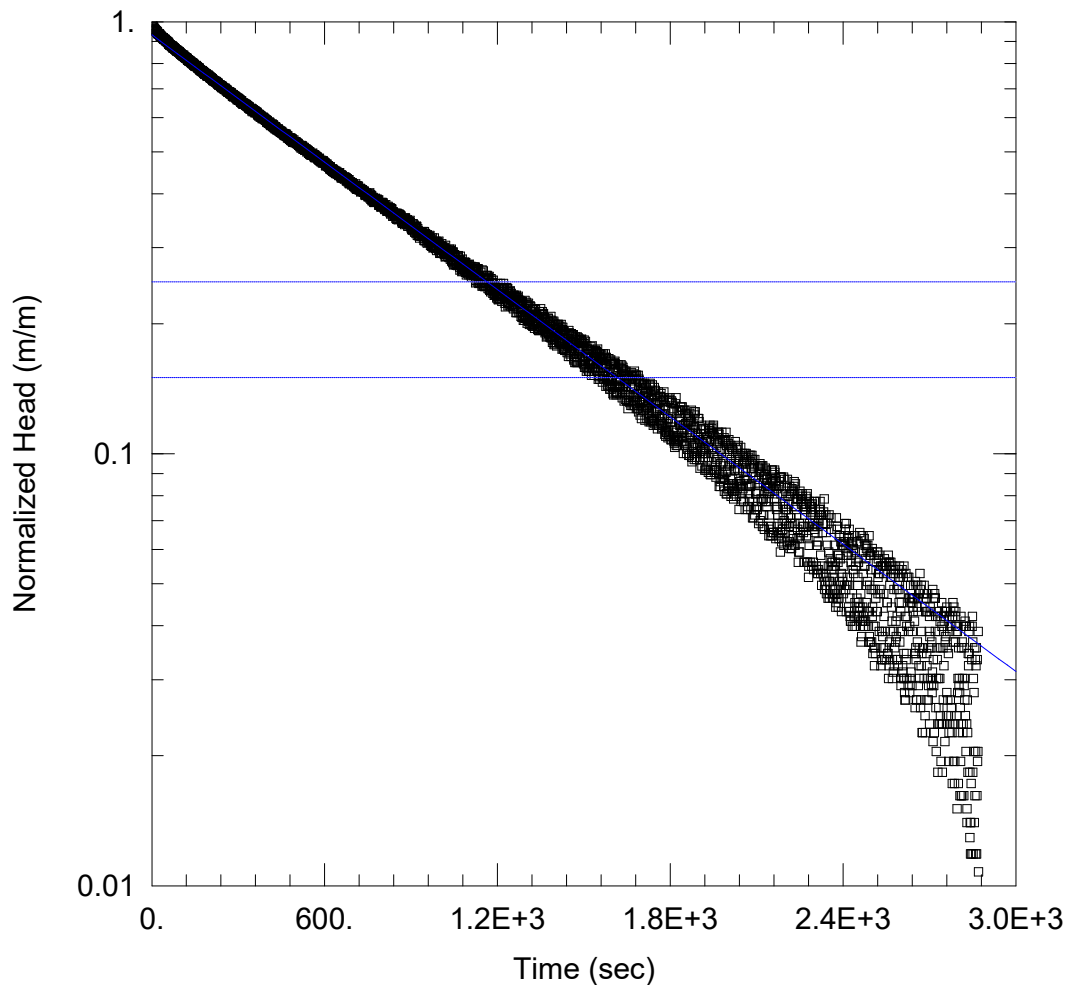
Initial Displacement: 1.071 m
 Total Well Penetration Depth: 16.56 m
 Casing Radius: 0.025 m

Static Water Column Height: 16.41 m
 Screen Length: 5 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 0.0632 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.0001862 m⁻¹



WELL TEST ANALYSIS

Data Set: MW03B RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:39:07

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 16.41 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW03B RHT1)

Initial Displacement: -0.928 m

Static Water Column Height: 16.41 m

Total Well Penetration Depth: 16.56 m

Screen Length: 5 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

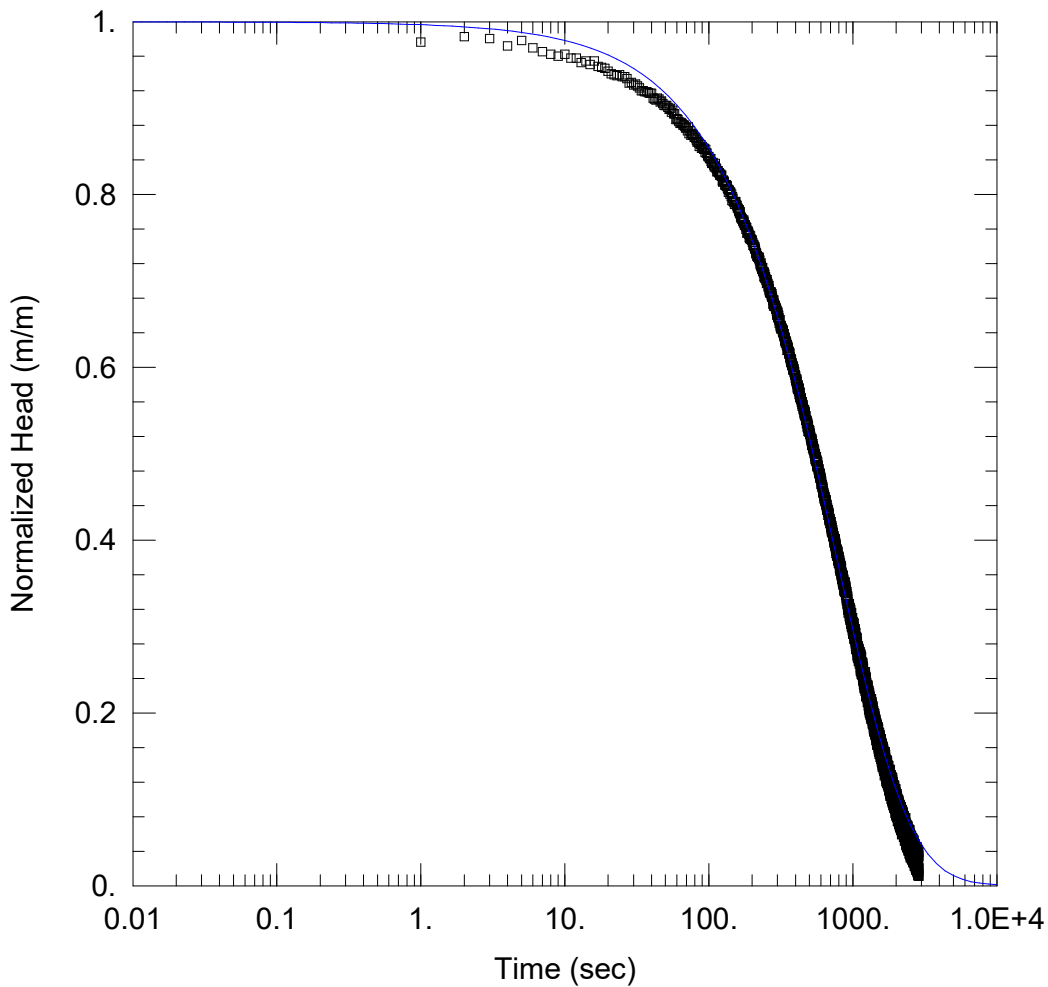
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03709 m/day

y0 = -0.8657 m



WELL TEST ANALYSIS

Data Set: MW03B RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:39:11

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 16.41 m

WELL DATA (MW03B RHT1)

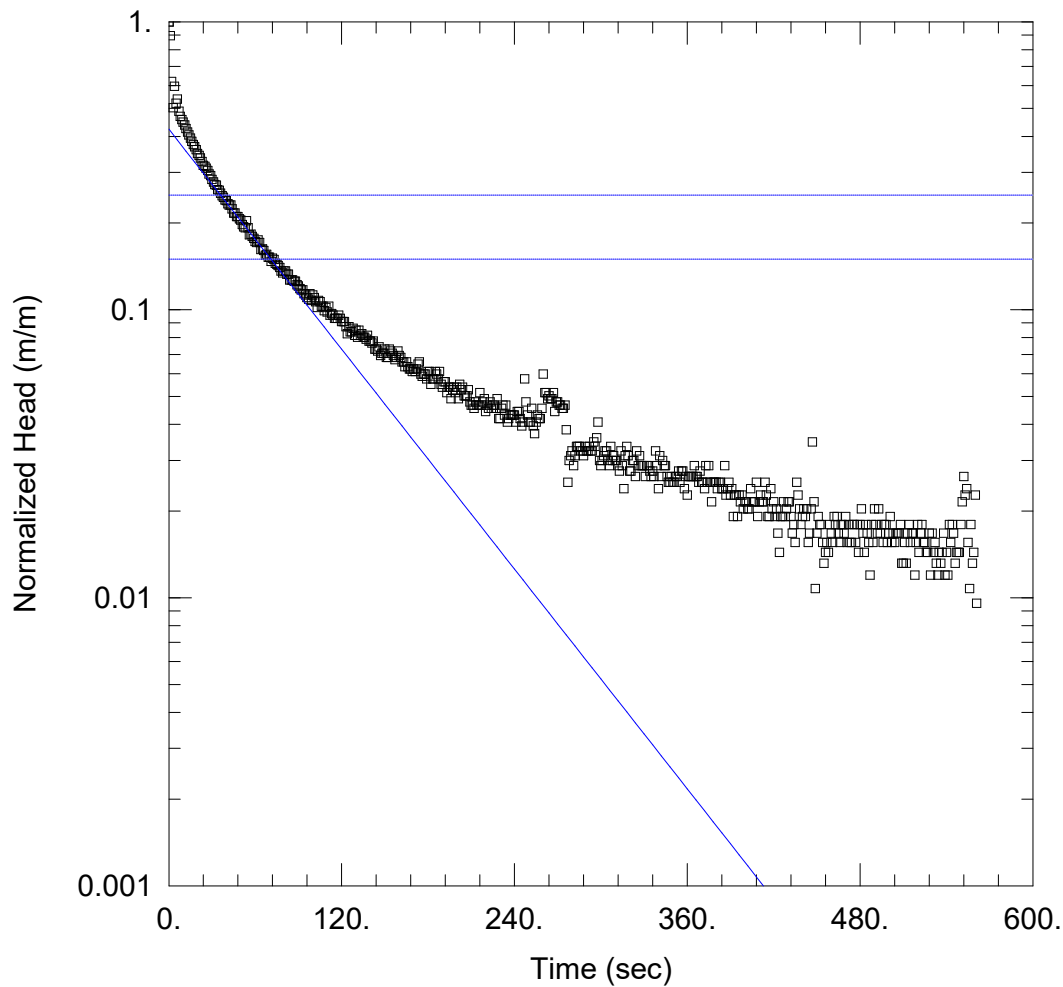
Initial Displacement: -0.928 m
 Total Well Penetration Depth: 16.56 m
 Casing Radius: 0.025 m

Static Water Column Height: 16.41 m
 Screen Length: 5 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 0.03497$ m/day
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 2.46E-6$ m⁻¹



WELL TEST ANALYSIS

Data Set: MW03Q FHT1 - Hvorslev.aqt
 Date: 08/26/22

Time: 15:41:40

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 5.86 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW03Q FHT1)

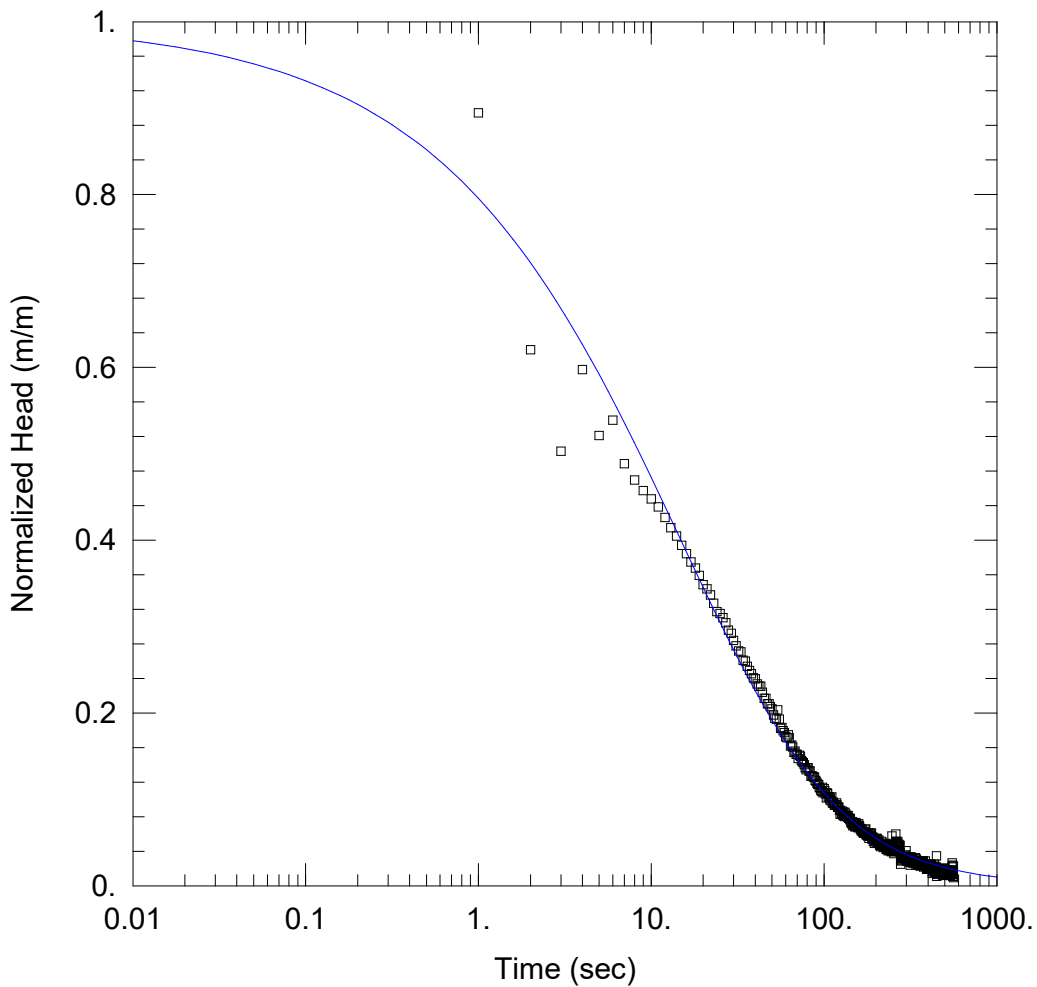
Initial Displacement: 0.835 m
 Total Well Penetration Depth: 5.42 m
 Casing Radius: 0.025 m

Static Water Column Height: 5.86 m
 Screen Length: 3.5 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 K = 0.5451 m/day

Solution Method: Hvorslev
 y0 = 0.3537 m



WELL TEST ANALYSIS

Data Set: MW03Q FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:41:43

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 5.86 m

WELL DATA (MW03Q FHT1)

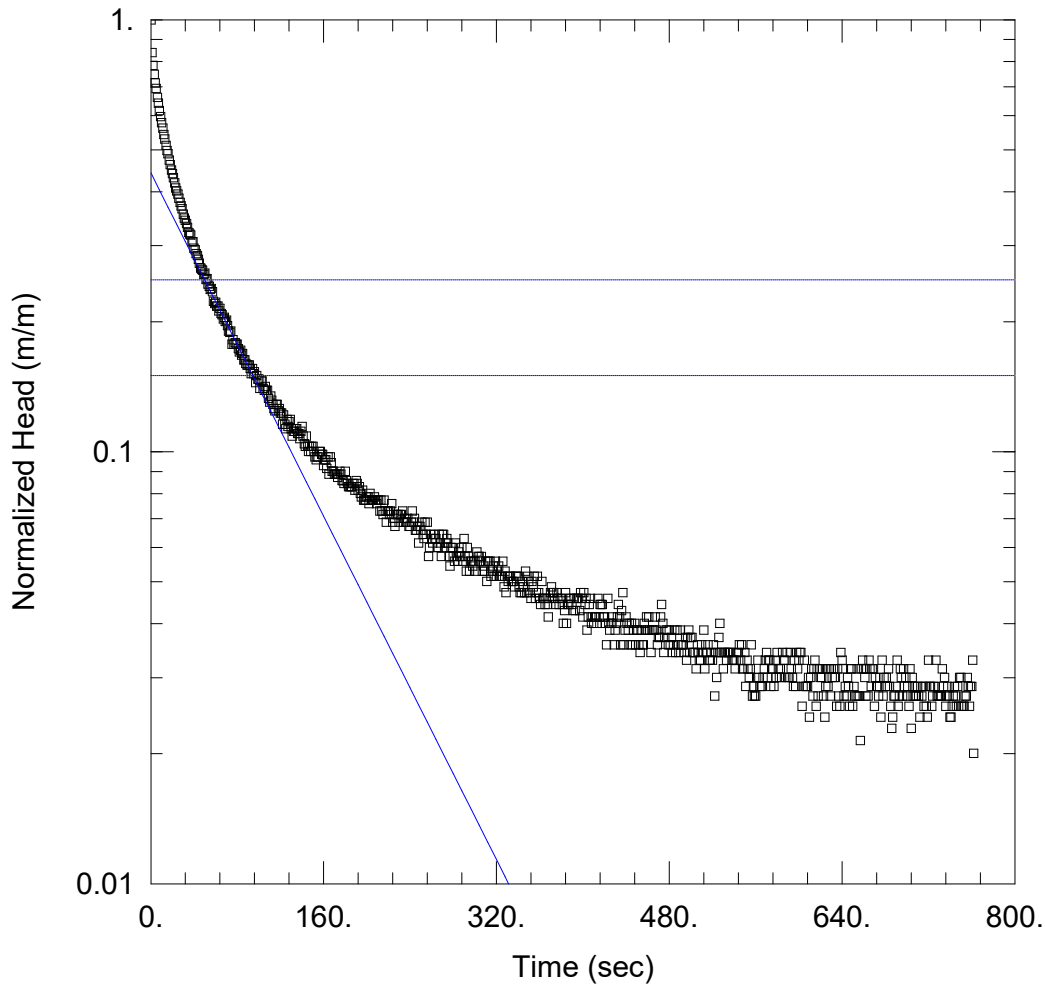
Initial Displacement: 0.835 m
 Total Well Penetration Depth: 5.42 m
 Casing Radius: 0.025 m

Static Water Column Height: 5.86 m
 Screen Length: 3.5 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 0.3707$ m/day
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 0.008844$ m⁻¹



WELL TEST ANALYSIS

Data Set: MW03Q RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:41:46

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.86 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW03Q RHT1)

Initial Displacement: -0.699 m

Static Water Column Height: 5.86 m

Total Well Penetration Depth: 5.42 m

Screen Length: 3.5 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

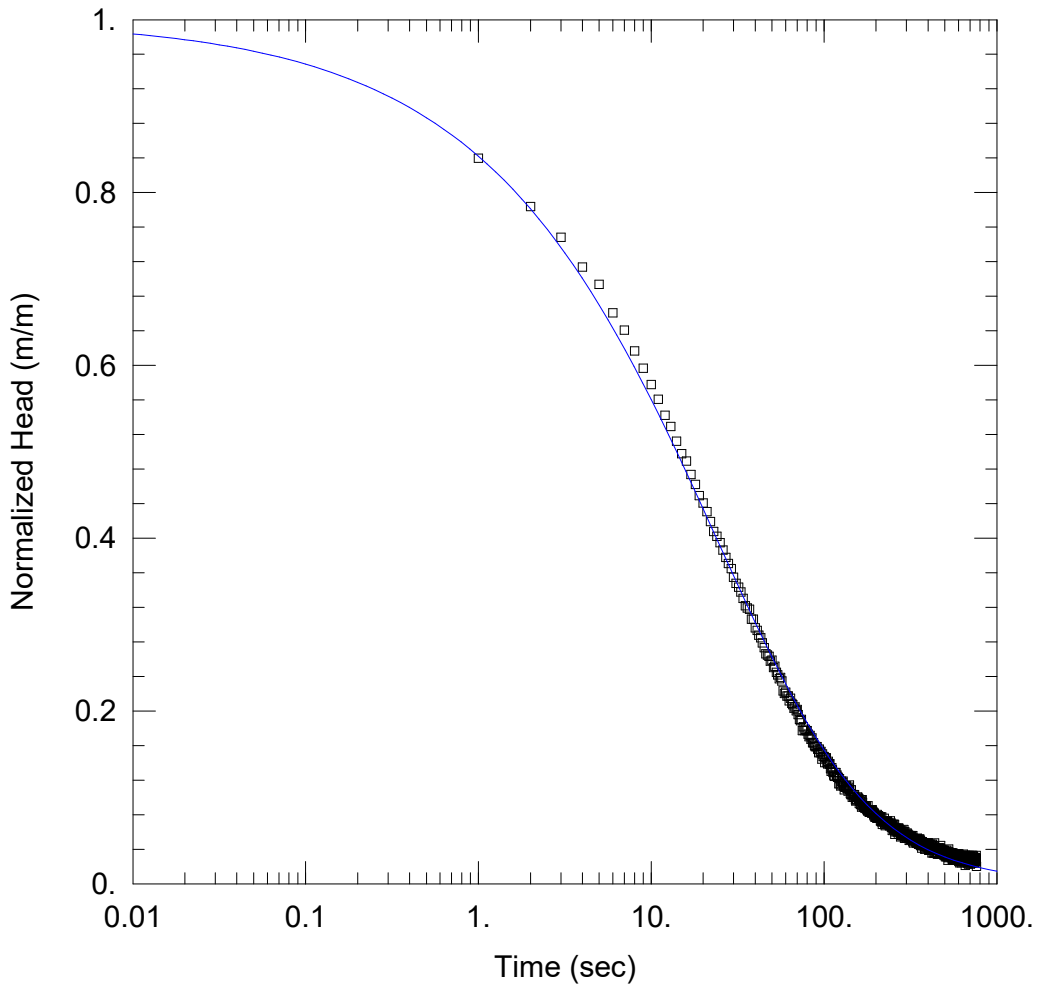
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.4255 m/day

y0 = -0.3092 m



WELL TEST ANALYSIS

Data Set: MW03Q RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:41:50

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.86 m

WELL DATA (MW03Q RHT1)

Initial Displacement: -0.699 m

Total Well Penetration Depth: 5.42 m

Casing Radius: 0.025 m

Static Water Column Height: 5.86 m

Screen Length: 3.5 m

Well Radius: 0.089 m

SOLUTION

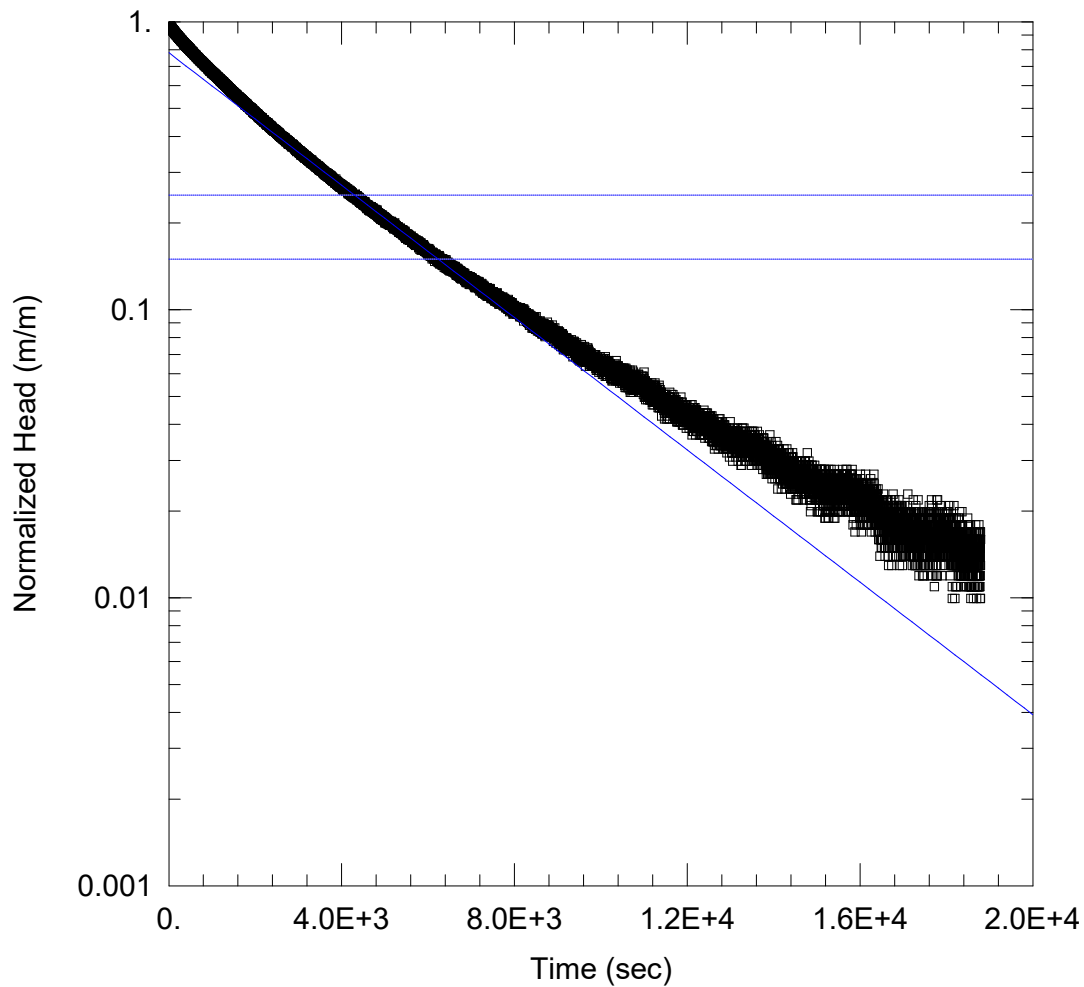
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 0.2635 m/day

Ss = 0.006865 m⁻¹

Kz/Kr = 0.1



WELL TEST ANALYSIS

Data Set: MW04B RHT1 - Hvorslev.aqt
 Date: 08/26/22

Time: 15:41:57

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 21.3 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW04B RHT1)

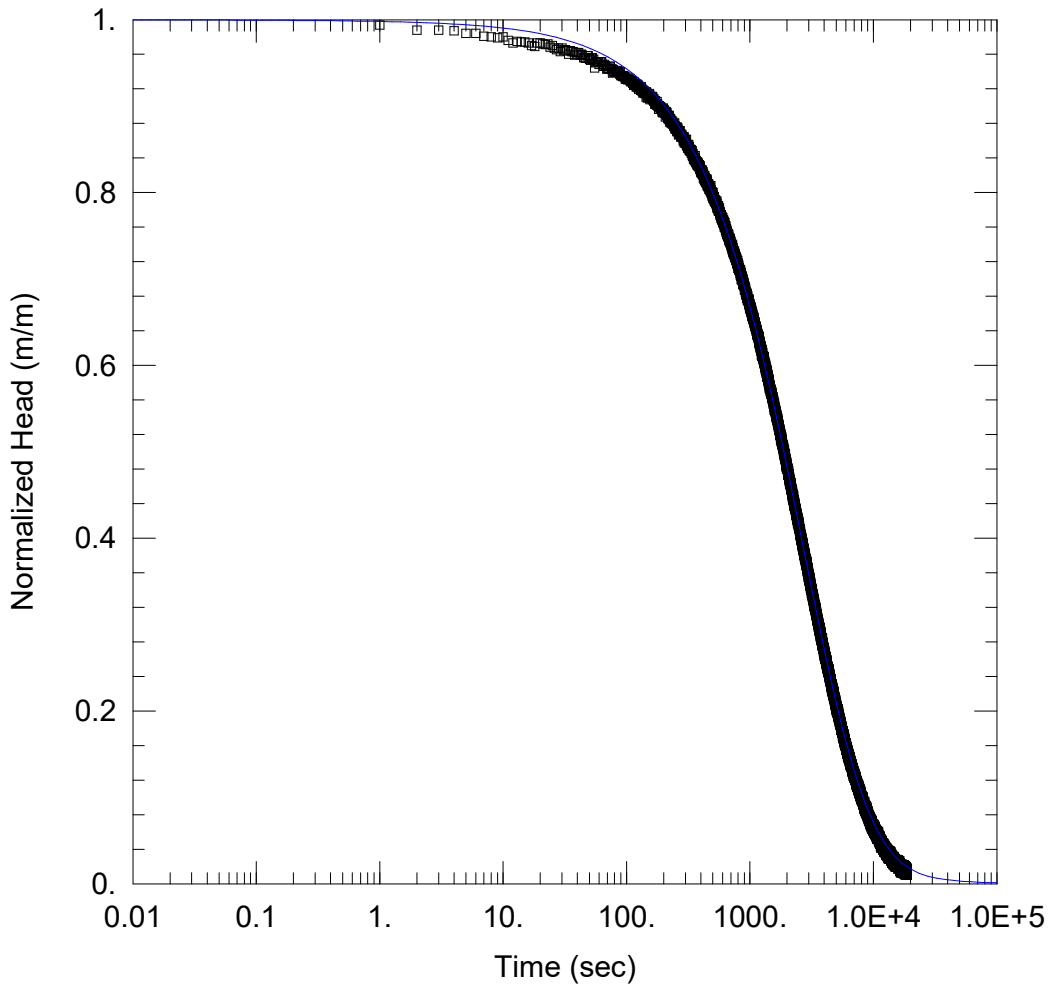
Initial Displacement: -1.005 m
 Total Well Penetration Depth: 21. m
 Casing Radius: 0.025 m

Static Water Column Height: 21.3 m
 Screen Length: 5. m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 K = 0.007683 m/day

Solution Method: Hvorslev
 y0 = -0.7842 m



WELL TEST ANALYSIS

Data Set: MW04B RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:42:07

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 21.3 m

WELL DATA (MW04B RHT1)

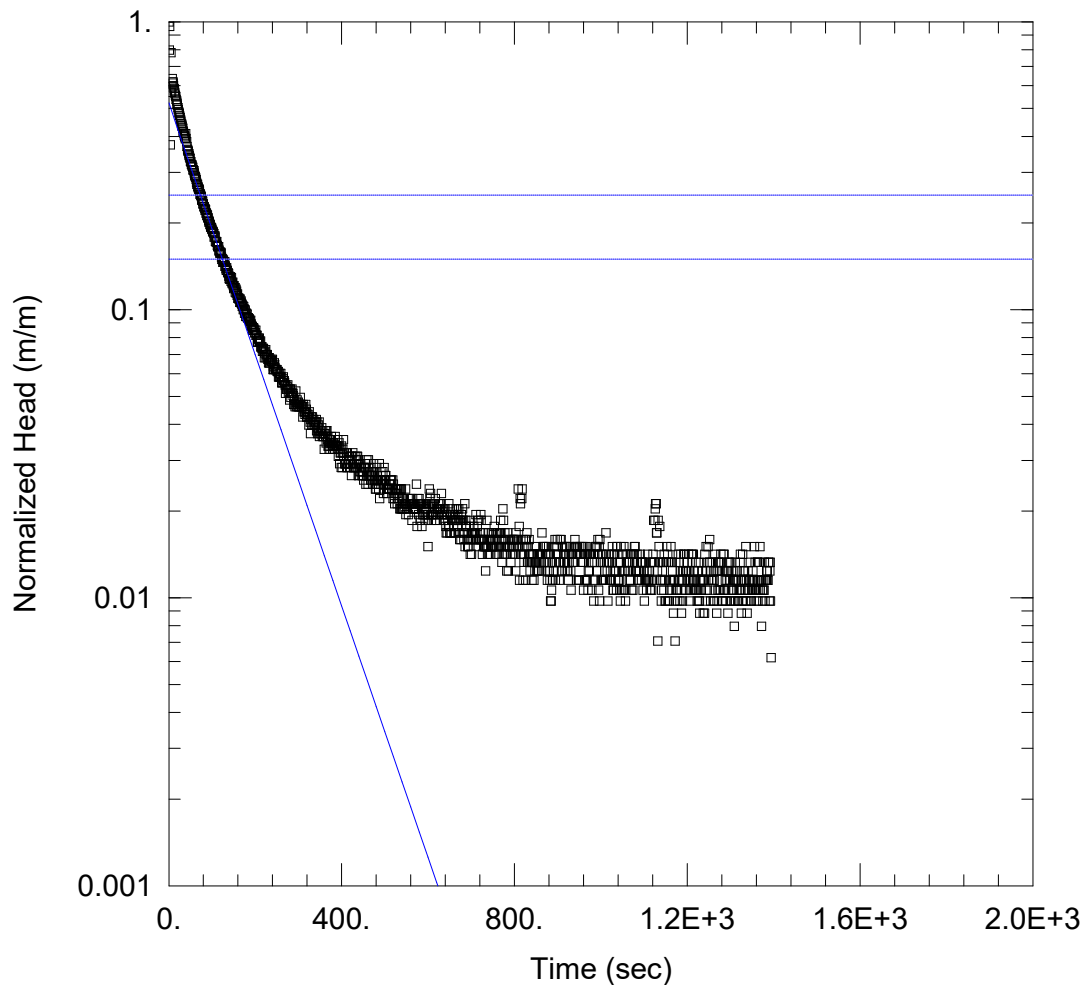
Initial Displacement: -1.005 m
 Total Well Penetration Depth: 21. m
 Casing Radius: 0.025 m

Static Water Column Height: 21.3 m
 Screen Length: 5. m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 0.007921$ m/day
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 1.049E-5$ m⁻¹



WELL TEST ANALYSIS

Data Set: MW04Q FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:43:10

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.37 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW04Q FHT1)

Initial Displacement: 1.13 m

Static Water Column Height: 8.81 m

Total Well Penetration Depth: 8.37 m

Screen Length: 1.8 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

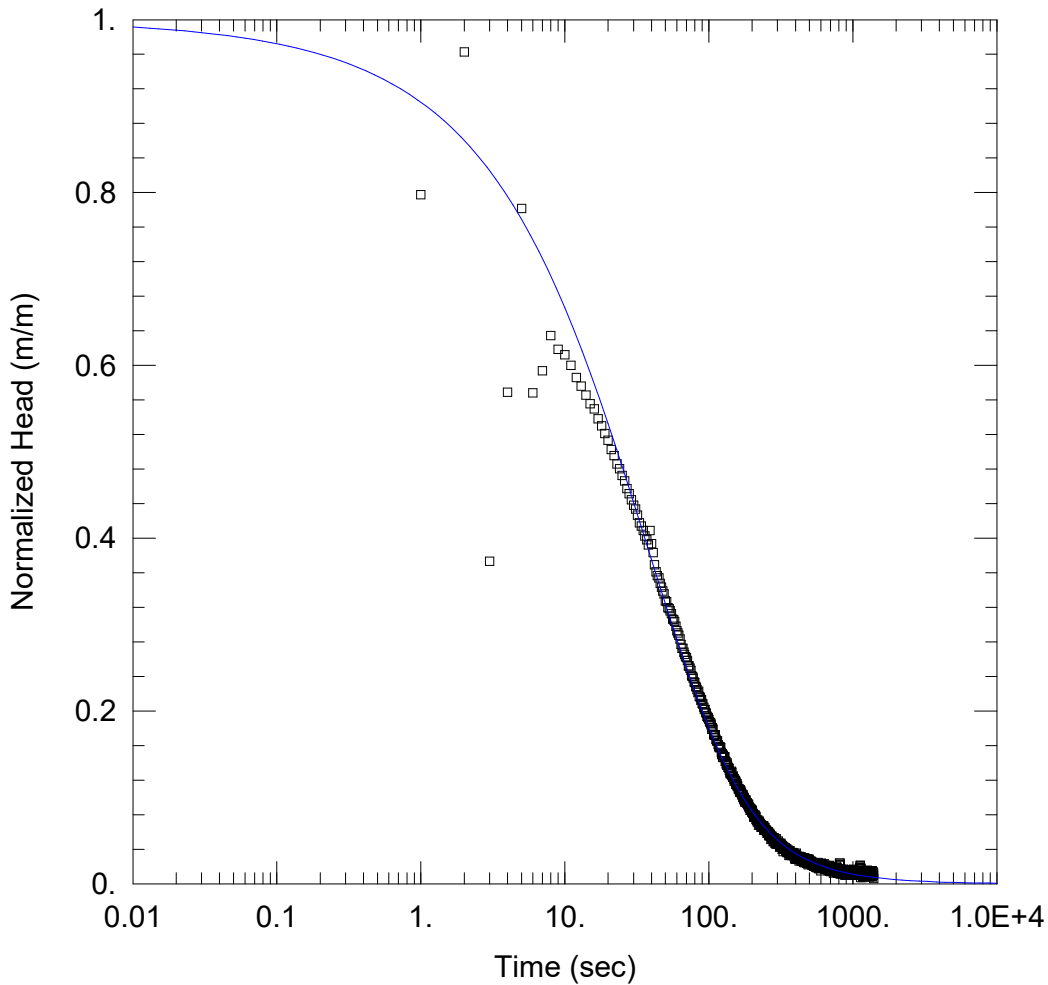
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.7313 m/day

y0 = 0.5902 m



WELL TEST ANALYSIS

Data Set: MW04Q FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:43:13

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 8.37 m

WELL DATA (MW04Q FHT1)

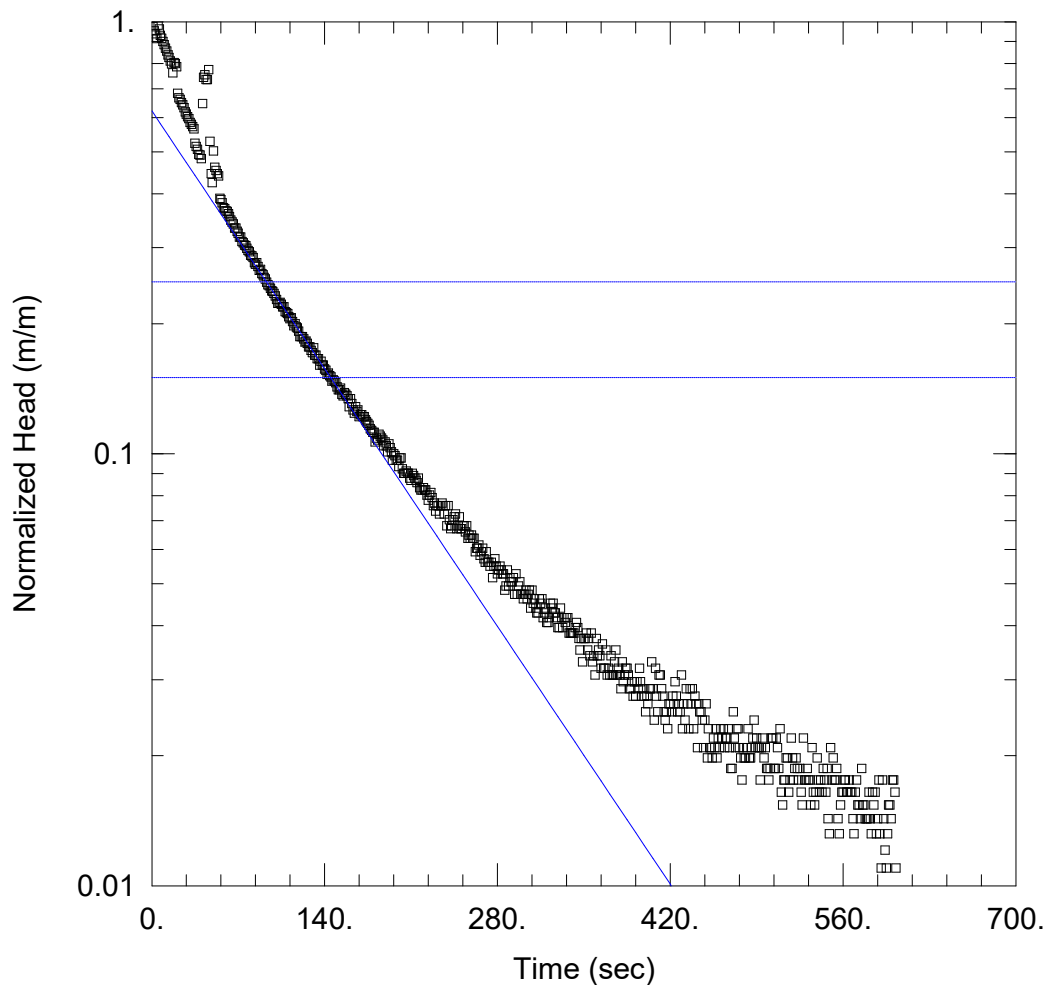
Initial Displacement: 1.13 m
 Total Well Penetration Depth: 8.37 m
 Casing Radius: 0.025 m

Static Water Column Height: 8.81 m
 Screen Length: 1.8 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 0.6447 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.002702 m⁻¹



WELL TEST ANALYSIS

Data Set: MW04Q RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:43:16

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.37 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW04Q RHT1)

Initial Displacement: -0.91 m

Static Water Column Height: 8.81 m

Total Well Penetration Depth: 8.37 m

Screen Length: 1.8 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

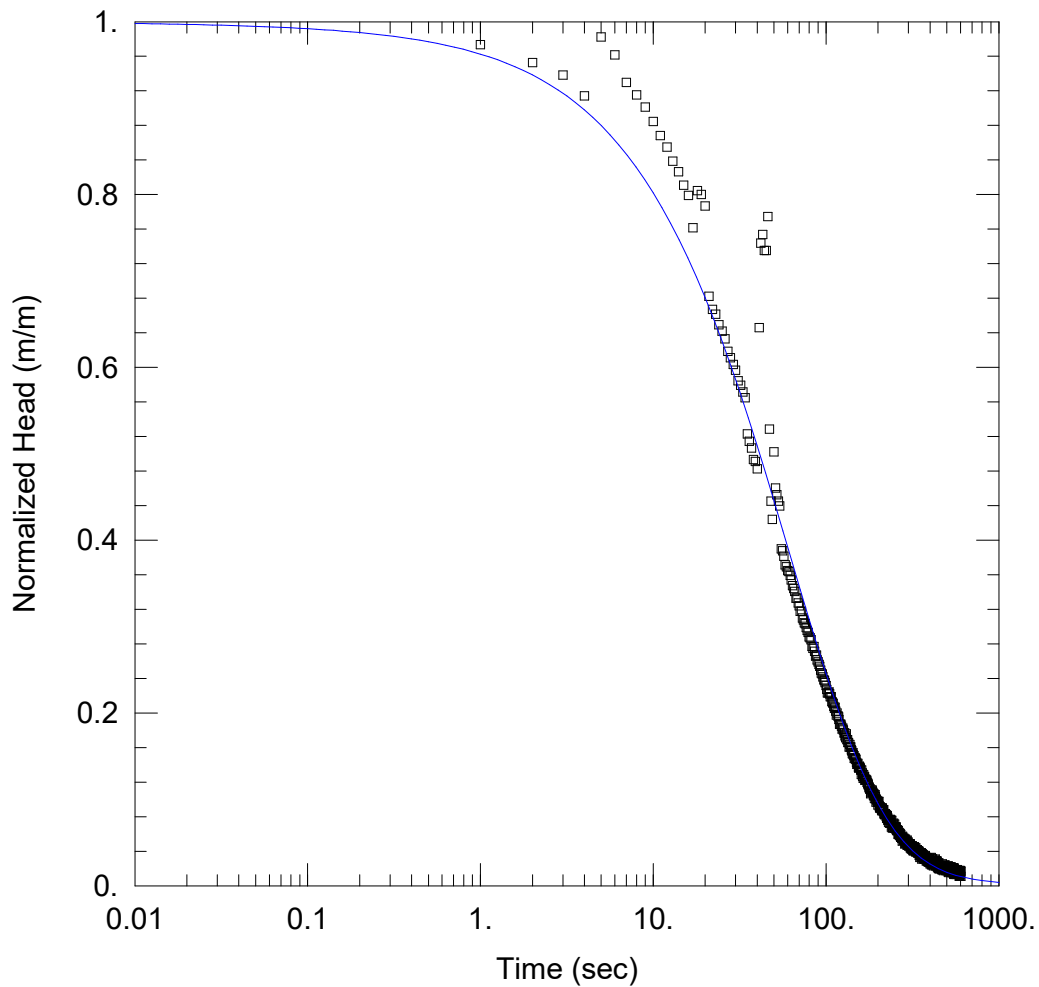
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.7141 m/day

y0 = -0.566 m



WELL TEST ANALYSIS

Data Set: MW04Q RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:43:18

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.37 m

WELL DATA (MW04Q RHT1)

Initial Displacement: -0.91 m

Total Well Penetration Depth: 8.37 m

Casing Radius: 0.025 m

Static Water Column Height: 8.81 m

Screen Length: 1.8 m

Well Radius: 0.089 m

SOLUTION

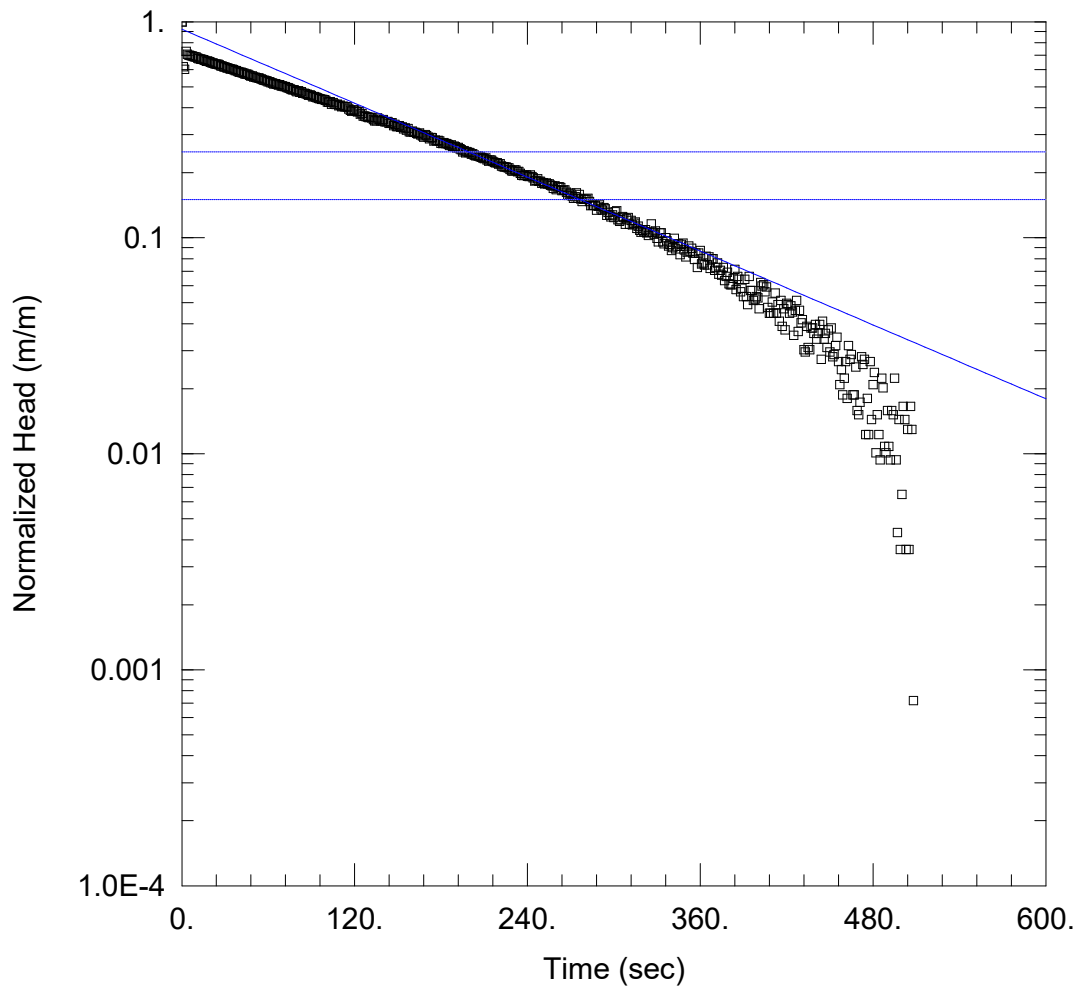
Aquifer Model: Unconfined

Kr = 0.7763 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.0001088 m⁻¹



WELL TEST ANALYSIS

Data Set: MW05B FHT1 - Hvorslev.aqt
 Date: 08/26/22

Time: 15:43:21

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 21.95 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW05B FHT1)

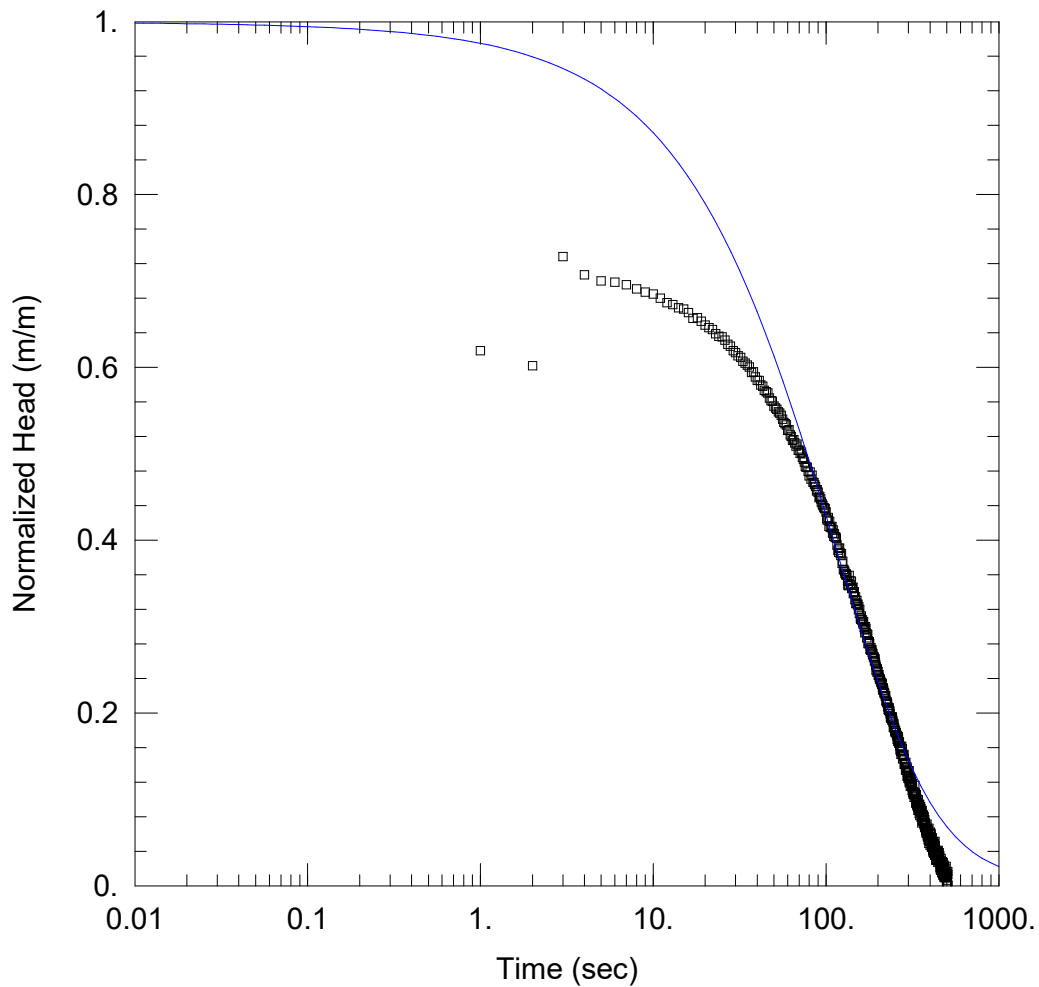
Initial Displacement: 1.387 m
 Total Well Penetration Depth: 23.05 m
 Casing Radius: 0.025 m

Static Water Column Height: 21.95 m
 Screen Length: 9 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 K = 0.1312 m/day

Solution Method: Hvorslev
 y0 = 1.281 m



WELL TEST ANALYSIS

Data Set: MW05B FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:43:24

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 21.95 m

WELL DATA (MW05B FHT1)

Initial Displacement: 1.387 m

Total Well Penetration Depth: 23.05 m

Casing Radius: 0.025 m

Static Water Column Height: 21.95 m

Screen Length: 9 m

Well Radius: 0.073 m

SOLUTION

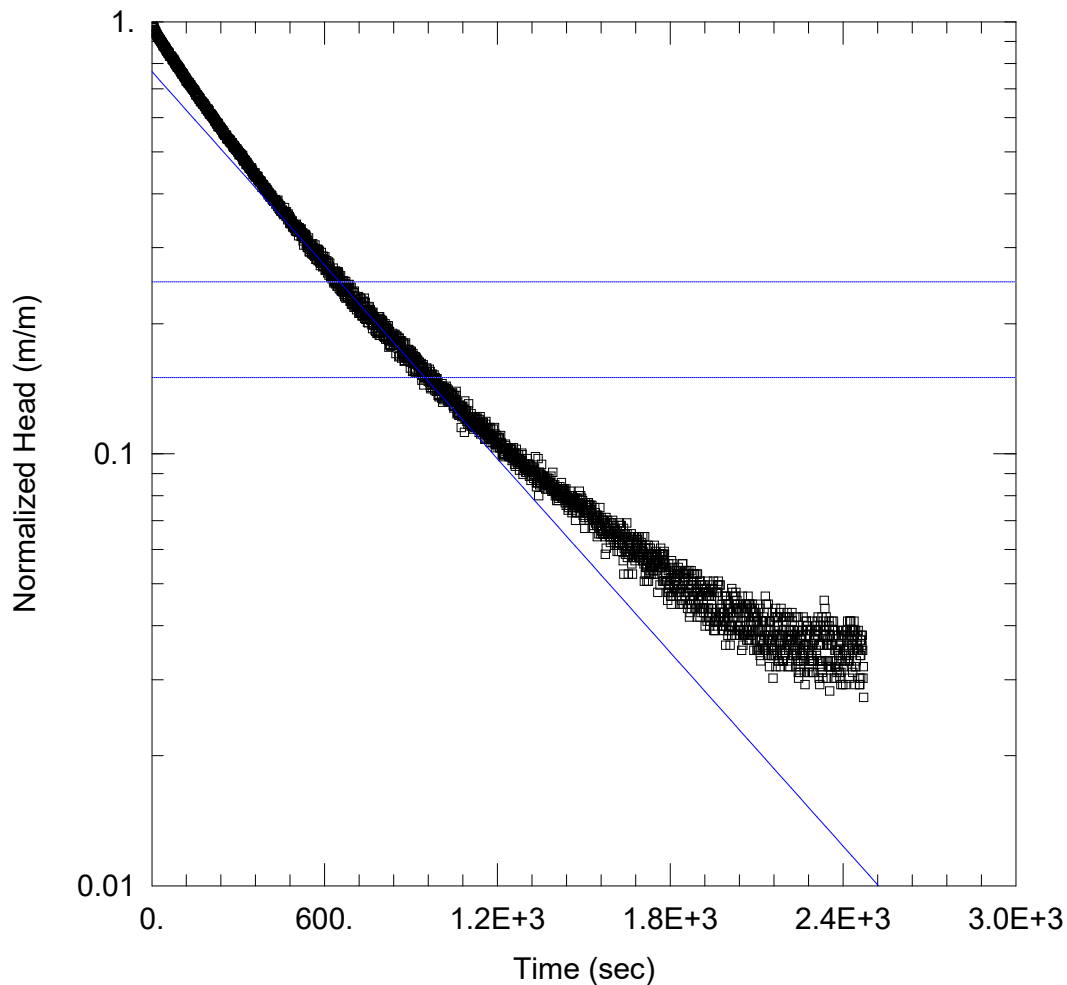
Aquifer Model: Unconfined

Kr = 0.1061 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 4.282E-5 m⁻¹



WELL TEST ANALYSIS

Data Set: MW05B RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:43:27

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 21.95 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW05B RHT1)

Initial Displacement: -1.026 m

Static Water Column Height: 21.95 m

Total Well Penetration Depth: 23.05 m

Screen Length: 9 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

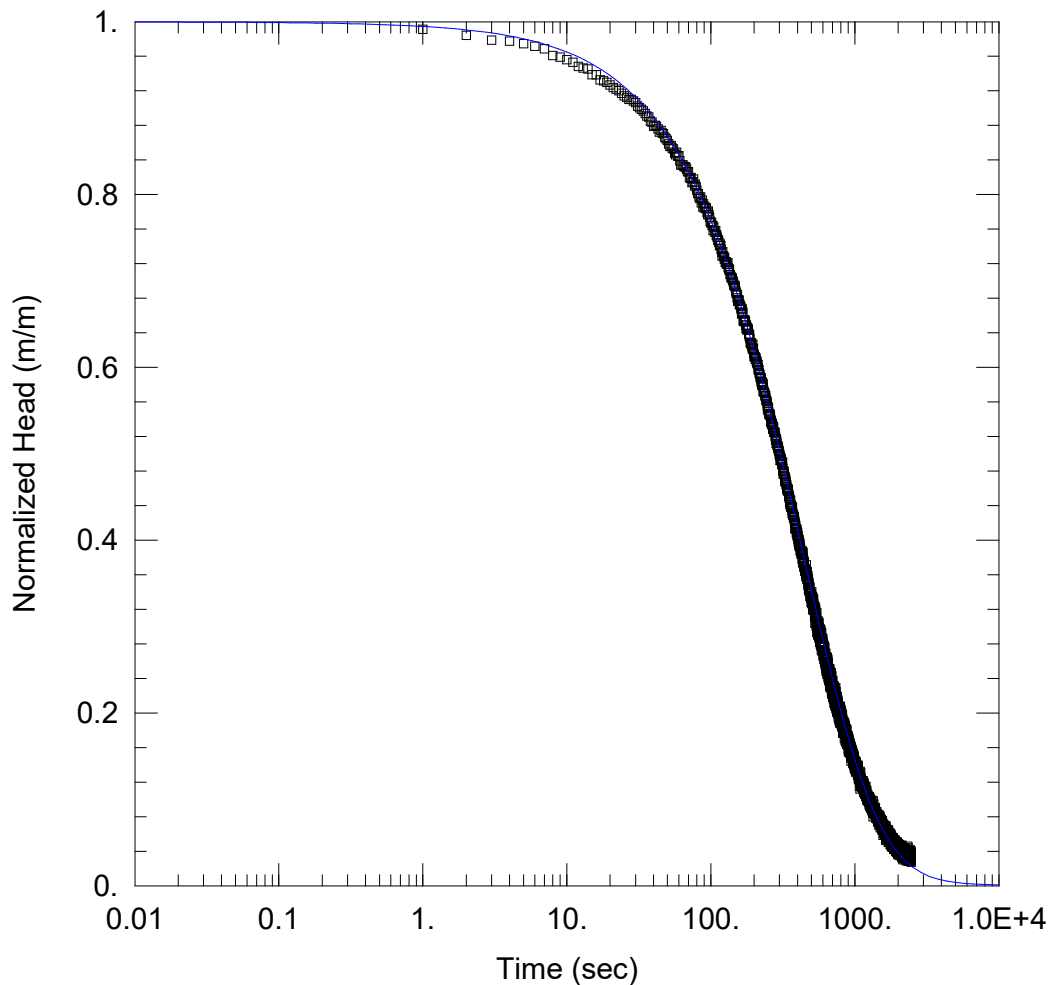
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03437 m/day

y0 = -0.7874 m



WELL TEST ANALYSIS

Data Set: MW05B RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:43:30

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 21.95 m

WELL DATA (MW05B RHT1)

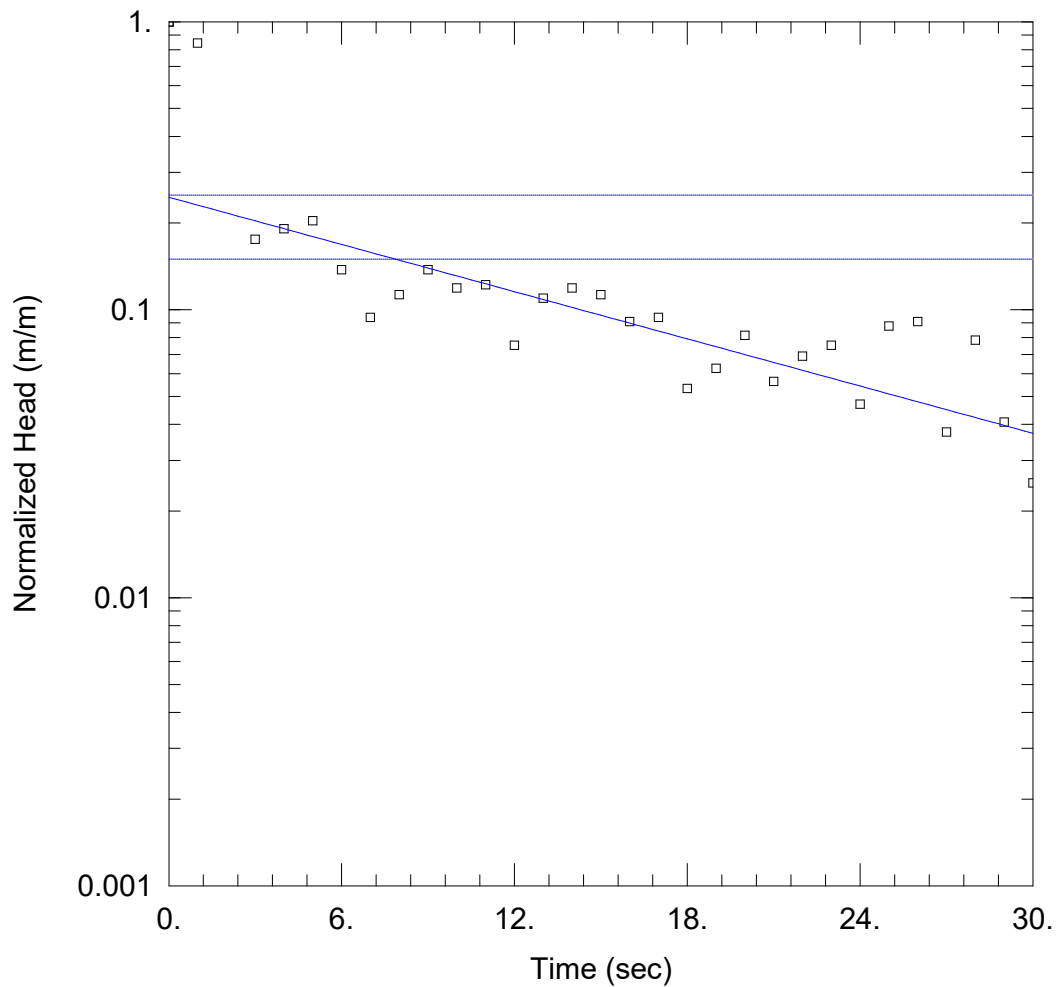
Initial Displacement: -1.026 m
 Total Well Penetration Depth: 23.05 m
 Casing Radius: 0.025 m

Static Water Column Height: 21.95 m
 Screen Length: 9 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 0.04062 \text{ m/day}$
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 1.724E-6 \text{ m}^{-1}$



WELL TEST ANALYSIS

Data Set: MW05Q FHT1 - Hvorslev.aqt
 Date: 08/26/22

Time: 15:44:42

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

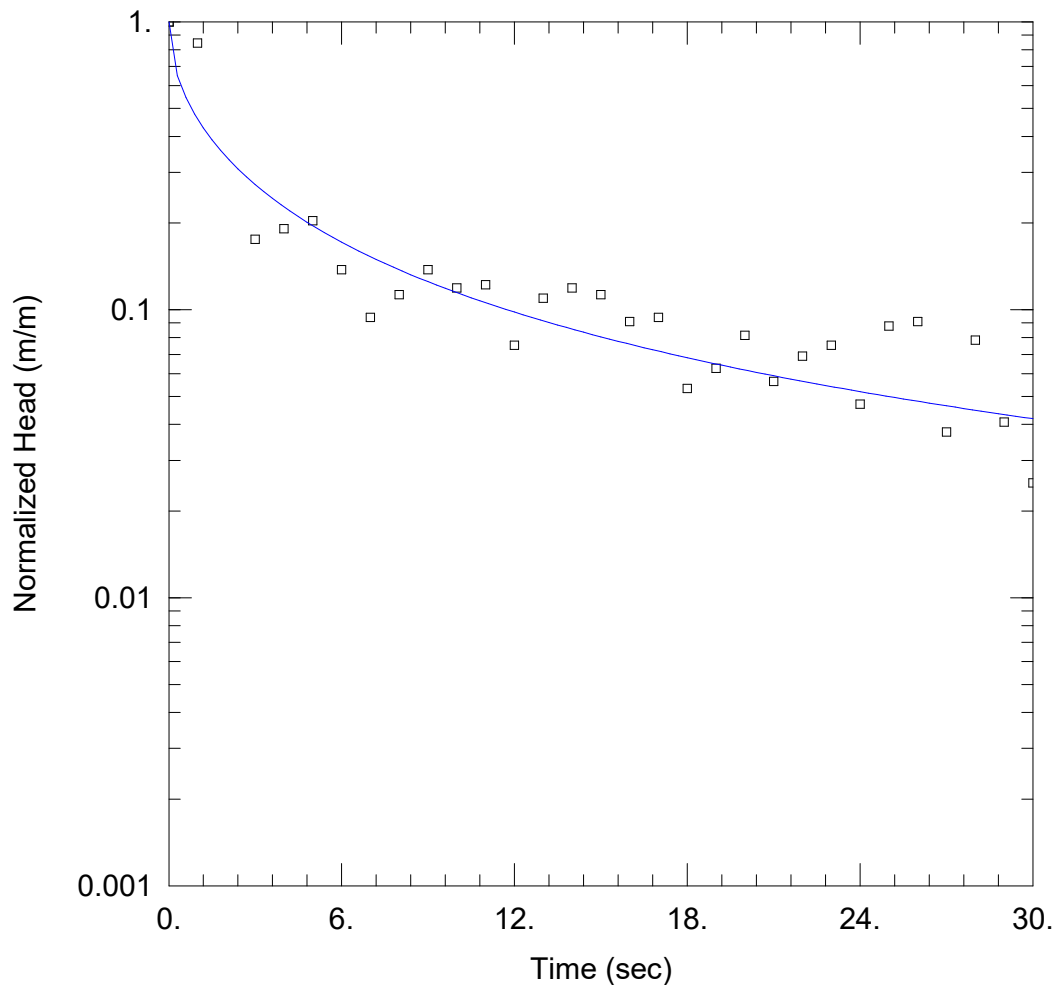
Saturated Thickness: 6.705 m Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW05Q FHT1)

Initial Displacement: 0.319 m Static Water Column Height: 7.575 m
 Total Well Penetration Depth: 6.705 m Screen Length: 2.9 m
 Casing Radius: 0.025 m Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev
 K = 3.121 m/day y0 = 0.07846 m



WELL TEST ANALYSIS

Data Set: MW05Q FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:44:44

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

WELL DATA (MW05Q FHT1)

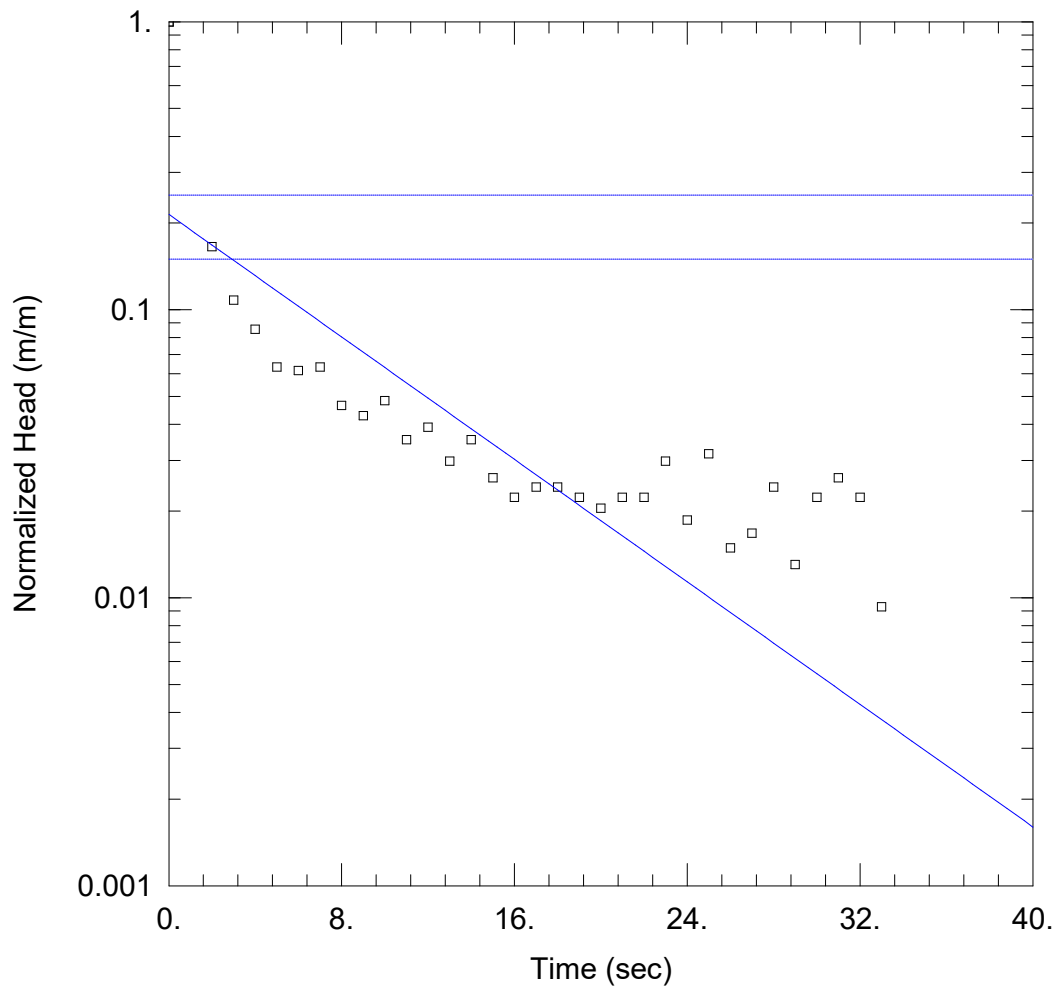
Initial Displacement: 0.319 m
 Total Well Penetration Depth: 6.705 m
 Casing Radius: 0.025 m

Static Water Column Height: 7.575 m
 Screen Length: 2.9 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 3.672 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01647 m⁻¹



WELL TEST ANALYSIS

Data Set: MW05Q FHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:44:47

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW05Q FHT2)

Initial Displacement: 0.537 m

Static Water Column Height: 7.575 m

Total Well Penetration Depth: 6.705 m

Screen Length: 2.9 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

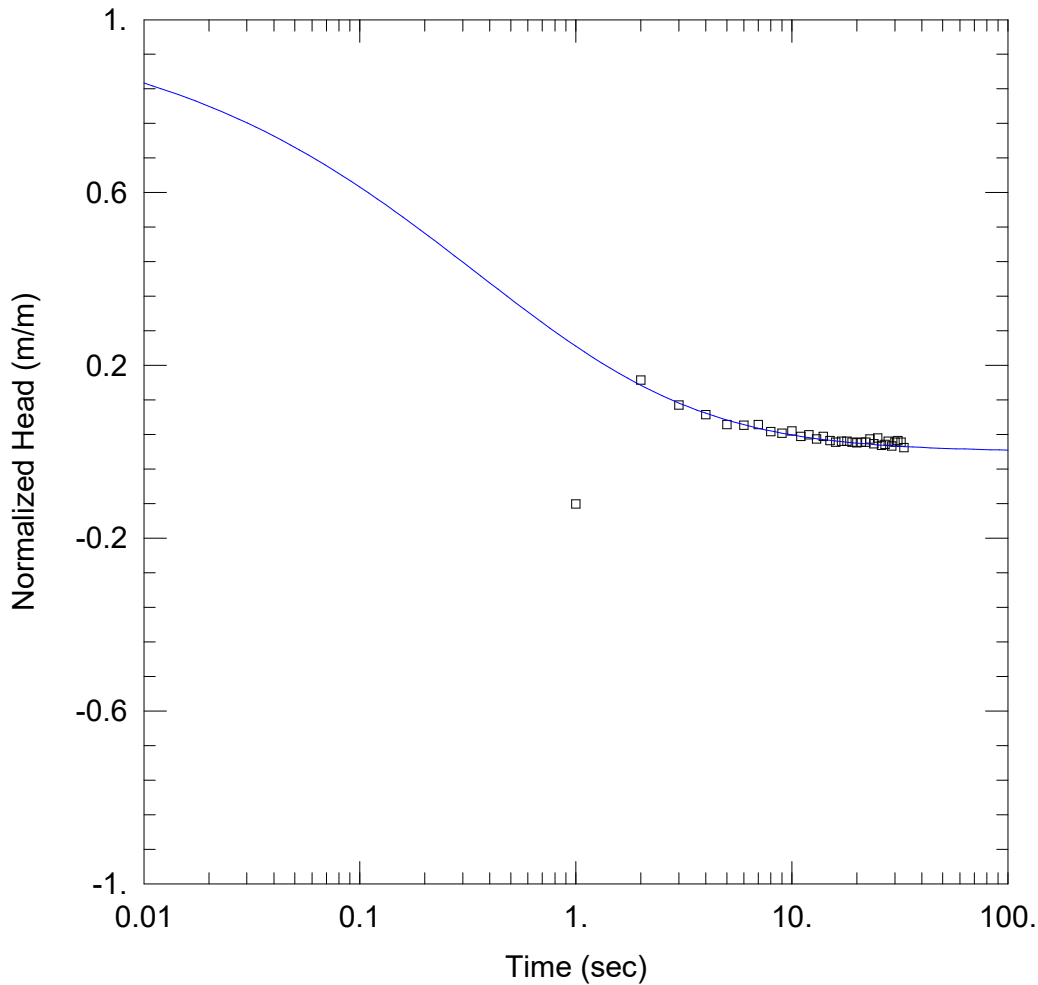
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 6.074 m/day

y0 = 0.1152 m



WELL TEST ANALYSIS

Data Set: MW05Q FHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:44:50

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

WELL DATA (MW05Q FHT2)

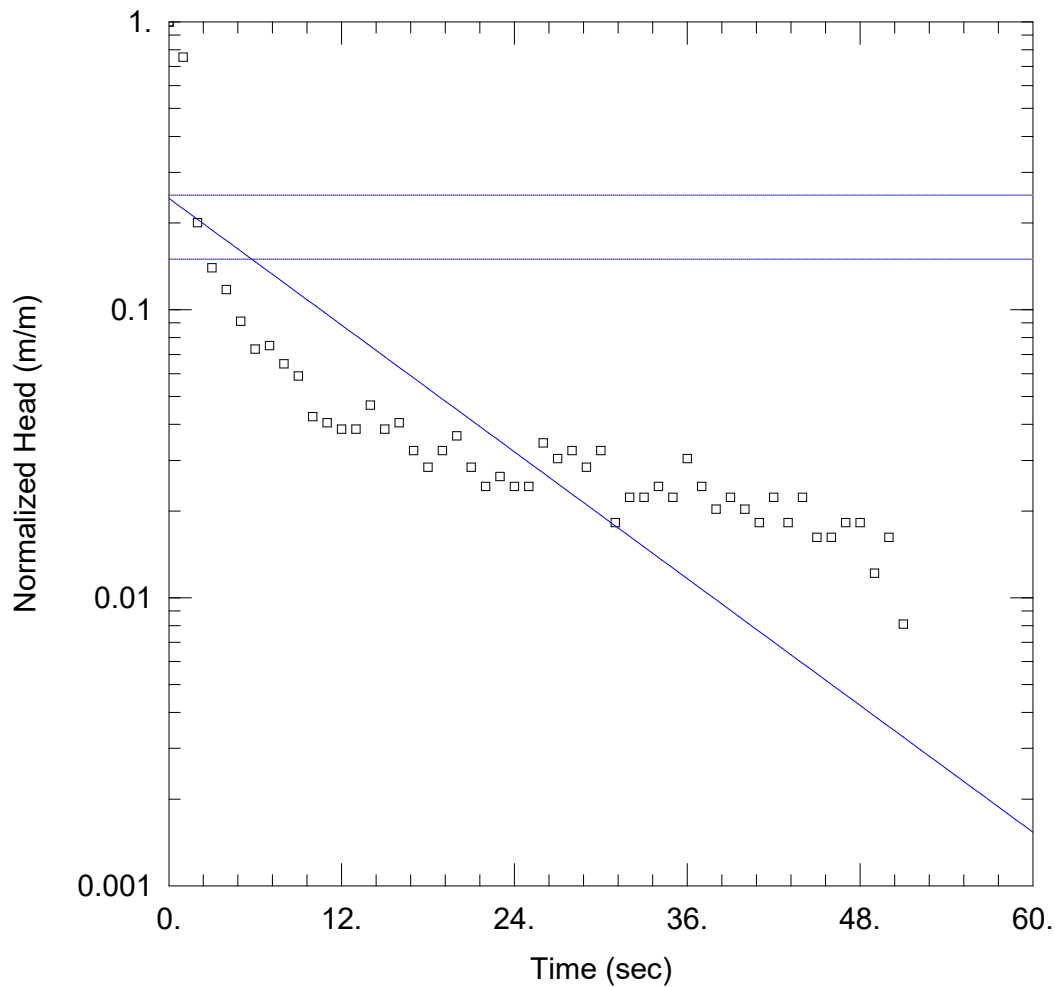
Initial Displacement: 0.537 m
 Total Well Penetration Depth: 6.705 m
 Casing Radius: 0.025 m

Static Water Column Height: 7.575 m
 Screen Length: 2.9 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 11.23 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: MW05Q FHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:44:52

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW05Q FHT3)

Initial Displacement: 0.493 m

Static Water Column Height: 7.575 m

Total Well Penetration Depth: 6.705 m

Screen Length: 2.9 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

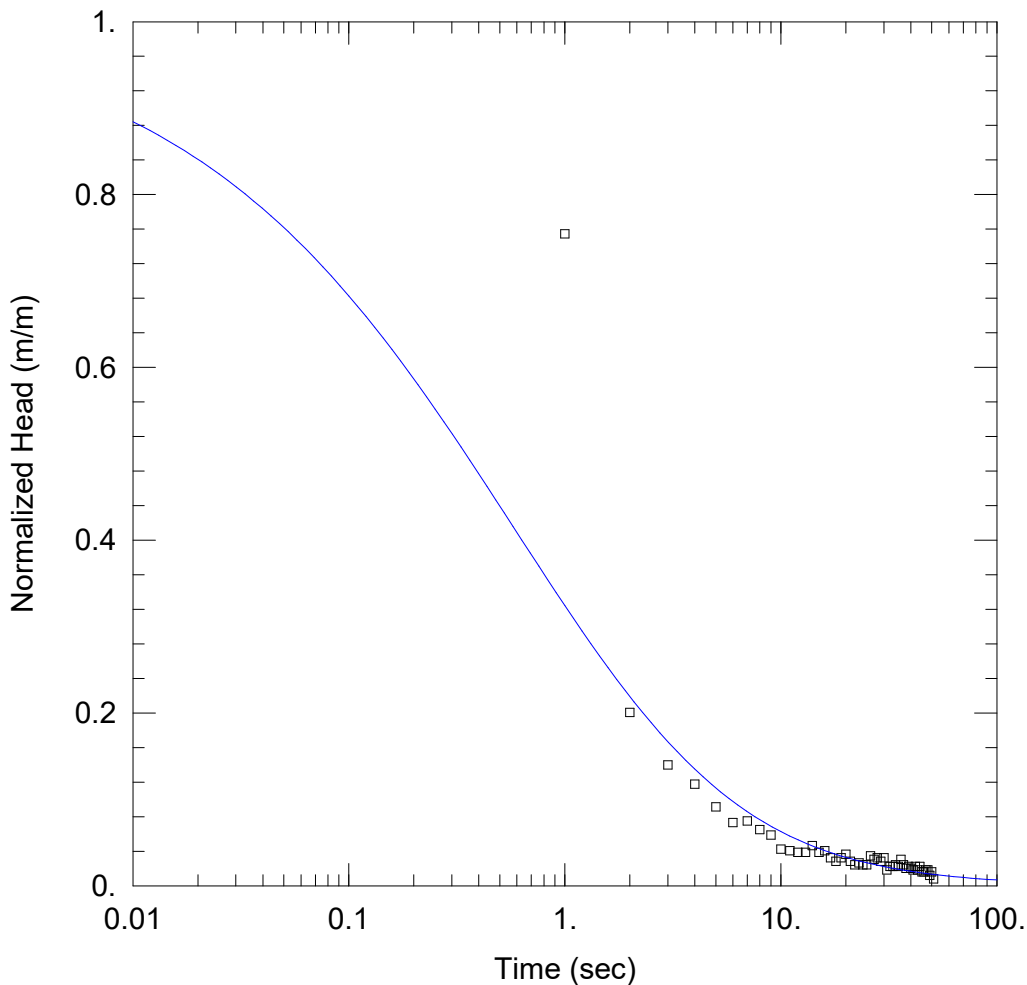
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 4.191 m/day

y0 = 0.1203 m



WELL TEST ANALYSIS

Data Set: MW05Q FHT3 - KGS.aqt
 Date: 08/26/22

Time: 15:44:55

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

WELL DATA (MW05Q FHT3)

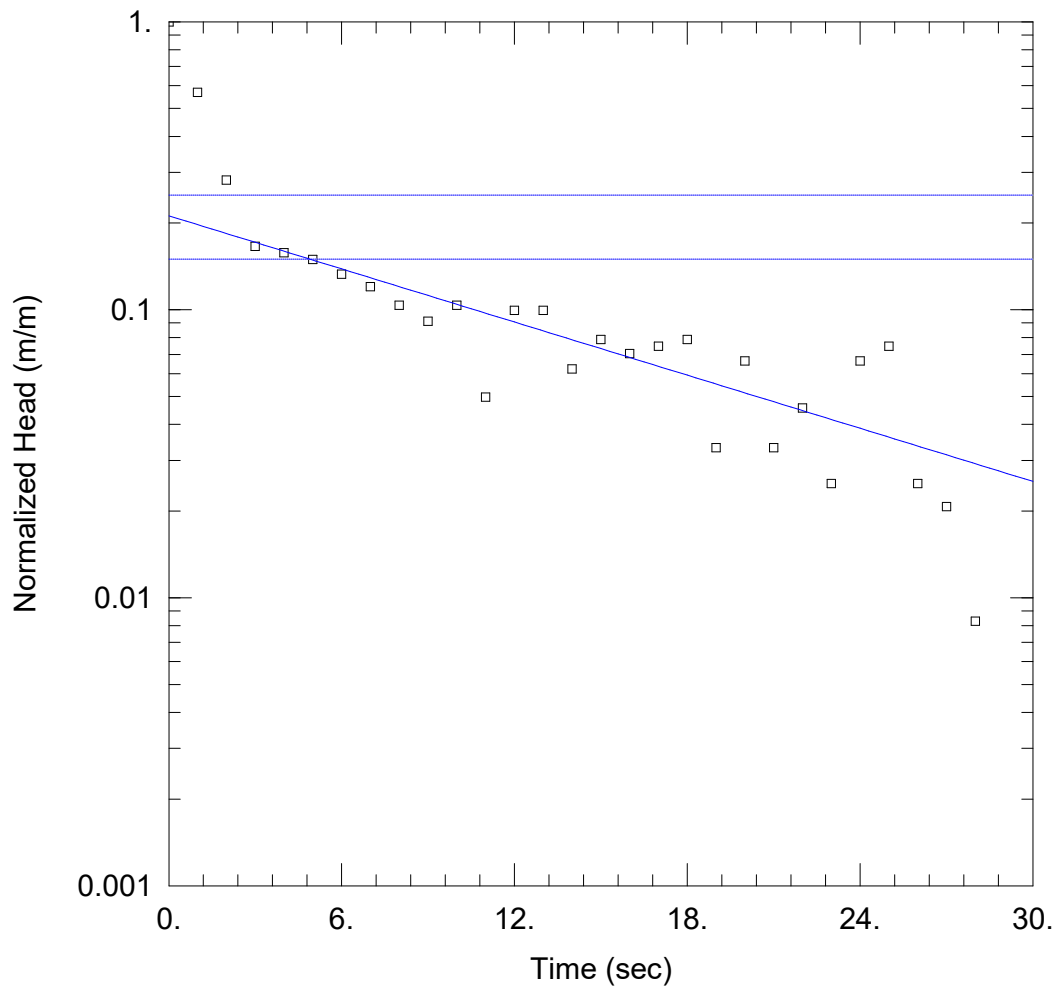
Initial Displacement: 0.493 m
 Total Well Penetration Depth: 6.705 m
 Casing Radius: 0.025 m

Static Water Column Height: 7.575 m
 Screen Length: 2.9 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 6.708 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: MW05Q RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:45:24

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW05Q RHT1)

Initial Displacement: -0.241 m

Static Water Column Height: 7.575 m

Total Well Penetration Depth: 6.705 m

Screen Length: 2.9 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

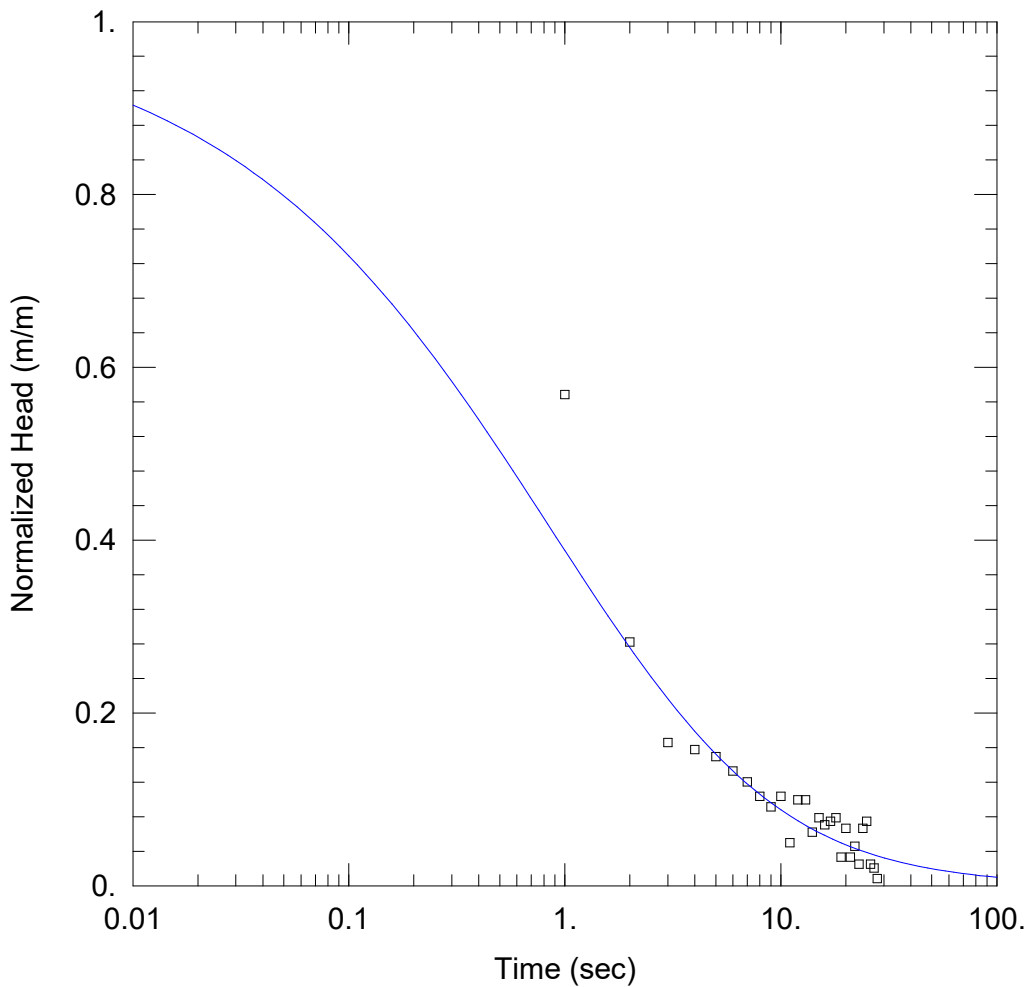
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.513 m/day

y0 = -0.0511 m



WELL TEST ANALYSIS

Data Set: MW05Q RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:45:26

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

WELL DATA (MW05Q RHT1)

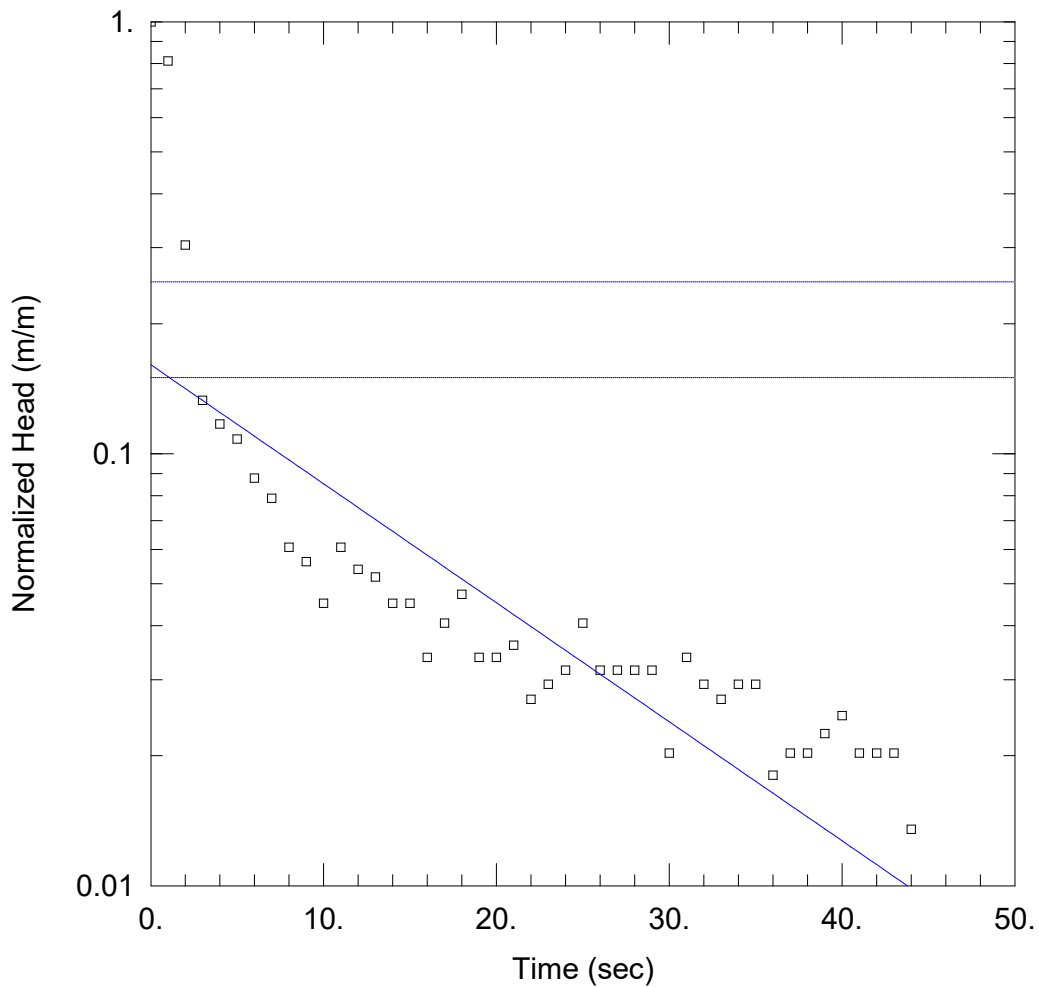
Initial Displacement: -0.241 m
 Total Well Penetration Depth: 6.705 m
 Casing Radius: 0.025 m

Static Water Column Height: 7.575 m
 Screen Length: 2.9 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 4.56 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: MW05Q RHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:45:28

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW05Q RHT2)

Initial Displacement: -0.444 m

Static Water Column Height: 7.575 m

Total Well Penetration Depth: 6.705 m

Screen Length: 2.9 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

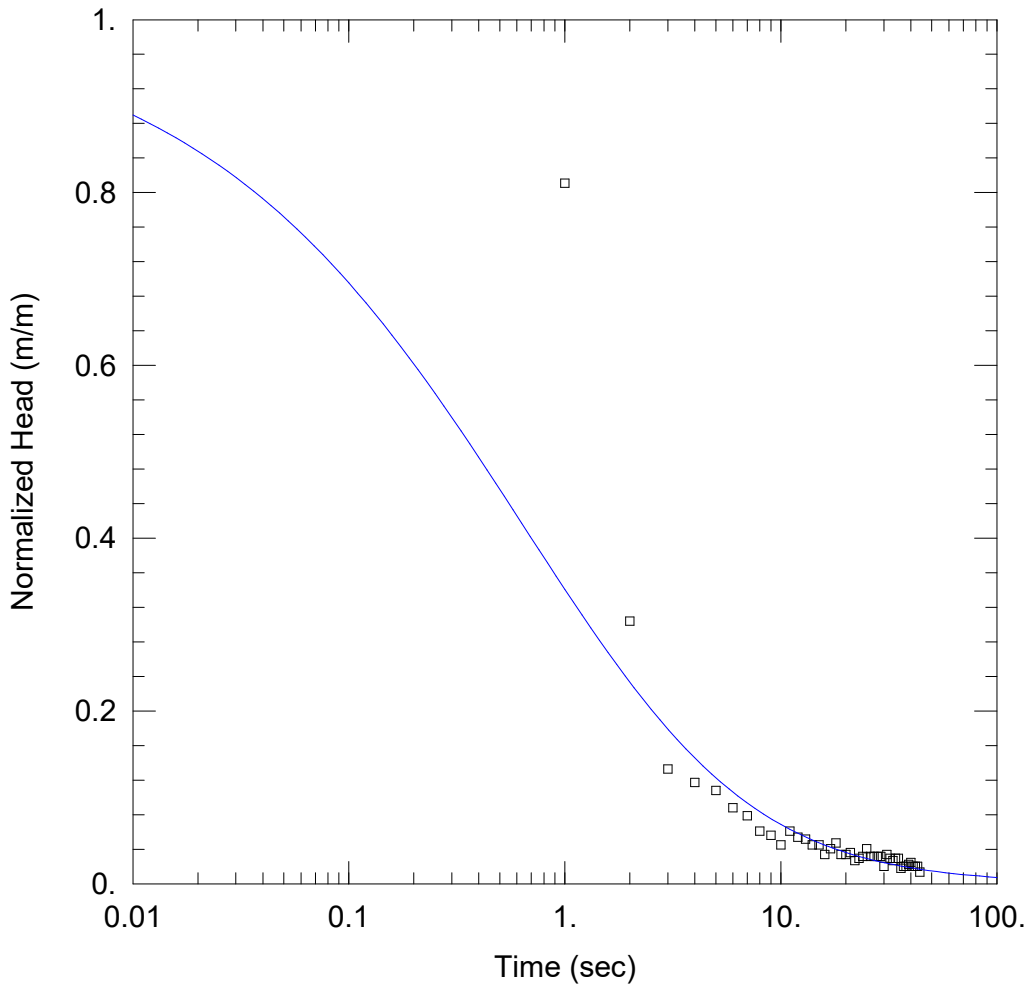
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.147 m/day

y0 = -0.07136 m



WELL TEST ANALYSIS

Data Set: MW05Q RHT2 - KGS.aqt

Date: 08/26/22

Time: 15:45:31

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

WELL DATA (MW05Q RHT2)

Initial Displacement: -0.444 m

Static Water Column Height: 7.575 m

Total Well Penetration Depth: 6.705 m

Screen Length: 2.9 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

SOLUTION

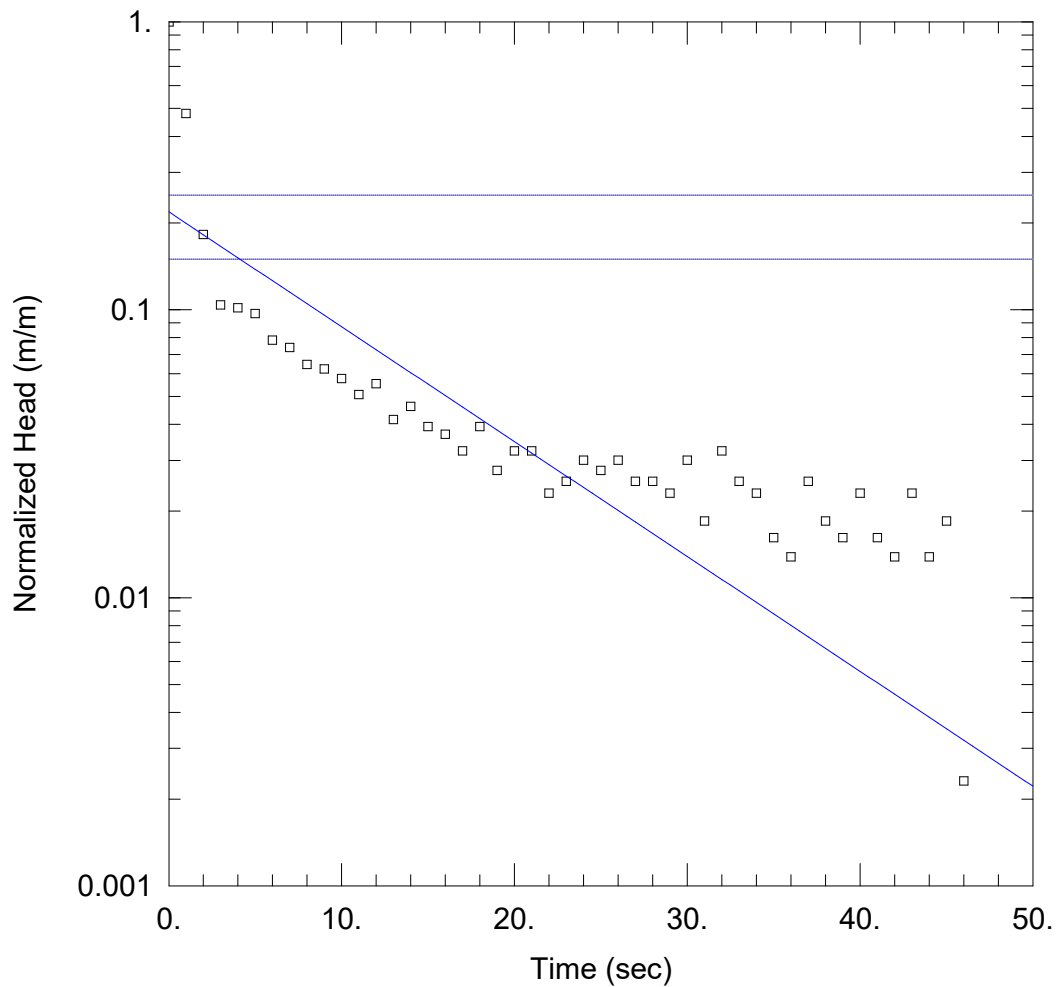
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 6.062 m/day

Ss = 0.02247 m⁻¹

Kz/Kr = 0.1



WELL TEST ANALYSIS

Data Set: MW05Q RHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:45:33

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW05Q RHT3)

Initial Displacement: -0.433 m

Static Water Column Height: 7.575 m

Total Well Penetration Depth: 6.705 m

Screen Length: 2.9 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

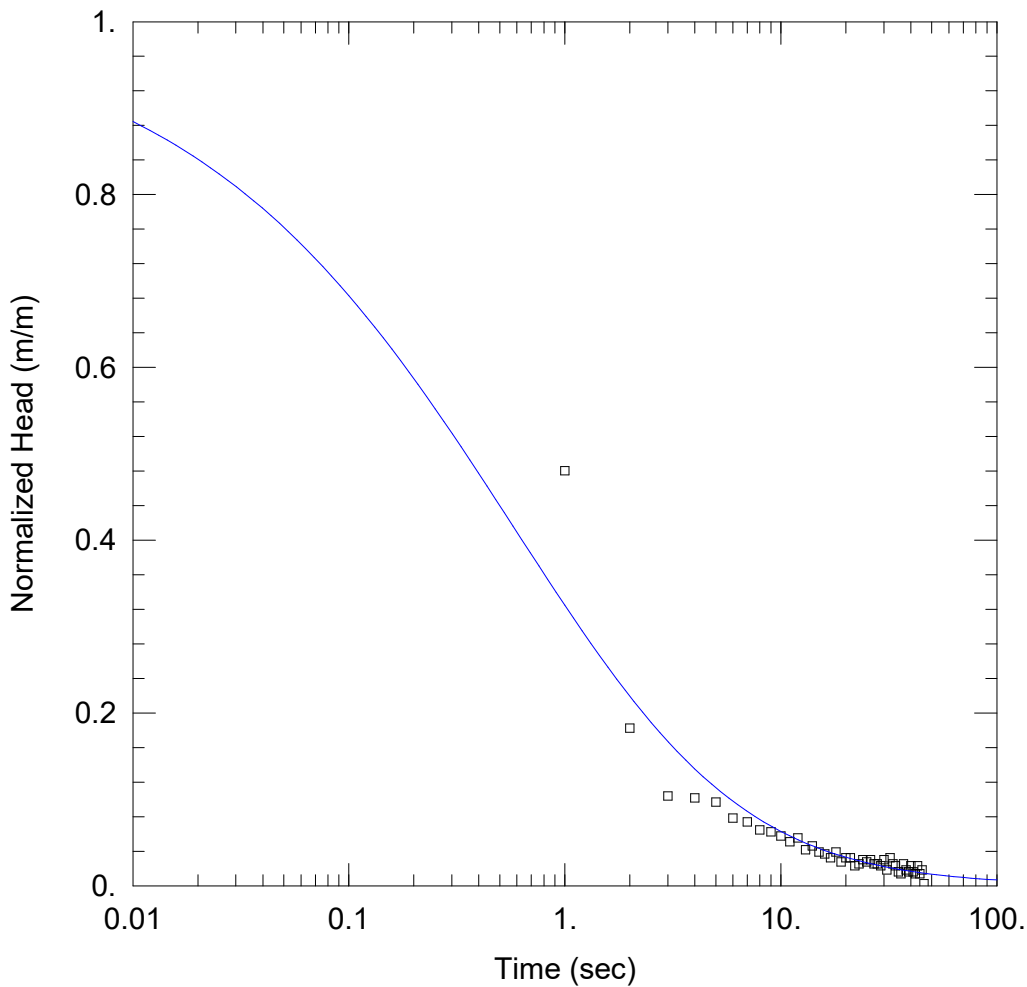
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 4.556 m/day

y0 = -0.09477 m



WELL TEST ANALYSIS

Data Set: MW05Q RHT3 - KGS.aqt
 Date: 08/26/22

Time: 15:45:36

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 6.705 m

WELL DATA (MW05Q RHT3)

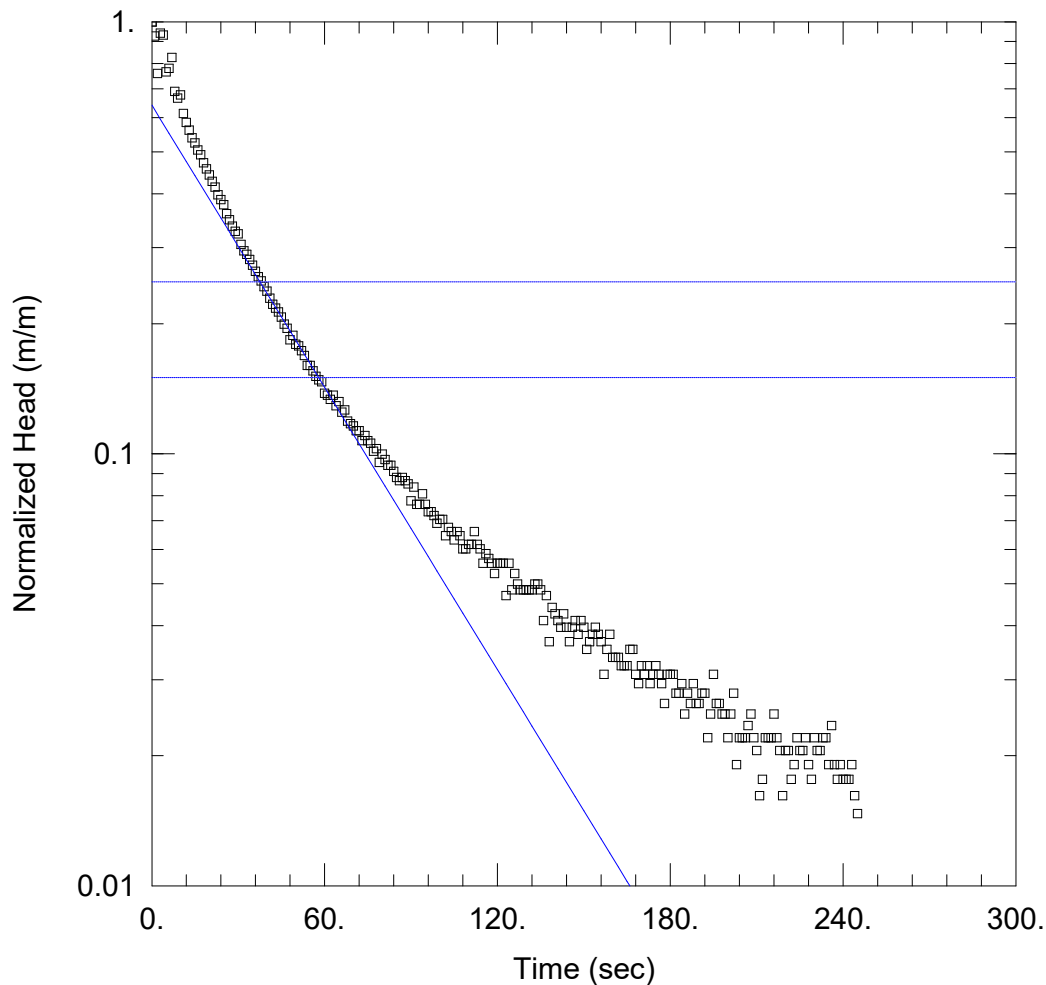
Initial Displacement: -0.433 m
 Total Well Penetration Depth: 6.705 m
 Casing Radius: 0.025 m

Static Water Column Height: 7.575 m
 Screen Length: 2.9 m
 Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 6.693 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.02247 m⁻¹



WELL TEST ANALYSIS

Data Set: MW06B FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:52:52

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 21.23 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW06B FHT1)

Initial Displacement: 0.681 m

Static Water Column Height: 21.23 m

Total Well Penetration Depth: 20.37 m

Screen Length: 4 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

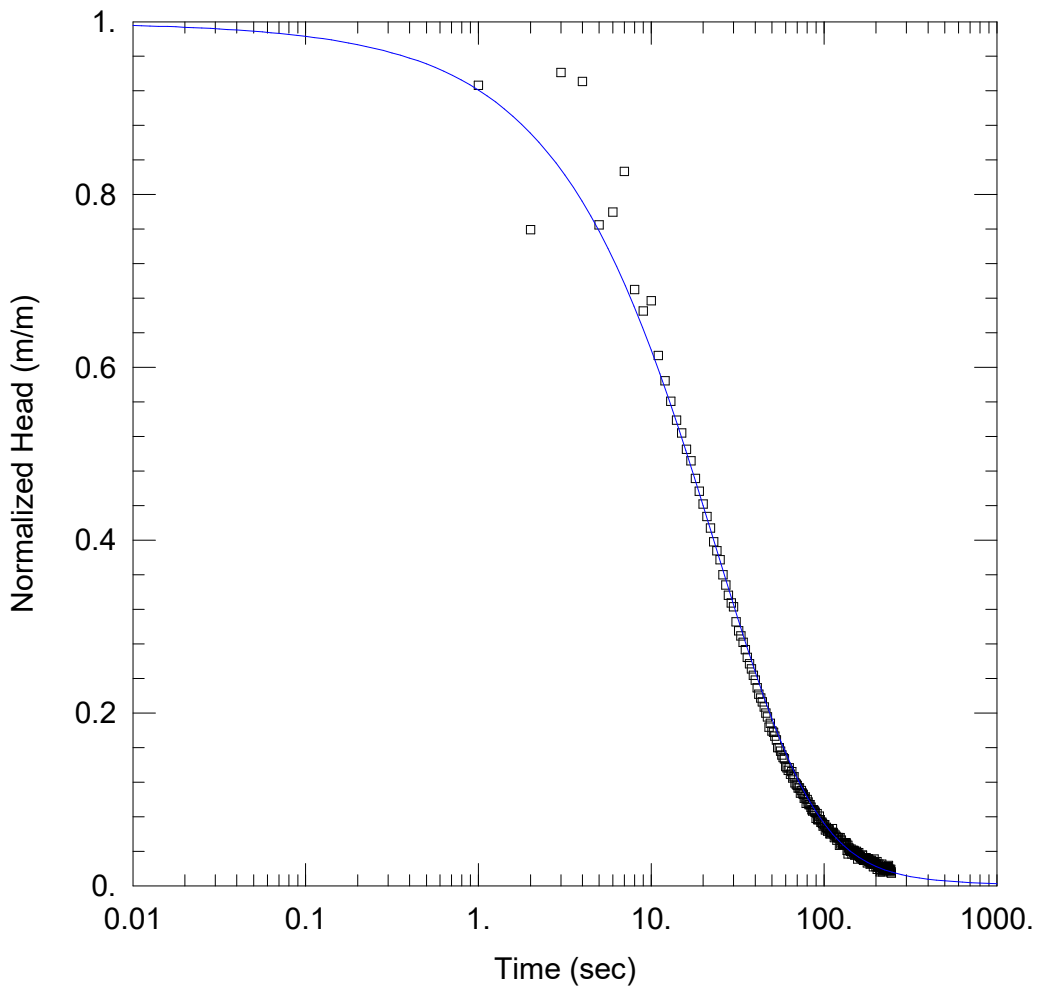
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.8725 m/day

y0 = 0.4369 m



WELL TEST ANALYSIS

Data Set: MW06B FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:52:55

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 21.23 m

WELL DATA (MW06B FHT1)

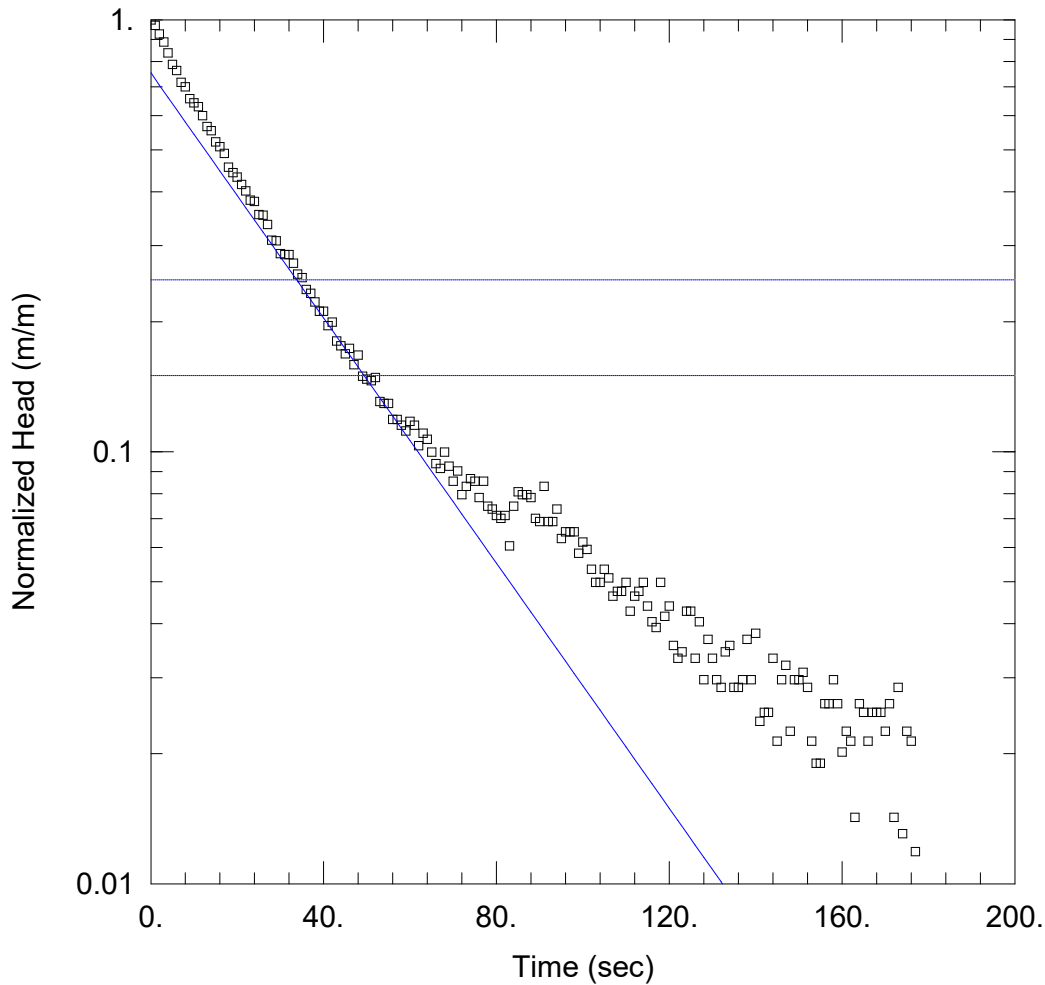
Initial Displacement: 0.681 m
 Total Well Penetration Depth: 20.37 m
 Casing Radius: 0.025 m

Static Water Column Height: 21.23 m
 Screen Length: 4 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 0.8359$ m/day
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 0.0001207$ m⁻¹



WELL TEST ANALYSIS

Data Set: MW06B RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:52:58

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 21.23 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW06B RHT1)

Initial Displacement: -0.842 m

Static Water Column Height: 21.23 m

Total Well Penetration Depth: 20.37 m

Screen Length: 4 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

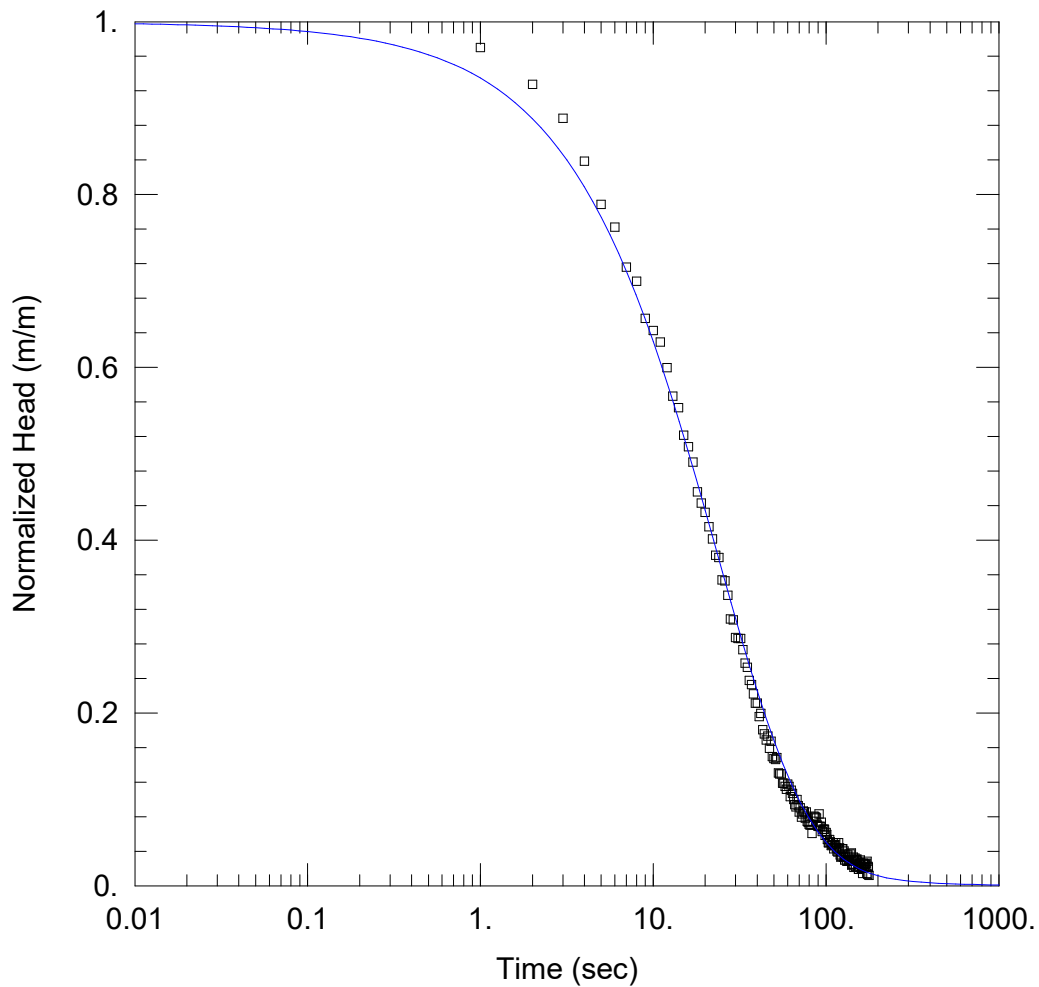
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 1.137 m/day

y0 = -0.6344 m



WELL TEST ANALYSIS

Data Set: MW06B RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:53:01

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 21.23 m

WELL DATA (MW06B RHT1)

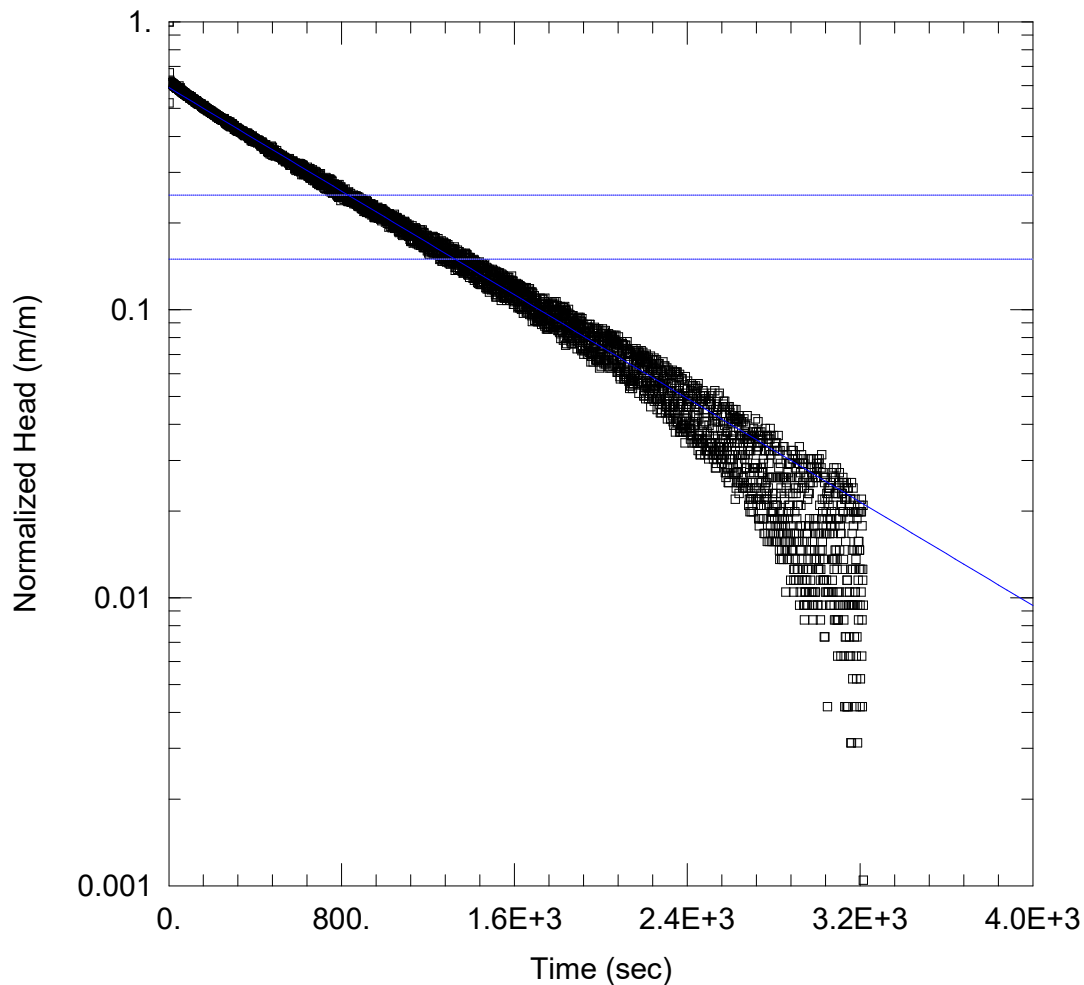
Initial Displacement: -0.842 m
 Total Well Penetration Depth: 20.37 m
 Casing Radius: 0.025 m

Static Water Column Height: 21.23 m
 Screen Length: 4 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 $K_r = 1.088 \text{ m/day}$
 $K_z/K_r = 0.1$

Solution Method: KGS Model
 $S_s = 1.869E-5 \text{ m}^{-1}$



WELL TEST ANALYSIS

Data Set: MW07B FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:53:04

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 13.93 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW07B FHT1)

Initial Displacement: 0.956 m

Static Water Column Height: 14.33 m

Total Well Penetration Depth: 13.83 m

Screen Length: 4 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

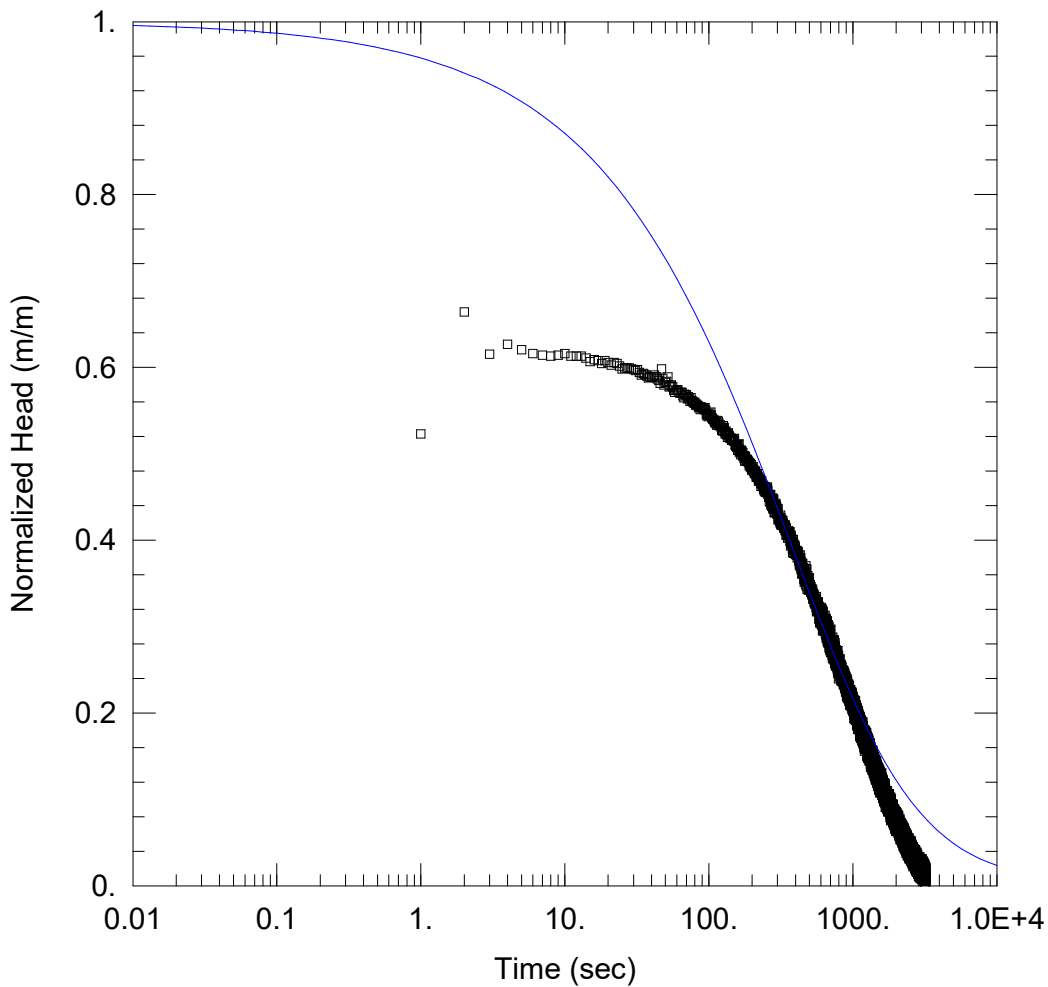
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03603 m/day

y0 = 0.5651 m



WELL TEST ANALYSIS

Data Set: MW07B FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:53:09

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 13.93 m

WELL DATA (MW07B FHT1)

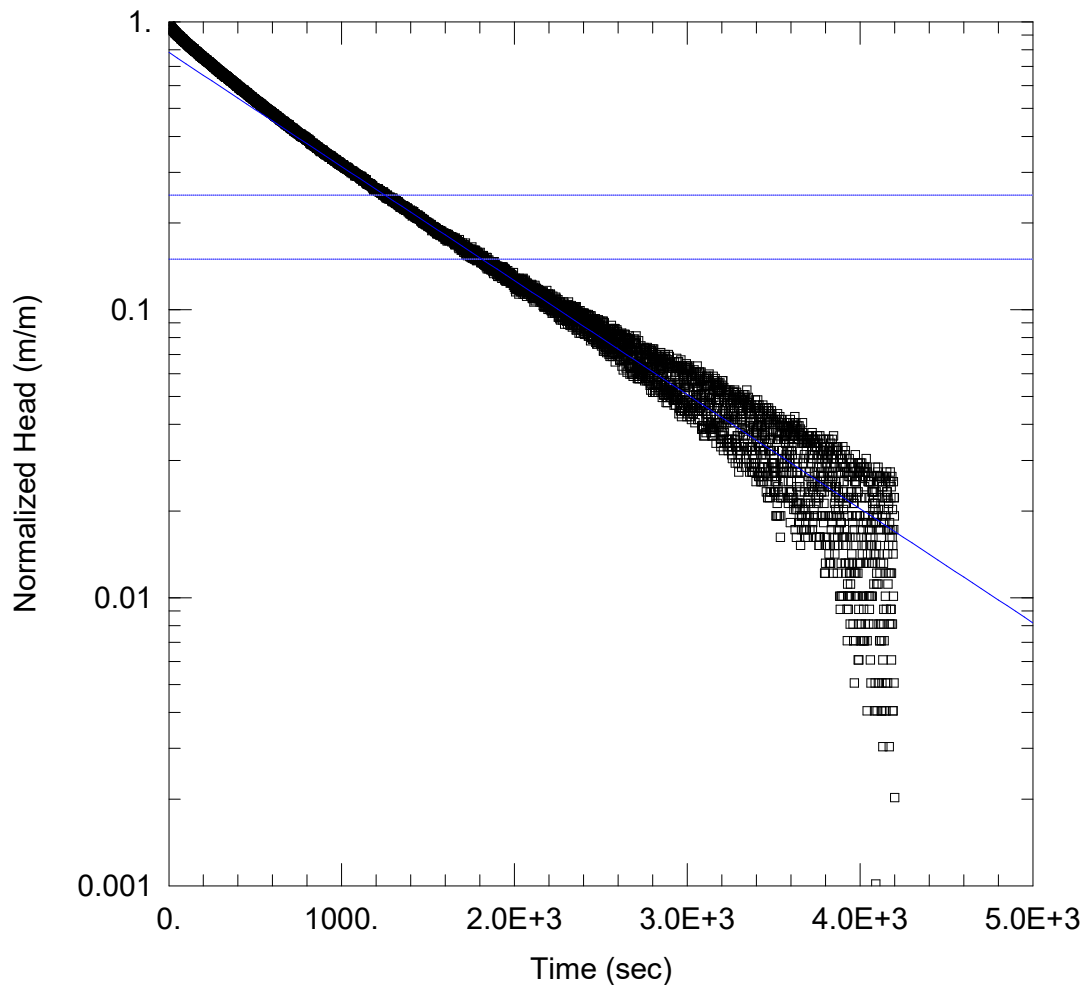
Initial Displacement: 0.956 m
 Total Well Penetration Depth: 13.83 m
 Casing Radius: 0.025 m

Static Water Column Height: 14.33 m
 Screen Length: 4 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 0.01521 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.008844 m⁻¹



WELL TEST ANALYSIS

Data Set: MW07B RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:53:14

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 13.93 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (MW07B RHT1)

Initial Displacement: -0.987 m

Static Water Column Height: 14.33 m

Total Well Penetration Depth: 13.83 m

Screen Length: 4 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

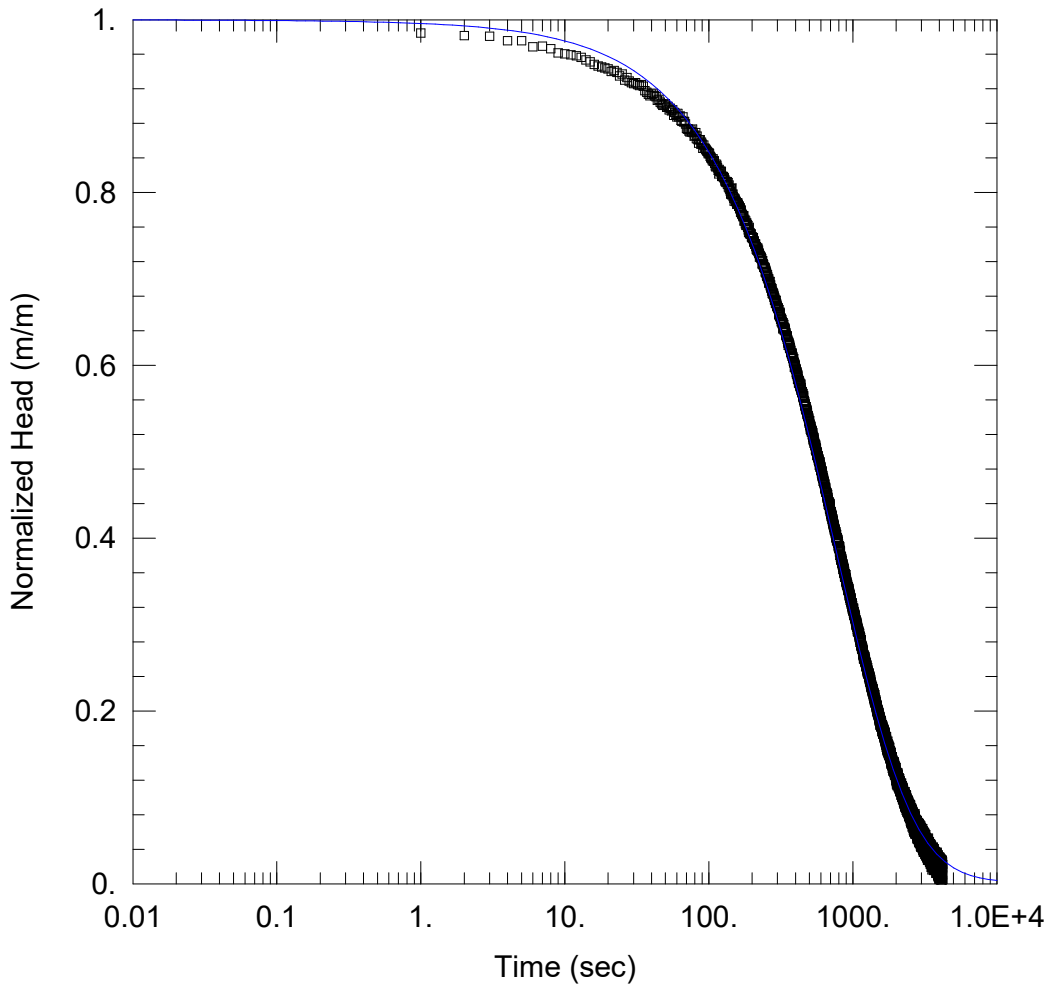
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03173 m/day

y0 = -0.7721 m



WELL TEST ANALYSIS

Data Set: MW07B RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:53:19

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 13.93 m

WELL DATA (MW07B RHT1)

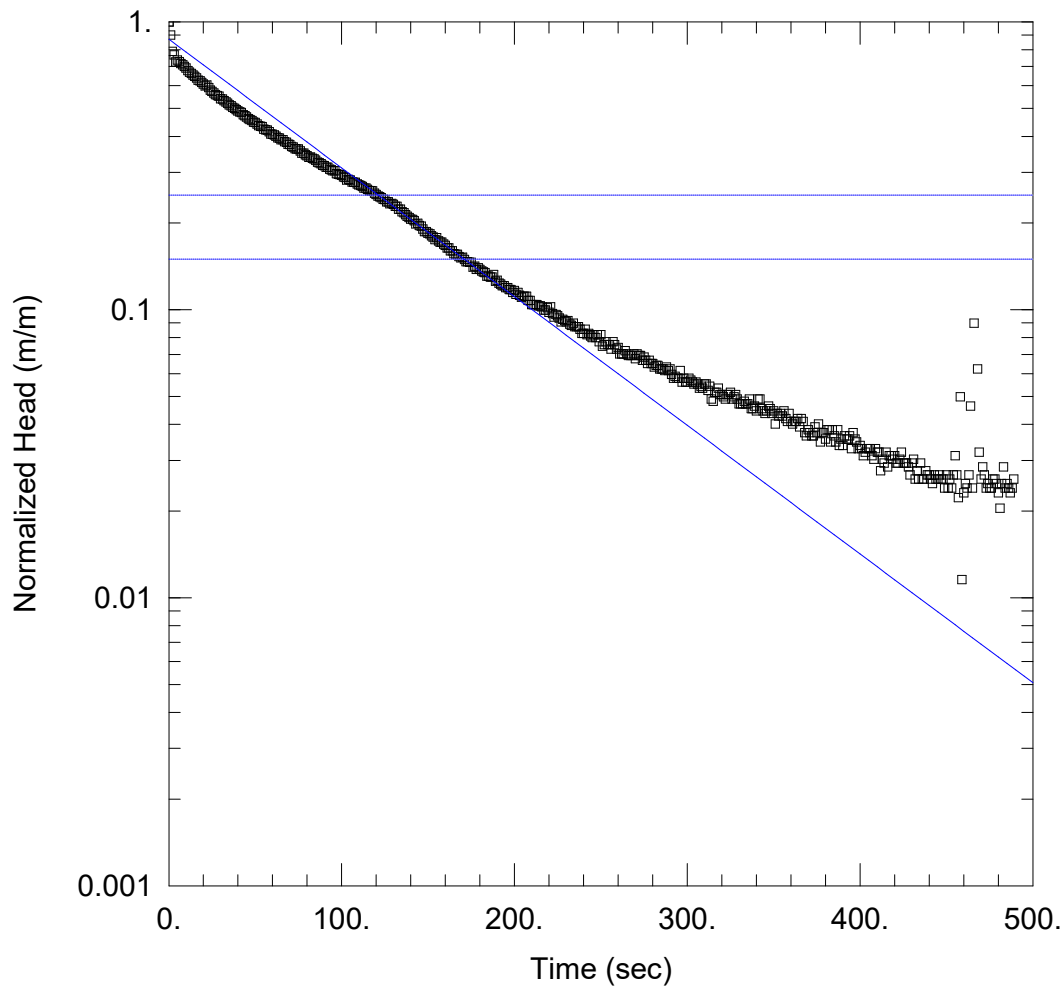
Initial Displacement: -0.987 m
 Total Well Penetration Depth: 13.83 m
 Casing Radius: 0.025 m

Static Water Column Height: 14.33 m
 Screen Length: 4 m
 Well Radius: 0.073 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 0.03634 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 1.004E-5 m⁻¹



WELL TEST ANALYSIS

Data Set: RW03S FHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:54:18

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.44 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW03S FHT1)

Initial Displacement: 1.123 m

Static Water Column Height: 8.44 m

Total Well Penetration Depth: 7.82 m

Screen Length: 1 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

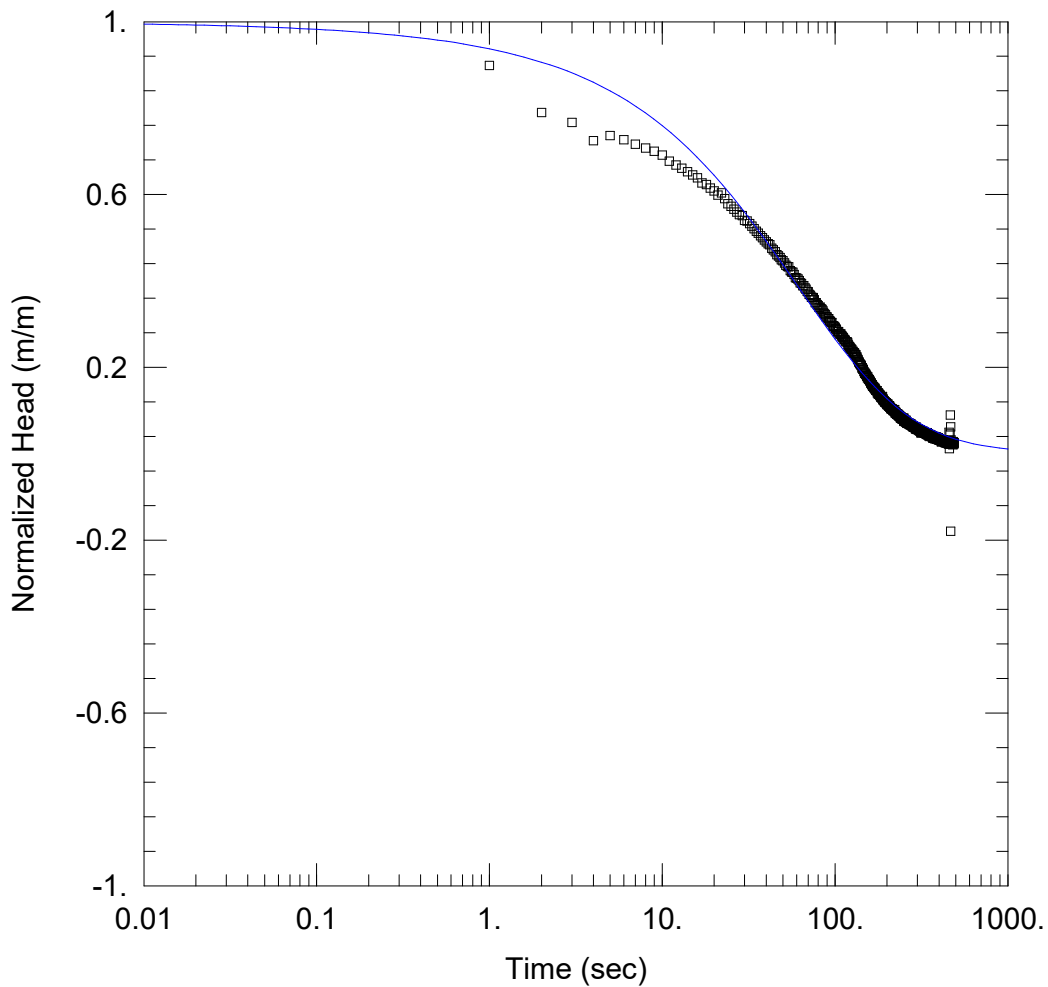
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 1.084 m/day

y0 = 0.9778 m



WELL TEST ANALYSIS

Data Set: RW03S FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:54:21

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.44 m

WELL DATA (RW03S FHT1)

Initial Displacement: 1.123 m

Total Well Penetration Depth: 7.82 m

Casing Radius: 0.025 m

Static Water Column Height: 8.44 m

Screen Length: 1 m

Well Radius: 0.064 m

SOLUTION

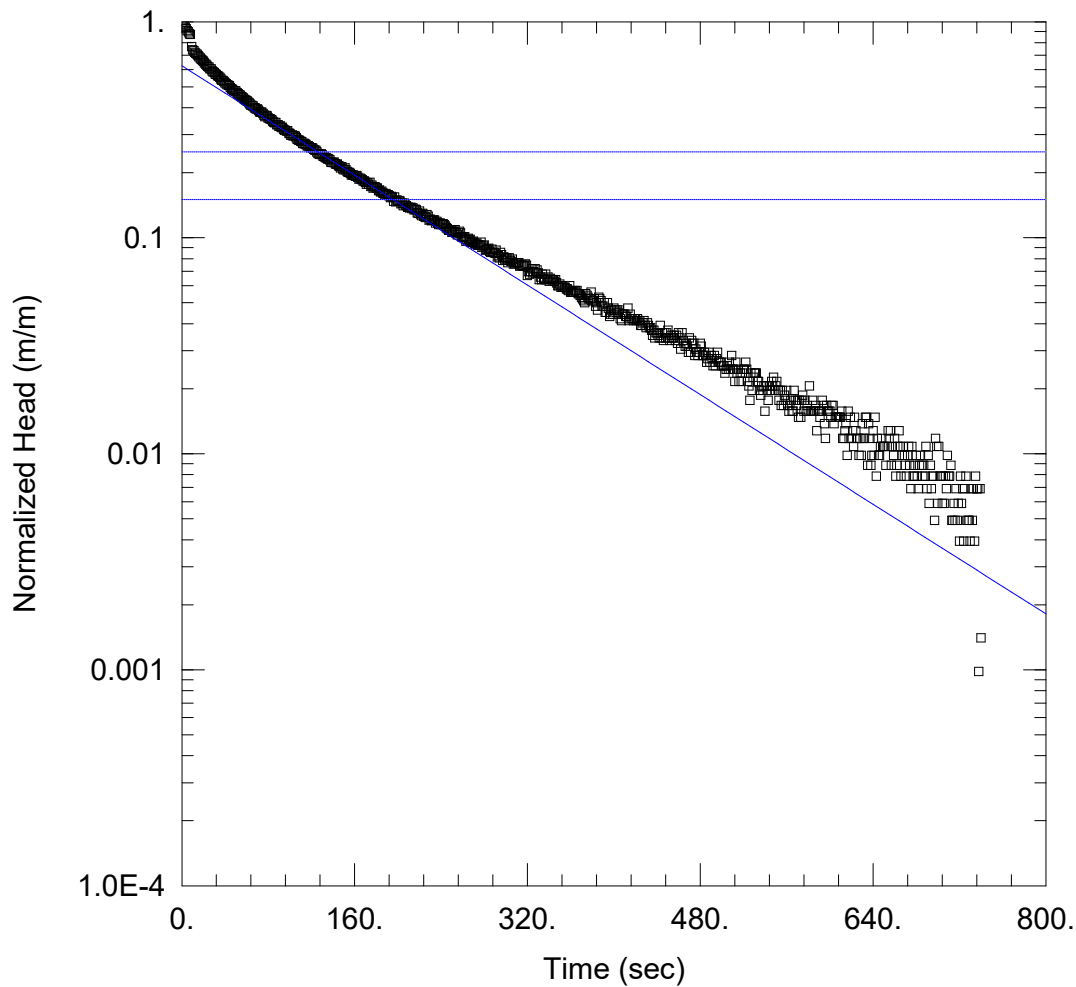
Aquifer Model: Unconfined

Kr = 0.8368 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.004842 m⁻¹



WELL TEST ANALYSIS

Data Set: RW03S RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:54:25

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 8.44 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW03S RHT1)

Initial Displacement: -1.017 m

Static Water Column Height: 8.44 m

Total Well Penetration Depth: 7.82 m

Screen Length: 1 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

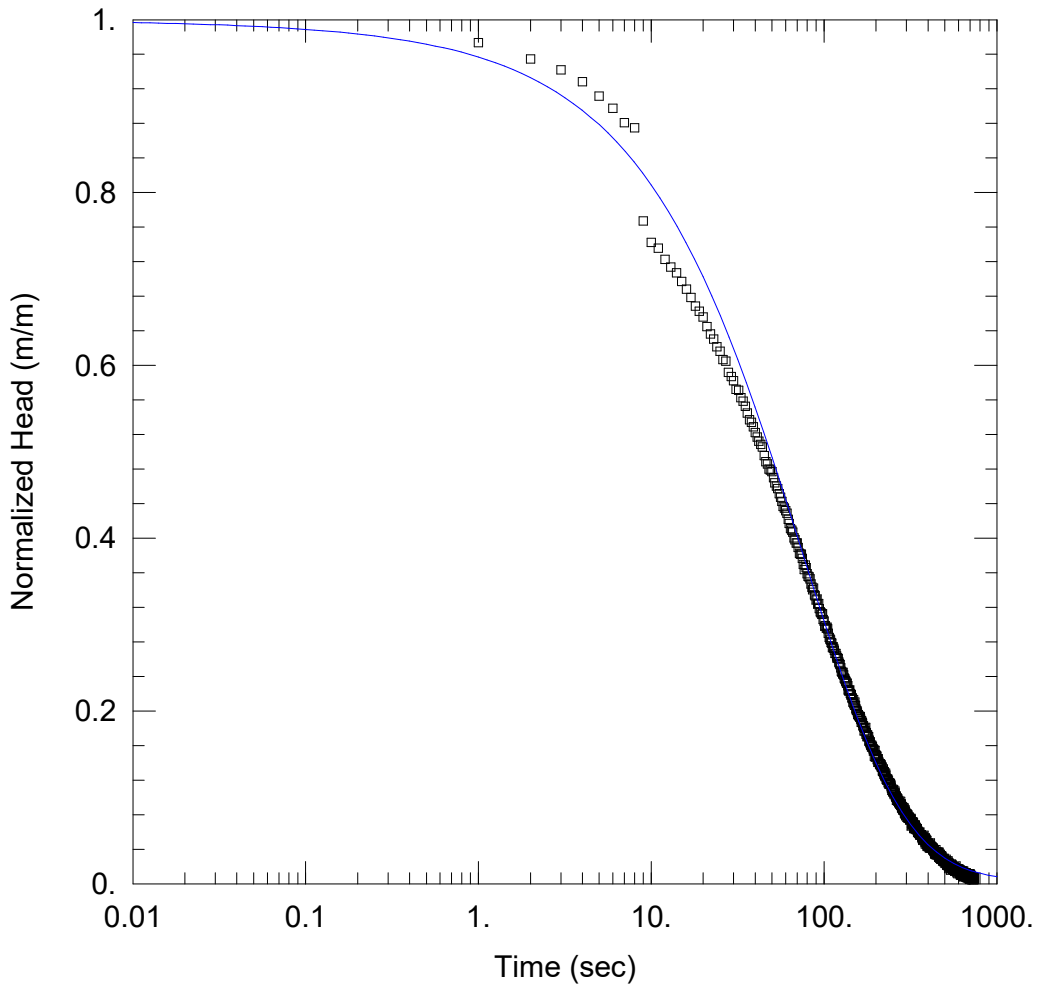
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.7694 m/day

y0 = -0.6367 m



WELL TEST ANALYSIS

Data Set: RW03S RHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:54:28

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 8.44 m

WELL DATA (RW03S RHT1)

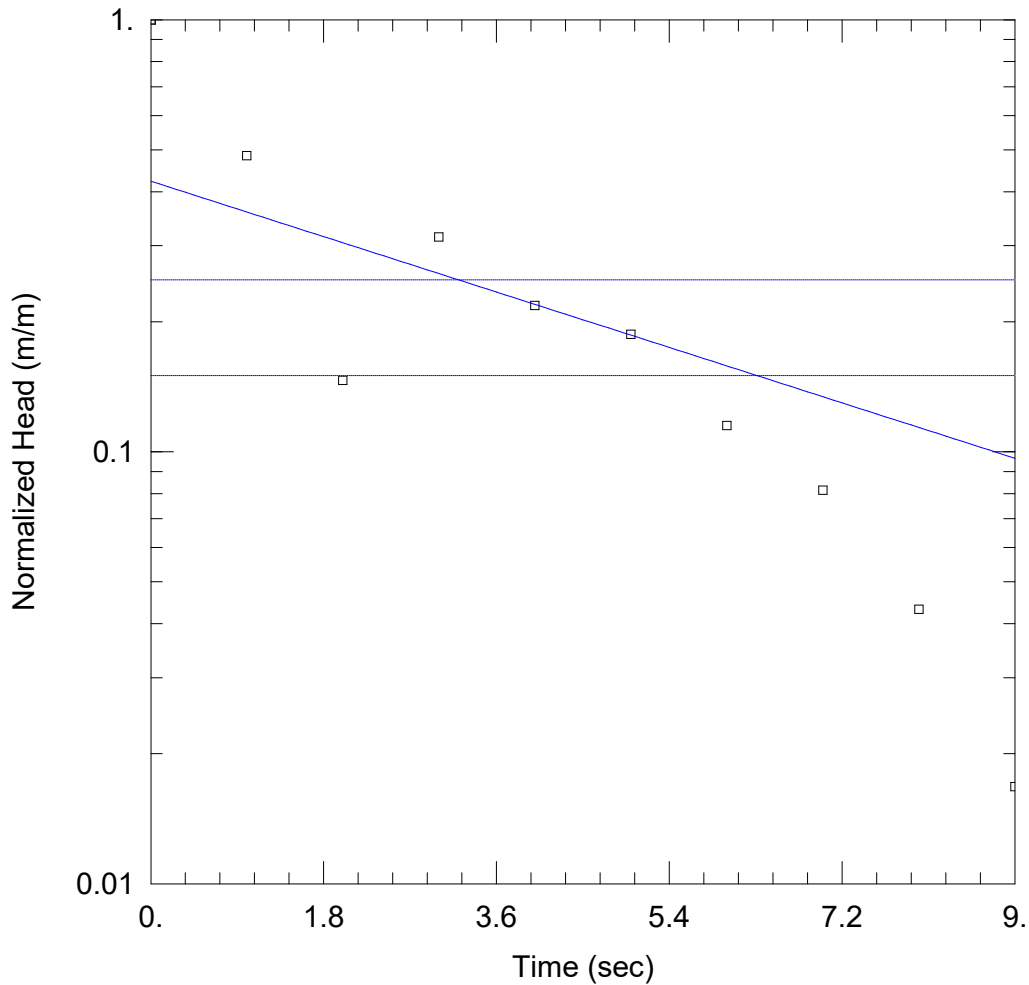
Initial Displacement: -1.017 m
 Total Well Penetration Depth: 7.82 m
 Casing Radius: 0.025 m

Static Water Column Height: 8.44 m
 Screen Length: 1 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 0.8612 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.001641 m⁻¹



WELL TEST ANALYSIS

Data Set: RW09B FHT1 - Hvorslev.aqt
 Date: 08/26/22

Time: 15:54:31

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 8.53 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW09B FHT1)

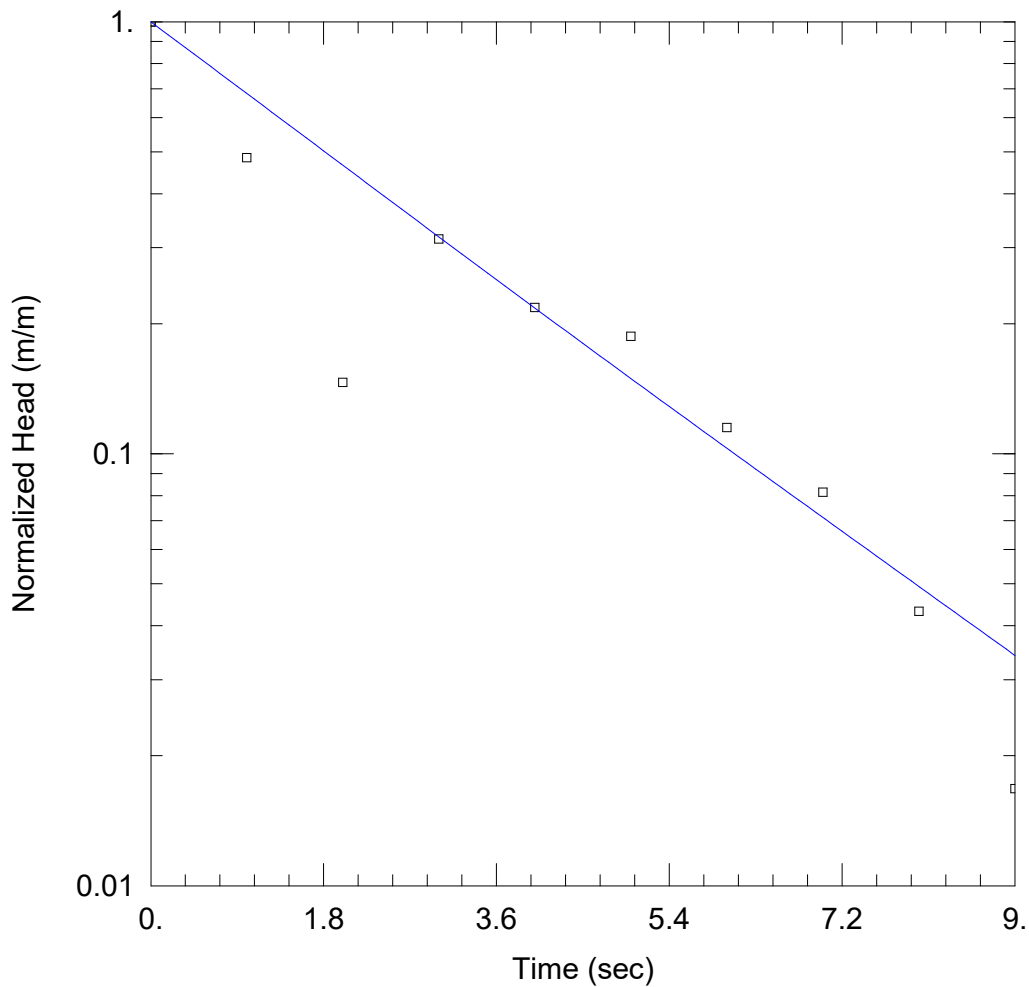
Initial Displacement: 0.417 m
 Total Well Penetration Depth: 8.72 m
 Casing Radius: 0.025 m

Static Water Column Height: 8.53 m
 Screen Length: 2 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 K = 11.71 m/day

Solution Method: Hvorslev
 y0 = 0.1764 m



WELL TEST ANALYSIS

Data Set: RW09B FHT1 - KGS.aqt
 Date: 08/26/22

Time: 15:54:34

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 8.53 m

WELL DATA (RW09B FHT1)

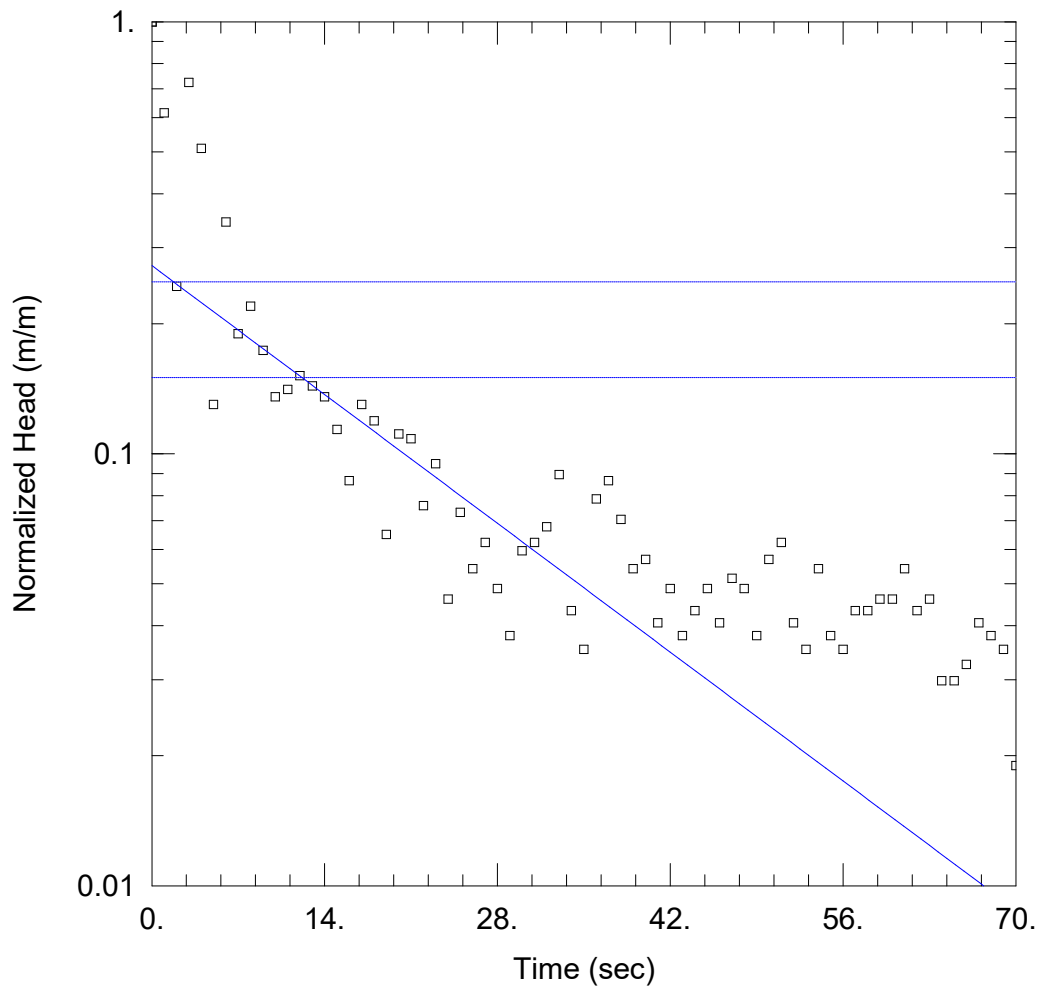
Initial Displacement: 0.417 m
 Total Well Penetration Depth: 8.72 m
 Casing Radius: 0.025 m

Static Water Column Height: 8.53 m
 Screen Length: 2 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 28.34 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 1.973E-11 m⁻¹



WELL TEST ANALYSIS

Data Set: RW10S FHT1 - Hvorslev.agt

Date: 08/26/22

Time: 15:54:59

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW10S FHT1)

Initial Displacement: 0.369 m

Static Water Column Height: 3.14 m

Total Well Penetration Depth: 3.11 m

Screen Length: 1.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

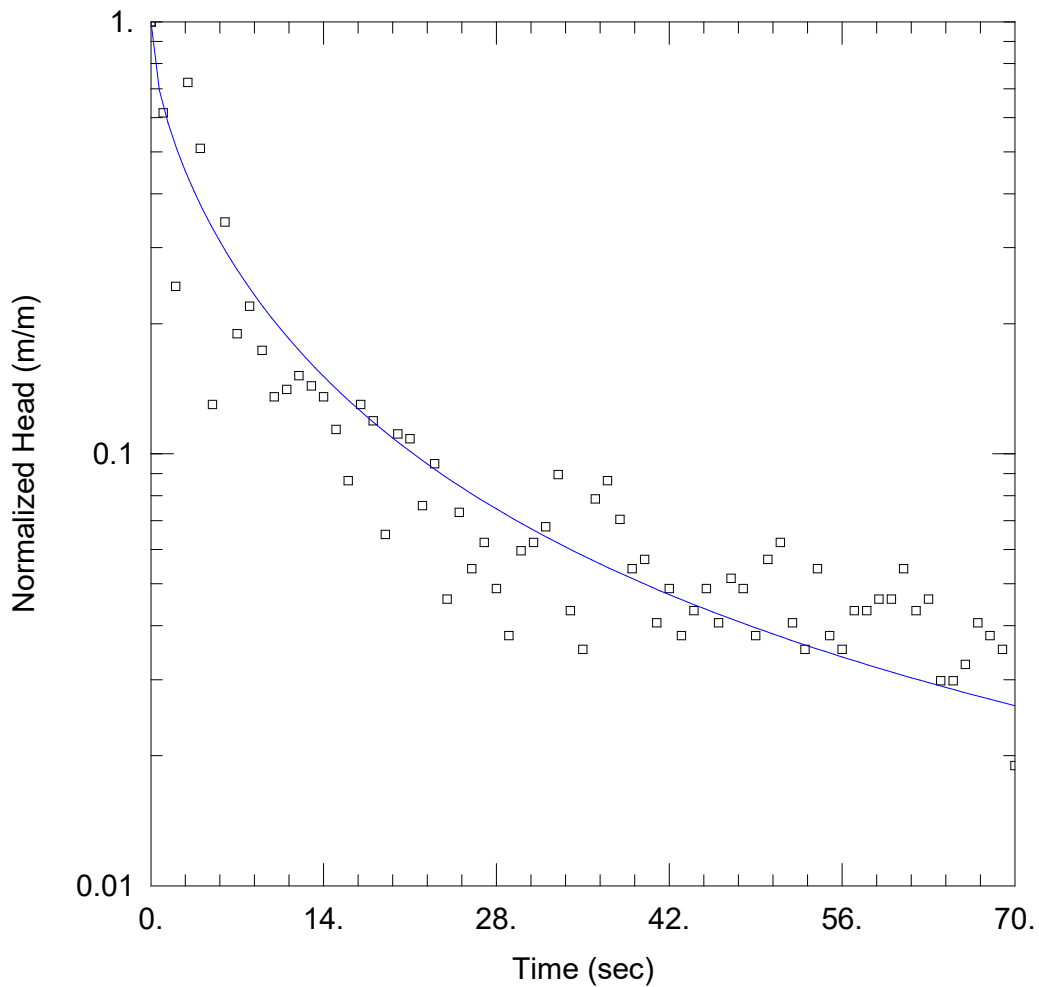
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.802 m/day

y0 = 0.1006 m



WELL TEST ANALYSIS

Data Set: RW10S FHT1 - KGS.aqt

Date: 08/26/22

Time: 15:55:02

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

WELL DATA (RW10S FHT1)

Initial Displacement: 0.369 m

Total Well Penetration Depth: 3.11 m

Casing Radius: 0.025 m

Static Water Column Height: 3.14 m

Screen Length: 1.5 m

Well Radius: 0.064 m

SOLUTION

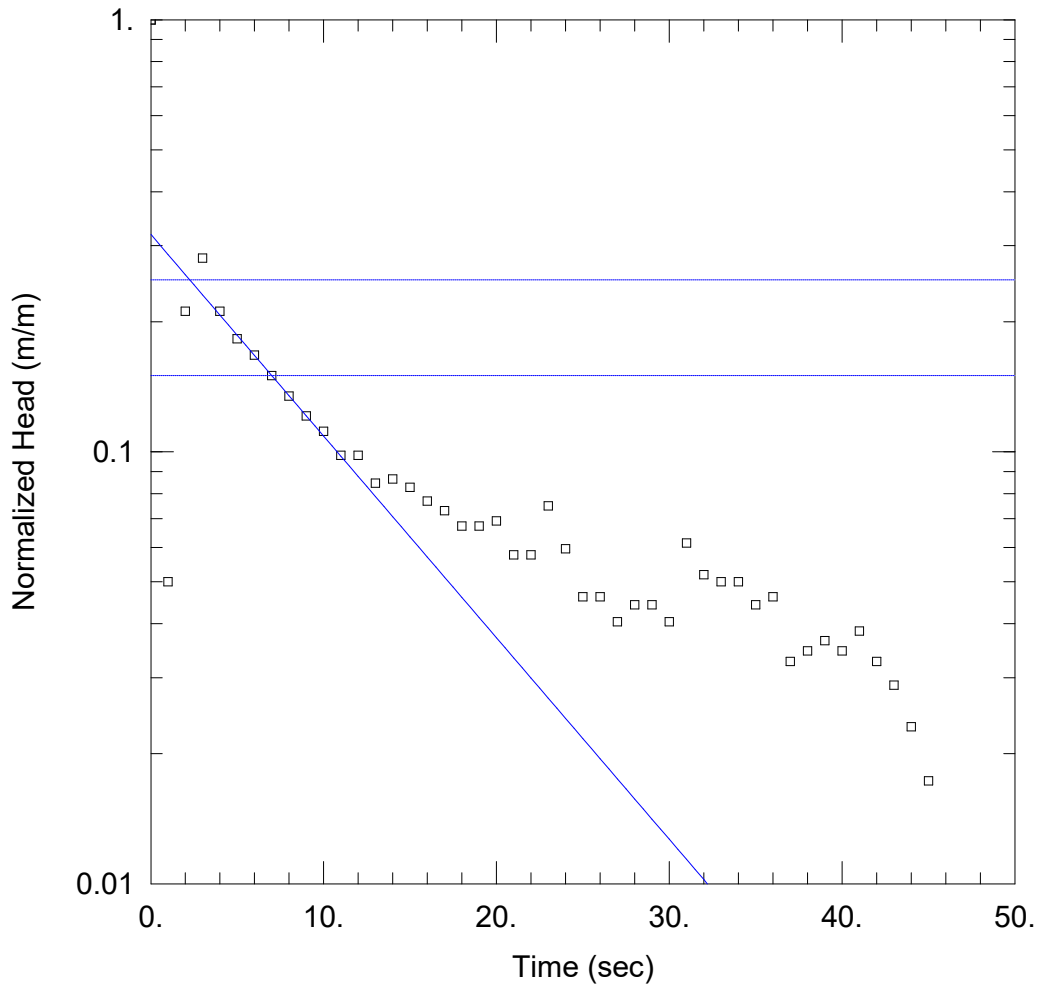
Aquifer Model: Unconfined

Kr = 5.121 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: RW10S FHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:55:05

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW10S FHT2)

Initial Displacement: 0.52 m

Static Water Column Height: 3.14 m

Total Well Penetration Depth: 3.11 m

Screen Length: 1.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

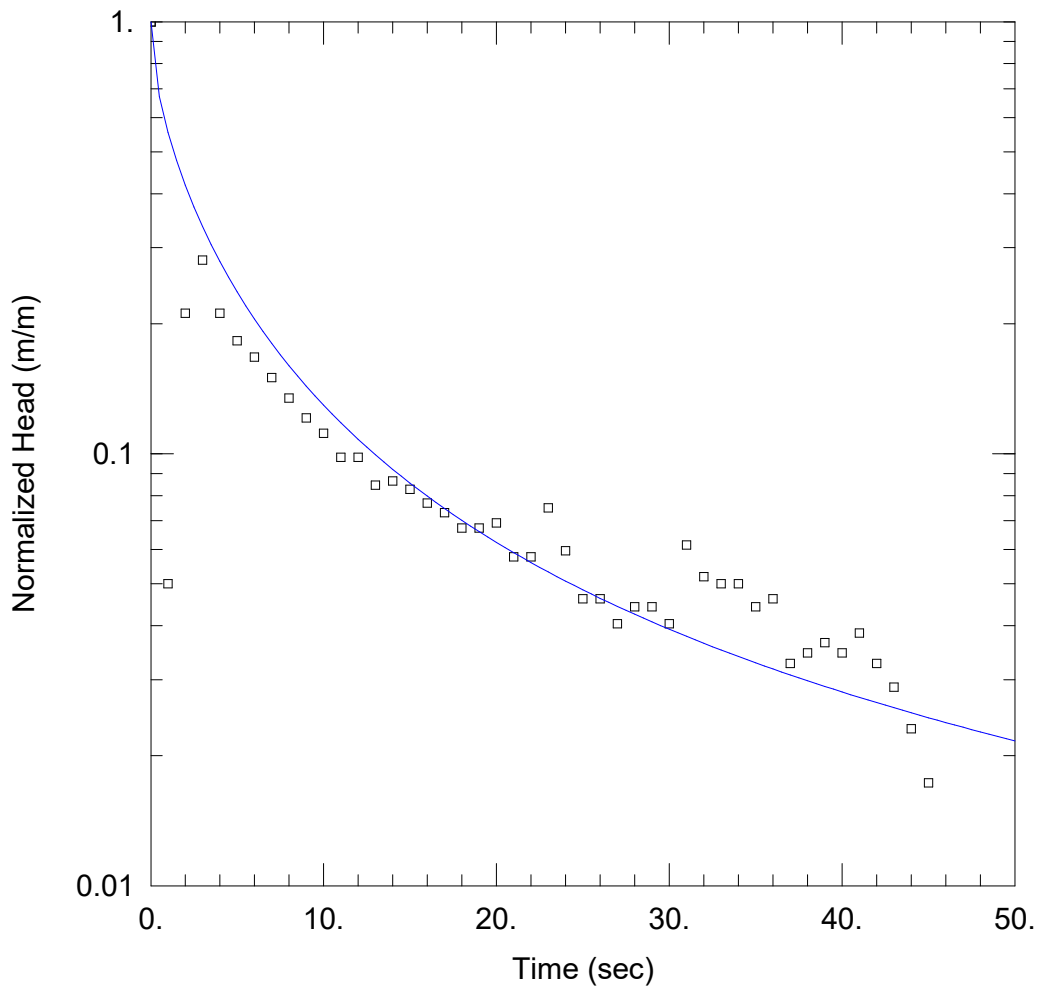
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 8.33 m/day

y0 = 0.1657 m



WELL TEST ANALYSIS

Data Set: RW10S FHT2 - KGS.aqt
 Date: 08/26/22

Time: 15:55:08

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

WELL DATA (RW10S FHT2)

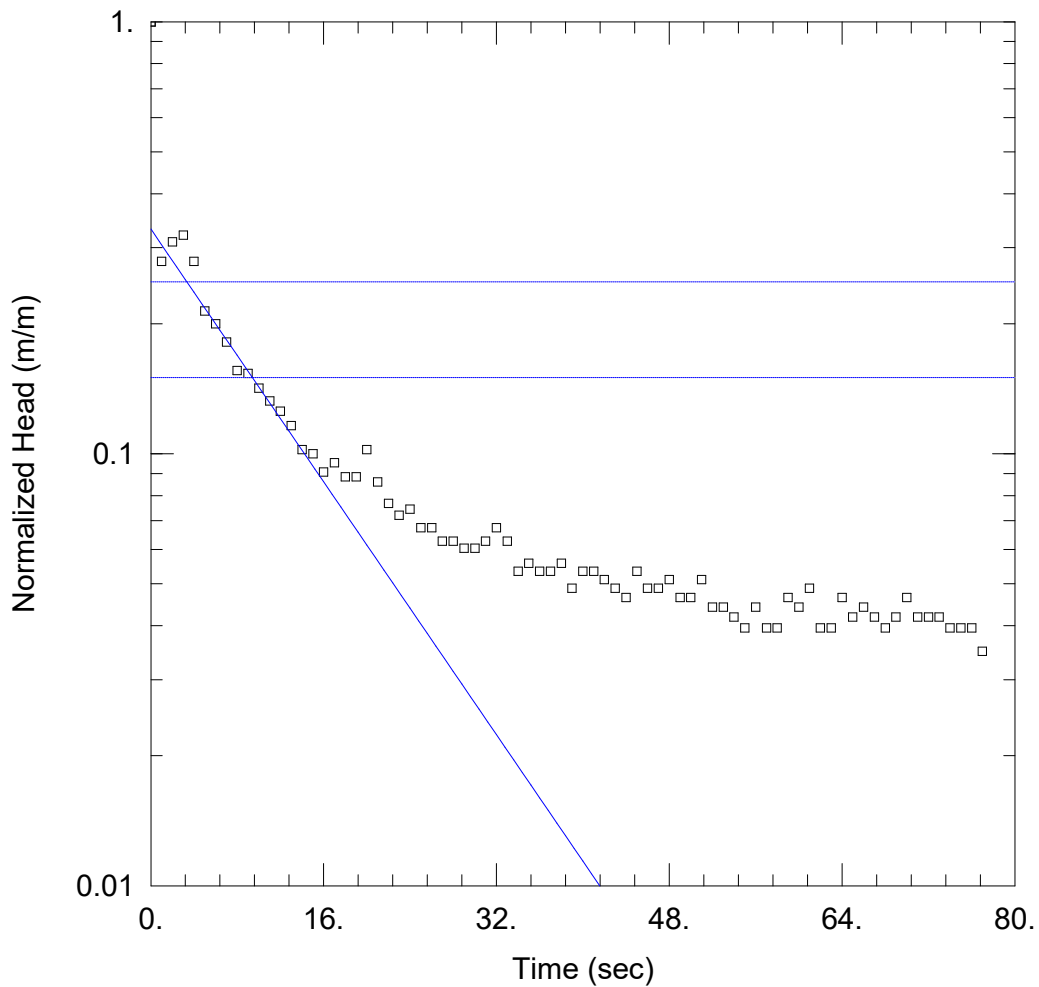
Initial Displacement: 0.52 m
 Total Well Penetration Depth: 3.11 m
 Casing Radius: 0.025 m

Static Water Column Height: 3.14 m
 Screen Length: 1.5 m
 Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
 Kr = 8.418 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: RW10S FHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:55:12

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW10S FHT3)

Initial Displacement: 0.43 m

Static Water Column Height: 3.14 m

Total Well Penetration Depth: 3.11 m

Screen Length: 1.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

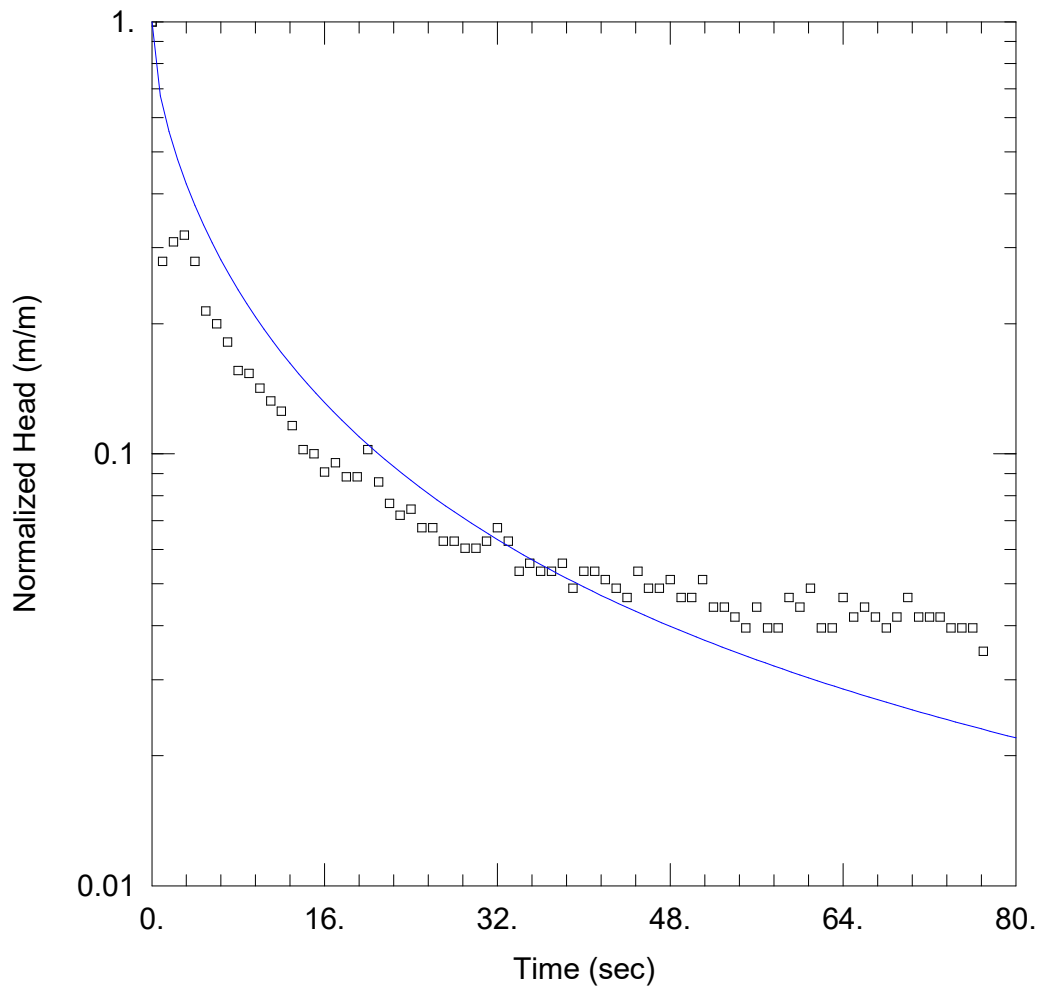
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 6.528 m/day

y0 = 0.1426 m



WELL TEST ANALYSIS

Data Set: RW10S FHT3 - KGS.aqt

Date: 08/26/22

Time: 15:55:15

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

WELL DATA (RW10S FHT3)

Initial Displacement: 0.43 m

Total Well Penetration Depth: 3.11 m

Casing Radius: 0.025 m

Static Water Column Height: 3.14 m

Screen Length: 1.5 m

Well Radius: 0.064 m

SOLUTION

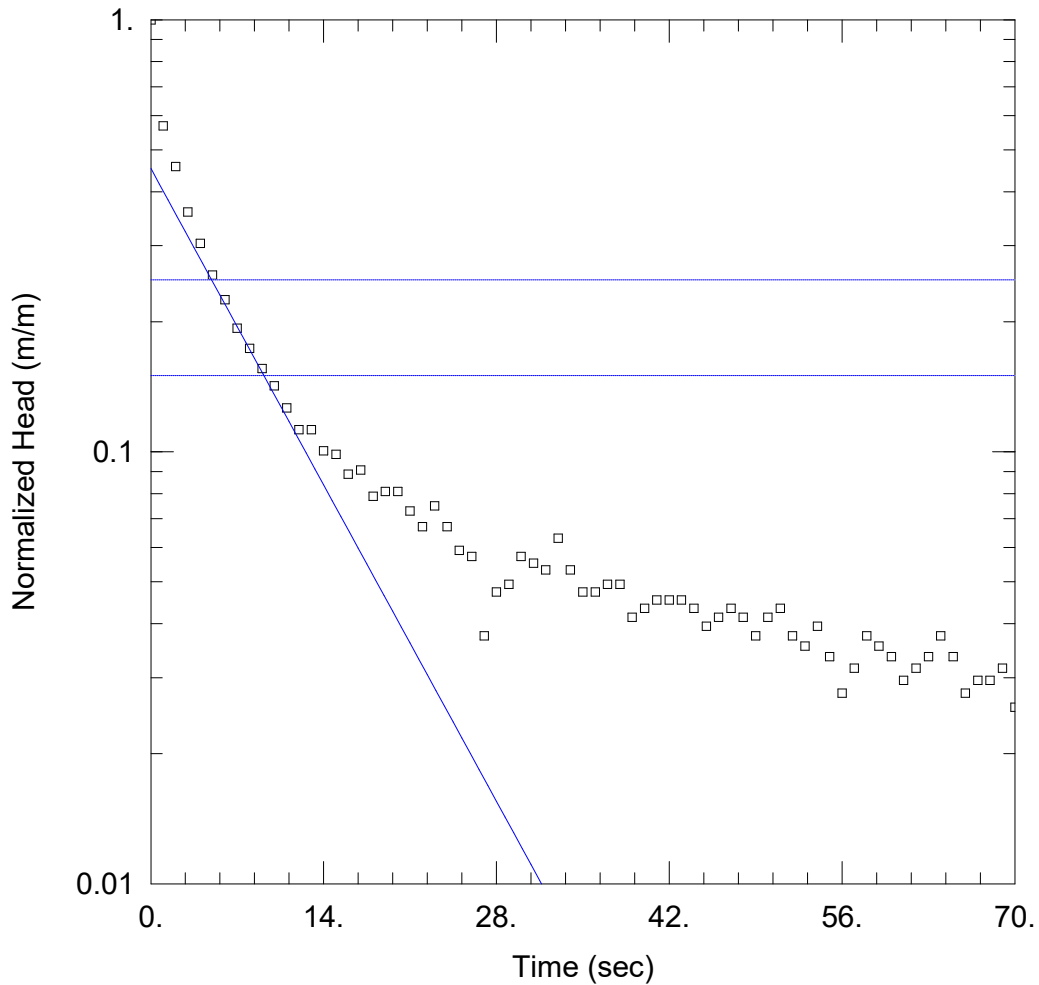
Aquifer Model: Unconfined

Kr = 5.191 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: RW10S RHT1 - Hvorslev.aqt

Date: 08/26/22

Time: 15:55:39

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW10S RHT1)

Initial Displacement: -0.507 m

Static Water Column Height: 3.14 m

Total Well Penetration Depth: 3.11 m

Screen Length: 1.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

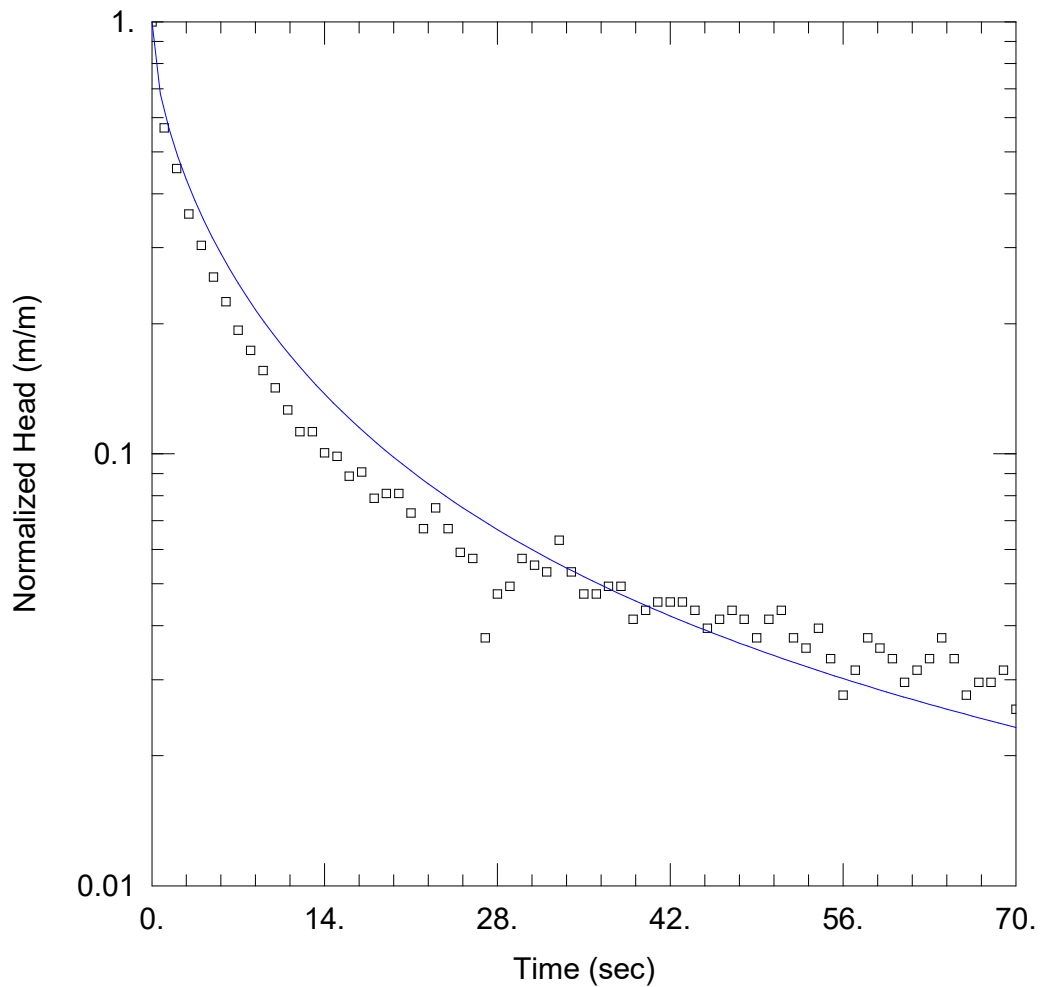
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 9.337 m/day

y0 = -0.2297 m



WELL TEST ANALYSIS

Data Set: RW10S RHT1 - KGS.aqt

Date: 08/26/22

Time: 15:55:42

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

WELL DATA (RW10S RHT1)

Initial Displacement: -0.507 m

Total Well Penetration Depth: 3.11 m

Casing Radius: 0.025 m

Static Water Column Height: 3.14 m

Screen Length: 1.5 m

Well Radius: 0.064 m

SOLUTION

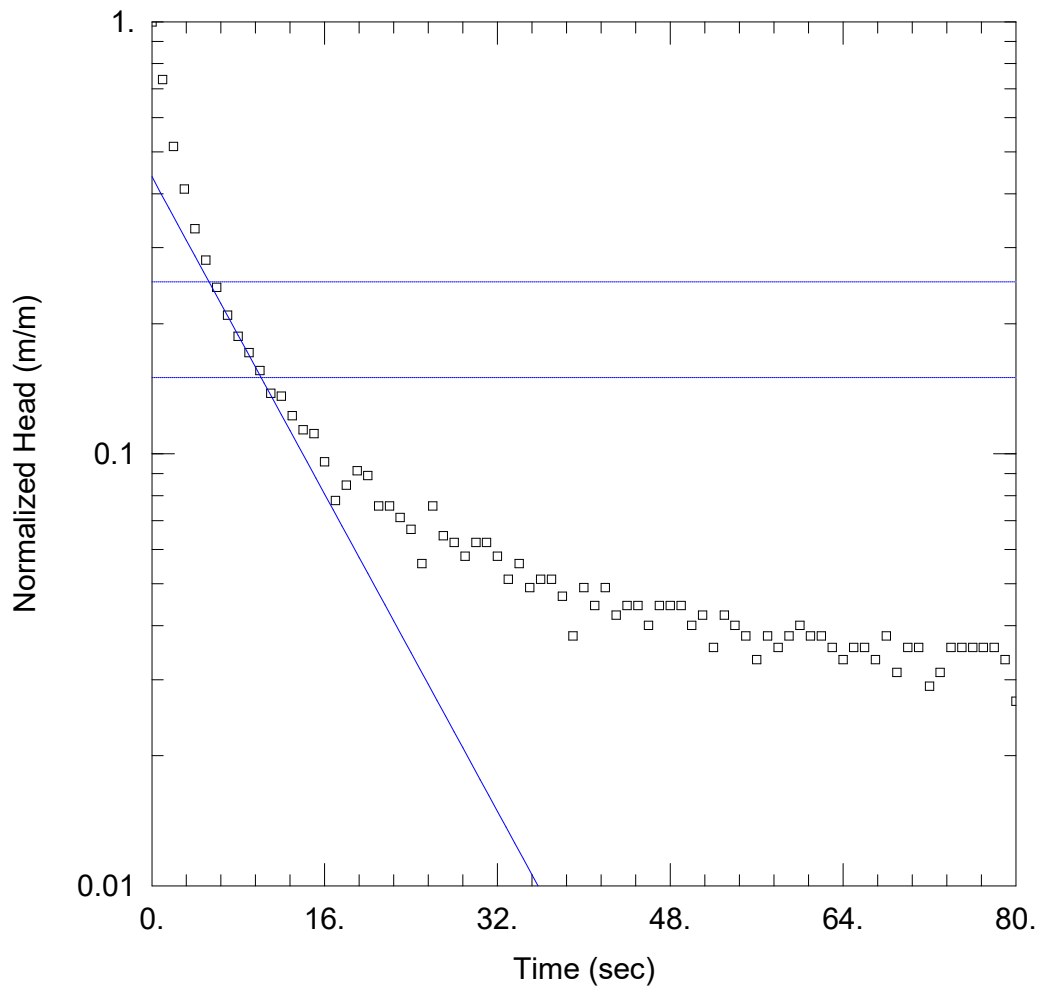
Aquifer Model: Unconfined

Kr = 5.655 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: RW10S RHT2 - Hvorslev.aqt

Date: 08/26/22

Time: 15:55:45

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW10S RHT2)

Initial Displacement: -0.449 m

Static Water Column Height: 3.14 m

Total Well Penetration Depth: 3.11 m

Screen Length: 1.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

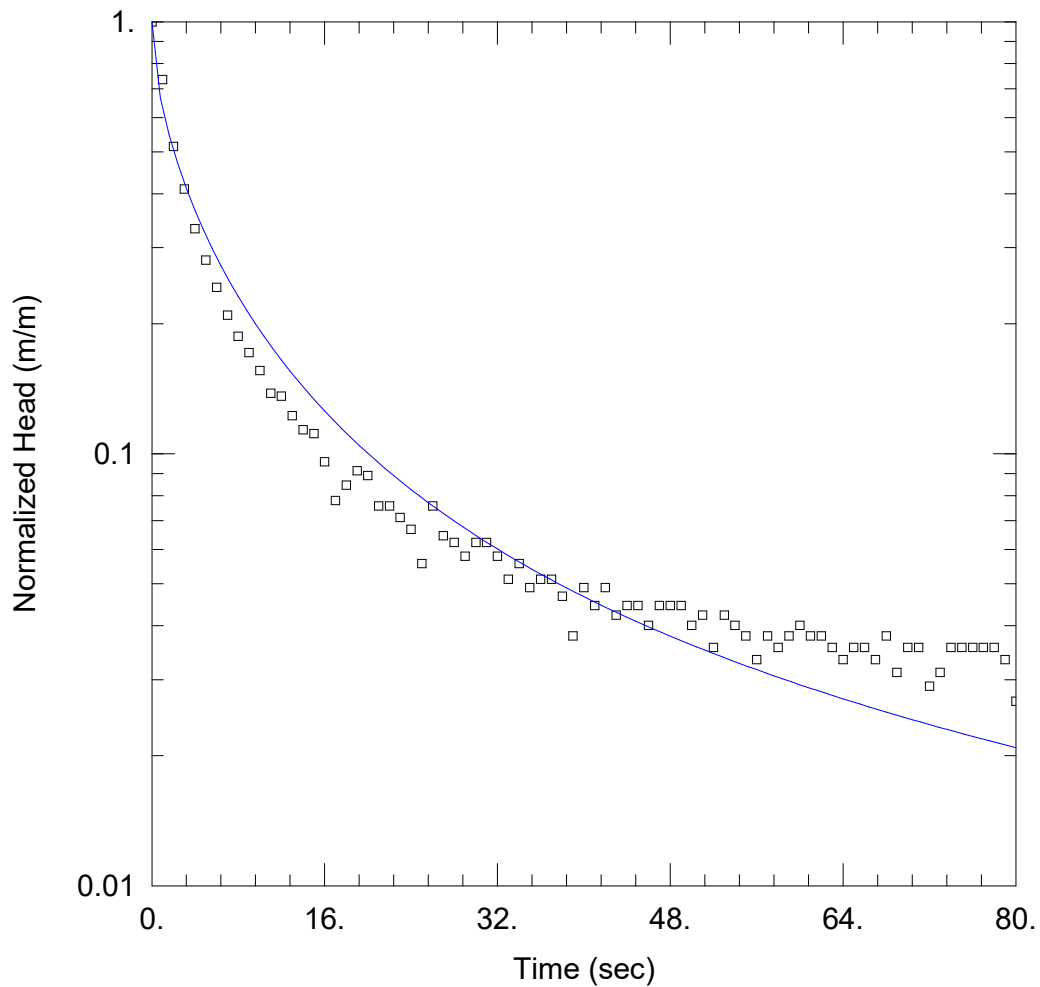
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 8.192 m/day

y0 = -0.1967 m



WELL TEST ANALYSIS

Data Set: RW10S RHT2 - KGS.aqt
Date: 08/26/22

Time: 15:55:49

PROJECT INFORMATION

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe
Test Well: -
Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

WELL DATA (RW10S RHT2)

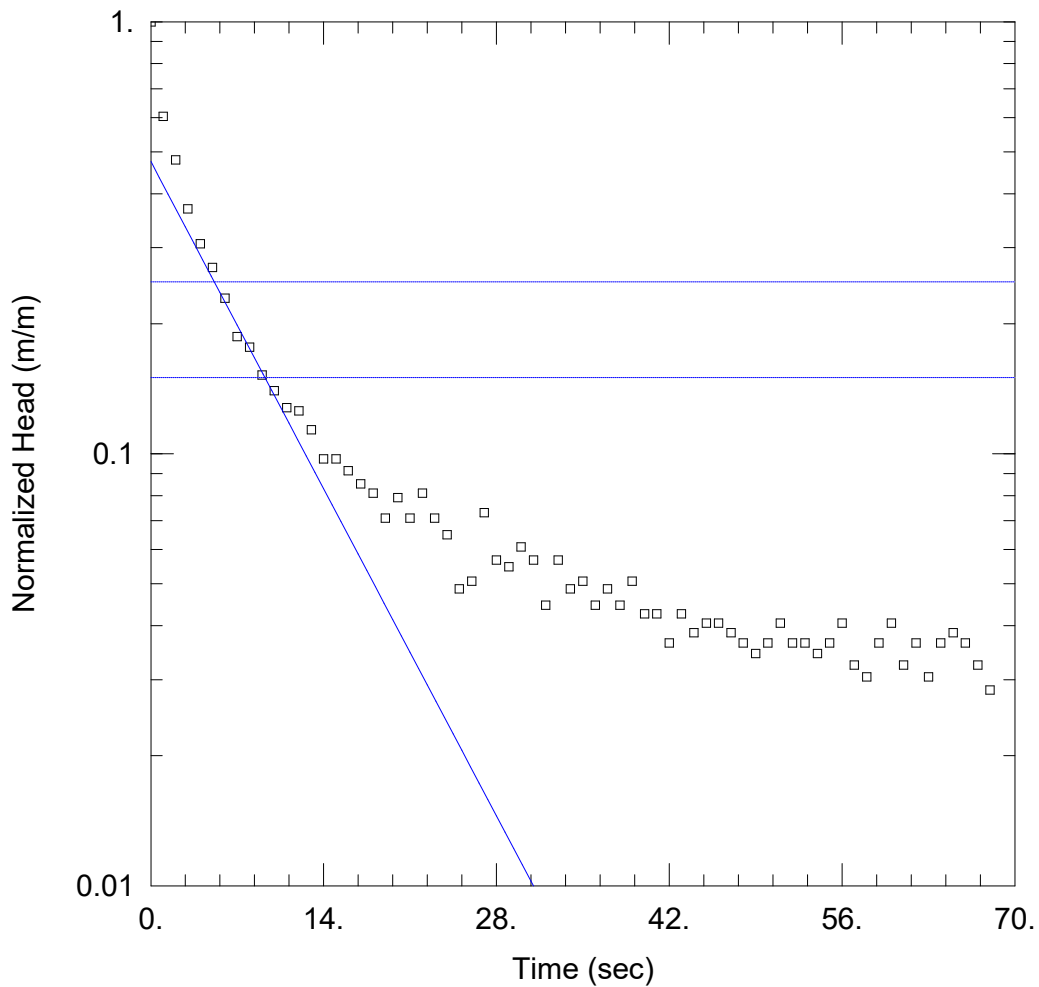
Initial Displacement: -0.449 m
Total Well Penetration Depth: 3.11 m
Casing Radius: 0.025 m

Static Water Column Height: 3.14 m
Screen Length: 1.5 m
Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined
Kr = 5.43 m/day
Kz/Kr = 0.1

Solution Method: KGS Model
Ss = 0.01862 m⁻¹



WELL TEST ANALYSIS

Data Set: RW10S RHT3 - Hvorslev.aqt

Date: 08/26/22

Time: 15:55:52

PROJECT INFORMATION

Company: CDM Smith

Client: Bord na Móna

Project: 263228

Location: Timahoe

Test Well: -

Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

Anisotropy Ratio (Kz/Kr): 0.1

WELL DATA (RW10S RHT3)

Initial Displacement: -0.493 m

Static Water Column Height: 3.14 m

Total Well Penetration Depth: 3.11 m

Screen Length: 1.5 m

Casing Radius: 0.025 m

Well Radius: 0.064 m

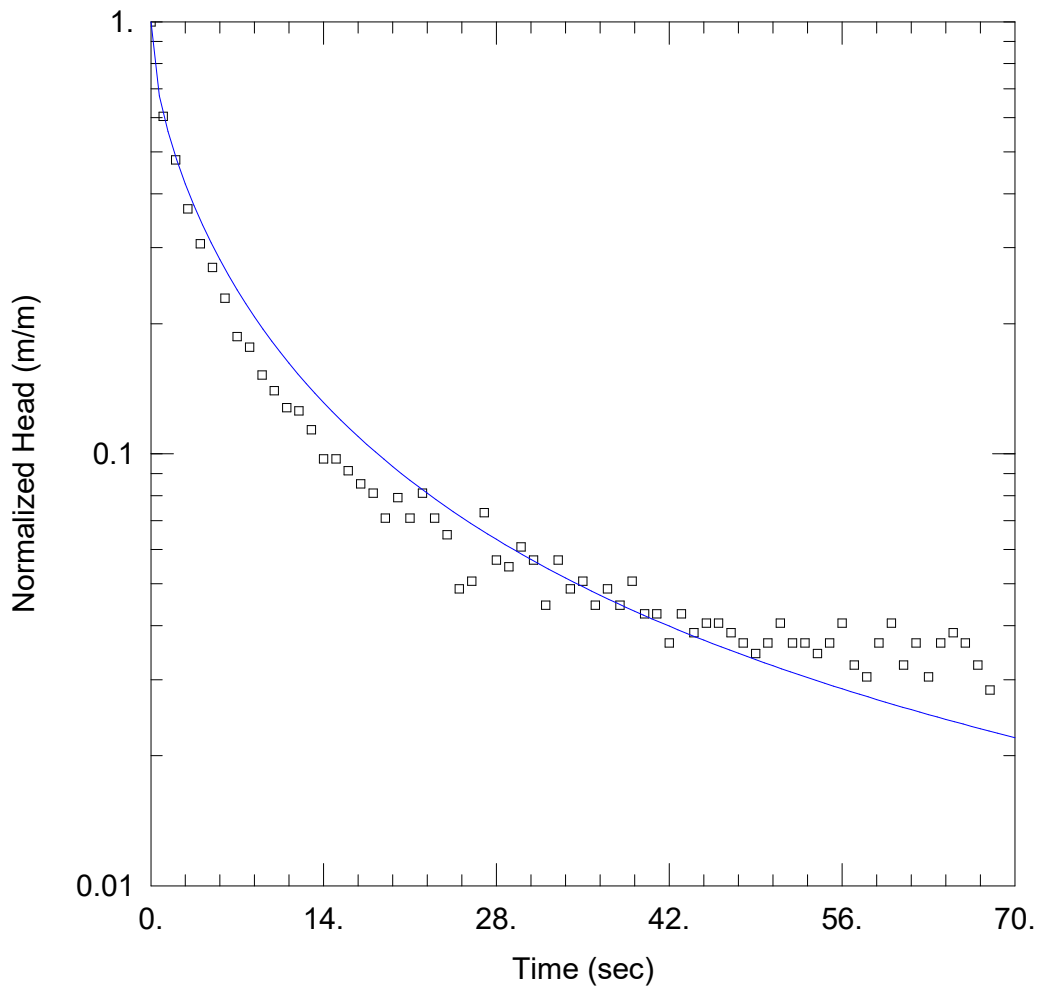
SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 9.653 m/day

y0 = -0.2341 m



WELL TEST ANALYSIS

Data Set: RW10S RHT3 - KGS.aqt
 Date: 08/26/22

Time: 15:55:58

PROJECT INFORMATION

Company: CDM Smith
 Client: Bord na Móna
 Project: 263228
 Location: Timahoe
 Test Well: -
 Test Date: -

AQUIFER DATA

Saturated Thickness: 5.61 m

WELL DATA (RW10S RHT3)

Initial Displacement: -0.493 m
 Total Well Penetration Depth: 3.11 m
 Casing Radius: 0.025 m

Static Water Column Height: 3.14 m
 Screen Length: 1.5 m
 Well Radius: 0.064 m

SOLUTION

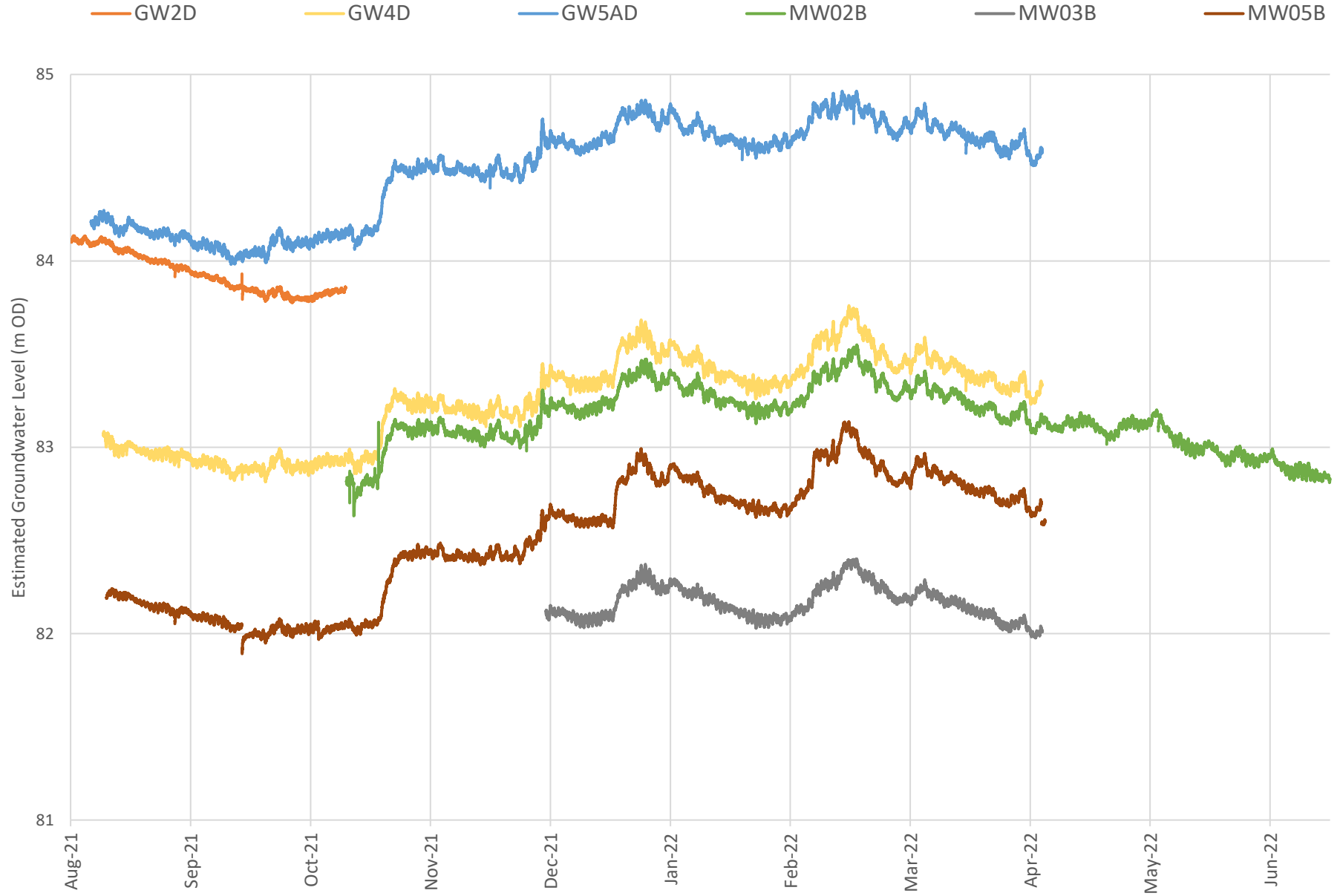
Aquifer Model: Unconfined
 Kr = 5.927 m/day
 Kz/Kr = 0.1

Solution Method: KGS Model
 Ss = 0.01862 m⁻¹

Appendix F

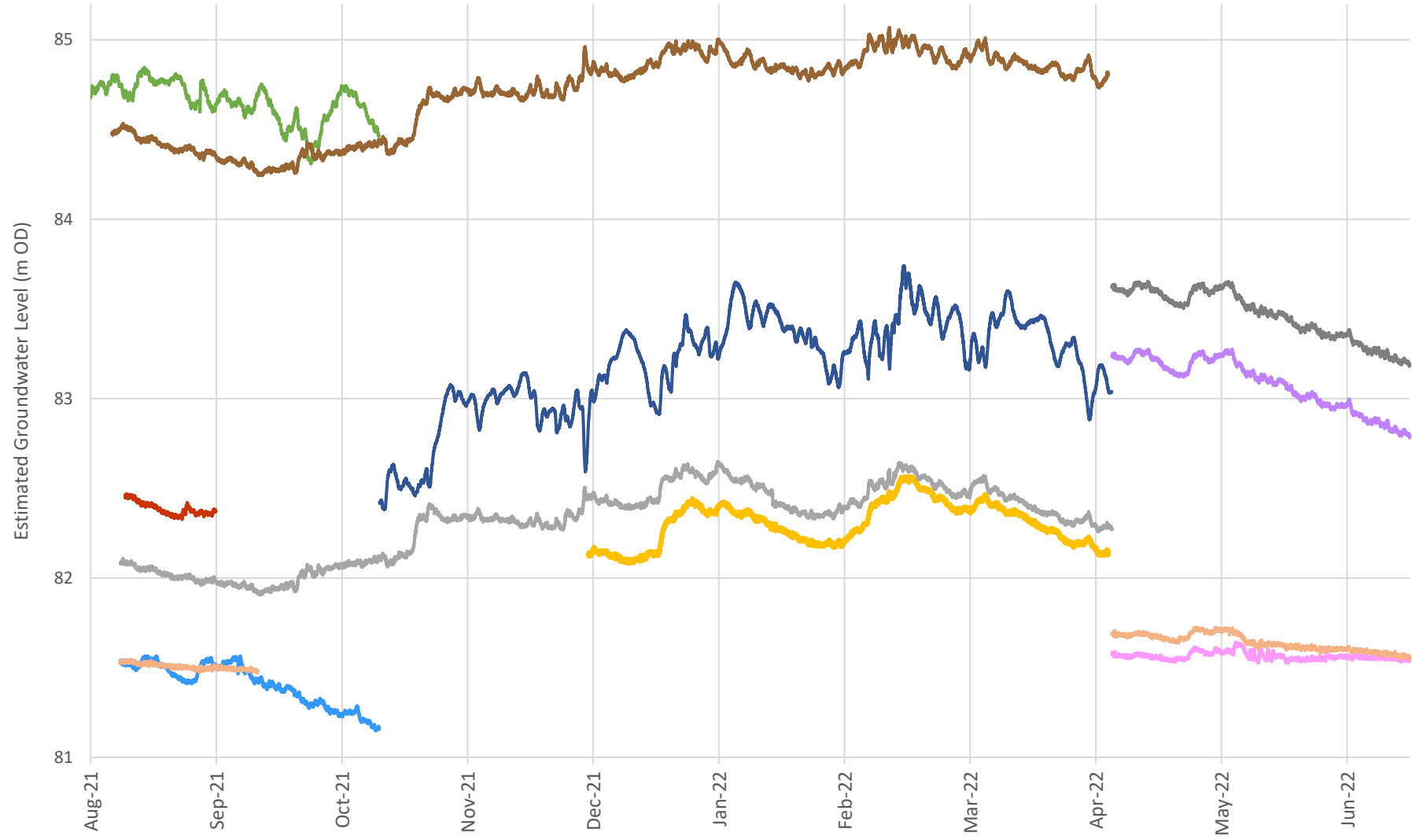
Groundwater Hydrographs (Pressure Transducer Data)

Bedrock Hydrographs

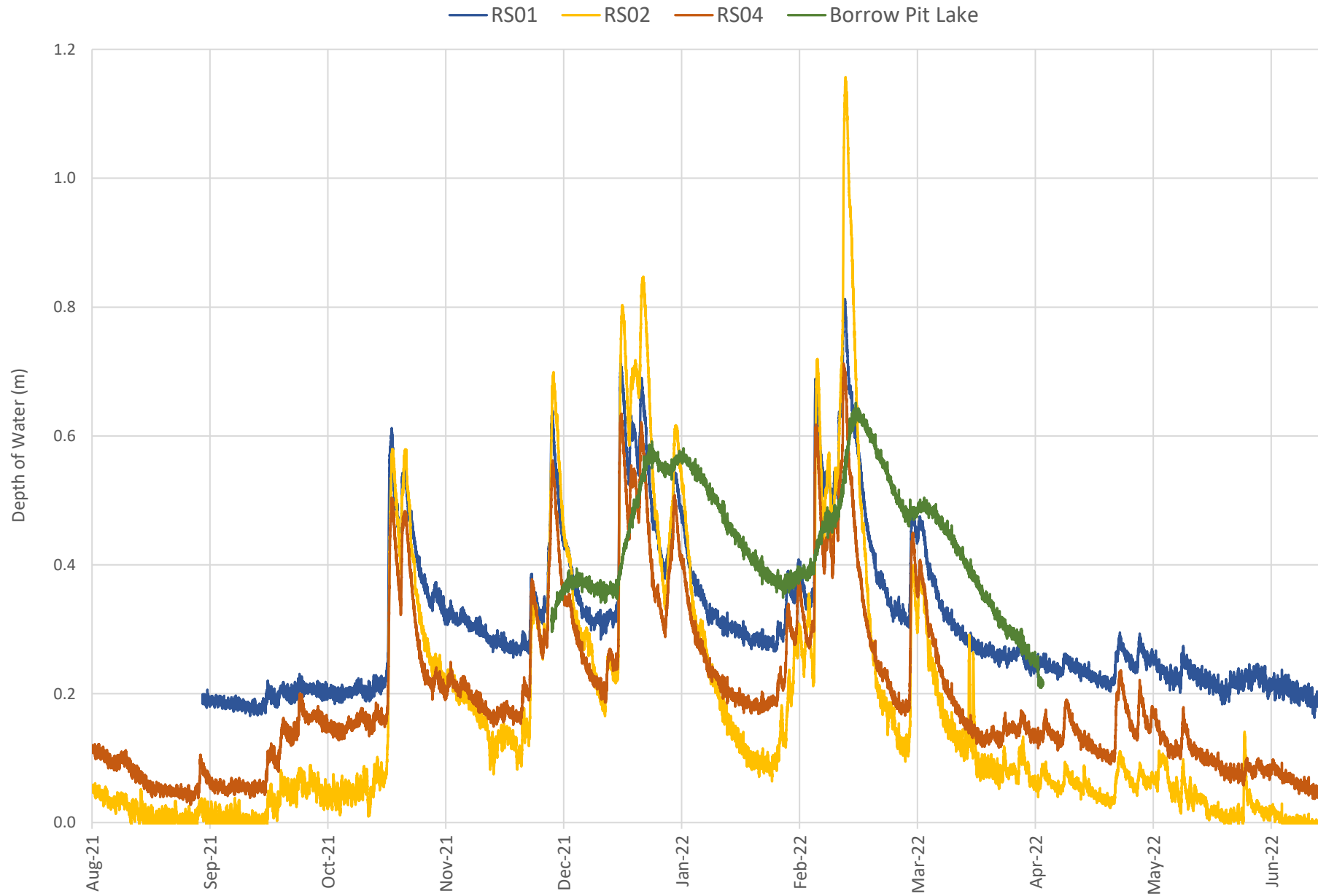


Quaternary Hydrographs

LW02S LW02D MW02Q MW03Q MW05Q RW02S RW03S RW09A RW09B RW10S GW5AS



Surface Water Hydrographs



Appendix G

Surface Water Hydrographs (Pressure Transducer Data)

Groundwater Level Gauging

	Monitoring Event 1 Start of Event: 06/09/2021		Monitoring Event 2 Start of Event: 22/09/2021		Monitoring Event 3 Start of Event: 20/10/2021		Monitoring Event 4 Start of Event: 23/11/2021		Monitoring Event 5 Start of Event: 03/12/2021		Monitoring Event 6 Start of Event: 14/12/2021		Monitoring Event 7 Start of Event: 25/01/2022		Monitoring Event 8 Start of Event: 22/02/2022		Monitoring Event 9 Start of Event: 22/03/2022		Monitoring Event 10 Start of Event: 26/04/2022		Monitoring Event 11 Start of Event: 10/05/2022		Monitoring Event 12 Start of Event: 28/07/2022	
	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *	Depth to Water (m)	Water Level (m OD) *
GW1D	2.25	82.31	2.19	82.37	2.14	82.42	1.91	82.65	ns, nm	ns, nm	1.80	82.76	1.90	82.66	1.47	83.09	1.74	82.82	1.90	82.66	ns, nm	ns, nm	2.37	82.19
GW1S	2.06	83.09	2.18	82.97	2.14	83.01	1.91	83.24	ns, nm	ns, nm	1.81	83.34	2.02	83.13	1.54	83.61	1.76	83.39	1.91	83.24	ns, nm	ns, nm	nm	nm
GW2D	3.72	83.96	ns, nm	ns, nm	ns, nm	ns, nm	3.28	84.40	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.33	84.35	ns, nm	ns, nm	ns, nm	ns, nm	3.68	83.96
GW2S	2.60	85.45	ns, nm	ns, nm	ns, nm	ns, nm	3.10	84.95	1.97	86.08	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.19	84.86	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
GW3aD	2.51	82.76	2.57	82.70	2.47	82.80	2.21	83.06	ns, nm	ns, nm	2.08	83.19	2.07	83.20	1.82	83.45	2.06	83.21	2.31	82.96	ns, nm	ns, nm	2.62	82.65
GW3S	2.44	82.69	2.51	82.62	2.42	82.71	2.43	82.70	2.12	83.01	2.03	83.10	2.02	83.11	1.77	83.36	2.00	83.13	2.52	82.61	ns, nm	ns, nm	nm	nm
GW4D	2.15	82.93	2.19	82.89	2.18	82.90	1.89	83.19	ns, nm	ns, nm	1.71	83.37	1.86	83.22	1.34	83.74	1.69	83.39	1.80	83.28	ns, nm	ns, nm	2.09	82.86
GW4S	1.90	82.47	1.91	82.46	1.88	82.49	1.65	82.72	1.61	82.76	1.49	82.88	1.53	82.84	1.22	83.15	1.51	82.86	1.86	82.51	ns, nm	ns, nm	nm	nm
GW5aD	2.90	84.08	2.93	84.05	2.86	84.12	2.46	84.52	ns, nm	ns, nm	ns	ns	2.35	84.63	2.11	84.87	2.32	84.66	2.50	84.48	ns, nm	ns, nm	2.87	83.97
GW5aS	2.50	84.36	2.57	84.29	2.50	84.36	2.16	84.70	ns, nm	ns, nm	ns	ns	2.03	84.83	1.84	85.02	1.99	84.87	2.14	84.72	ns, nm	ns, nm	nm	nm
GW6	nm	nm	nm	nm	nm	nm	nm	nm	ns, nm	ns, nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	nm	ns, nm	ns, nm	nm	nm
GW9	2.20	81.15	2.21	81.14	2.13	81.22	1.97	81.38	2.07	81.28	1.82	81.53	1.82	81.53	1.54	81.81	1.83	81.52	1.99	81.36	ns, nm	ns, nm	nm	nm
GW10	2.56	82.01	2.60	81.97	2.44	82.13	2.25	82.32	2.39	82.18	2.11	82.46	2.07	82.50	1.86	82.71	2.05	82.52	2.35	82.22	ns, nm	ns, nm	nm	nm
GW11D	2.00	83.10	ns, nm	ns, nm	ns, nm	ns, nm	1.31	83.79	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.63	83.47
GW11S	1.15	83.83	ns, nm	ns, nm	ns, nm	ns, nm	0.91	84.07	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
GW12D	0.44	82.92	ns, nm	ns, nm	ns, nm	ns, nm	nm	83.36	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.52	82.84
GW12S	0.67	83.10	ns, nm	ns, nm	ns, nm	ns, nm	0.43	83.34	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
GW13D	2.71	82.05	ns, nm	ns, nm	ns, nm	ns, nm	2.29	82.47	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.63	82.13
GW13S	3.26	81.34	ns, nm	ns, nm	ns, nm	ns, nm	3.32	81.28	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
R8	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.36	-	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.62	-	1.52	-	2.00	-
R9	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.85	-	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.97	-	0.85	-	nm	nm
R10	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.27	-	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.44	-	0.33	-	nm	nm
R11	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.80	-	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.09	-	3.00	-	3.49	-
MW01B	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.83	82.89
MW02B	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.20	83.09	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.23	83.06	2.12	83.17	2.41	82.71
MW02P	3.80	81.52	Dry	Dry	3.68	81.64	Dry	Dry	ns, nm	ns, nm	ns	ns	2.61	82.71	3.49	81.83	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW02Q	3.90	81.45	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.67	81.68	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.82	81.53	3.78	81.57	nm	nm
MW03B	2.78	81.87	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.61	82.04	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.68	81.97	2.61	82.04	2.60	81.71
MW03P	2.65	82.19	nm	nm	2.77	82.07	2.55	82.29	ns, nm	ns, nm	2.36	82.48	2.33	82.51	1.90	82.94	2.25	82.59	2.61	82.23	ns, nm	ns, nm	nm	nm
MW03Q	2.92	81.78	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.69	82.01	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.67	82.03	2.63	82.07	nm	nm
MW04B	2.70	82.19	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.63	82.09
MW04P	2.64	82.33	3.13	81.84	2.72	82.25	2.49	82.48	ns, nm	ns, nm	2.31	82.66	2.22	82.75	2.02	82.95	2.16	82.81	2.31	82.66	ns, nm	ns, nm	nm	nm
MW04Q	3.00	82.07	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW05B	4.04	82.12	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.65	82.10
MW05P	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	ns, nm	ns, nm	ns	ns	ns, nm	ns, nm	2.83	83.53	3.29	83.07	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW05Q	3.98	82.07	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW06B	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.46	82.80	0.38	82.88	0.55	82.53
MW06P	ns, nm	ns, nm	ns, nm	ns, nm	0.92	82.32	0.90	82.34	ns, nm	ns, nm	0.97	82.27	0.80	82.44	0.76	82.48	0.81	82.43	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW06Q	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.91	82.34	0.85	82.40	nm	nm
MW07B	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.43	83.57	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.47	83.53	3.37	83.63	3.66	83.13
MW07P	ns, nm	ns, nm	1.57	85.48	1.64	85.41	ns	ns	ns, nm	ns, nm	ns	ns	ns, nm	ns, nm	0.73	86.32	1.03	86.02	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW07Q	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.67	84.32	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.20	83.79	2.72	84.27	nm	nm
LW01	1.09	82.91	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.78	83.22	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.24	82.76	0.83	83.17	nm	nm
LW02D	2.08	83.11	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.48	83.71	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.67	83.52	1.56	83.63	nm	nm
LW02S	1.98	83.18	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
LFBH05	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.82	82.28	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.93	82.17	2.86	82.24	nm	nm
RW02P	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	ns, nm	ns, nm	nm	nm	nm	nm	Dry	Dry	Dry	Dry	dry	Dry	ns, nm	ns, nm	nm	nm
RW02S	2.99	84.55	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.30	85.24	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.58	84.96	2.05	85.49	nm	nm
RW03P	1.04	83.38	1.72	82.70	1.42	83.00	1.32	83.10	ns, nm	ns, nm	1.01	83.41	1.14	83.28	0.74	83.68	1.11	83.31	1.36	83.06	ns, nm	ns, nm	nm	nm
RW03S	2.09	82.37	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.77	82.69	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.02	82.44	1.83	82.63	nm	nm
RW04P	2.33	82.61	2.18	82.56	2.16	82.58	1.86	82.88	ns, nm	ns, nm	1.69	83.05	1.72	83.02	1.46	83.28	1.69	83.05	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
RW04S	2.37	82.44	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.96	82.85	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.02	82.79	1.95	82.86	nm	nm
RW09A	2.20	81.46	2.20	81.46	2.12	81.54	1.97	81.69	1.88	81.78	1.82	81.84	1.82	81.84	1.54	82.12	1.84	81.82	1.99	81.67	1.95	81.71	nm	nm
RW09B	2.15	81.48	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.01	81.62	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.96	81.67	1.92	81.71	nm	nm
RW10P	2.21	82.06	2.26	82.01	2.07	82.20	1.87																	

The logo for CDM Smith, featuring the text "CDM" in a bold, dark blue font above "Smith" in a bold, dark blue font with a registered trademark symbol. Below the logo is the website address "cdmsmith.com" in a smaller, dark blue font. The background of the entire page is a light blue gradient with abstract, overlapping curved shapes in various shades of blue, creating a modern and dynamic feel.

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