



LONG PLAINS MINE GROUNDWATER TESTING AND VIBRATING WIRE PIEZOMETER INSTALLATION

FACTUAL REPORT

For

GRT

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Quality
ISO 9001



FINAL REPORT



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1 INTRODUCTION

1.1 Background

The Long Plains Prospect is located approximately 10km south of the Savage River Mine. Savage River is situated approximately 100km south west by sealed road from Burnie. The exploration licence, EL30/2003, comprises an area of 38km² which encompasses the entirety of the Long Plains magnetic anomaly and provides continuous leasehold connecting EL30/2003 and the Savage River Mine Lease, 2M/2001.

In 2011, ground magnetic surveys were conducted to aid targeting of the drilling program. A first round of diamond drilling exploration was completed in May of 2012. It was recognised that significant information needs to be obtained from Long Plains before a meaningful evaluation can be carried out and the potential for supplying ore to the mill determined (GRT, 2012).

In order to confirm the potential, GRT has carried out the drilling of additional holes (inclined) for exploration and geotechnical testing between mid-2012 to mid-2013.

In a previous phase (early 2013), Mining One provided technical support for the definition of a monitoring program aiming to provide baseline data for the development of the environmental work plan. As part of the scope, Mining One assisted GRT assessing the possibility to use the existing inclined holes for environmental and groundwater assessment purposes. Mining One supported GRT in defining the specification for groundwater testing (packer test and falling head test) and installing Vibrating Wire Piezometers (VWP) at the site.

The hydrogeological data collection was required for:

- Furthering the hydrogeological understanding of weathered material and shear zones to enable more accurate geotechnical assessments to be completed in future when optimising the pit design and the potential dewatering requirements;
- Assessment of groundwater levels on the expansion of mining operations;
- Collection of test data in preparation of the development of a coupled conceptual model covering both geotechnical and groundwater aspects; and
- Collection of baseline groundwater data in preparation for the Environmental Approvals documentation associated with the mine development.

This Factual Report provides an account of the completed testing and monitoring instrument installation program and presents the collected hydrogeological data.

A glossary of technical abbreviations used in the Factual Report Tables and Appendices can be referenced in Appendix A – Glossary of Terms.



1.2 Scope of Work

Early 2013, Mining One was involved with the definition and planning of a monitoring program¹. The report proposed a series of groundwater tests (packer tests and falling head tests) and the installation of Vibrating Wire Piezometers (VWP), for the northern and southern sites.

A drilling campaign to collect exploration and geotechnical data was completed in June 2013 by Spauldings Drillers.

The testing was undertaken by Stacpoole Enterprises, under the supervision of a Mining One hydrogeologist and field technician. The following tasks were completed:

- Liaise with GRT to select the holes to be tested;
- Define the testing regime;
- Supervise the undertaking of the falling head tests and packer tests on the selected holes;
- Organise the selection, calibration and installation of VWPs in the selected holes;
- Install the VWPs;
- Collect the first series of readings; and
- Summarise the test results together with the reporting of the first readings of the VWPs in a factual report

The testing and installation program on existing exploration and geotechnical holes was conducted from June to September 2013.

¹ Long Plain Mine, Proposed Surface Water and Groundwater Infrastructure and Testing

2 TESTING AND INSTALLATION PROGRAM

A total of seven drill holes were tested and equipped with VWP's.

Table 2-1: Hole ID for the Northern Site

Coordinates (GDA94 Zone 55s and Geoid 98)				Hole Size	Hole inclination against vert.
Hole ID	Y	X	Z		
LPDD1215	5396480.0	348123.4	271.78	HQ	31.4°
LPDD1304	5397050.1	347772.3	261.39	HQ	2.1°
LPDD1306	5396310.7	347795.3	276.33	HQ	35.0°
LPDD1310	5396676.7	348081.8	270.00	HQ	16.0°
LPDD1312	5396160.0	348090.0	262.53	HQ	19.6°

Table 2-2: Hole ID for the Southern Site

Coordinates (GDA94 Zone 55s and Geoid 98)				Hole Size	Hole inclination against vert.
Hole ID	Y	X	Z		
LPDD1204	5394950.2	348295.4	259.37	HQ	27.8°
LPDD1205	5395260.0	348194.8	240.68	HQ	31.9°

The location map showing the selected holes is shown in Appendix B.

For each hole, a series of packer tests were undertaken, followed by a series of falling head tests. At completion dual-level VWPs were installed (except for LPDD1310 with only one instrument installed).

2.1 Packer Test

Packer tests involve measuring the flow rate, and pressure build-up and decay of water injected into the test interval over a period of time (10 minutes). For this test, water is injected at specific pressure “steps” and the resulting flow is recorded when this has reached a quasi-steady state condition.

The steps are used to “ramp” up and down through the pressure range of 1 Mpa. The behaviour of the system to the increasing and recovery injection pressures can render useful information on the rock and fracture behaviour, as well as packer and injection performance².

² Standard Operating Procedures for Borehole Packer Testing. M Royle

Packer testing was carried out through the drilling rods (wireline packer). AGE packers were used for the testing.

Mining One undertook the analysis of the cores to assess the ground conditions to determine the test horizons and the number of test for each hole (Table 2-3).

Table 2-3: Number of Packer Tests per Hole

Hole ID	Number of Tests
LPDD1312	4
LPDD1310	5
LPDD1306	5
LPDD1304	4
LPDD1215	5
LPDD1205	4
LPDD1204	6

The testing regime shown in Table 2-4 was adopted for the program. In some cases, the high degree of fracturing present in the rock mass did not allow for the full range of pressures to be developed in the cavity.

In highly fractured and sheared zones, water return in the cavity was observed, suggesting bypassing of the upper packer. Those tests have been recorded as having failed. The packer test calculation sheets are shown in Appendix C.

Table 2-4: Packer Testing Regime

Test Phase	Step number	Pressure (kPa)	Time (min)
Up	1	400	10
	2	600	10
	3	800	10
	4	1000	10
	5	1200	10
Down	6	700	10
	7	500	10
	8	300	10

2.2 Falling Head Test

This method of testing uses a slug of introduced water to increase the water level in a well and monitor the subsequent water-level recovery. Each test involved the filling of the piezometer with water until either steady state is achieved or the piezometer overflowed.

Analytical solutions can then be applied to hydrographs of water-level recovery to determine the well characteristics and the hydraulic conductivity of the rock surrounding the well. Each test provides an estimate of the hydraulic conductivity in the vicinity of the response horizon of the piezometer.

Table 2-5: Number of Falling Head Test per Hole

Hole ID	Number of Falling Head Tests
LPDD1312	2
LPDD1310	1
LPDD1306	2
LPDD1304	2
LPDD1215	2
LPDD1205	2
LPDD1204	2

The falling head test calculations sheet are shown in Appendix D

2.3 VWP Installation

The VWP is an instrument sealed in boreholes to measure pore-water pressures. The VWP converts water pressure to a frequency signal via a diaphragm and a tensioned steel wire. The VWP is designed so that a change in pressure on the diaphragm causes a change in tension of the wire.

The VWP installation was overseen and completed to a design issued by the Mining One site hydrogeologist.

The instruments have been installed on a tremie line and lowered down the open hole, then grouted in. Installation levels are derived from the response of the vibrating wire reading before grouting. A summary of the VWP installations is presented in Appendix E.

Photographs of each completed VWP monument are shown in Appendix G.

Table 2-6 lists the serial number and true vertical depth (TVD) installation level for the instruments installed on site.



Table 2-6: VWP Instruments Identification Table

Hole ID	RL of Ground Level (mAHD)	Hole Depth (mAHD)	Shallow Instrument		Deep Instrument	
			Serial Number	Installation level (TVD mAHD)	Serial Number	Installation level (TVD mAHD)
LPDD1312	262.5	53.67	18345	71.29	N/A	N/A
LPDD1310	270.0	-27.8	18554	209.44	N/A	N/A
LPDD1306	276.3	-123.63	18553	202.84	18322	110.02
LPDD1304	261.4	60.49	18551	194.39	18320	77.39
LPDD1215	271.8	14.5	18549	244.46	18624	124.97
LPDD1205	240.7	-7.7	18556	189.94	18621	92.02
LPDD1204	259.4	-163.5	18557	193.56	18622	106.95

3 RESULTS

3.1 Packer Testing

The packer test results are summarised in Table 3-1. The preliminary results confirm that the sections of the hole tested are generally relatively permeable. Rock masses with a very high density of fractures could not be tested effectively, due to the limitation of the capacity of the pump. Those sections are believed to have permeabilities above 5E-06 m/s. Zones of high to medium fracture density have permeabilities in the range of 1.1E-06 to 4.7E-06 m/s. Media with a lower density of fractures have permeabilities below 5.7E-07 m/s.

The following test descriptions have been applied in Table 3-1:

- Test Completed: Test completed successfully, with 7 to 8 steps and a final pressure in the cavity at or above 1MPa.
- Test Extrapolated: Test completed successfully, with 5 to 6 steps and a final pressure inferior but close to 1MPa.
- Test Failed: Test unsuccessful, with a maximum of 2 to 4 steps and a final pressure in the cavity well under 1MPa. The failure is associated with the high density of fracture and a large inflow of water within the media. In those conditions, the pressure of 1 MPa was not achieved due to the limitation of the capacity of the rig pump.

Table 3-1: Packer Tests Summary Table

Hole ID	Test depth (mBGL)	Test Results	Test Response *	K (m/s)
LPDD1312	218-221	Failed	1	-
	195-199	Extrapolated	2	4.70E-06
	175-178	Failed	1	-
	128-132	Completed	2	4.66E-06
LPDD1310	274-278	Failed	1	-
	201-204	Failed	1	-
	173-176	Completed	6	2.81E-06
	132-136	Extrapolated	2	3.73E-06
	92-95	Failed	1	-
LPDD1306	219-223	Completed	6	1.50E-07
	182-186	Failed	1	-
	156-160	Failed	1	-

Hole ID	Test depth (mBGL)	Test Results	Test Response *	K (m/s)
	92-96	Failed	1	-
	56-60	Failed	1	-
LPDD1304	195-199	Completed	2	1.69E-07
	118-123	Failed	3	-
	71-75	Completed	2	1.75E-08
	39-43	Failed	3	-
LPDD1215	255-259	Completed	6	2.02E-07
	193-197	Completed	6	1.25E-07
	171-175	Completed	6	1.21E-07
	159-163	Completed	6	1.16E-07
	132-136	Completed	2	1.45E-07
LPDD1205	208-212	Failed	4	-
	155-159	Failed	5	-
	96-100	Extrapolated	2	3.29E-06
	63-67	Extrapolated	2	2.65E-06
LPDD1204	266-270	Extrapolated	1	1.66E-06
	252-256	Extrapolated	1	5.76E-07
	171-175	Extrapolated	2	4.09E-06
	137-141	Extrapolated	1	1.06E-06
	88-92	Extrapolated	3	2.46E-06
	49-53	Failed	3	-

* Response explanation listed below:

- (1) Water return due to bypass of the packer through the network of fractures
- (2) Opening of the fractures at high pressure and increase of the permeability
- (3) Failing to build up pressure within the cavity (inadequate sealing of the packer)
- (4) Progressive blocking of the fractures and decrease in permeability
- (5) Opening then blocking of the fractures
- (6) Turbulent flow

3.2 Falling Head Testing

A series of falling head tests have been completed within the upper section of the media, which is generally highly weathered and could not be tested by packer testing.

The tests have been analysed in Aqtesolv, a pumping test and slug test analysis software.

Based on the analysis of the core logging undertaken by GRT, and an assessment of the Aqtesolv analyses, Mining One hydrogeologists have selected the following methods of analysis:

Confined aquifer

- Cooper-Bredehoeft-Papadopulos
- Dougherty-Babu
- KGS Model
- Butler
- Butler-Zhan
- Bouwer-Rice
- Hvorslev
- McElwee-Zenner

Fractured block

- Barker-Black

Unconfined

- KGS Model

Falling head test results are summarised in Table 3-2. The preliminary results confirm that the top of the holes have generally low to very low permeabilities. Those sections have permeabilities around $6.8E-07$ m/s, but as low as $1.0E-09$ m/s.

Table 3-2: Falling Head Test Summary Table

Hole ID	K (m/s)
LPDD1312	5.03E-08
LPDD1310	5.55E-09
LPDD1306	4.35E-08
LPDD1304	1.03E-07
LPDD1215	1.45E-08
LPDD1205	4.52E-06
LPDD1204	2.11E-09

3.3 VWP Initial Readings

The initial VWP water level and temperature readings were collected by Mining One and are shown in Appendix E.

Calibration certificates for all the installed VWPs are contained in Appendix F.

The initial readings indicate that the upper and lower instruments are showing different pore pressures for all the dual install holes. A difference in level of around 100 m was observed between the deep and shallow instrument, with the deeper instrument showing a higher pressure range. This is likely to indicate the presence of two different aquifers at depth.

The level recorded with the grouted instruments are substantially different from the water level recorded before the start of the testing program, which is in the range of 15 to 20m BGL.

Exploration holes have been drilled through the various aquifers and aquitards encountered at the site. The static level recorded is consequently a combination of levels from all the water bearing horizons encountered. The highest level is indicative of the shallow unconfined aquifer, which is recharged by direct rainfall.

The falling head test results indicate that the permeability of the upper section of the hole is relatively low, which is preventing water from the shallow aquifer leaking directly into the lower aquifers, except when in contact with shear or fractured zones.

4 CONCLUSIONS AND RECOMMENDATIONS

Mining One has completed a series of groundwater tests (packer test and falling head test) and the installation of Vibrating Wire Piezometers (VWP), for the northern and southern sites of the Long Plains extension project (GRT).

As part of this program, the following was undertaken:

- Analysis of core logs and definition of the testing and installation program;
- Completion of 33 packer tests;
- Completion of 13 falling head tests; and
- Installation of 12 VWPs.

The findings of this preliminary set of groundwater investigations is summarised below:

- Rock mass with a very high fracture density was encountered in some holes, with permeabilities around 5E-06 m/s and above. Zones of high to medium density of fractures have permeabilities ranging between 1.1E-06 and 4.7E-06 m/s, whilst the fresher rock have permeabilities around 5.7E-07 m/s and below.
- The weathered profile down to around 50 mBGL have permeabilities around 6.8E-07 m/s, but as low as 1E-09 m/s.
- Water levels recorded with the instruments installed at depth are substantially different from the water level recorded before the start of the testing program. Mining One understand that VWPs which are now grouted in are recording water levels in the actual response zones as opposed to the combined aquifers.
- At this stage of the investigations, it is likely that three separate aquifers can be distinguished at the site.

The development of a specific testing program to confirm these findings is recommended.

Ongoing monitoring should be set up to confirm the range of groundwater level variation associated with the proposed pit water level over wet seasons to confirm the water level range and potential variations.

A Conceptual Site Model (CSM) should be developed to better define the number of aquifers and their respective hydraulic properties and water levels, and determine their interrelationship. the model should also establish the zones of high conductivities associated with fracturing and identify high conductance areas to enable the assessment of the expected mine inflows based on the current and future anticipated hydraulic gradients (Mining One proposal 3769³).

³ Long Plains Mine Hydrogeological Conceptual Site Model Proposal – Mining One –Aug 2013 Ref 3769



As discussed in Mining One document 3549⁴, it is important to conduct the drilling of a network of shallow open piezometers to capture information to allow the assessment of shallow water table variation with rainfall events.

Once these recommendations are completed, it is likely that the development of a numerical groundwater model will be necessary in order to quantify the environmental impact as well as the operational mining dewatering requirements and associated methodology.

⁴ Proposed Surface Water and Groundwater Monitoring Infrastructure and Testing Report – Mining One – Mar 2013 Ref 3549



Appendix A

Glossary of Terms

GLOSSARY OF TERMS

General

- GRT – Grange Resources Tasmania
- M1 – Mining One Consultants
- VWP – Vibrating Wire Piezometer
- mBGL – Metres below ground level (usually describing the water level)
- mRL – Reduced level in metres
- AHD – Australian Height Datum
- TVD - True Vertical Depth (accounting for hole inclination)

Groundwater Testing

- FHT – Falling Head Test
- PT – Packer Test

Vibrating Wire Piezometer

- FF – Factory zero rating
- F0 – Zero reading prior to installation
- F1 – Current piezometer reading
- CP – Pressure coefficient
- CT – Temperature coefficient
- T1 – Current temperature reading
- T0 – Factory temperature reading



Appendix B

Groundwater Testing Locations Map

Northern Site

Coordinates (GDA94 Zone 55s and Geoid 98)			
Hole ID	Y	X	Z
LPDD1215	5396480.0	348123.4	271.78
LPDD1304	5397050.1	347772.3	261.39
LPDD1306	539631.7	347795.3	276.33
LPDD1310	5396676.7	348081.8	270.00
LPDD1312	5396160.0	348090.0	262.53

LPDD 1304



LPDD 1306



LPDD 1310



LPDD 1215



LPDD 1312



N



LEGEND



Geotech / exploration holes tested and equipped with vibrating wires

CLIENT

GRANGE RESOURCES TASMANIA



Date
13/09/2013



PROJECT

Long Plains Mine
Groundwater VWP Location Map

Mining One P/L

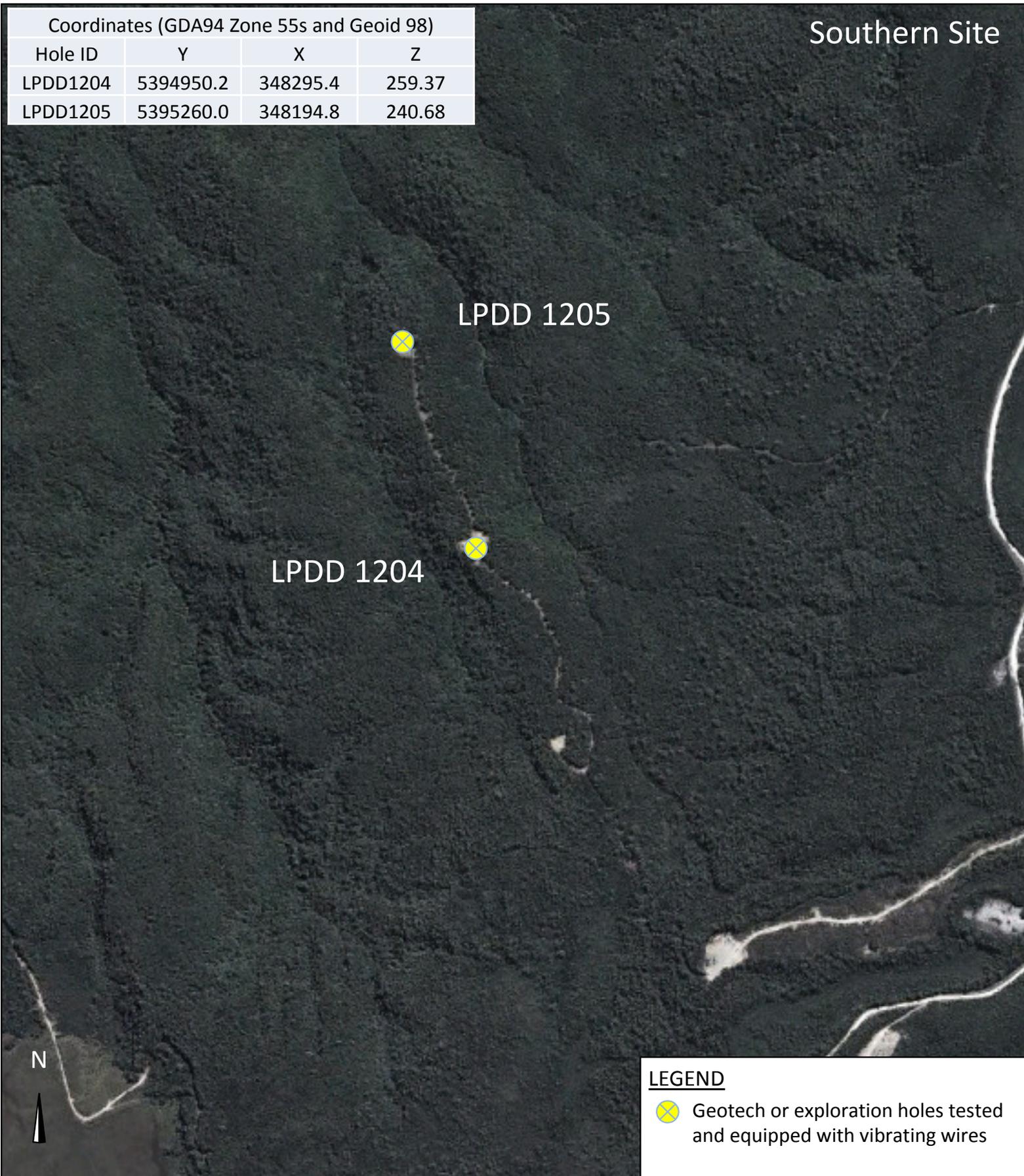
Job # : 1839_G

FIGURE 1

Coordinates (GDA94 Zone 55s and Geoid 98)

Southern Site

Hole ID	Y	X	Z
LPDD1204	5394950.2	348295.4	259.37
LPDD1205	5395260.0	348194.8	240.68



LEGEND

 Geotech or exploration holes tested and equipped with vibrating wires

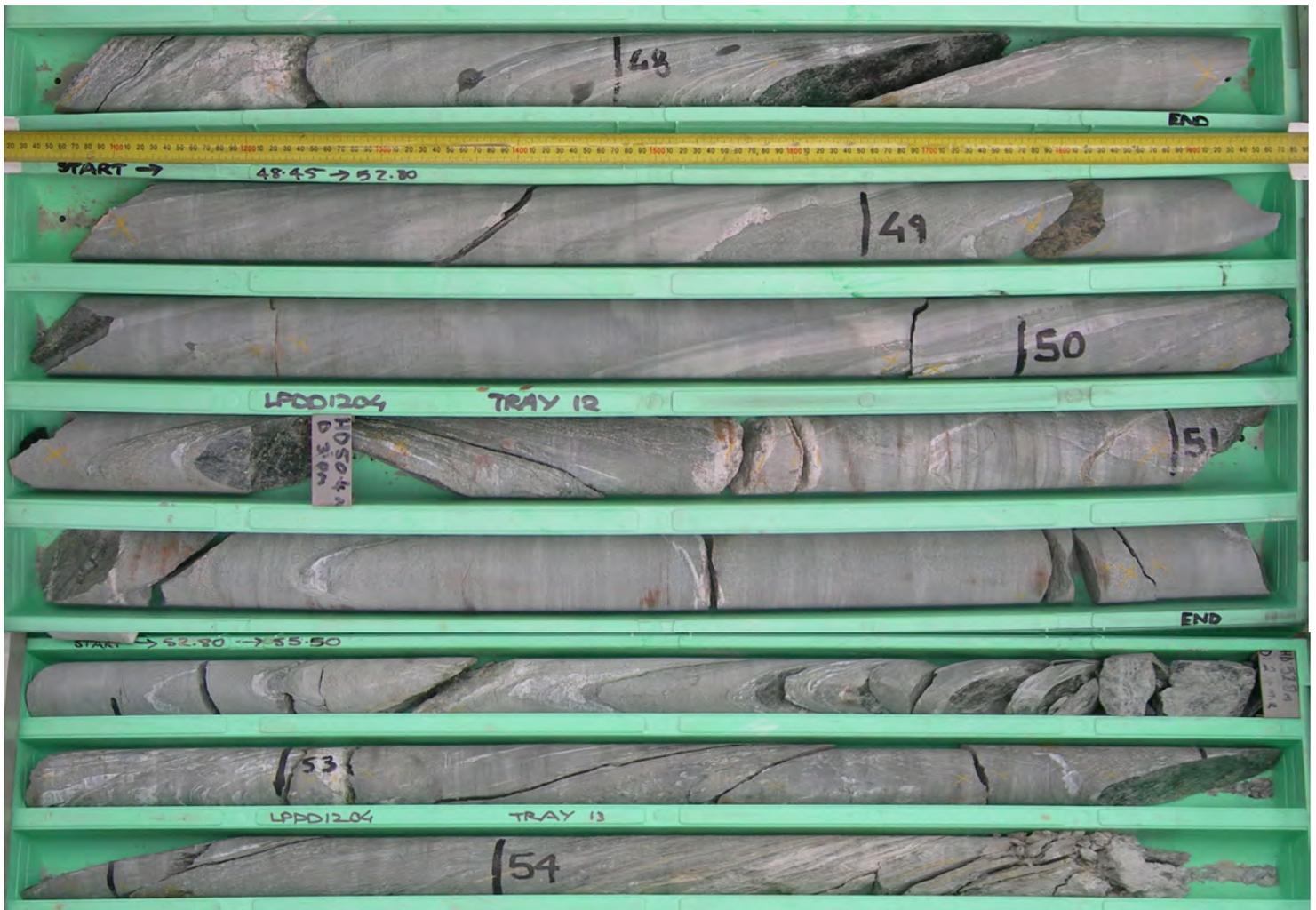
CLIENT	GRANGE RESOURCES TASMANIA		Date 13/09/2013	150m 
PROJECT	Long Plains Mine Groundwater VWP Location Map	Mining One P/L	Job # : 1839_G	FIGURE 2



Appendix C

Packer Testing Results

LPDD1204
Packer Test Interval
49m to 53m
6/08/2013



LPDD1204
Packer Test Interval
88m to 92m
6/08/2013



LPDD1204
Packer Test Interval
137m to 141m
6/08/2013



LPDD1204
Packer Test Interval
171m to 175m
6/08/2013



LPDD1204
Packer Test Interval
252m to 256m
6/08/2013



LPDD1204
Packer Test Interval
266m to 270m
5/08/2013



Packers test pressure calculation sheet

Legend

Result

Date : 05/08/2013
Author : Alexis Valenza

Date	<input type="text" value="05/08/2013"/>	Depth to water level :	<input type="text" value="5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="267.5"/> m
Hole No.	<input type="text" value="1204"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="1"/>	Vertical depth :	<input type="text" value="267.5"/> m
Test interval	<input type="text" value="266"/> to <input type="text" value="269"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="27.84"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="236.5"/> m
Packer inflation pressure :	<input type="text" value="4325"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.0810	2.03	420.82	4.8	3.85E-07	6.98E-07	
B	10	0.7170	17.93	614.40	29.2	2.33E-06	4.23E-06	
C	10	0.5250	13.13	324.74	40.4	3.23E-06	5.86E-06	
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	4.8	3.8E-07	7.0E-07
					Average	19.8	1.6E-06	3.6E-06
					Maximum	40.4	3.2E-06	5.9E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

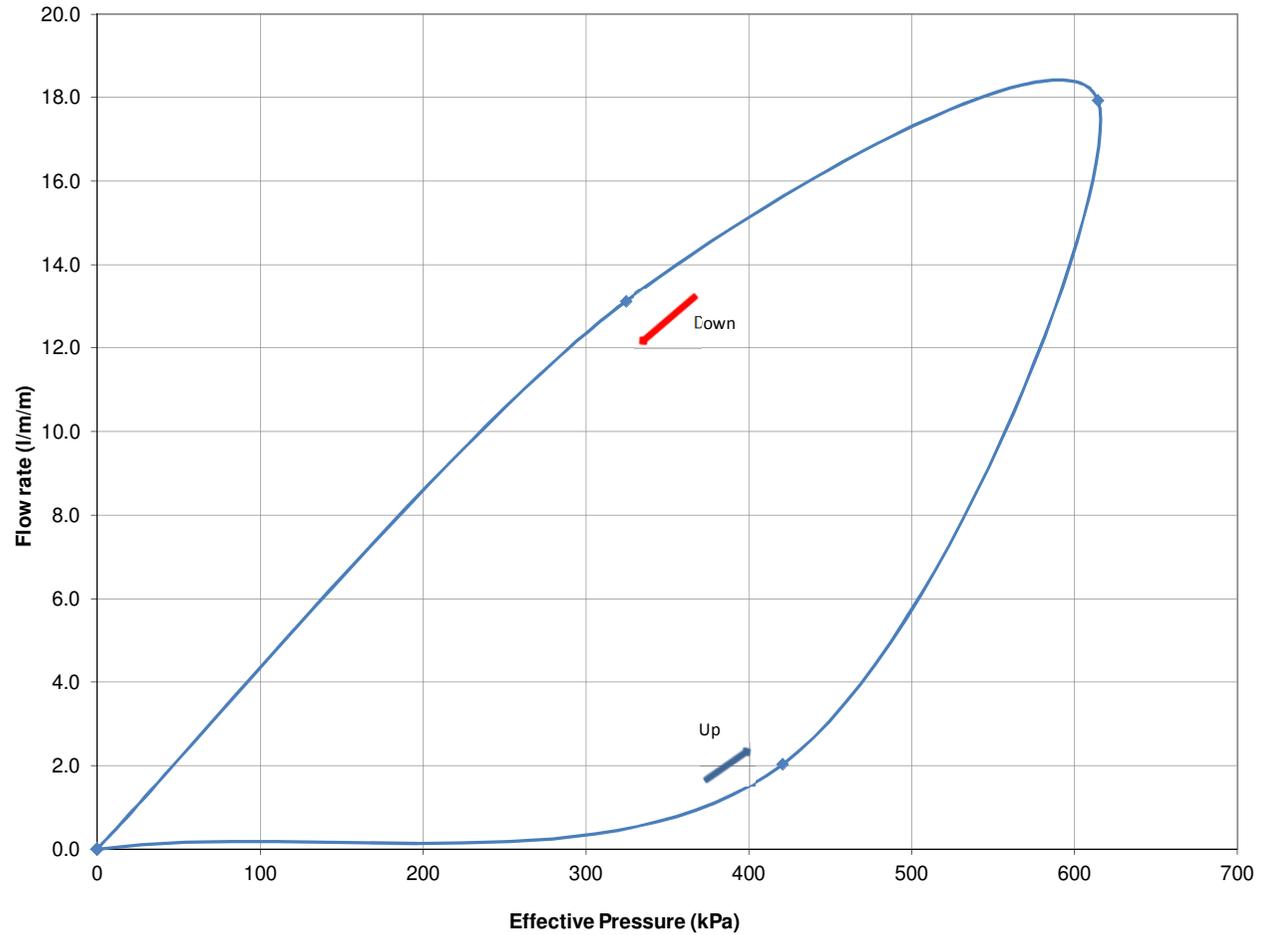
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
2.03	420.82	4.81	6.98E-07
17.93	614.40	29.17	4.23E-06
13.13	324.74	40.42	5.86E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

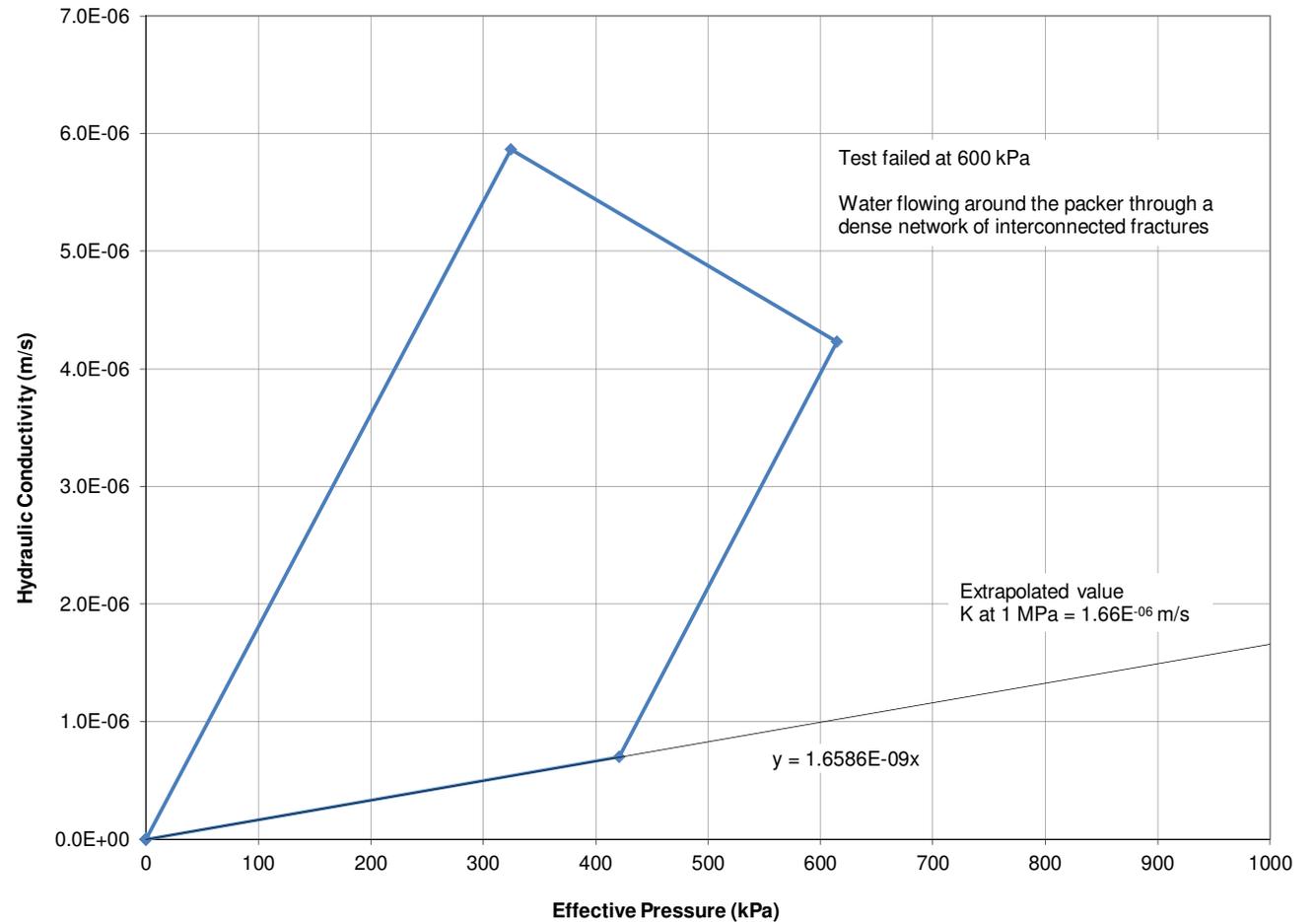


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
2.03	420.82	4.81	6.98E-07
17.93	614.40	29.17	4.23E-06
13.13	324.74	40.42	5.86E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

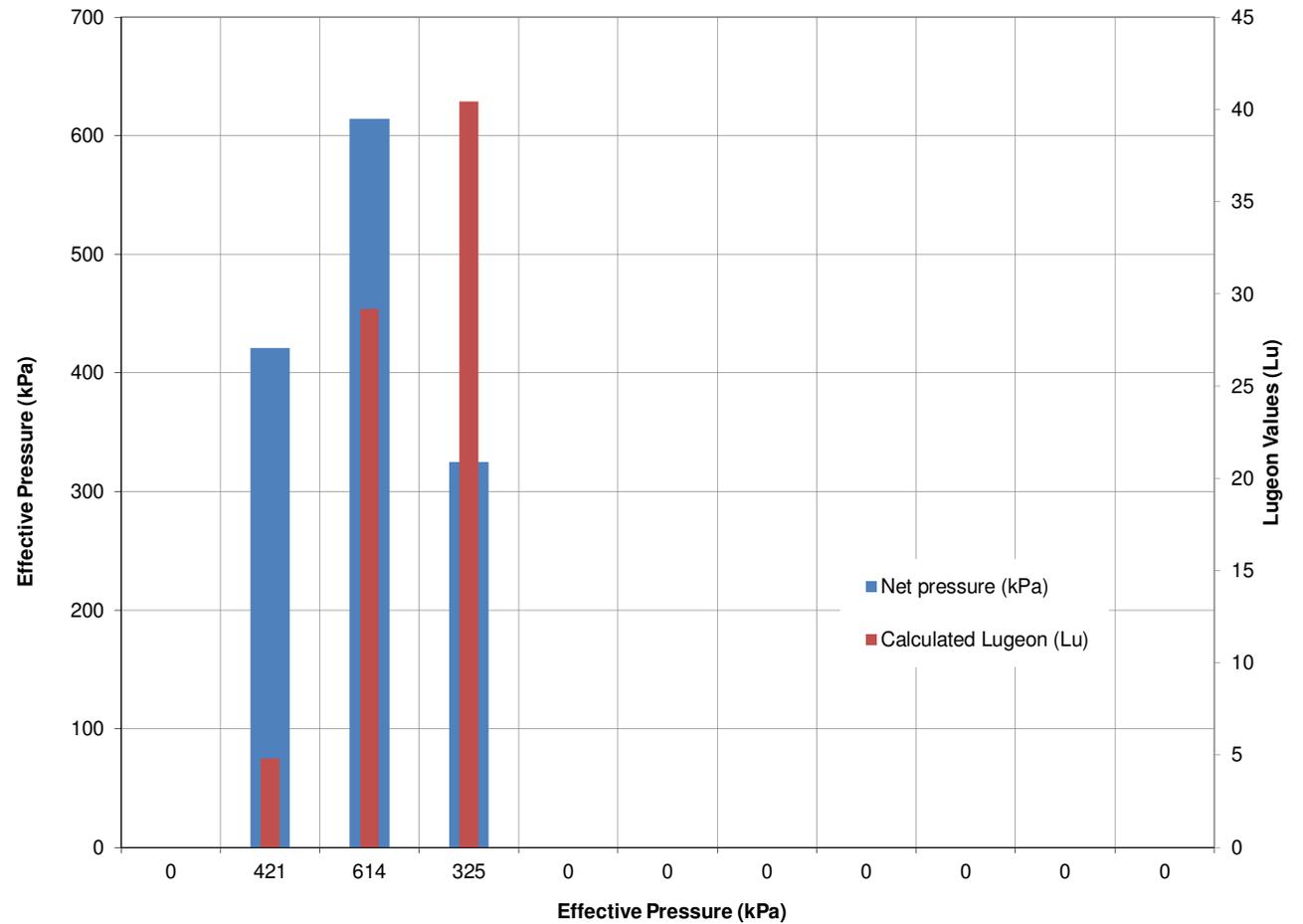


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
2.03	420.82	4.81	6.98E-07
17.93	614.40	29.17	4.23E-06
13.13	324.74	40.42	5.86E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend
 Result

Date : 05/08/2013
Author : Alexis Valenza

Date	<input type="text" value="05/08/2013"/>	Depth to water level :	<input type="text" value="5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="253.5"/> m
Hole No.	<input type="text" value="1204"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="2"/>	Vertical depth :	<input type="text" value="253.5"/> m
Test interval	<input type="text" value="252"/> to <input type="text" value="255"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="27.84"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="224.2"/> m
Packer inflation pressure :	<input type="text" value="4185"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0300	0.75	420.82	1.8	1.43E-07	2.59E-07
B	2	0.0120	1.50	614.40	2.4	1.95E-07	3.54E-07
C							
D							
E							
Dr							
Cr							
Br							
Ar							
				Minimum	1.8	1.4E-07	2.6E-07
				Average	2.0	1.6E-07	3.1E-07
				Maximum	2.4	2.0E-07	3.5E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

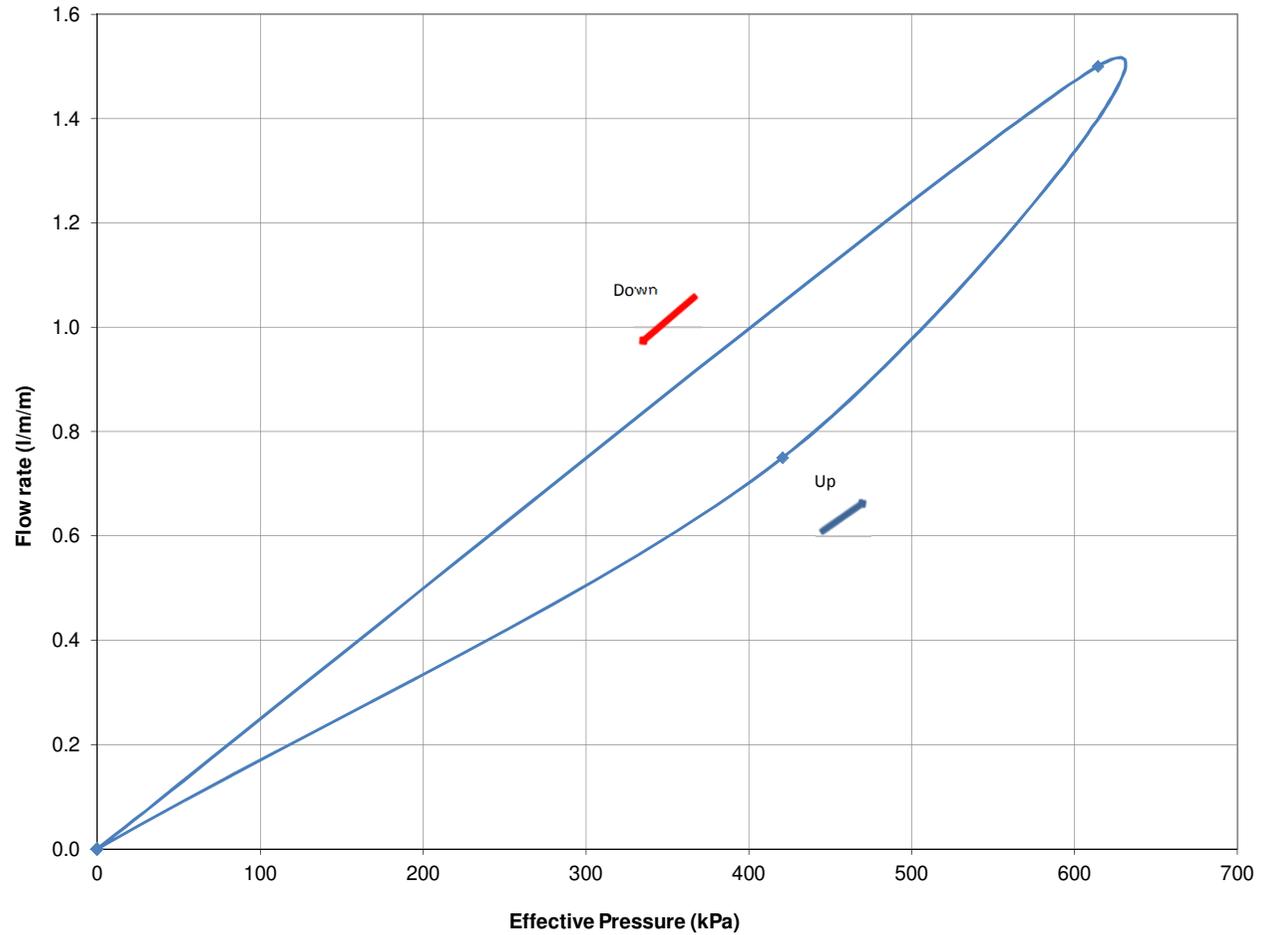
Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.75	420.82	1.78	2.59E-07
1.50	614.40	2.44	3.54E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



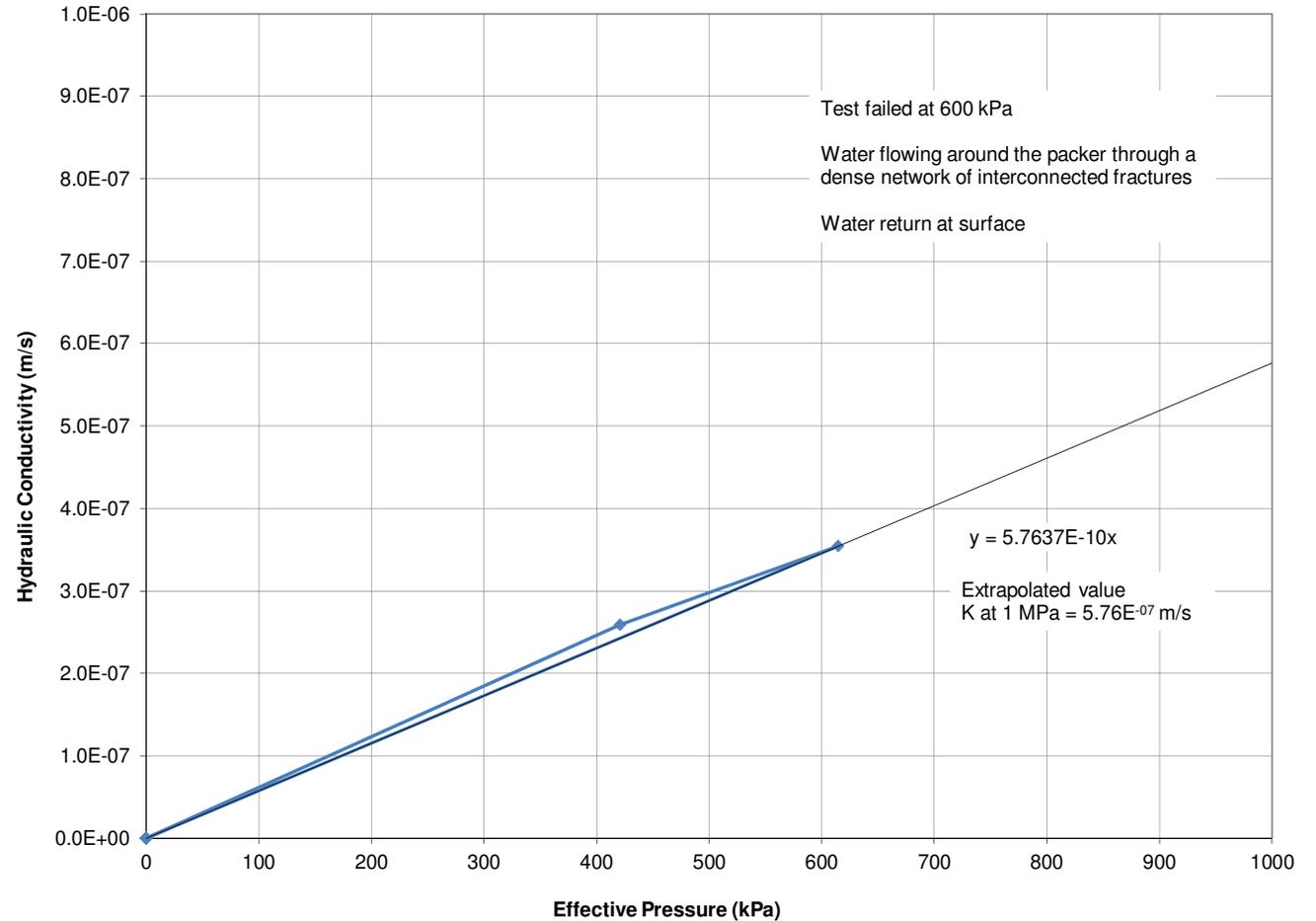
Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.75	420.82	1.78	2.59E-07
1.50	614.40	2.44	3.54E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

5.7637E-07

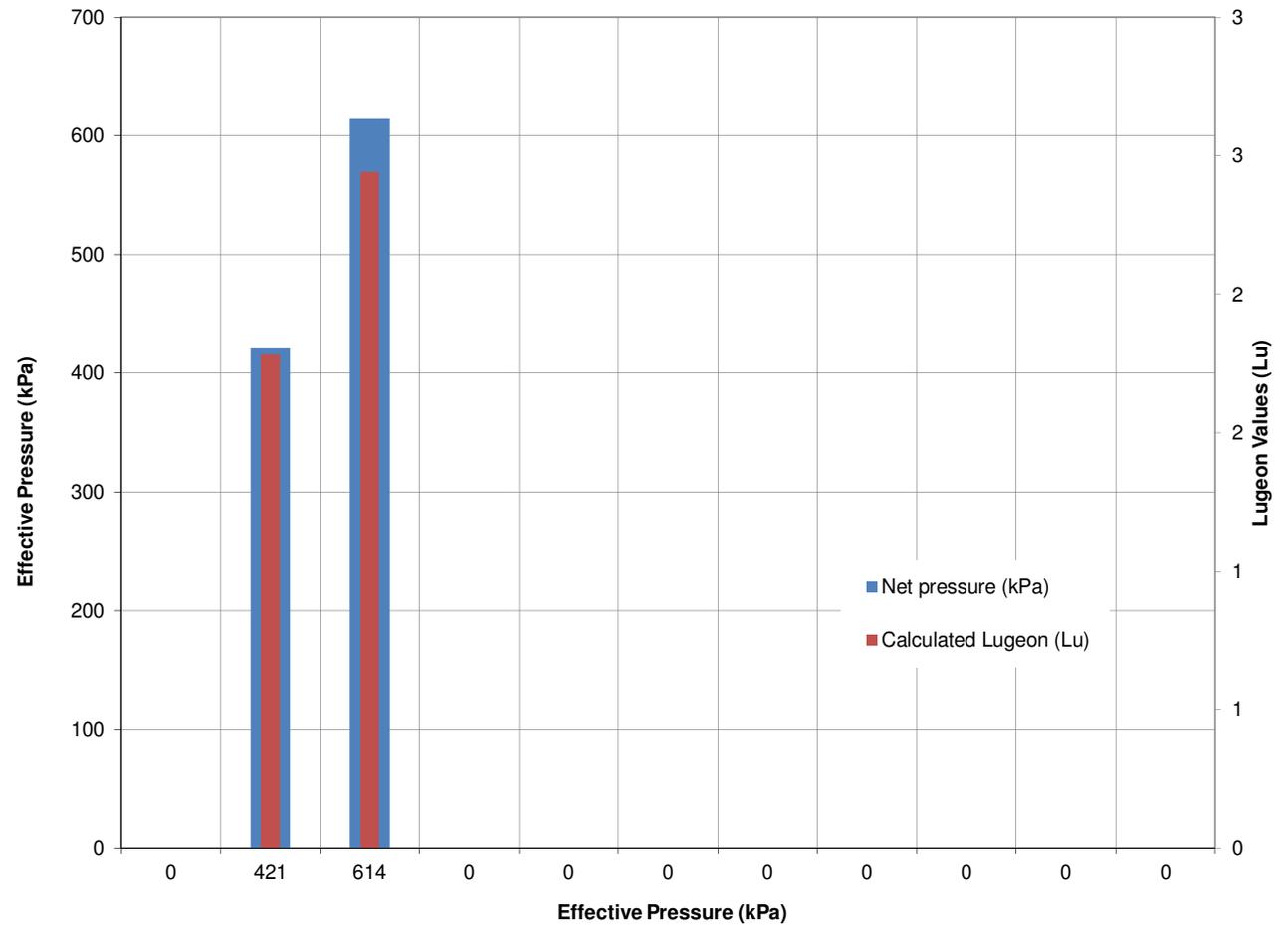


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.75	420.82	1.78	2.59E-07
1.50	614.40	2.44	3.54E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 05/08/2013
Author : Alexis Valenza

Date	<input type="text" value="06/08/2013"/>	Depth to water level :	<input type="text" value="5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="172"/> m
Hole No.	<input type="text" value="1204"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="3"/>	Vertical depth :	<input type="text" value="172"/> m
Test interval	<input type="text" value="171"/> to <input type="text" value="174"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="27.84"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="152.1"/> m
Packer inflation pressure :	<input type="text" value="3370"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0500	1.25	420.82	3.0	2.38E-07	4.31E-07
B	10	0.5420	13.55	614.40	22.1	1.76E-06	3.20E-06
C	10	0.7620	19.05	809.10	23.5	1.88E-06	3.42E-06
D	10	1.0000	25.00	906.73	27.6	2.21E-06	4.00E-06
E	10	0.8100	20.25	517.43	39.1	3.13E-06	5.68E-06
Dr							
Cr							
Br							
Ar							
Minimum					3.0	2.4E-07	4.3E-07
Average					19.7	1.6E-06	3.3E-06
Maximum					39.1	3.1E-06	5.7E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

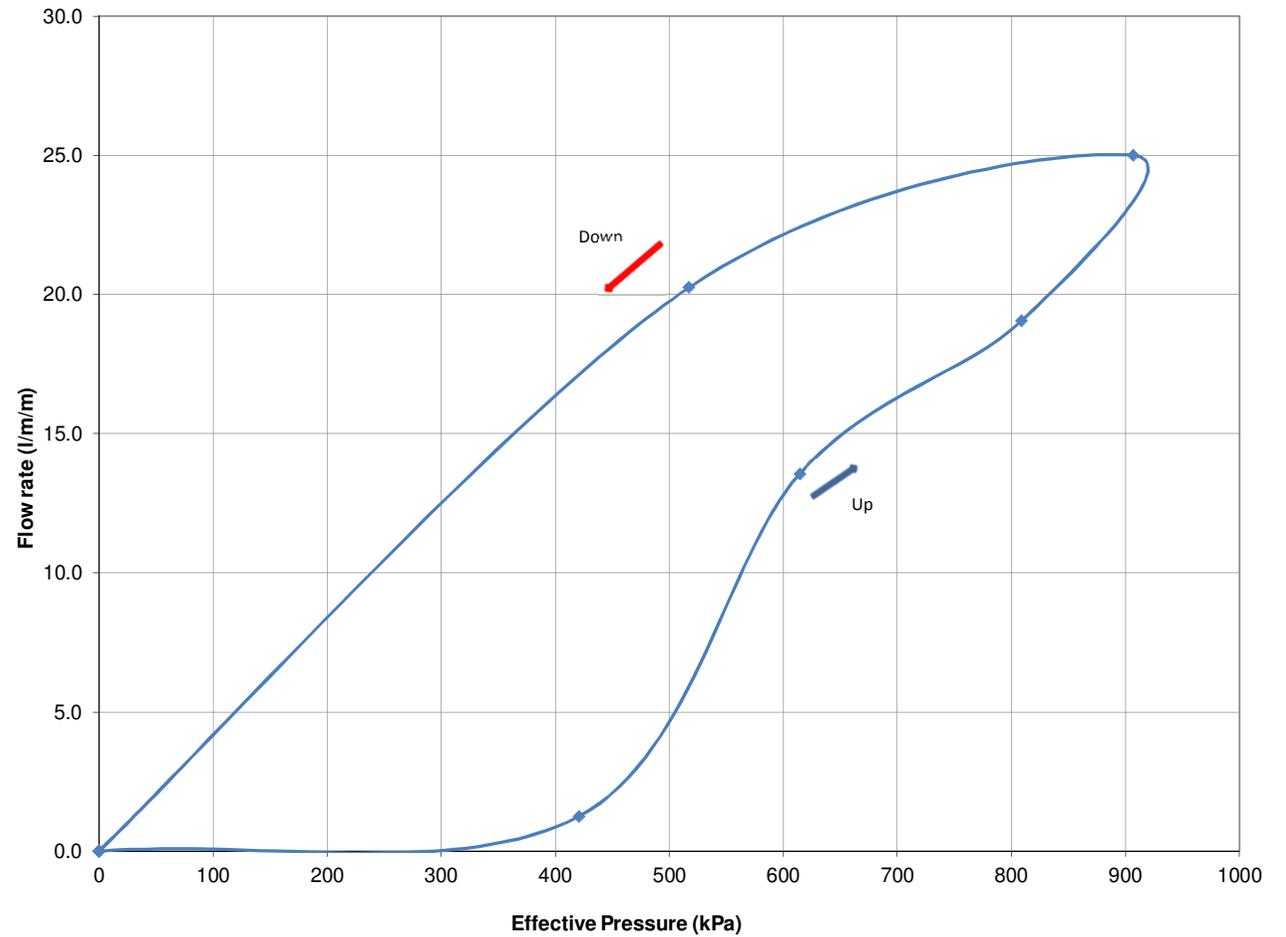
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times LN ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.25	420.82	2.97	4.31E-07
13.55	614.40	22.05	3.20E-06
19.05	809.10	23.54	3.42E-06
25.00	906.73	27.57	4.00E-06
20.25	517.43	39.14	5.68E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



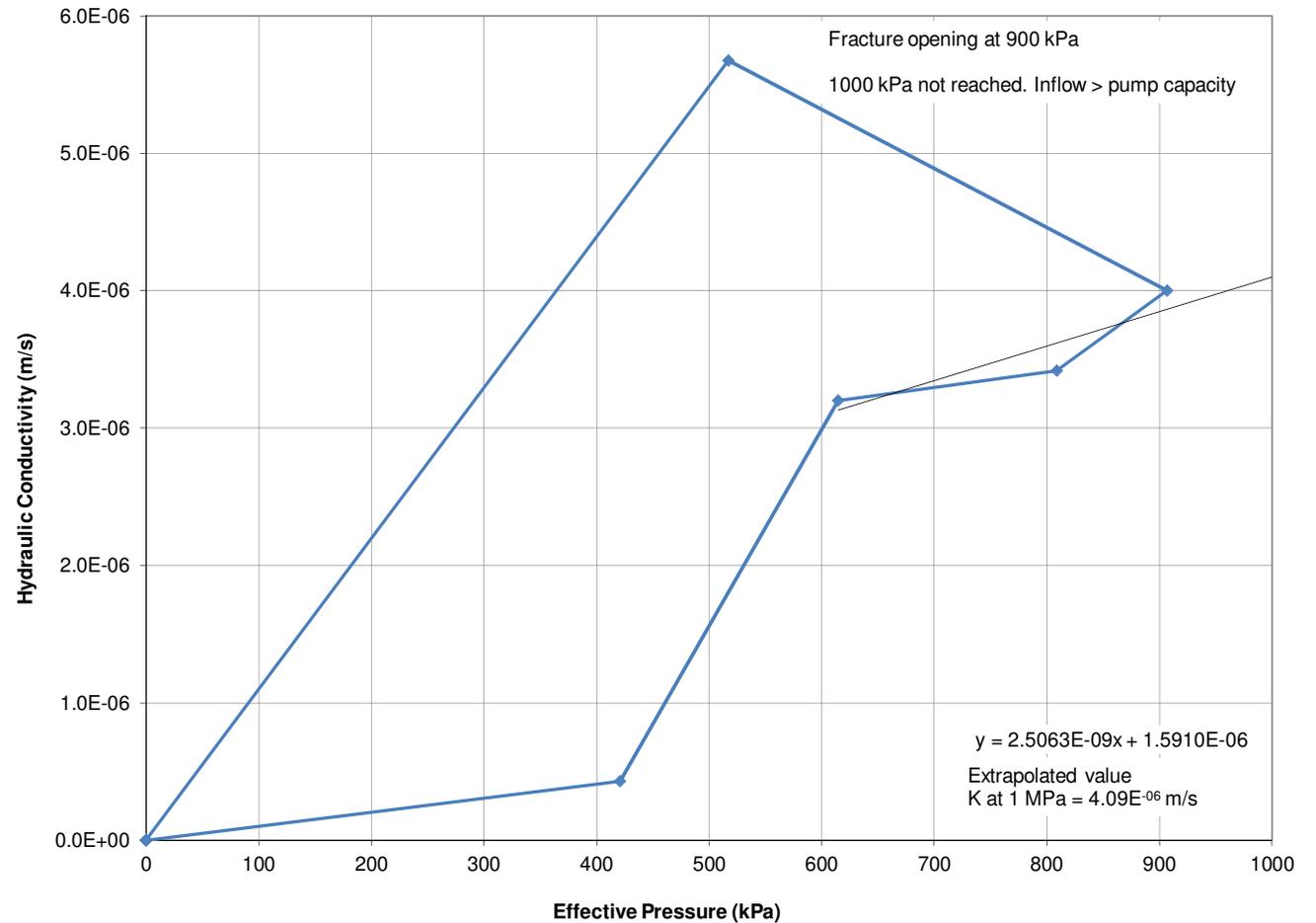
Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.25	420.82	2.97	4.31E-07
13.55	614.40	22.05	3.20E-06
19.05	809.10	23.54	3.42E-06
25.00	906.73	27.57	4.00E-06
20.25	517.43	39.14	5.68E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

4.0973E-06

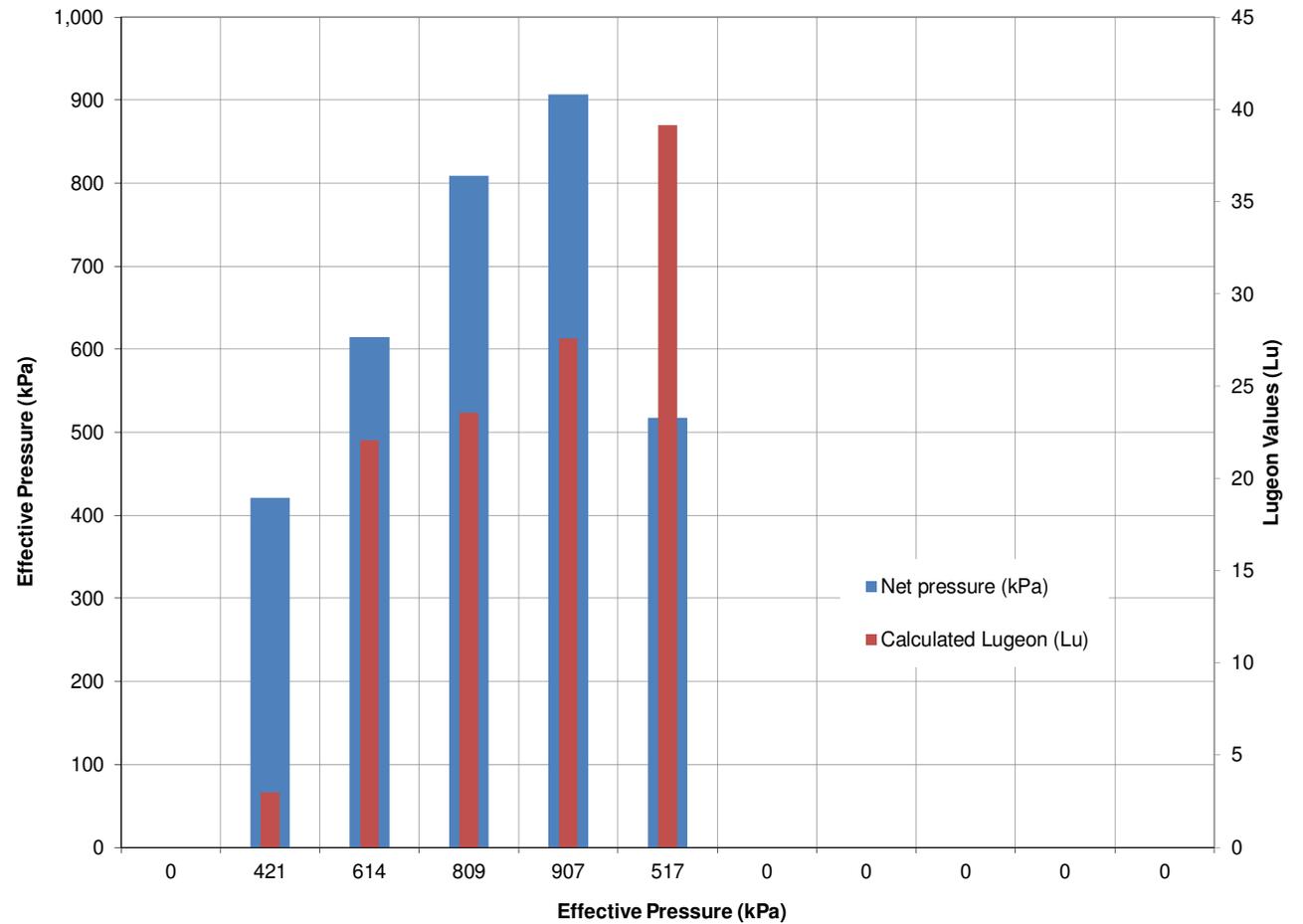


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.25	420.82	2.97	4.31E-07
13.55	614.40	22.05	3.20E-06
19.05	809.10	23.54	3.42E-06
25.00	906.73	27.57	4.00E-06
20.25	517.43	39.14	5.68E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend
 Result

Date : 05/08/2013
Author : Alexis Valenza

Date	<input type="text" value="06/08/2013"/>	Depth to water level :	<input type="text" value="5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="138"/> m
Hole No.	<input type="text" value="1204"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="4"/>	Vertical depth :	<input type="text" value="138"/> m
Test interval	<input type="text" value="137"/> to <input type="text" value="140"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="27.84"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="122.0"/> m
Packer inflation pressure :	<input type="text" value="3030"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.0630	1.58	420.82	3.7	2.99E-07	5.43E-07	
B	3	0.0330	2.75	614.40	4.5	3.58E-07	6.49E-07	
C								
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	3.7	3.0E-07	5.4E-07
					Average	4.0	3.2E-07	6.0E-07
					Maximum	4.5	3.6E-07	6.5E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

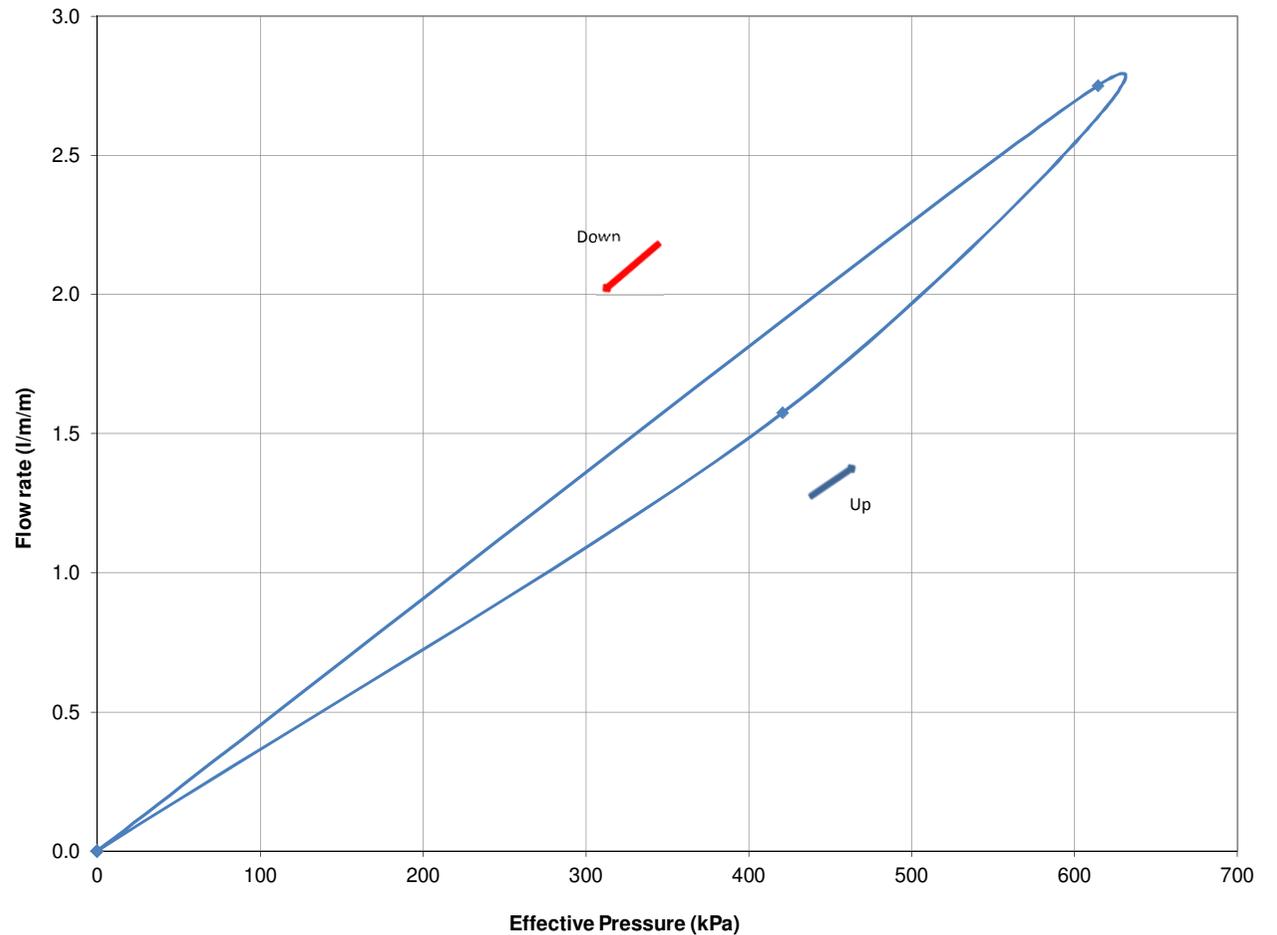
Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.58	420.82	3.74	5.43E-07
2.75	614.40	4.48	6.49E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

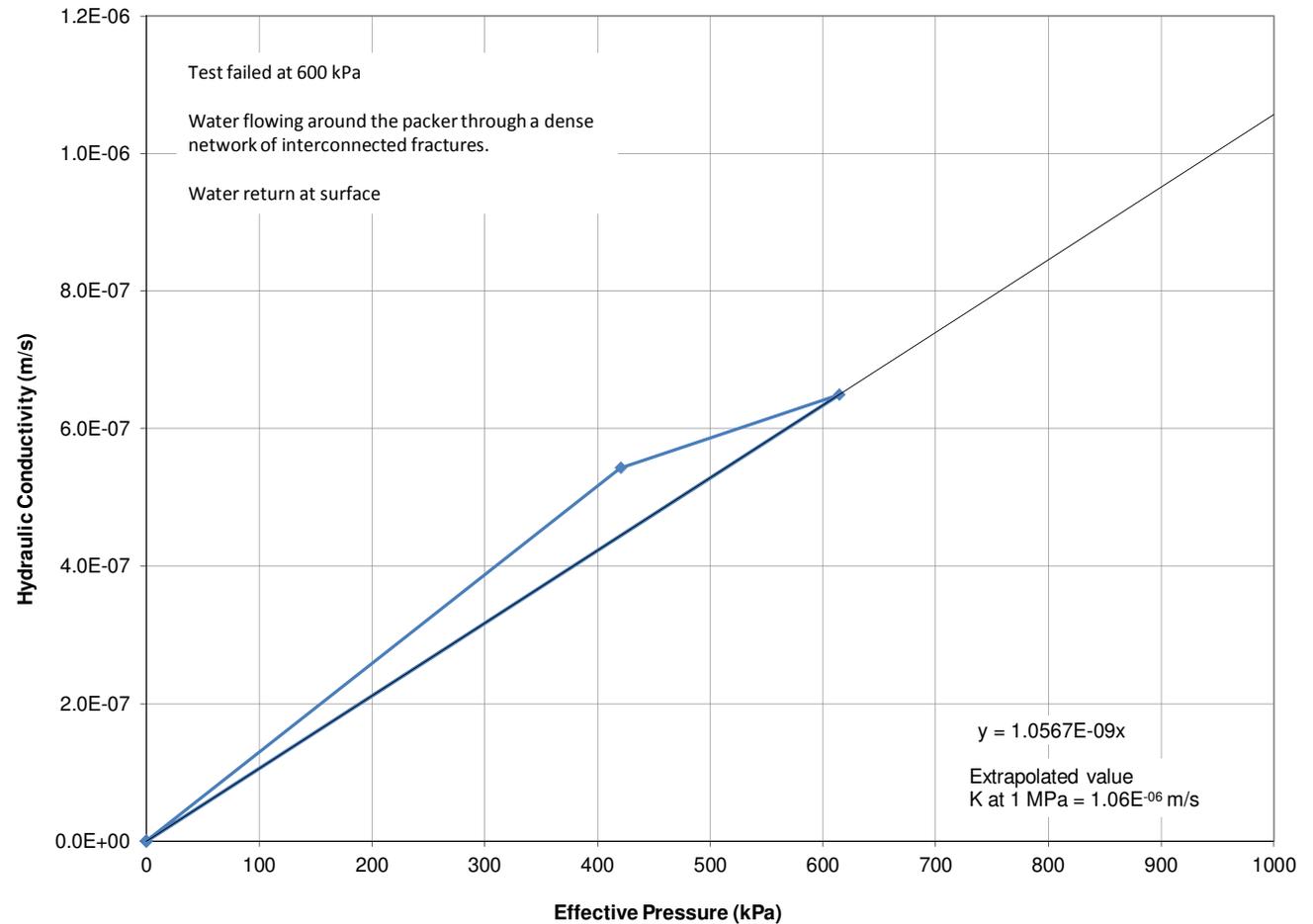


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.58	420.82	3.74	5.43E-07
2.75	614.40	4.48	6.49E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

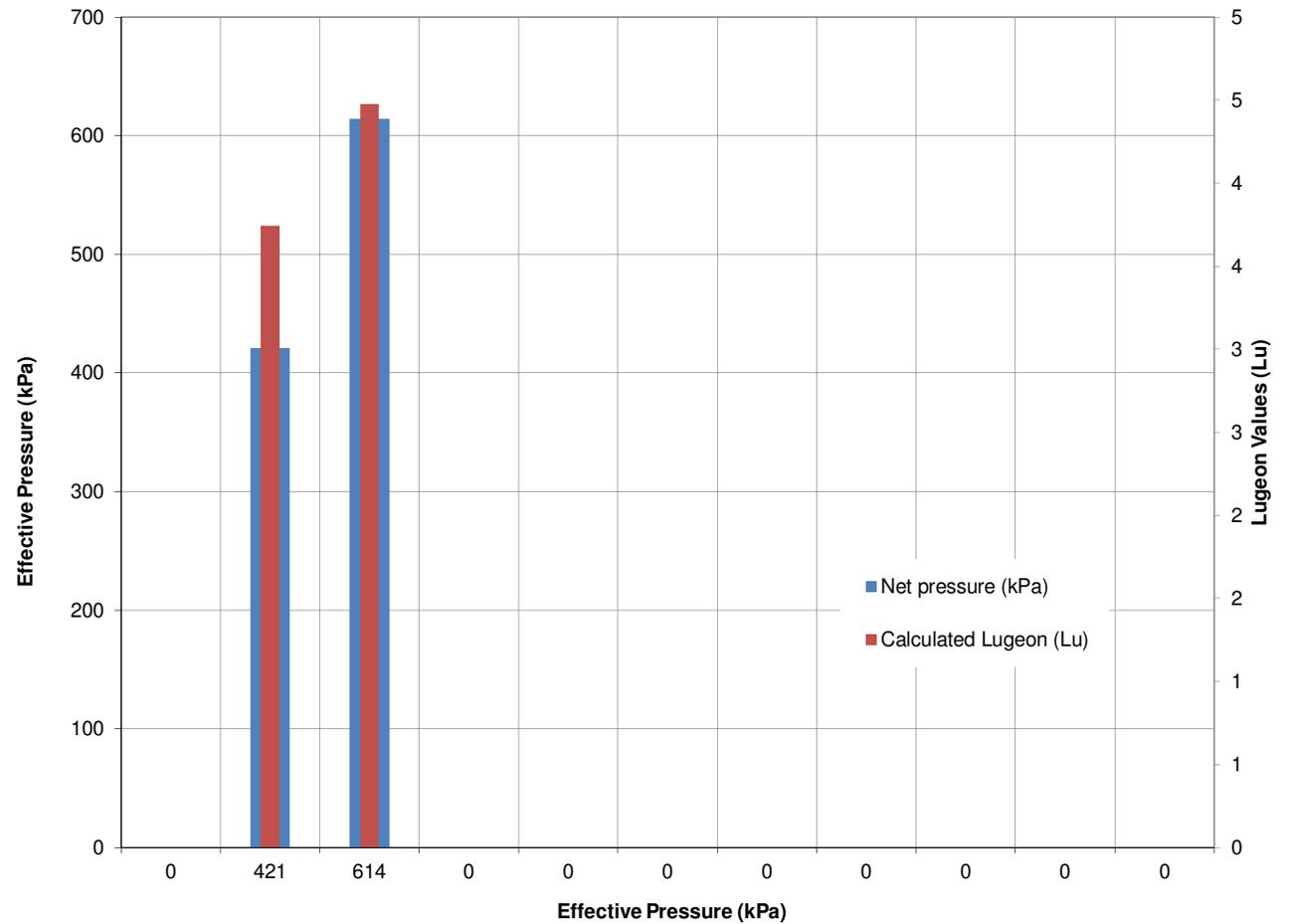


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.58	420.82	3.74	5.43E-07
2.75	614.40	4.48	6.49E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend
 Result

Date : 06/08/2013
Author : Alexis Valenza

Date	<input type="text" value="06/08/2013"/>	Depth to water level :	<input type="text" value="5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="138"/> m
Hole No.	<input type="text" value="1204"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="5"/>	Vertical depth :	<input type="text" value="138"/> m
Test interval	<input type="text" value="88"/> to <input type="text" value="91"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="27.84"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="122.0"/> m
Packer inflation pressure :	<input type="text" value="3030"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.1200	3.00	420.82	7.1	5.70E-07	1.03E-06	
B	2	0.0290	3.37	614.40	5.5	4.39E-07	7.96E-07	
C								
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	5.5	4.4E-07	8.0E-07
					Average	6.0	4.8E-07	9.2E-07
					Maximum	7.1	5.7E-07	1.0E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

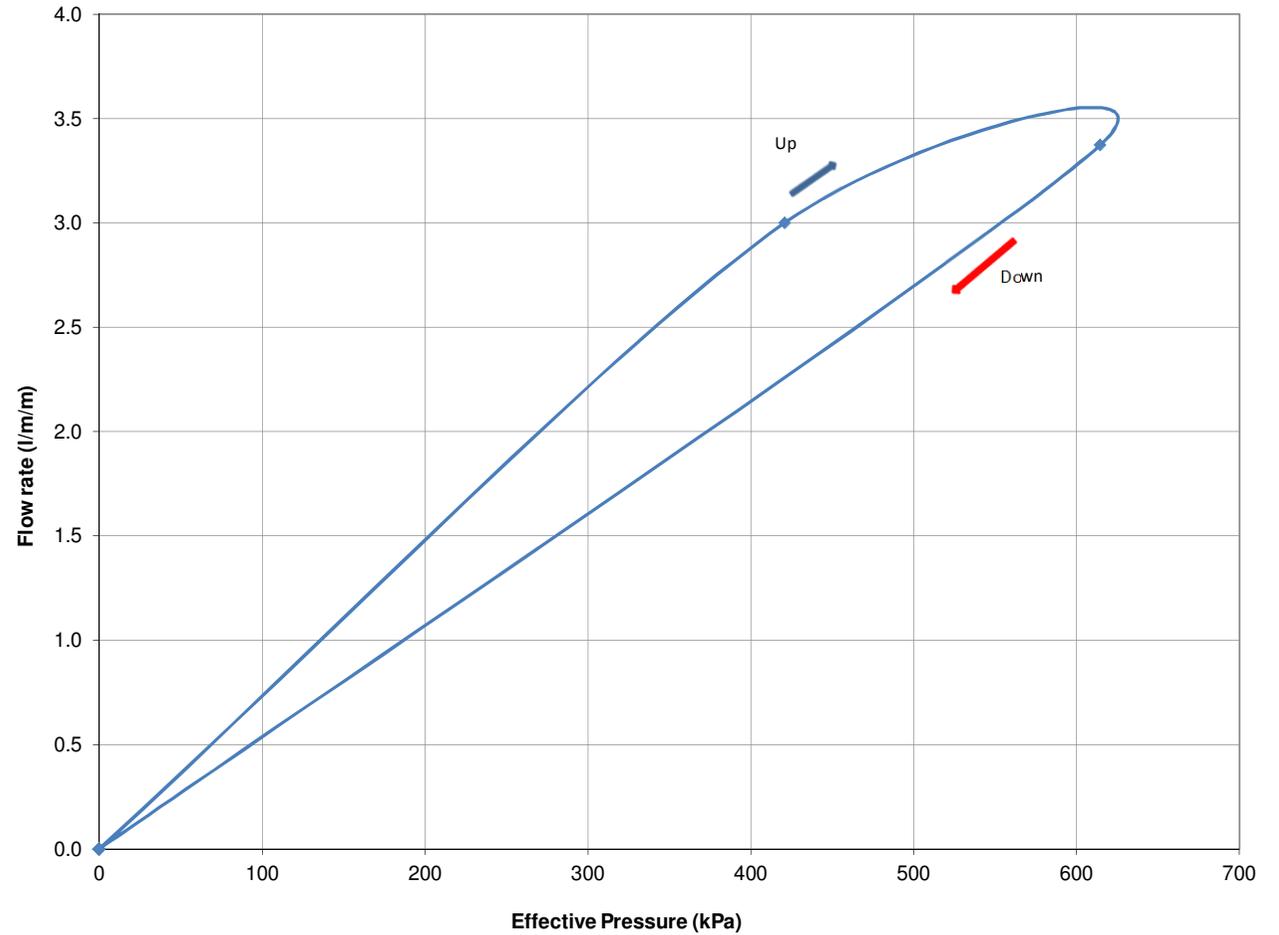
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
3.00	420.82	7.13	1.03E-06
3.37	614.40	5.49	7.96E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

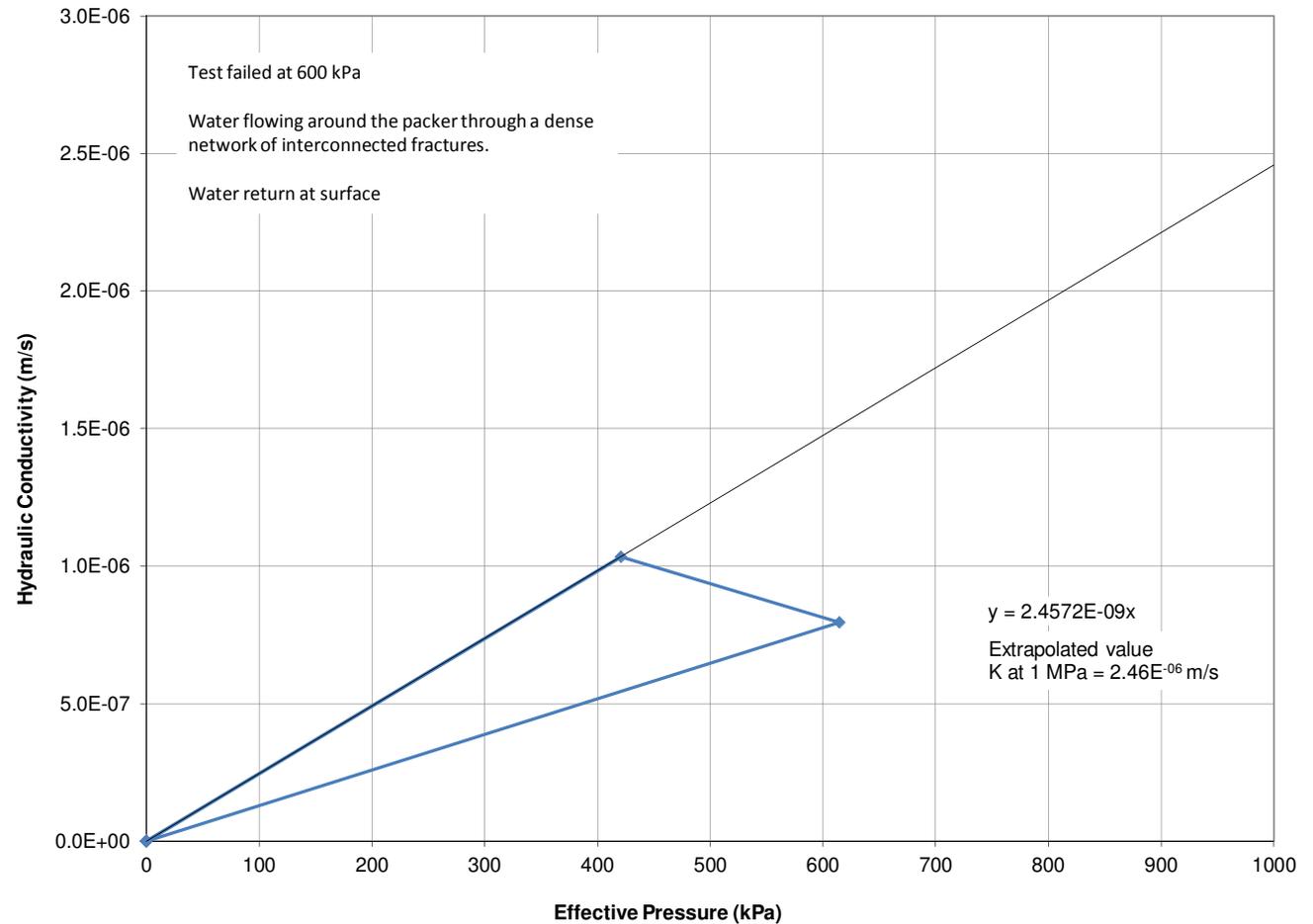


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
3.00	420.82	7.13	1.03E-06
3.37	614.40	5.49	7.96E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

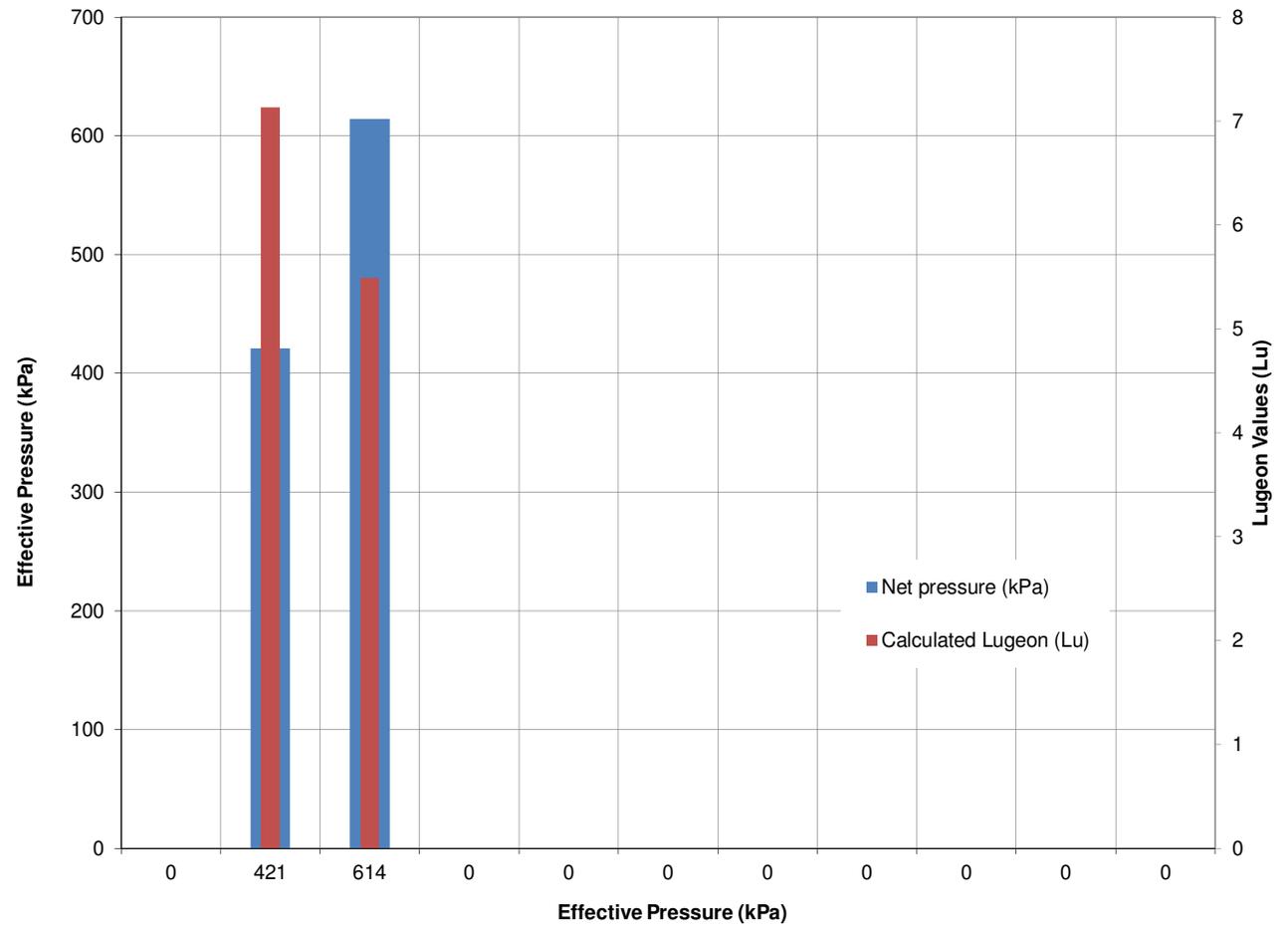


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
3.00	420.82	7.13	1.03E-06
3.37	614.40	5.49	7.96E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 06/08/2013
Author : Alexis Valenza

Date	<input type="text" value="06/08/2013"/>	Depth to water level :	<input type="text" value="5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="50"/> m
Hole No.	<input type="text" value="1204"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="6"/>	Vertical depth :	<input type="text" value="50"/> m
Test interval	<input type="text" value="49"/> to <input type="text" value="52"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="27.84"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="44.2"/> m
Packer inflation pressure :	<input type="text" value="2150"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A							
B							
C							
D							
E							
Dr							
Cr							
Br							
Ar							
				Minimum	0.0	0.0E+00	0.0E+00
				Average	0.0	0.0E+00	#DIV/0!
				Maximum	0.0	0.0E+00	0.0E+00

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:

Hole No.

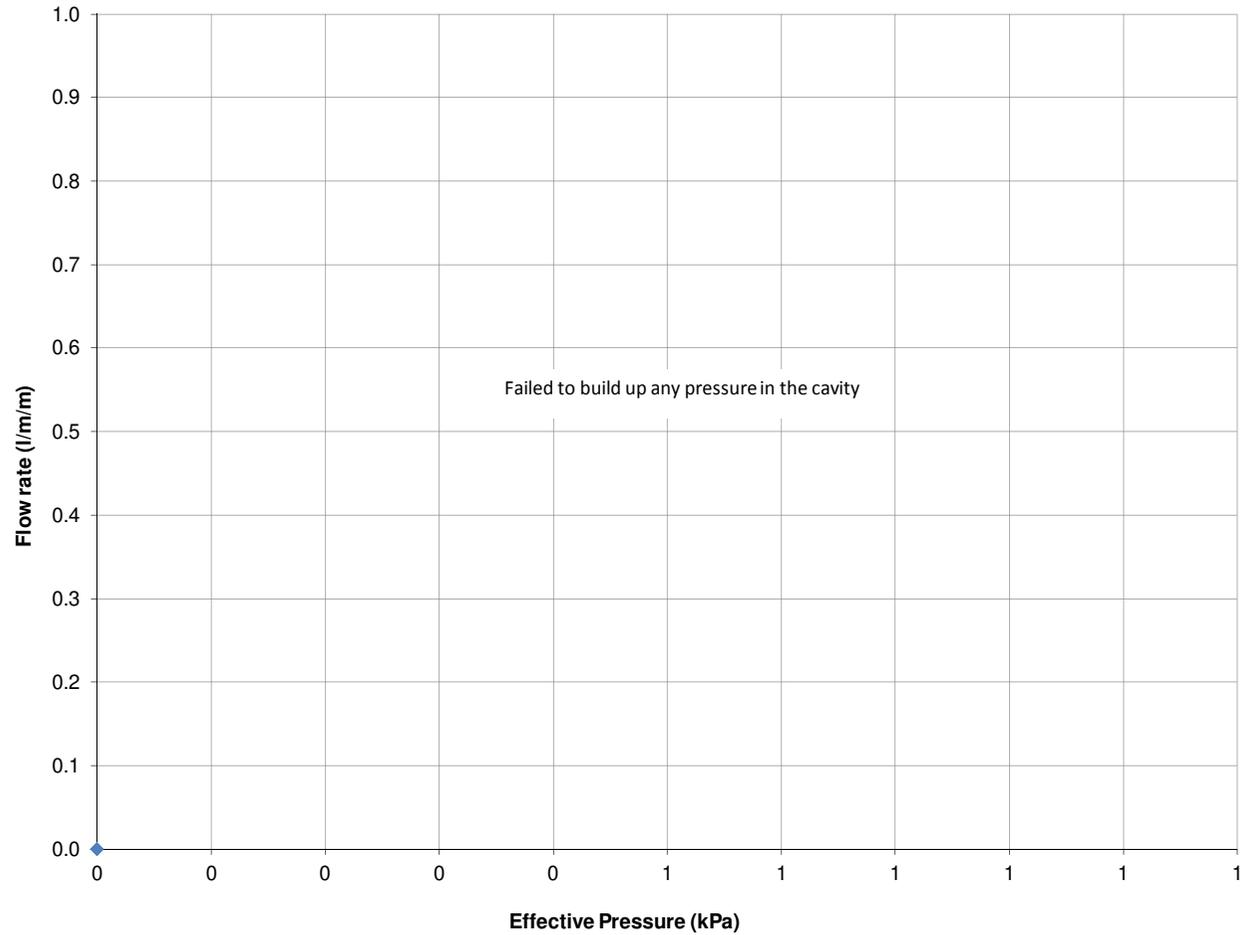
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers Test Results

Site Location:

Hole No.

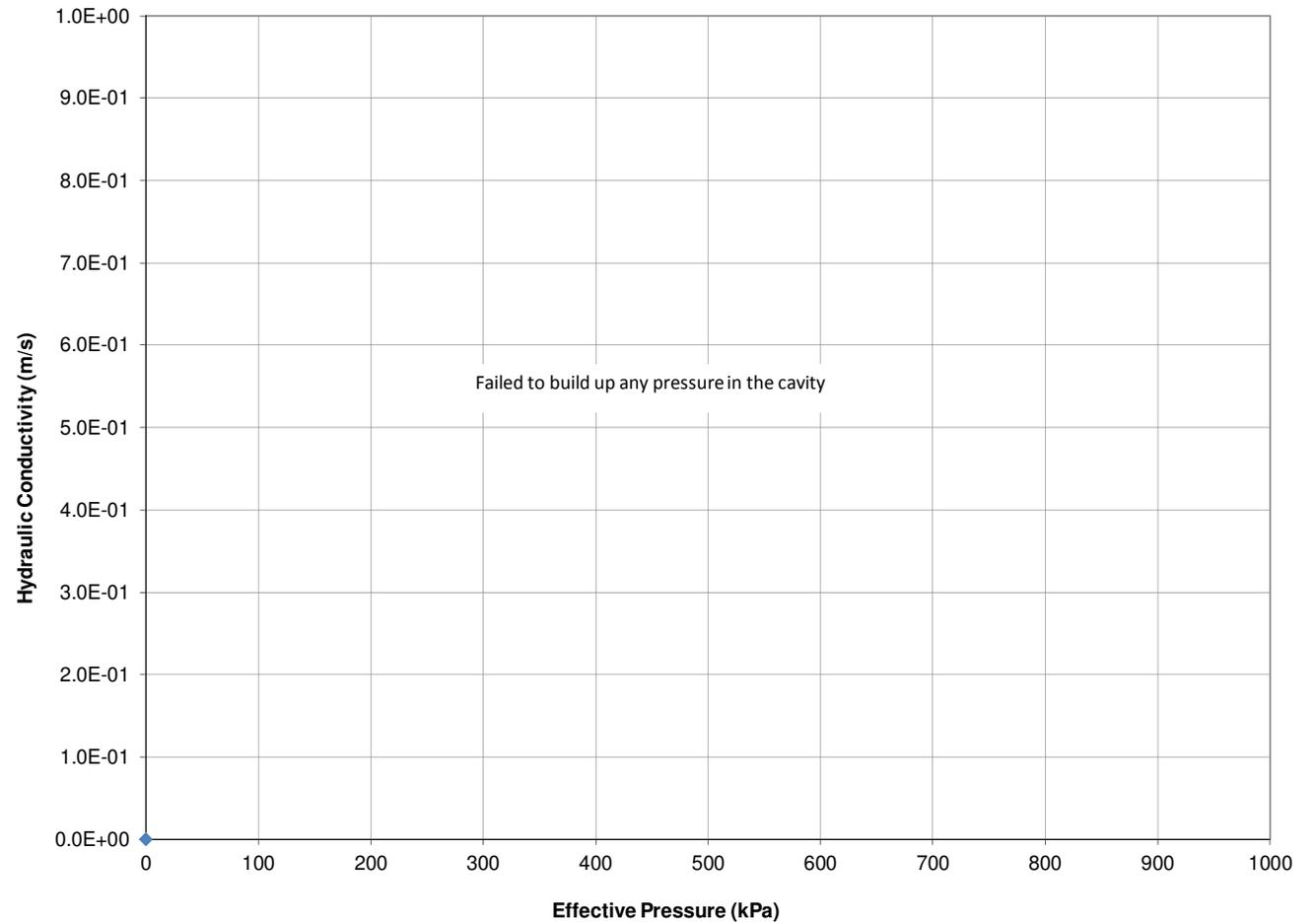
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers Test Results

Site Location:

Hole No.

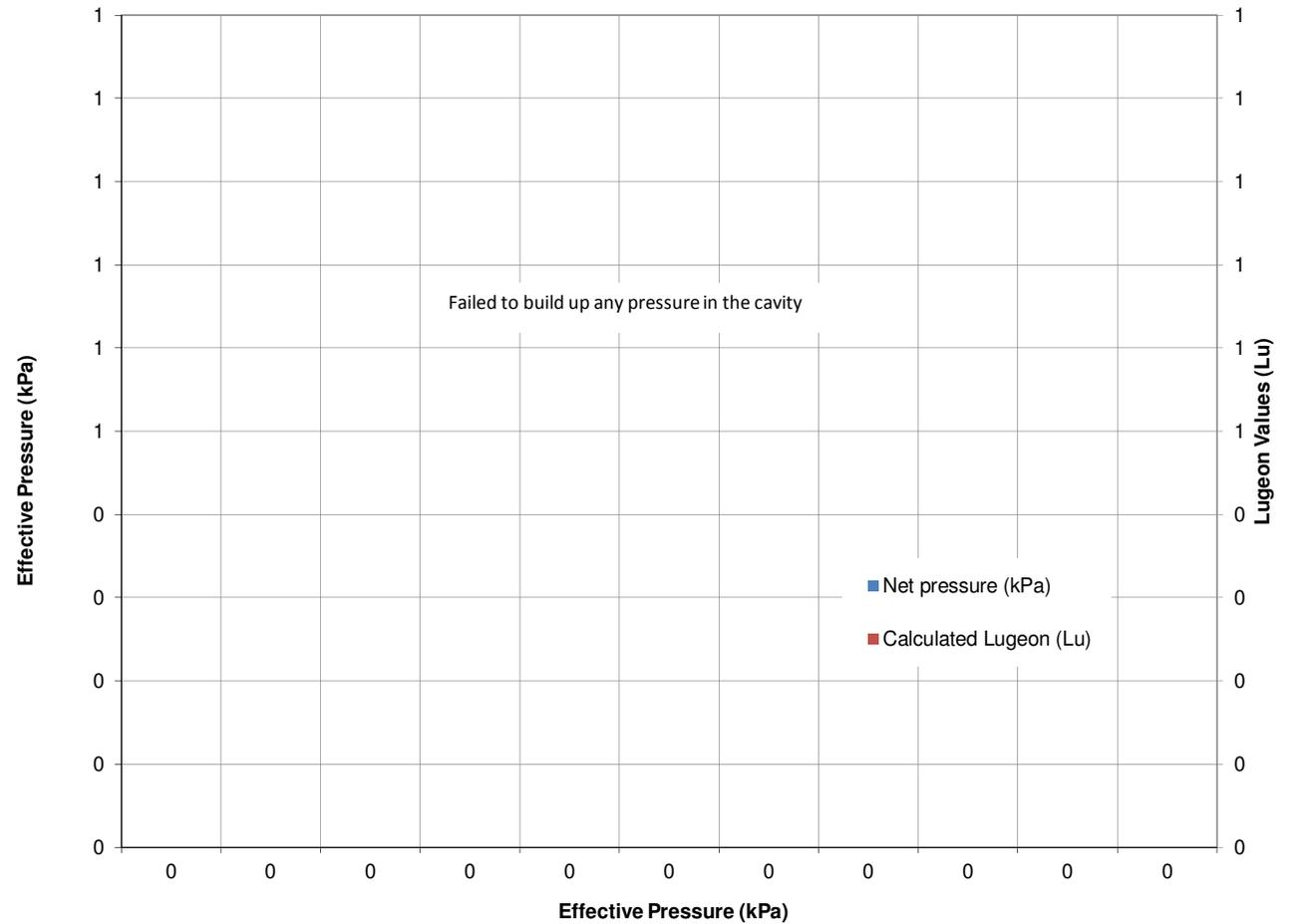
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



LPDD1205
Packer Test Interval
63m to 67m
15/08/2013



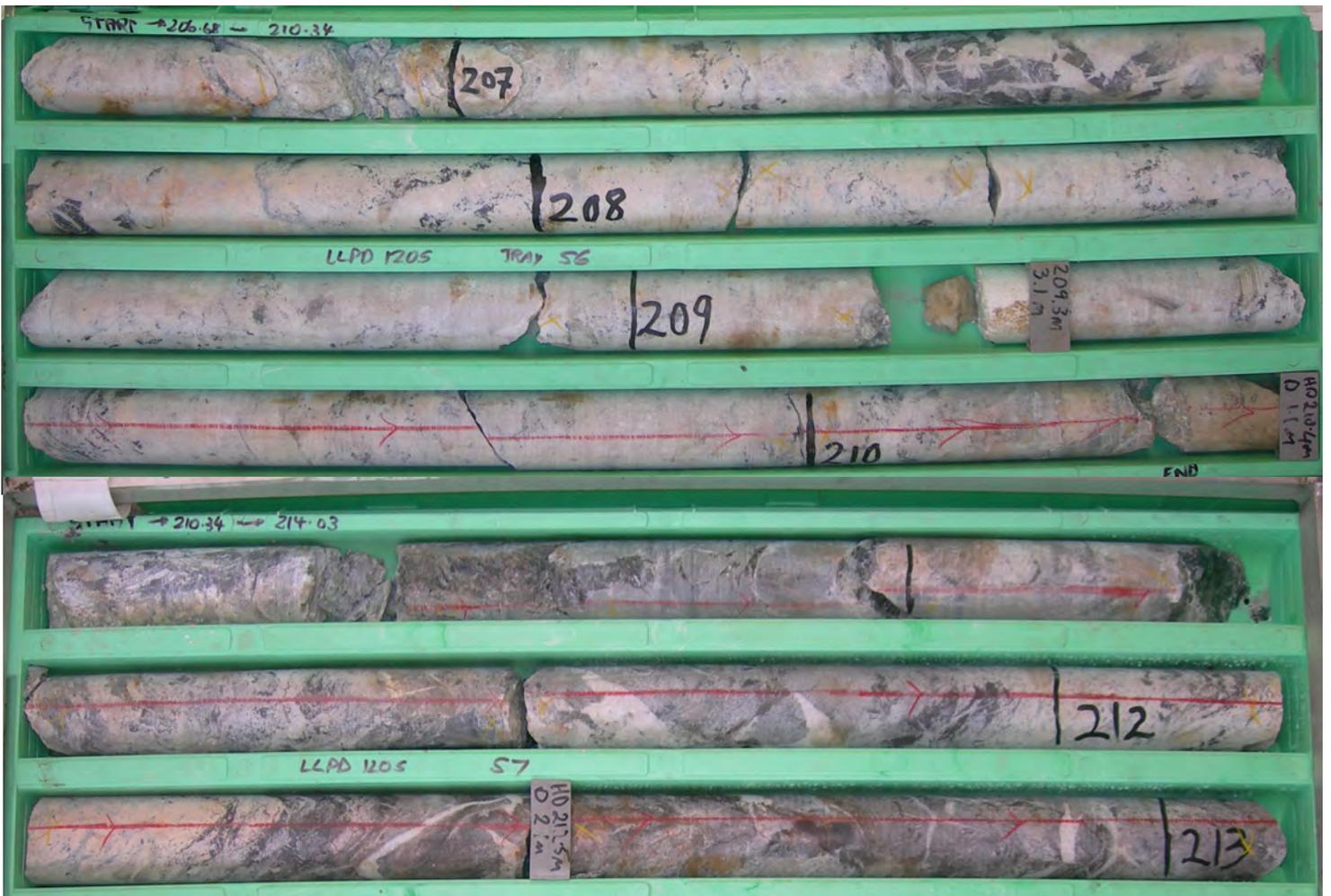
LPDD1205
Packer Test Interval
96m to 100m
15/08/2013



LPDD1205
Packer Test Interval
155m to 159m
14/08/2013



LPDD1205
Packer Test Interval
208m to 212m
14/08/2013



Packers test pressure calculation sheet

Legend

Result

Date : 14/08/2013
Author : Alexis Valenza

Date	<input type="text" value="14/08/2013"/>	Depth to water level :	<input type="text" value="14.6"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="209"/> m
Hole No.	<input type="text" value="1205"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="1"/>	Vertical depth :	<input type="text" value="209"/> m
Test interval	<input type="text" value="208"/> to <input type="text" value="211"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.96"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="177.3"/> m
Packer inflation pressure :	<input type="text" value="3644"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.5910	14.78	514.97	28.7	2.30E-06	4.16E-06	
B	10	0.7540	18.85	708.55	26.6	2.13E-06	3.86E-06	
C	10	0.6770	16.93	611.58	27.7	2.21E-06	4.01E-06	
D	10	0.5090	12.73	418.88	30.4	2.43E-06	4.41E-06	
E								
Dr								
Cr								
Br								
Ar								
					Minimum	26.6	2.1E-06	3.9E-06
					Average	28.0	2.2E-06	4.1E-06
					Maximum	30.4	2.4E-06	4.4E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

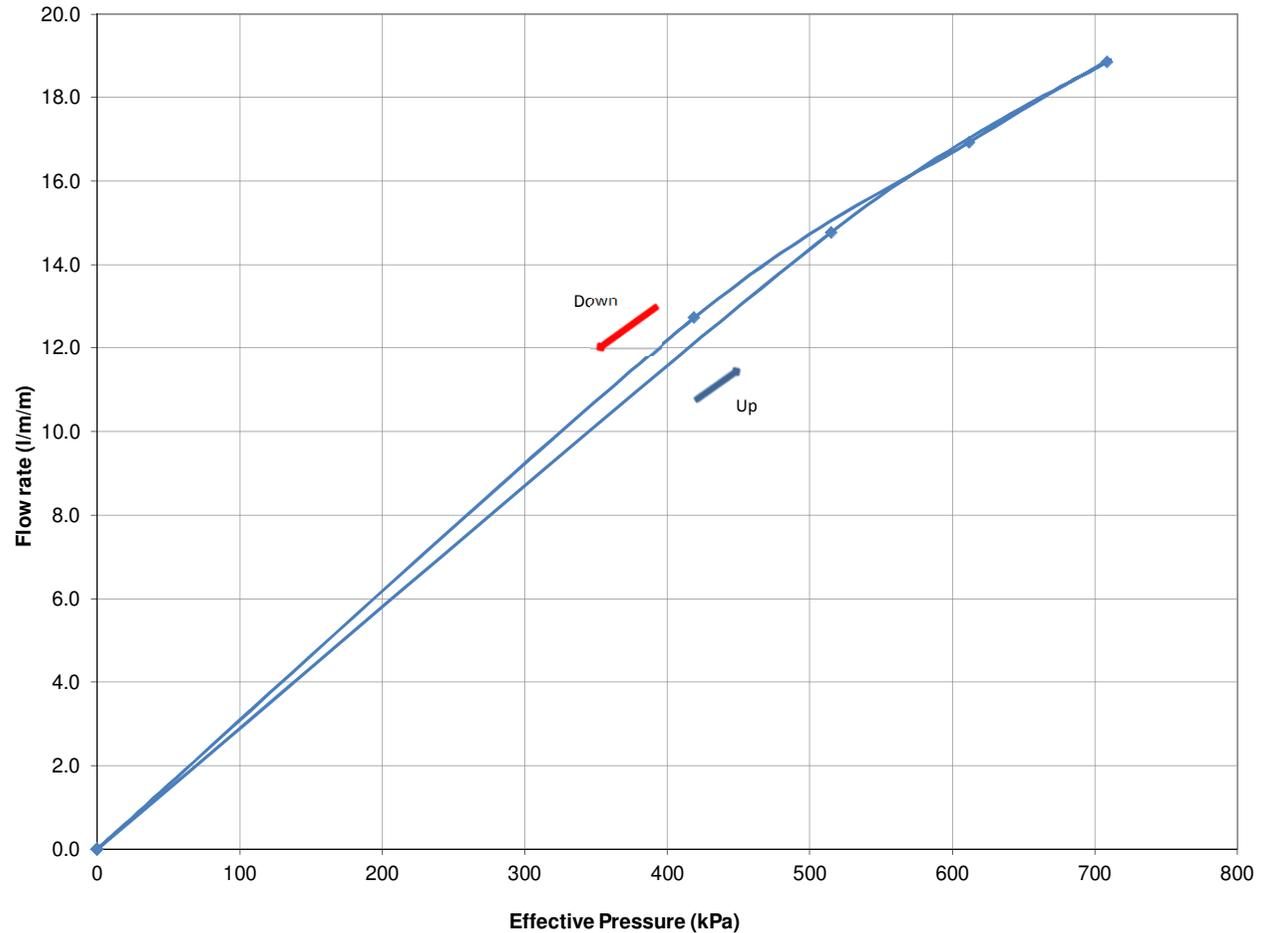
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
14.78	514.97	28.69	4.16E-06
18.85	708.55	26.60	3.86E-06
16.93	611.58	27.67	4.01E-06
12.73	418.88	30.38	4.41E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

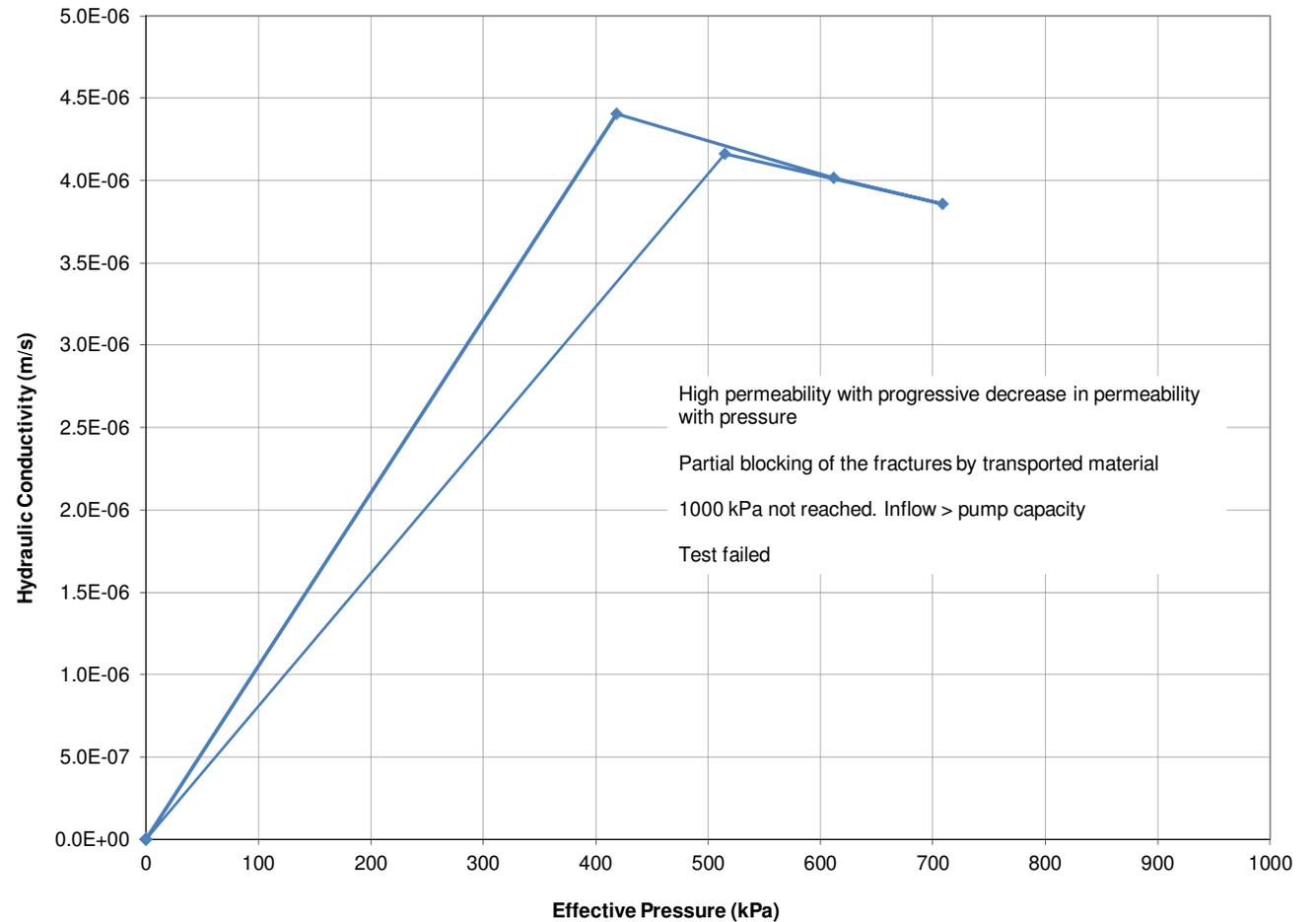


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
14.78	514.97	28.69	4.16E-06
18.85	708.55	26.60	3.86E-06
16.93	611.58	27.67	4.01E-06
12.73	418.88	30.38	4.41E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

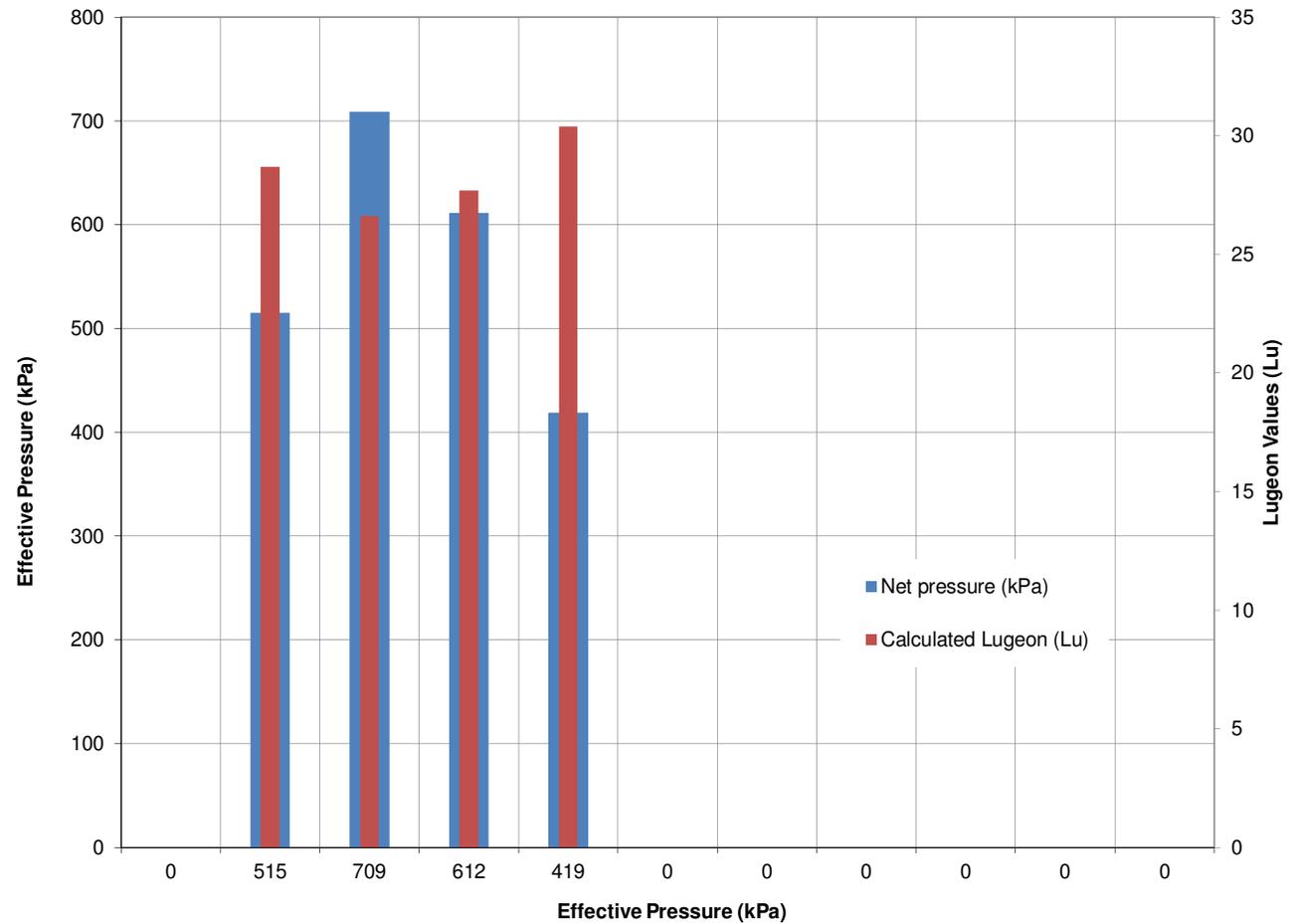


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
14.78	514.97	28.69	4.16E-06
18.85	708.55	26.60	3.86E-06
16.93	611.58	27.67	4.01E-06
12.73	418.88	30.38	4.41E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 14/08/2013
Author : Alexis Valenza

Date	<input type="text" value="14/08/2013"/>	Depth to water level :	<input type="text" value="14.6"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="156"/> m
Hole No.	<input type="text" value="1205"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="2"/>	Vertical depth :	<input type="text" value="156"/> m
Test interval	<input type="text" value="155"/> to <input type="text" value="158"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.96"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="132.4"/> m
Packer inflation pressure :	<input type="text" value="3114"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.0090	0.23	514.97	0.4	3.50E-08	6.34E-08	
B	10	0.5890	14.73	708.55	20.8	1.66E-06	3.01E-06	
C	10	0.6990	17.48	903.25	19.3	1.55E-06	2.81E-06	
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	0.4	3.5E-08	6.3E-08
					Average	10.3	8.2E-07	2.0E-06
					Maximum	20.8	1.7E-06	3.0E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

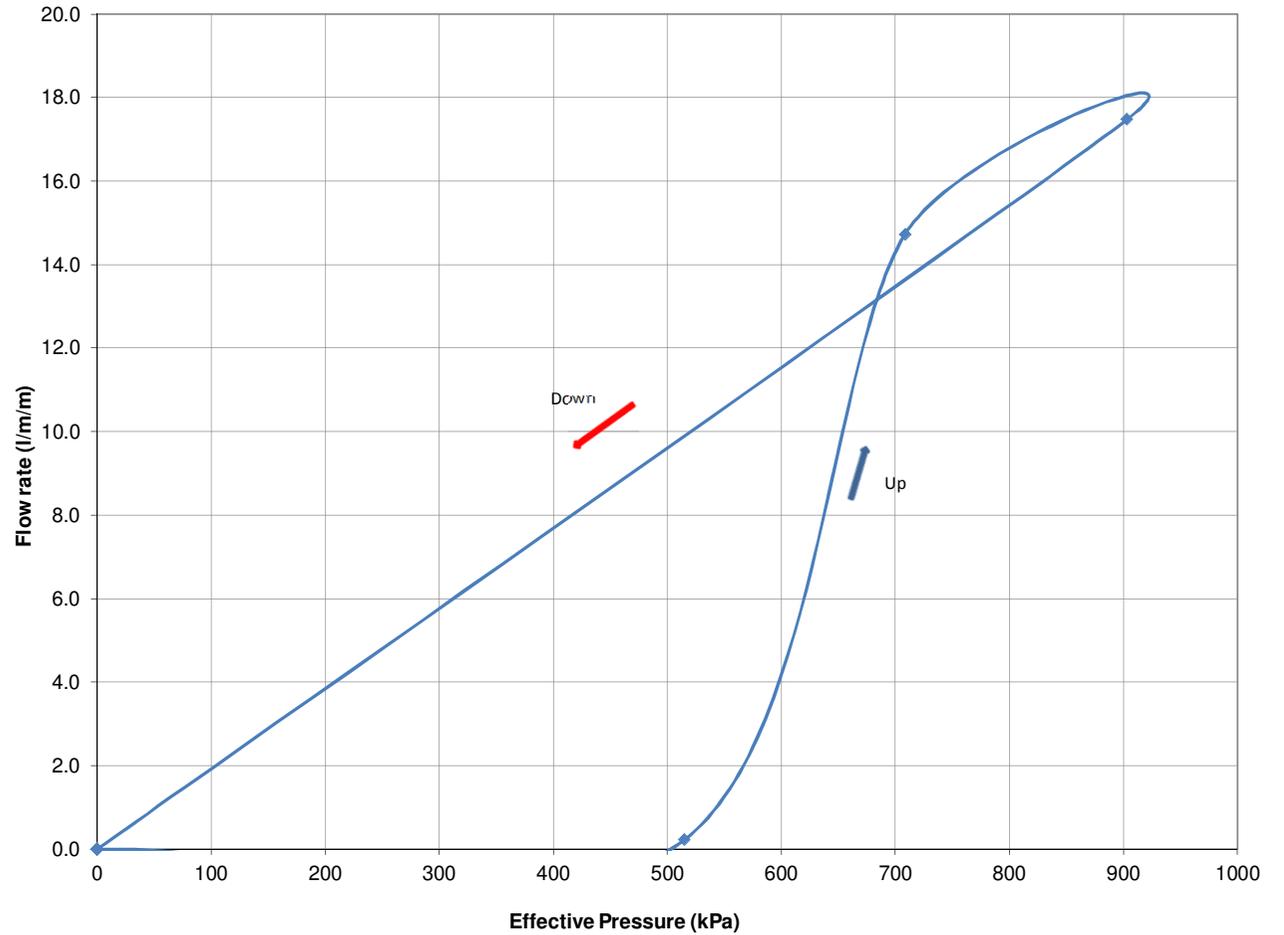
Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.23	514.97	0.44	6.34E-08
14.73	708.55	20.78	3.01E-06
17.48	903.25	19.35	2.81E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

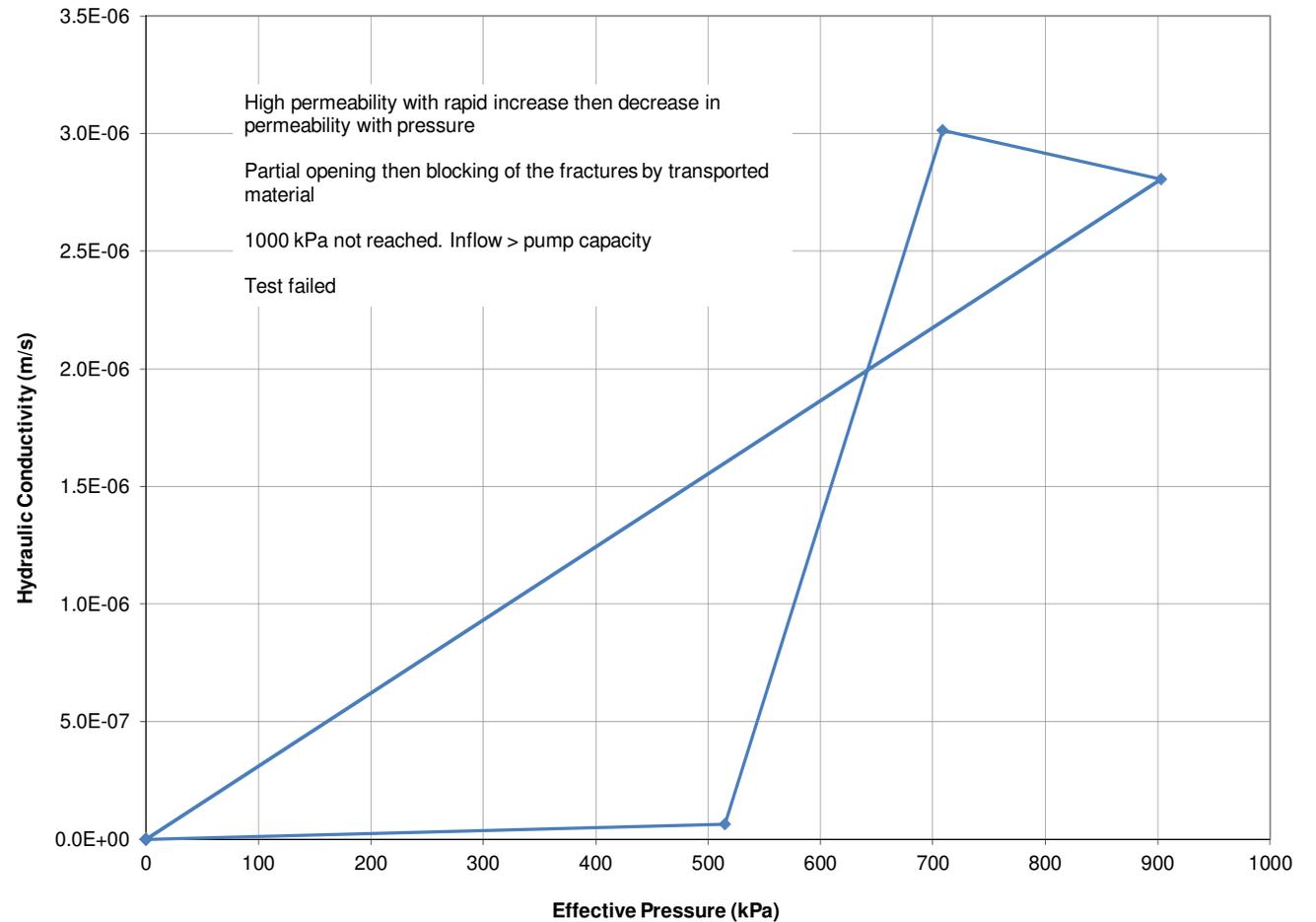


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.23	514.97	0.44	6.34E-08
14.73	708.55	20.78	3.01E-06
17.48	903.25	19.35	2.81E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

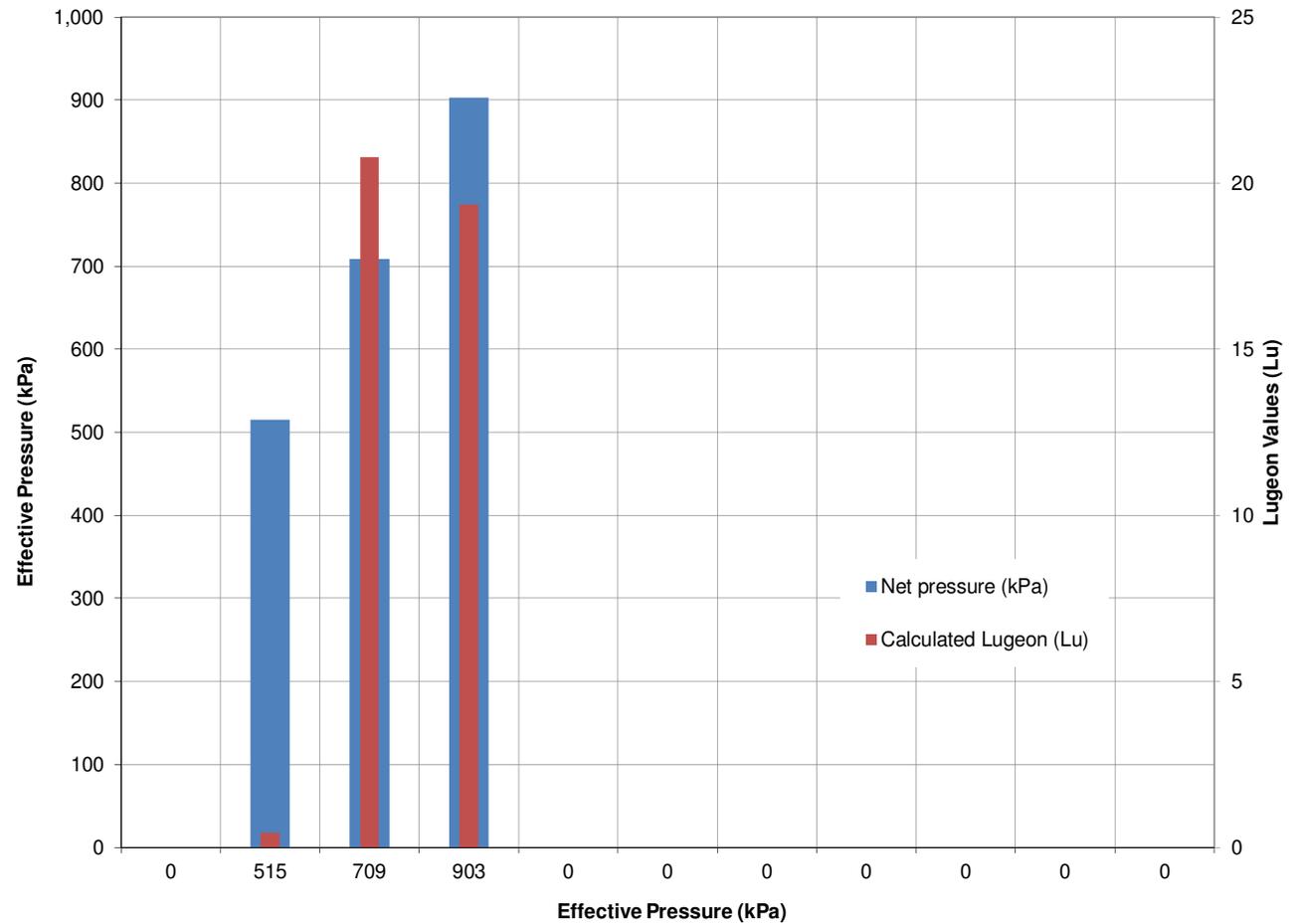


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.23	514.97	0.44	6.34E-08
14.73	708.55	20.78	3.01E-06
17.48	903.25	19.35	2.81E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 15/08/2013
Author : Alexis Valenza

Date	<input type="text" value="15/08/2013"/>	Depth to water level :	<input type="text" value="14.6"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="98"/> m
Hole No.	<input type="text" value="1205"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="3"/>	Vertical depth :	<input type="text" value="98"/> m
Test interval	<input type="text" value="96"/> to <input type="text" value="99"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.96"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="83.1"/> m
Packer inflation pressure :	<input type="text" value="2534"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.0570	1.43	514.97	2.8	2.21E-07	4.01E-07	
B	10	0.0700	1.75	708.55	2.5	1.98E-07	3.58E-07	
C	10	0.6600	16.50	903.25	18.3	1.46E-06	2.65E-06	
D	2	0.1320	16.50	805.79	20.5	1.64E-06	2.97E-06	
E	10	0.4430	11.08	418.88	26.4	2.12E-06	3.84E-06	
Dr								
Cr								
Br								
Ar								
					Minimum	2.5	2.0E-07	3.6E-07
					Average	12.1	9.7E-07	2.0E-06
					Maximum	26.4	2.1E-06	3.8E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

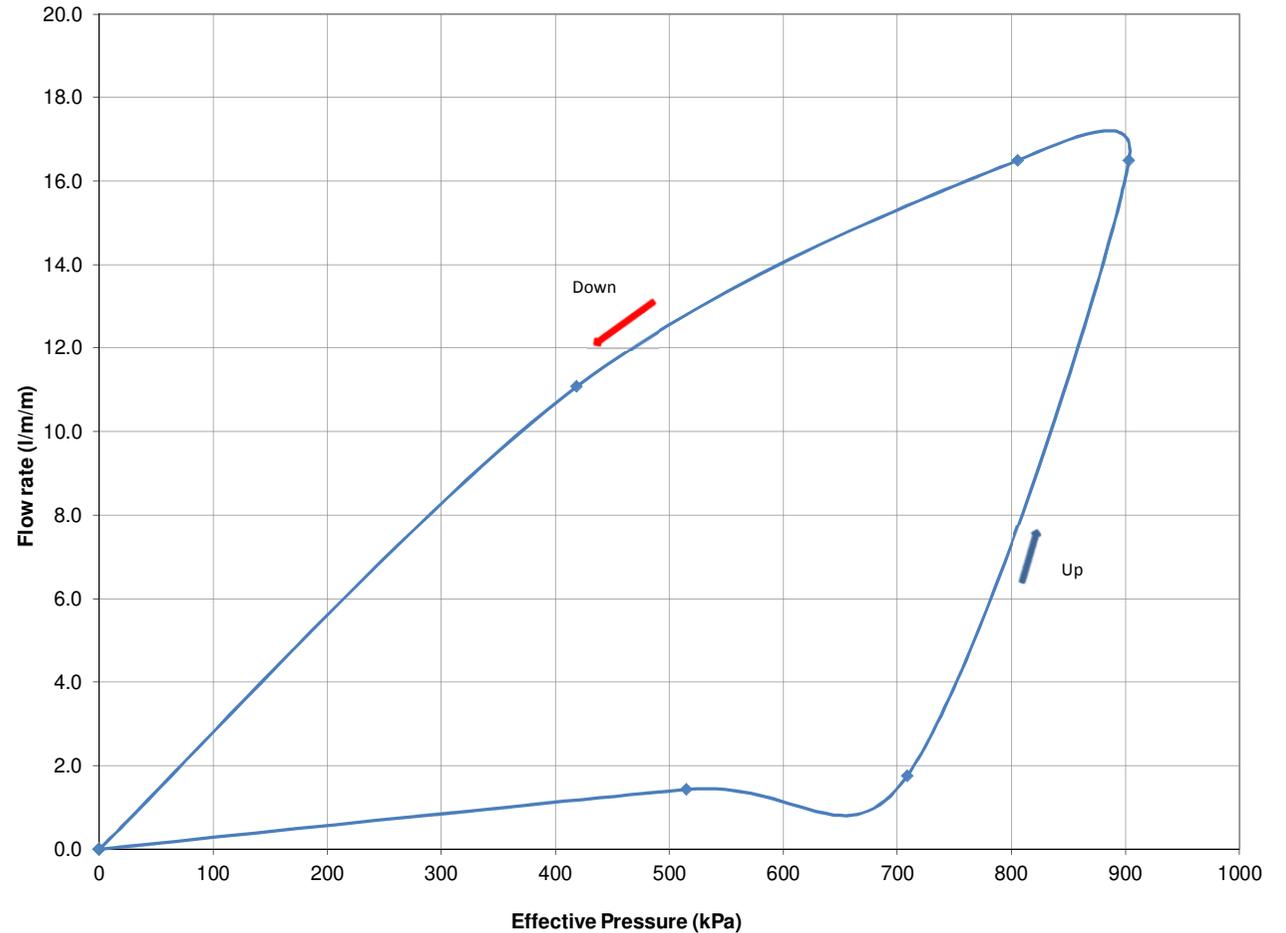
Hydraulic Conductivity
 $K (m/s) = \text{Flow rate (m}^3/s) \times LN ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.43	514.97	2.77	4.01E-07
1.75	708.55	2.47	3.58E-07
16.50	903.25	18.27	2.65E-06
16.50	805.79	20.48	2.97E-06
11.08	418.88	26.44	3.84E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

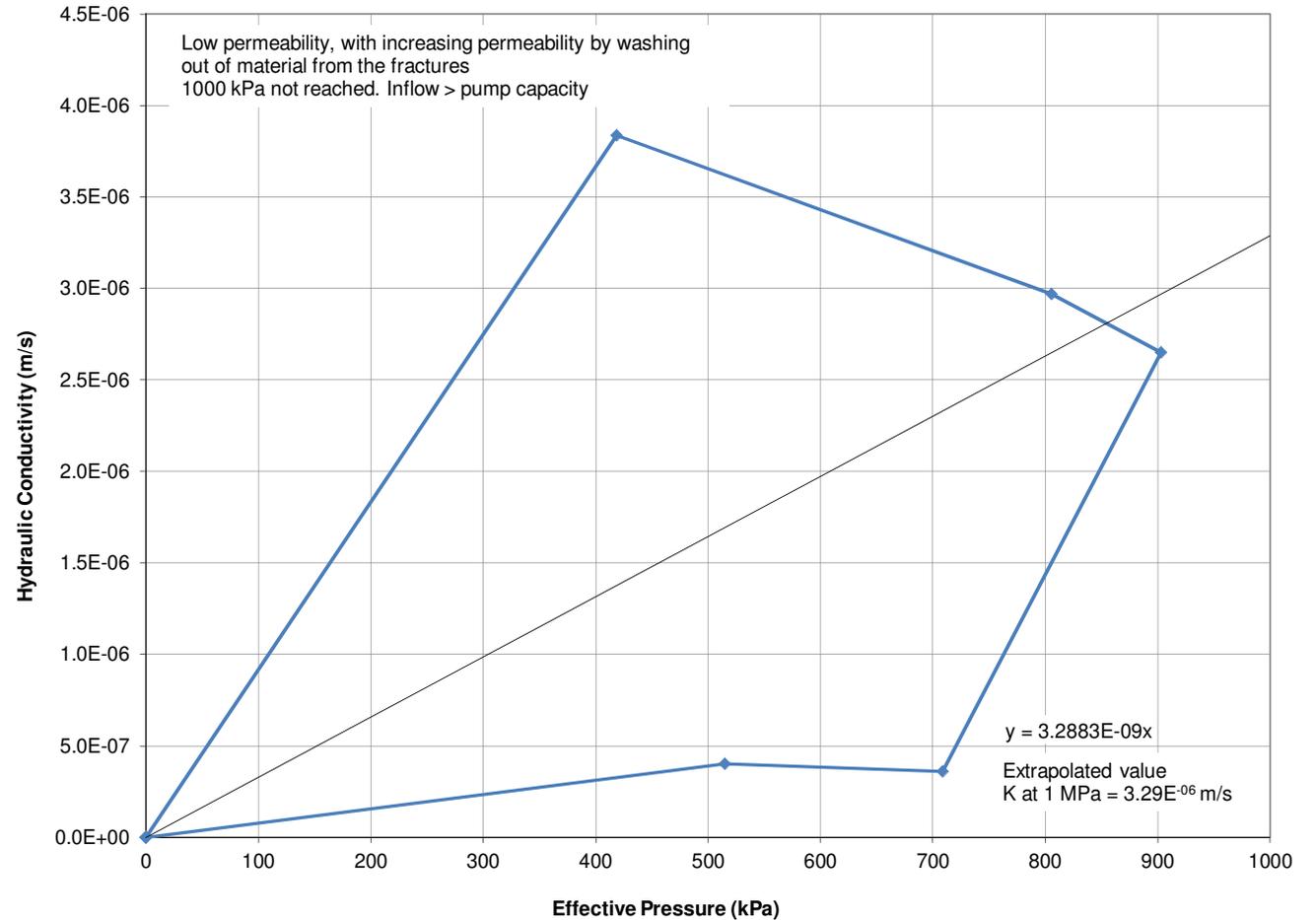


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.43	514.97	2.77	4.01E-07
1.75	708.55	2.47	3.58E-07
16.50	903.25	18.27	2.65E-06
16.50	805.79	20.48	2.97E-06
11.08	418.88	26.44	3.84E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

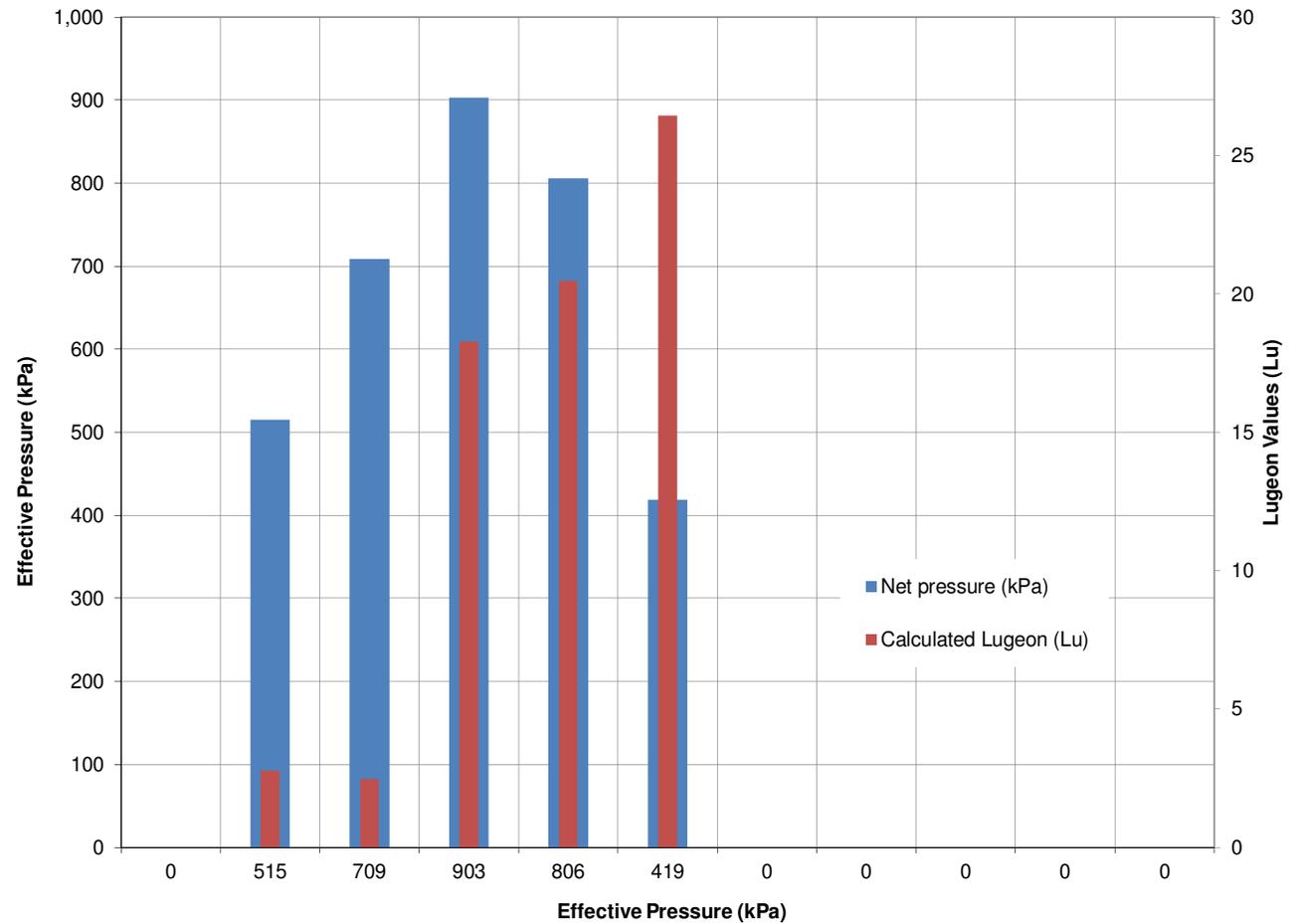


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.43	514.97	2.77	4.01E-07
1.75	708.55	2.47	3.58E-07
16.50	903.25	18.27	2.65E-06
16.50	805.79	20.48	2.97E-06
11.08	418.88	26.44	3.84E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 15/08/2013
Author : Alexis Valenza

Date	<input type="text" value="15/08/2013"/>	Depth to water level :	<input type="text" value="14.6"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="64"/> m
Hole No.	<input type="text" value="1205"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="4"/>	Vertical depth :	<input type="text" value="64"/> m
Test interval	<input type="text" value="63"/> to <input type="text" value="66"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.96"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="54.3"/> m
Packer inflation pressure :	<input type="text" value="2194"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.1670	4.18	514.97	8.1	6.49E-07	1.18E-06	
B	10	0.6850	17.13	708.55	24.2	1.93E-06	3.51E-06	
C	10	0.6580	16.45	903.25	18.2	1.46E-06	2.64E-06	
D	10	0.8090	20.23	418.88	48.3	3.86E-06	7.00E-06	
E								
Dr								
Cr								
Br								
Ar								
					Minimum	8.1	6.5E-07	1.2E-06
					Average	21.4	1.7E-06	3.6E-06
					Maximum	48.3	3.9E-06	7.0E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

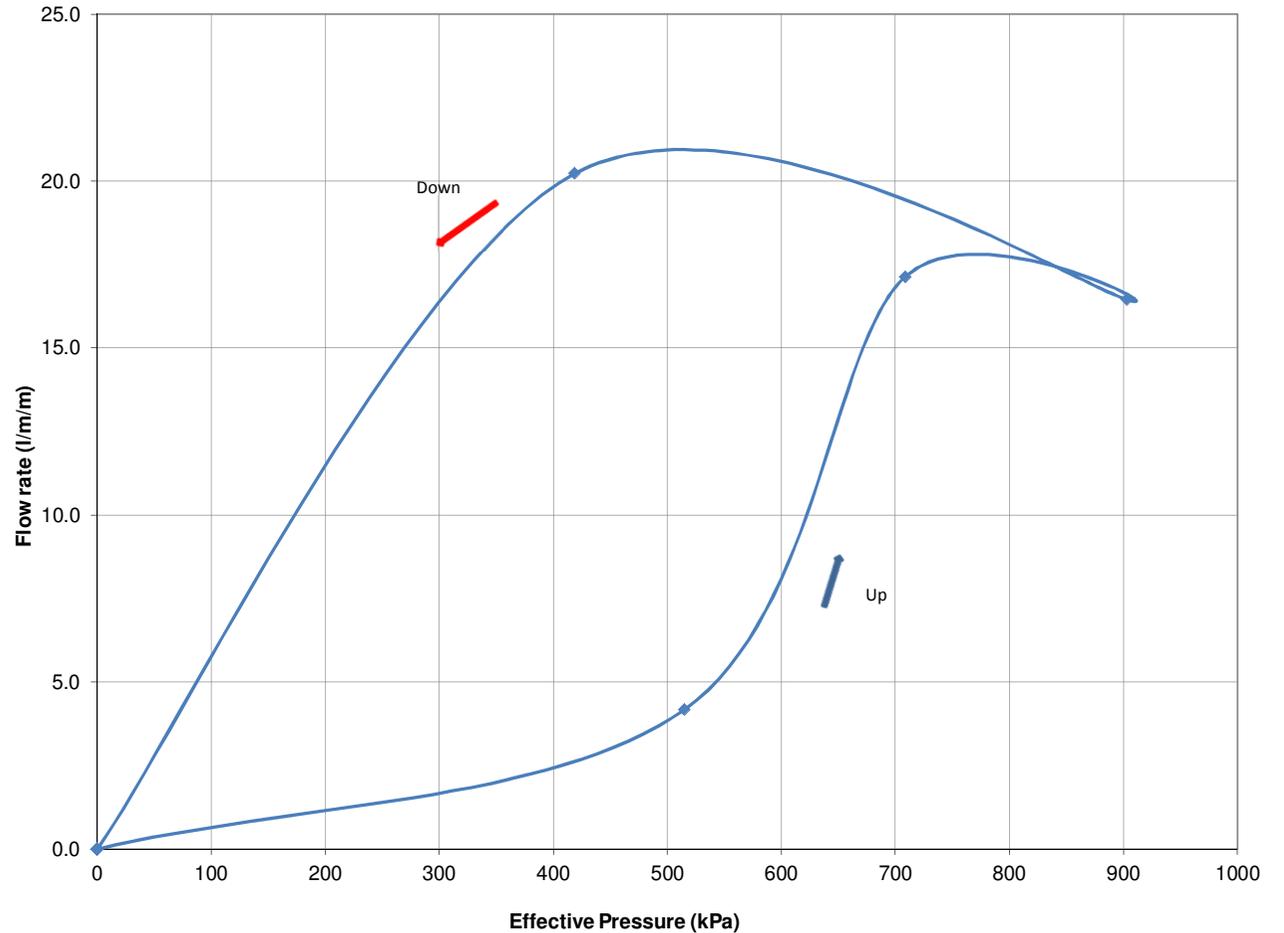
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times LN ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
4.18	514.97	8.11	1.18E-06
17.13	708.55	24.17	3.51E-06
16.45	903.25	18.21	2.64E-06
20.23	418.88	48.28	7.00E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers Test Results

Site Location:

Hole No.

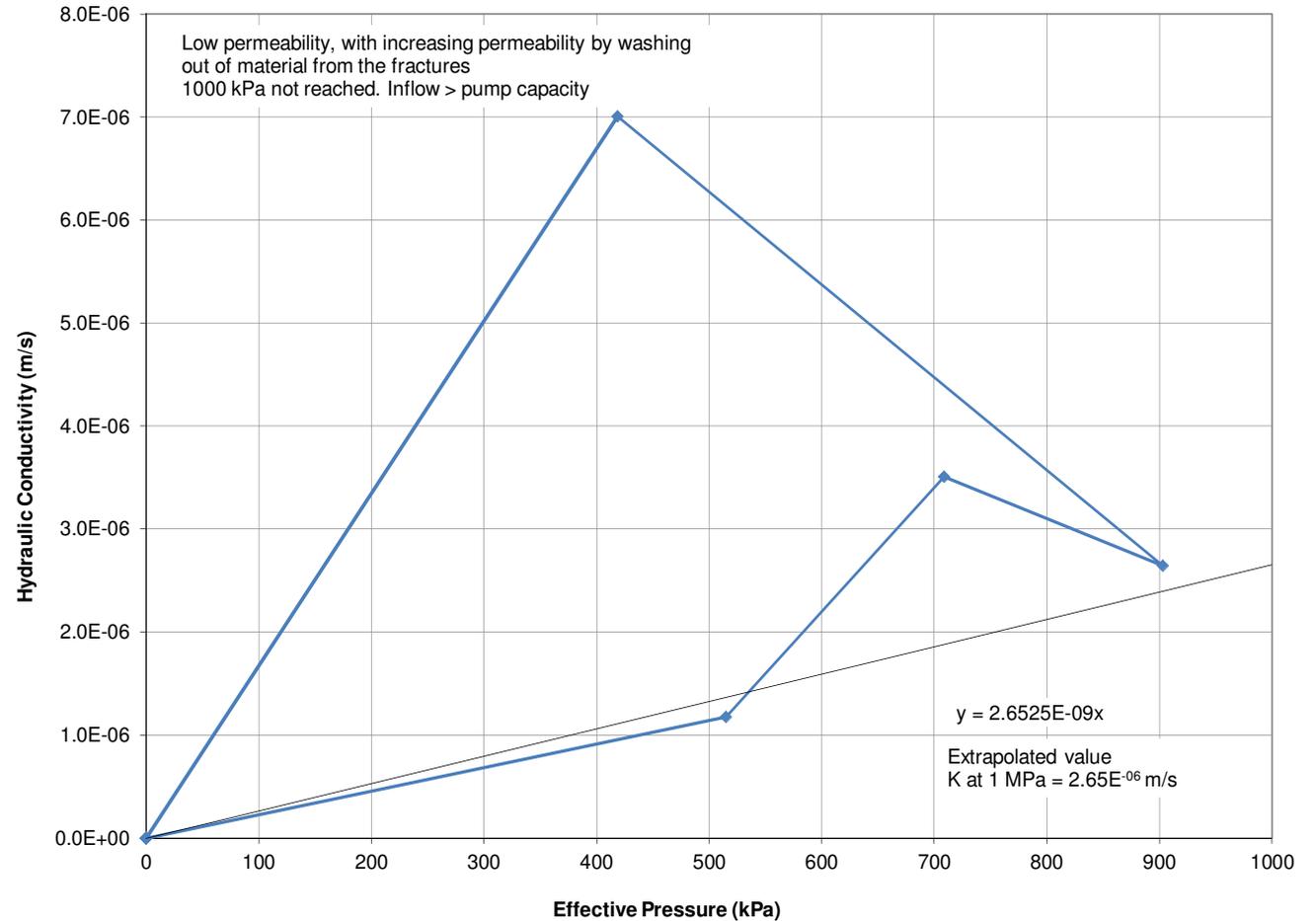
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
4.18	514.97	8.11	1.18E-06
17.13	708.55	24.17	3.51E-06
16.45	903.25	18.21	2.64E-06
20.23	418.88	48.28	7.00E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

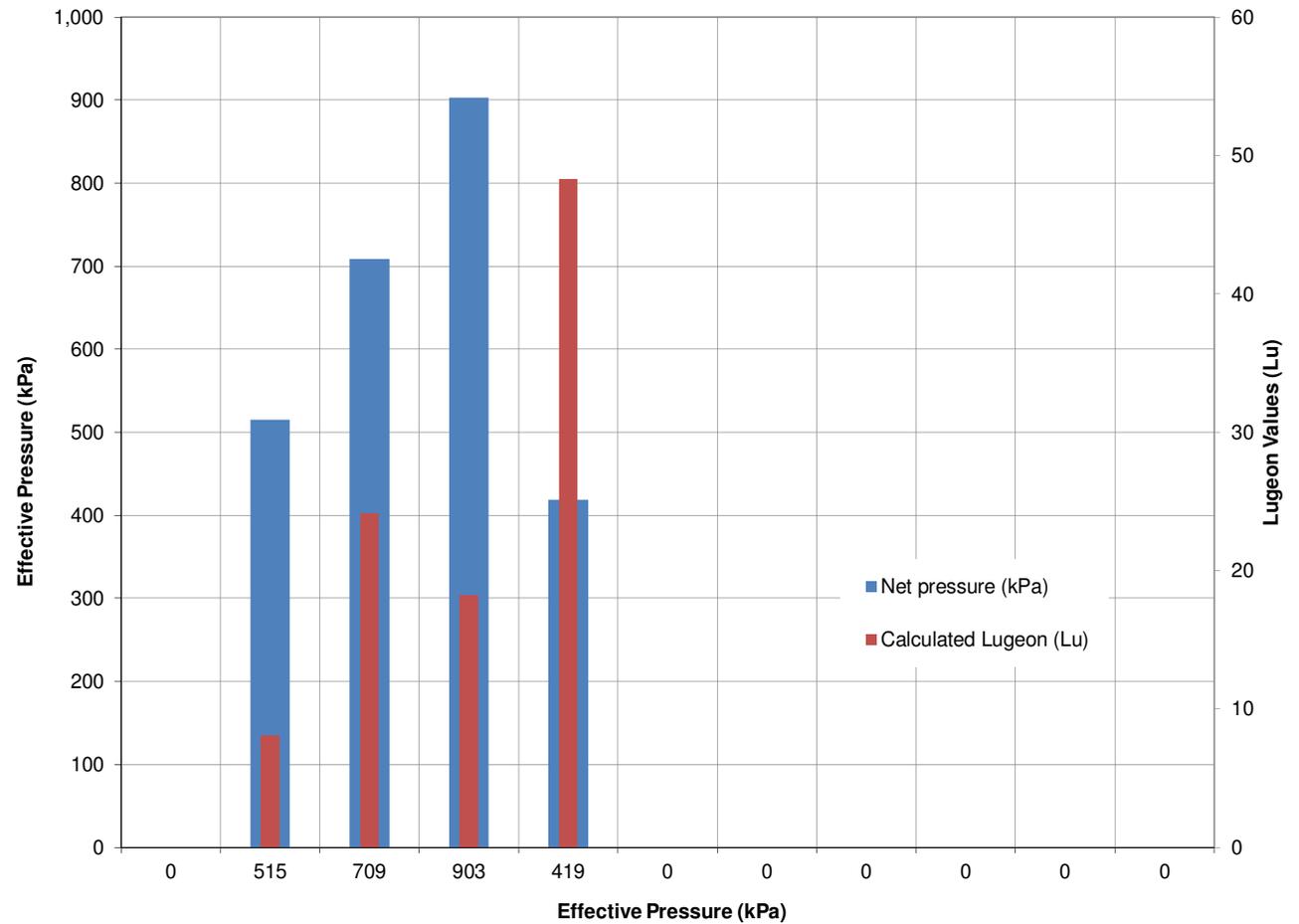


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
4.18	514.97	8.11	1.18E-06
17.13	708.55	24.17	3.51E-06
16.45	903.25	18.21	2.64E-06
20.23	418.88	48.28	7.00E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



LPDD1215
Packer Test Interval
132m to 136m
20/06/2013



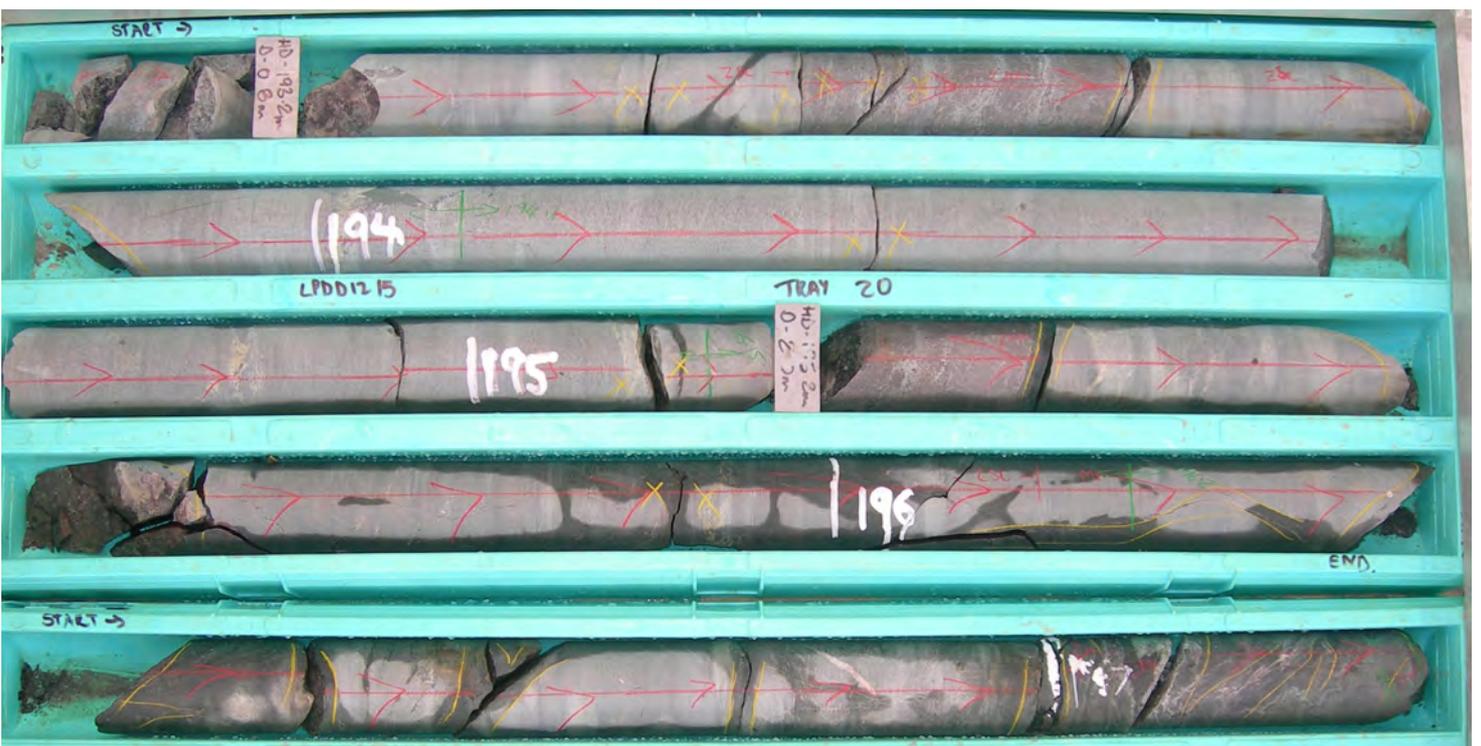
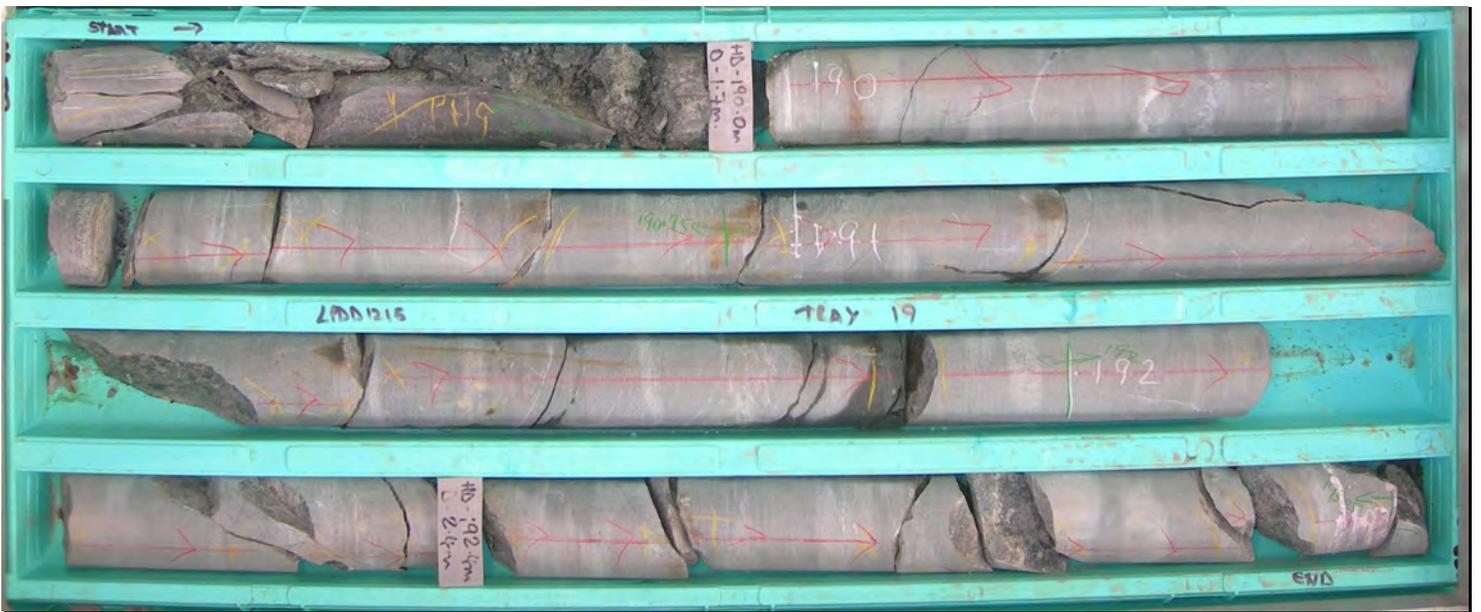
LPDD1215
Packer Test Interval
159m to 163m
19/06/2013



LPDD1215
Packer Test Interval
171m to 175m
19/06/2013



LPDD1215
Packer Test Interval
192m to 196m
19/06/2013



LPDD1215

Packer Test Interval

255m to 259m
19/06/2013



Packers test pressure calculation sheet

Legend

Result

Date : 20/06/2013
Author : Alexis Valenza

Date	<input type="text" value="20/06/2013"/>	Depth to water level :	<input type="text" value="14.6"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="257"/> m
Hole No.	<input type="text" value="1215"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="1"/>	Vertical depth :	<input type="text" value="257"/> m
Test interval	<input type="text" value="255"/> to <input type="text" value="259"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.43"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="219.3"/> m
Packer inflation pressure :	<input type="text" value="4124"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0220	0.55	323.63	1.7	1.36E-07	2.47E-07
B	10	0.0350	0.88	611.58	1.4	1.14E-07	2.08E-07
C	5	0.0220	1.10	854.50	1.3	1.03E-07	1.87E-07
D	5	0.0290	1.45	1098.65	1.3	1.06E-07	1.91E-07
E	5	0.0340	1.70	1294.55	1.3	1.05E-07	1.90E-07
Dr	5	0.0300	1.50	1098.65	1.4	1.09E-07	1.98E-07
Cr	5	0.0240	1.20	854.50	1.4	1.12E-07	2.04E-07
Br	5	0.0130	0.65	514.97	1.3	1.01E-07	1.83E-07
Ar							
Minimum					1.3	1.0E-07	1.8E-07
Average					1.4	1.1E-07	2.0E-07
Maximum					1.7	1.4E-07	2.5E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:

Hole No.

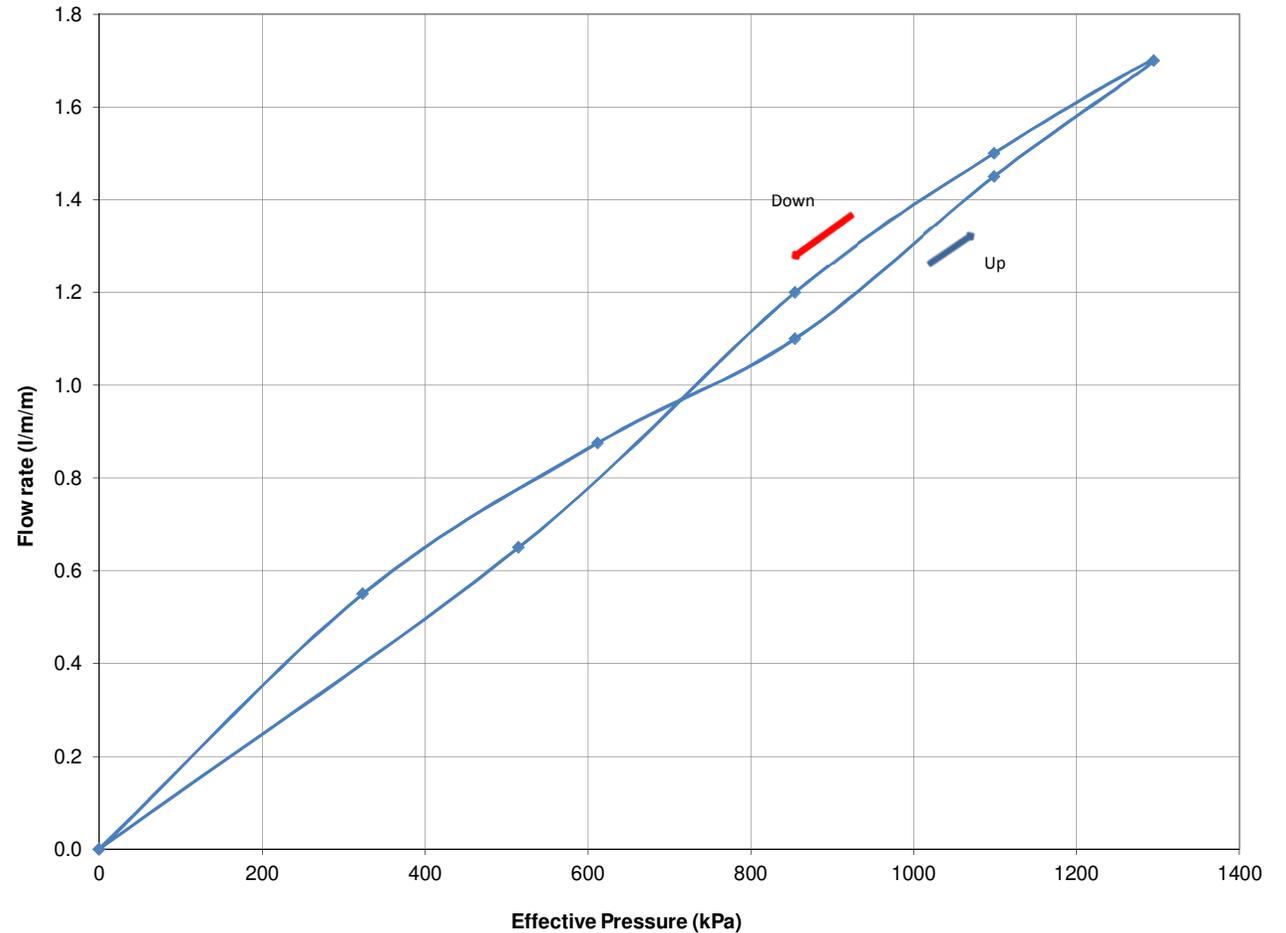
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.55	323.63	1.70	2.47E-07
0.88	611.58	1.43	2.08E-07
1.10	854.50	1.29	1.87E-07
1.45	1098.65	1.32	1.91E-07
1.70	1294.55	1.31	1.90E-07
1.50	1098.65	1.37	1.98E-07
1.20	854.50	1.40	2.04E-07
0.65	514.97	1.26	1.83E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

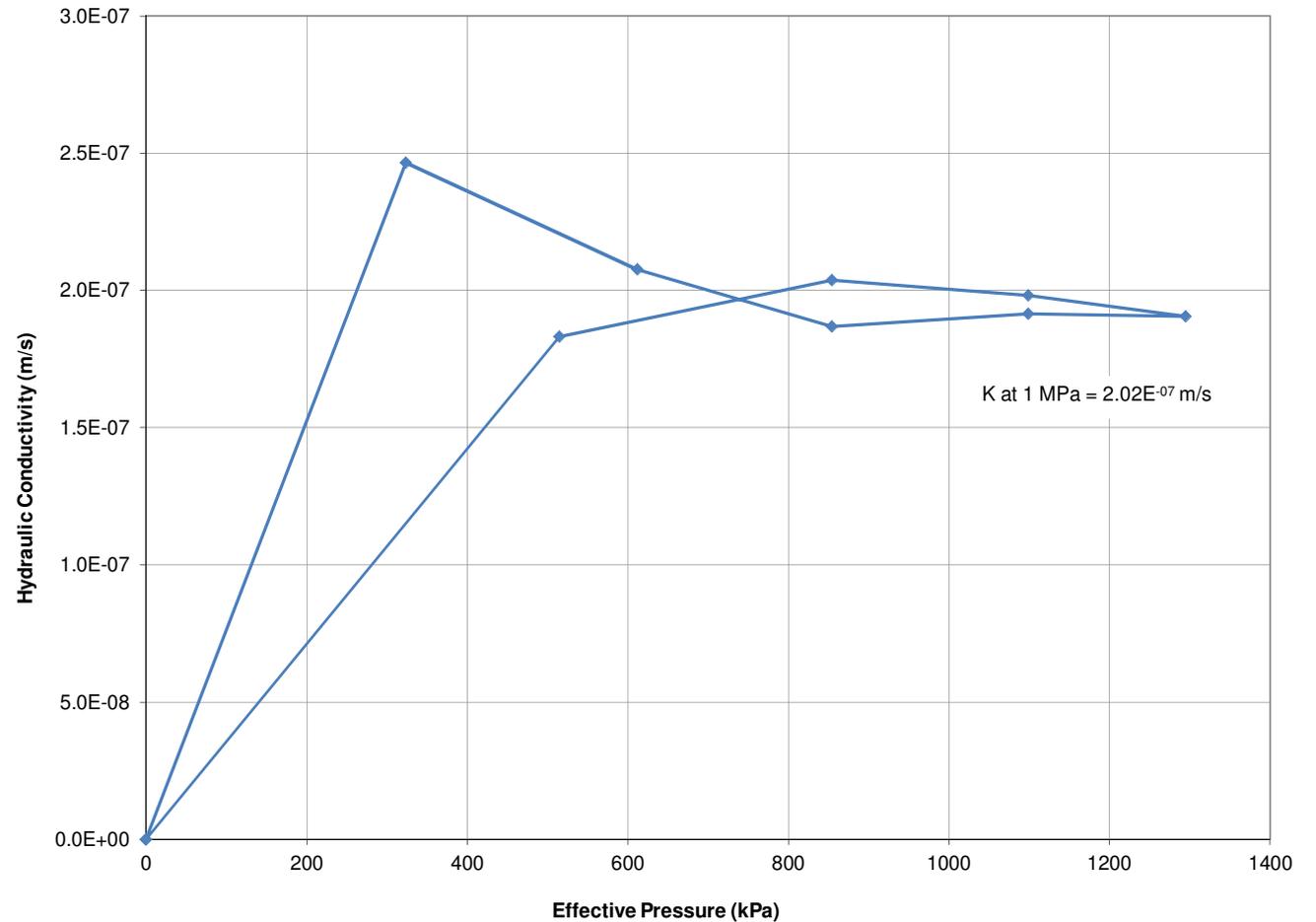


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.55	323.63	1.70	2.47E-07
0.88	611.58	1.43	2.08E-07
1.10	854.50	1.29	1.87E-07
1.45	1098.65	1.32	1.91E-07
1.70	1294.55	1.31	1.90E-07
1.50	1098.65	1.37	1.98E-07
1.20	854.50	1.40	2.04E-07
0.65	514.97	1.26	1.83E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

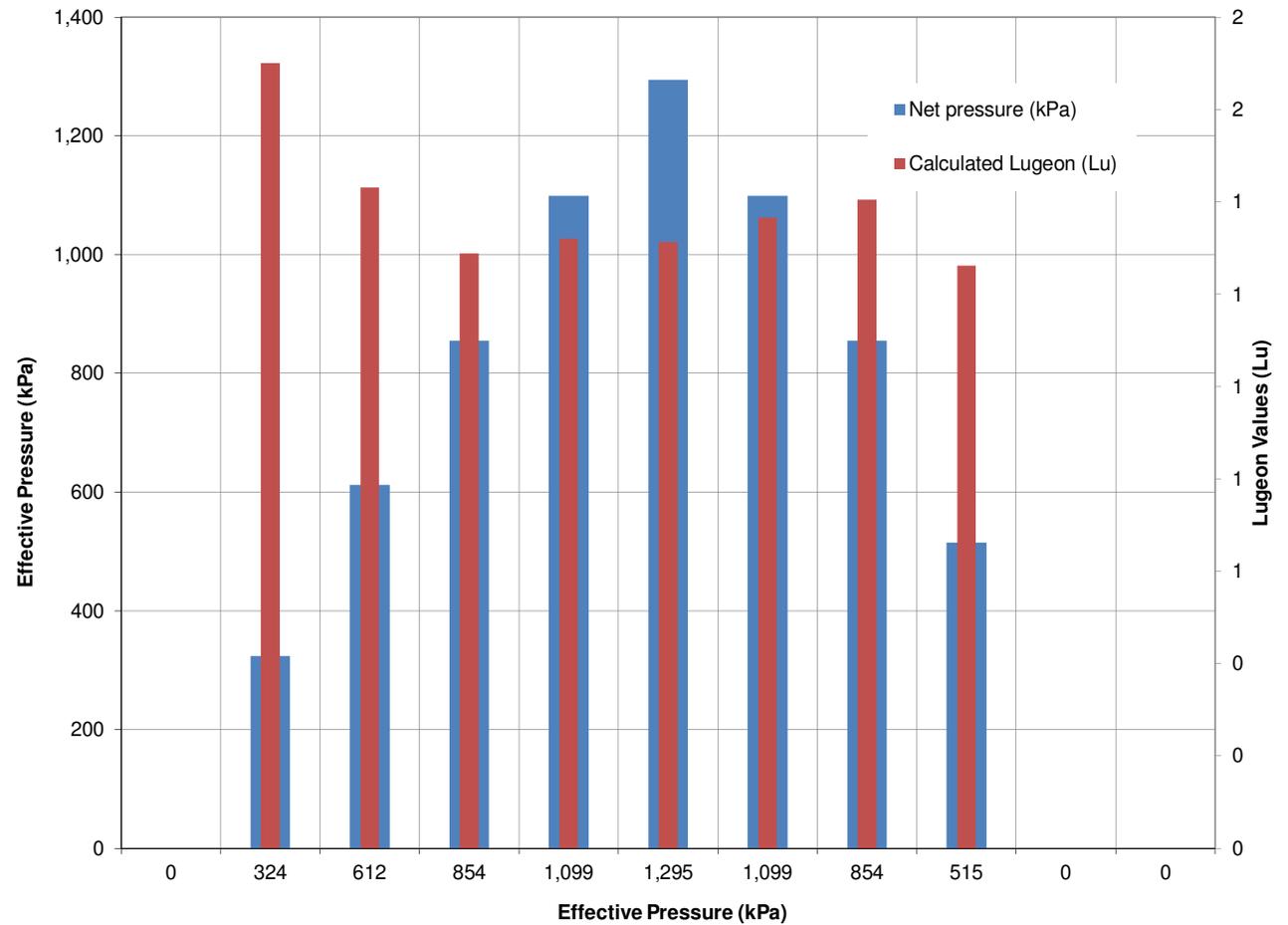


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.55	323.63	1.70	2.47E-07
0.88	611.58	1.43	2.08E-07
1.10	854.50	1.29	1.87E-07
1.45	1098.65	1.32	1.91E-07
1.70	1294.55	1.31	1.90E-07
1.50	1098.65	1.37	1.98E-07
1.20	854.50	1.40	2.04E-07
0.65	514.97	1.26	1.83E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 20/06/2013
Author : Alexis Valenza

Date	<input type="text" value="20/06/2013"/>	Depth to water level :	<input type="text" value="14.6"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="194"/> m
Hole No.	<input type="text" value="1215"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="2"/>	Vertical depth :	<input type="text" value="194"/> m
Test interval	<input type="text" value="193"/> to <input type="text" value="197"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.43"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="165.5"/> m
Packer inflation pressure :	<input type="text" value="3494"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0240	0.60	514.97	1.2	9.32E-08	1.69E-07
B	10	0.0330	0.83	708.55	1.2	9.31E-08	1.69E-07
C	10	0.0370	0.93	903.25	1.0	8.19E-08	1.49E-07
D	10	0.0470	1.18	1098.65	1.1	8.56E-08	1.55E-07
E	10	0.0480	1.20	1294.55	0.9	7.42E-08	1.34E-07
Dr	10	0.0330	0.83	805.79	1.0	8.19E-08	1.49E-07
Cr	10	0.0260	0.65	611.58	1.1	8.50E-08	1.54E-07
Br	10	0.0180	0.45	418.88	1.1	8.59E-08	1.56E-07
Ar							
Minimum					0.9	7.4E-08	1.3E-07
Average					1.0	8.4E-08	1.5E-07
Maximum					1.2	9.3E-08	1.7E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

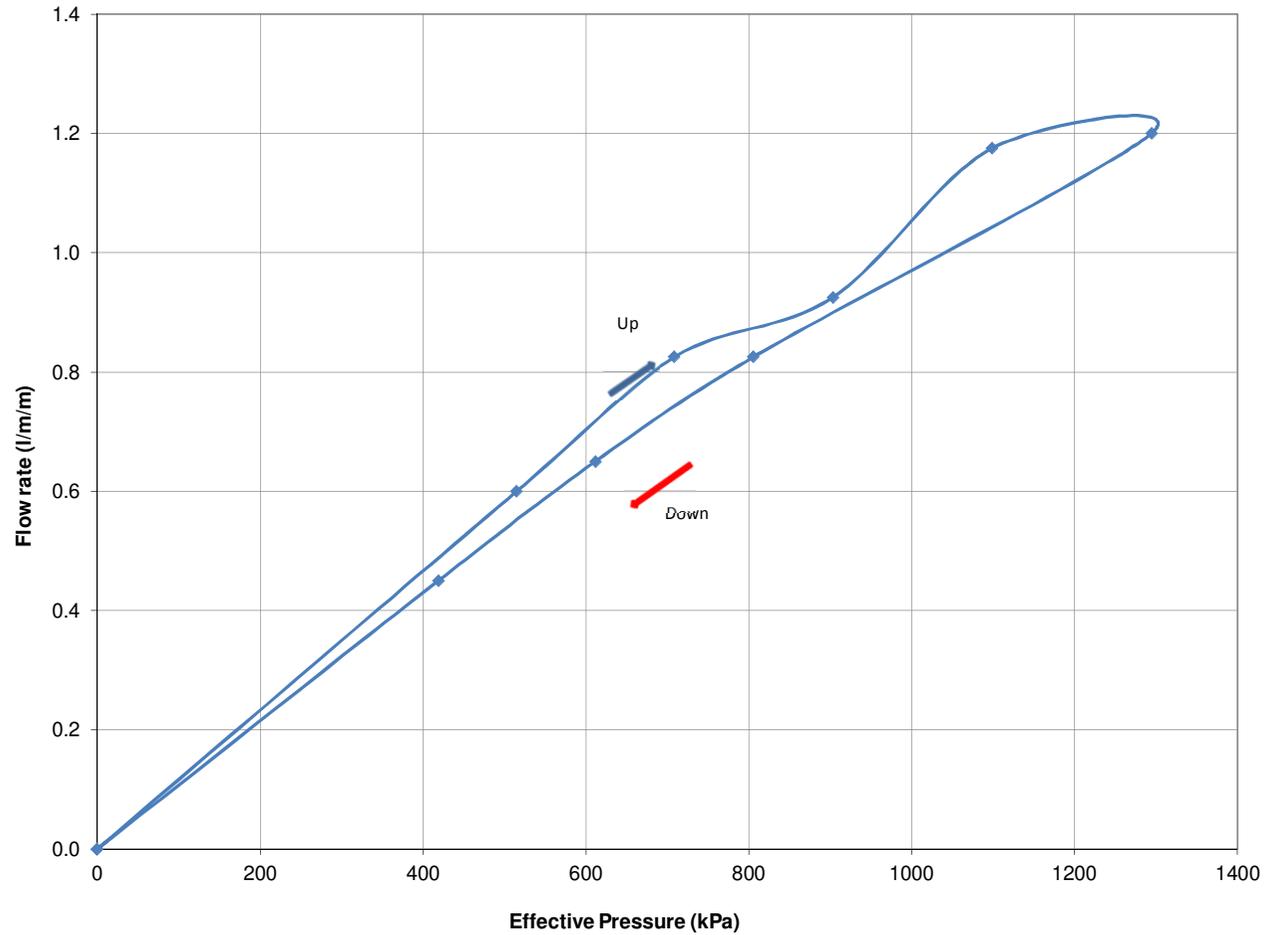
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.60	514.97	1.17	1.69E-07
0.83	708.55	4.00	1.69E-07
0.93	903.25	1.02	1.49E-07
1.18	1098.65	1.07	1.55E-07
1.20	1294.55	0.93	1.34E-07
0.83	805.79	1.02	1.49E-07
0.65	611.58	1.06	1.54E-07
0.45	418.88	1.07	1.56E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

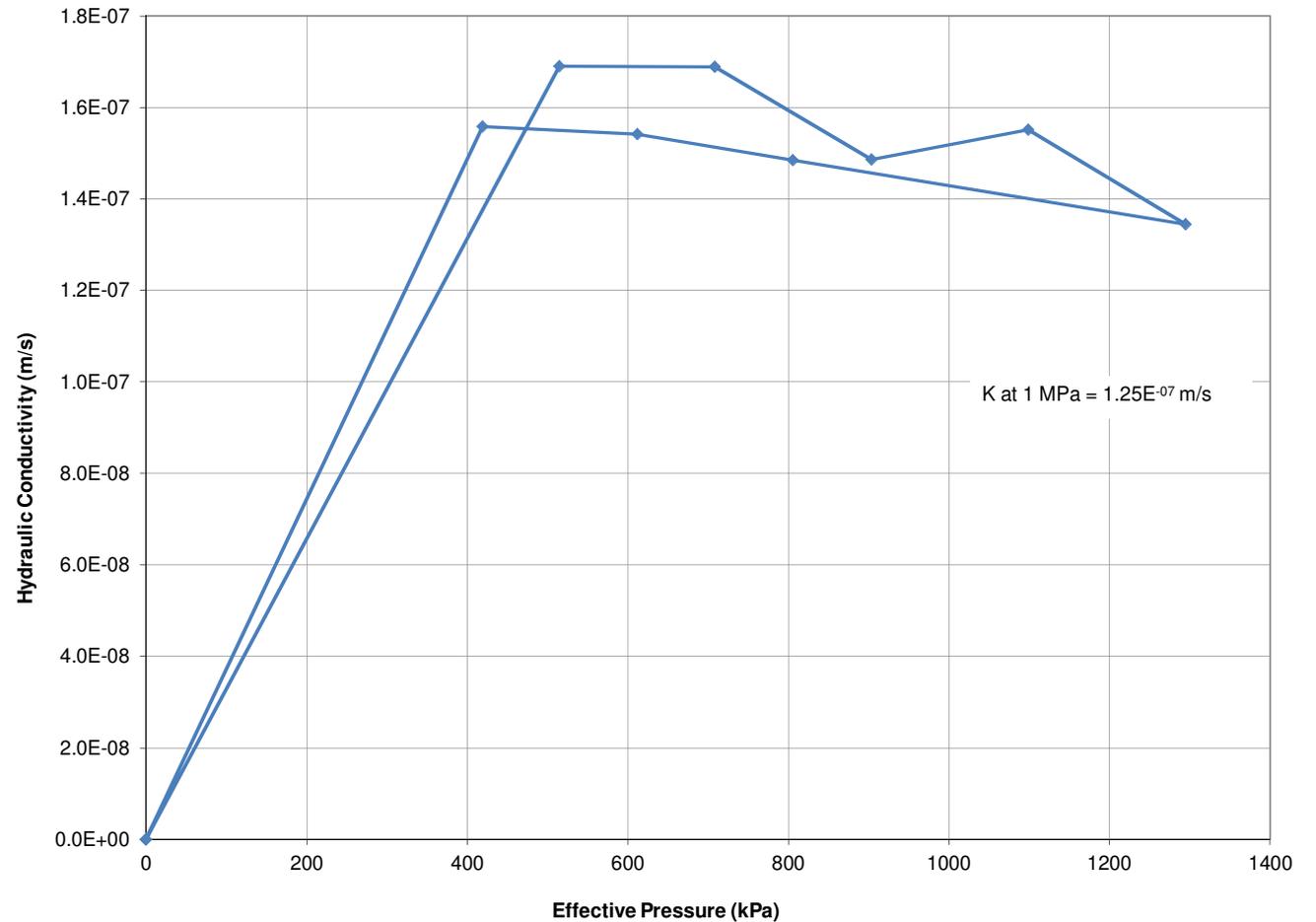


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.60	514.97	1.17	1.69E-07
0.83	708.55	4.00	1.69E-07
0.93	903.25	1.02	1.49E-07
1.18	1098.65	1.07	1.55E-07
1.20	1294.55	0.93	1.34E-07
0.83	805.79	1.02	1.49E-07
0.65	611.58	1.06	1.54E-07
0.45	418.88	1.07	1.56E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

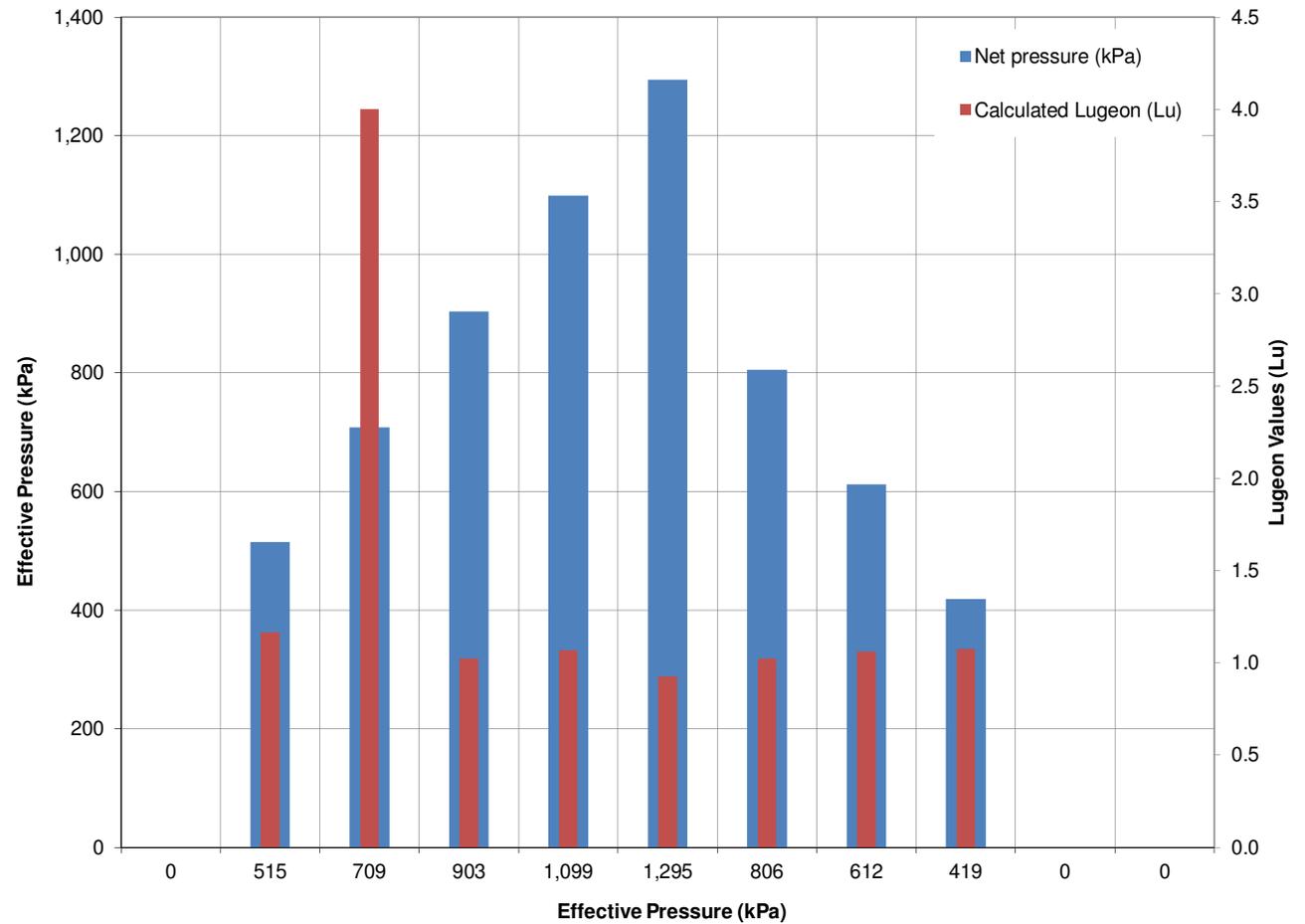


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.60	514.97	1.17	1.69E-07
0.83	708.55	4.00	1.69E-07
0.93	903.25	1.02	1.49E-07
1.18	1098.65	1.07	1.55E-07
1.20	1294.55	0.93	1.34E-07
0.83	805.79	1.02	1.49E-07
0.65	611.58	1.06	1.54E-07
0.45	418.88	1.07	1.56E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 20/06/2013
Author : Alexis Valenza

Date	<input type="text" value="20/06/2013"/>	Depth to water level :	<input type="text" value="22"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="173"/> m
Hole No.	<input type="text" value="1215"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="3"/>	Vertical depth :	<input type="text" value="173"/> m
Test interval	<input type="text" value="171"/> to <input type="text" value="175"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.43"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="147.6"/> m
Packer inflation pressure :	<input type="text" value="3210"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0290	0.73	587.54	1.2	9.87E-08	1.79E-07
B	10	0.0290	0.73	781.12	0.9	7.43E-08	1.35E-07
C	10	0.0340	0.85	975.82	0.9	6.97E-08	1.26E-07
D	10	0.0390	0.98	1171.22	0.8	6.66E-08	1.21E-07
E	10	0.0490	1.23	1367.12	0.9	7.17E-08	1.30E-07
Dr	10	0.0290	0.73	878.36	0.8	6.60E-08	1.20E-07
Cr	10	0.0230	0.58	684.15	0.8	6.72E-08	1.22E-07
Br	10	0.0160	0.40	491.46	0.8	6.51E-08	1.18E-07
Ar							
Minimum					0.8	6.5E-08	1.2E-07
Average					0.9	7.2E-08	1.3E-07
Maximum					1.2	9.9E-08	1.8E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

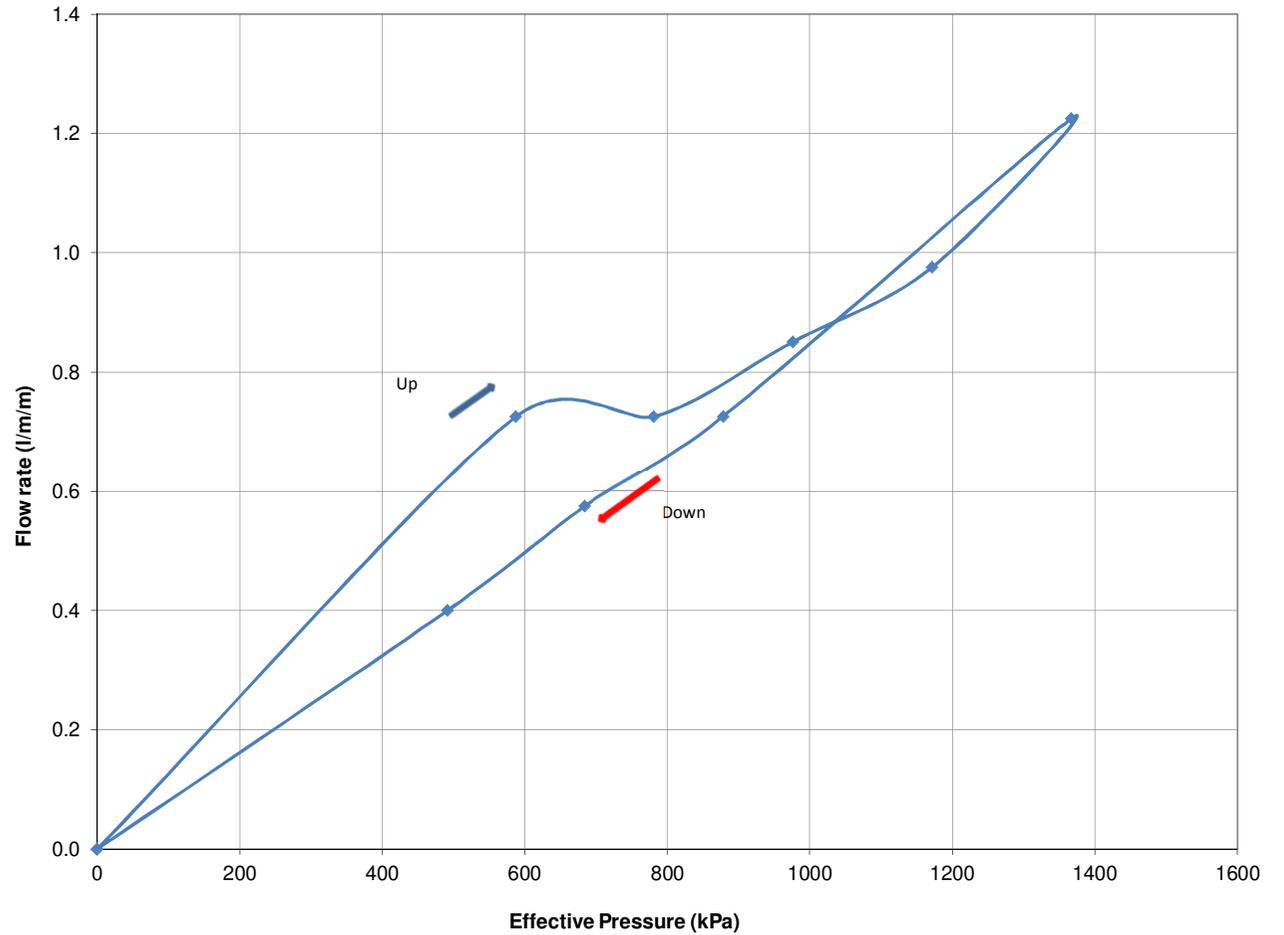
Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.73	587.54	1.23	1.79E-07
0.73	781.12	0.93	1.35E-07
0.85	975.82	0.87	1.26E-07
0.98	1171.22	0.83	1.21E-07
1.23	1367.12	0.90	1.30E-07
0.73	878.36	0.83	1.20E-07
0.58	684.15	0.84	1.22E-07
0.40	491.46	0.81	1.18E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

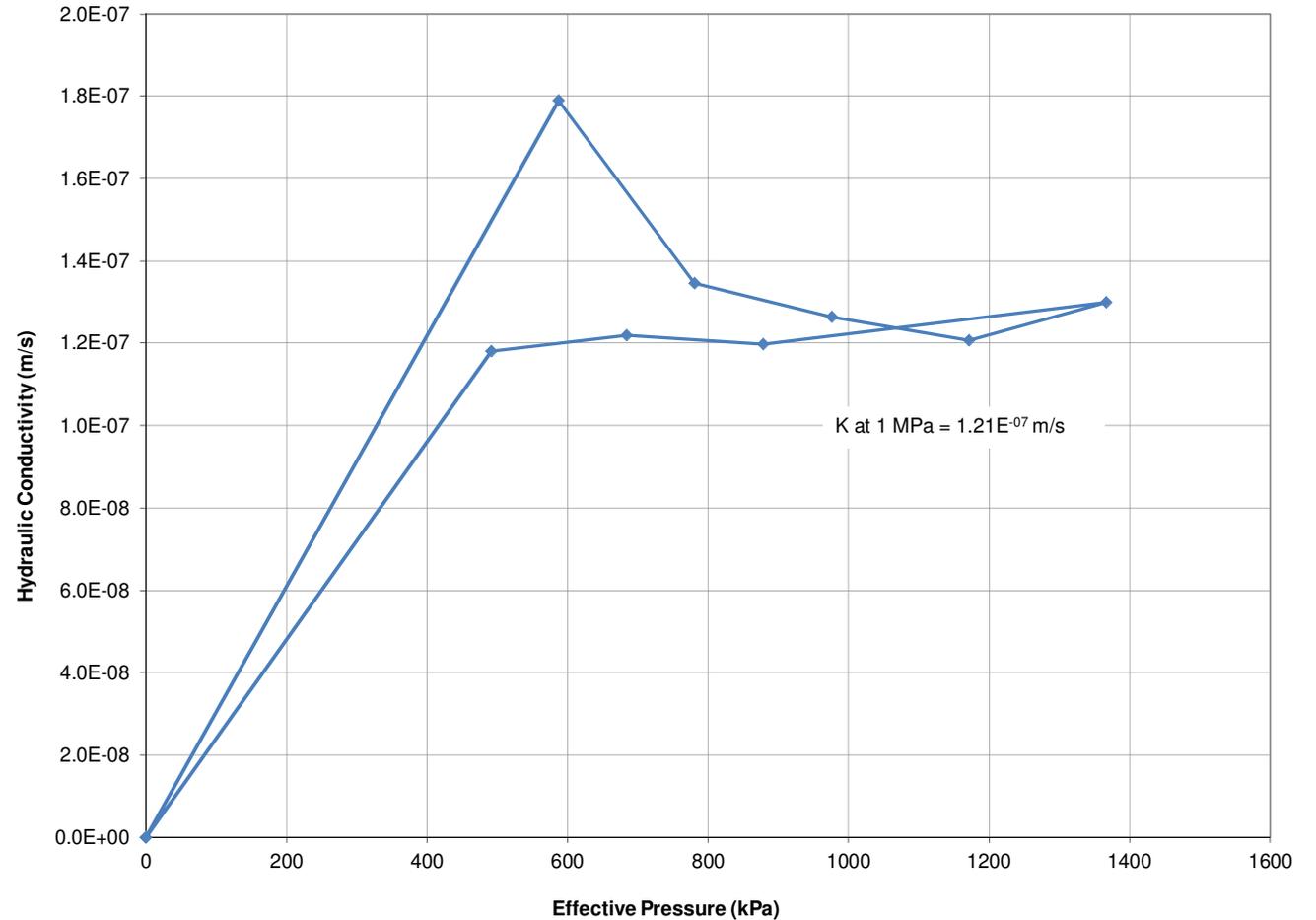


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.73	587.54	1.23	1.79E-07
0.73	781.12	0.93	1.35E-07
0.85	975.82	0.87	1.26E-07
0.98	1171.22	0.83	1.21E-07
1.23	1367.12	0.90	1.30E-07
0.73	878.36	0.83	1.20E-07
0.58	684.15	0.84	1.22E-07
0.40	491.46	0.81	1.18E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

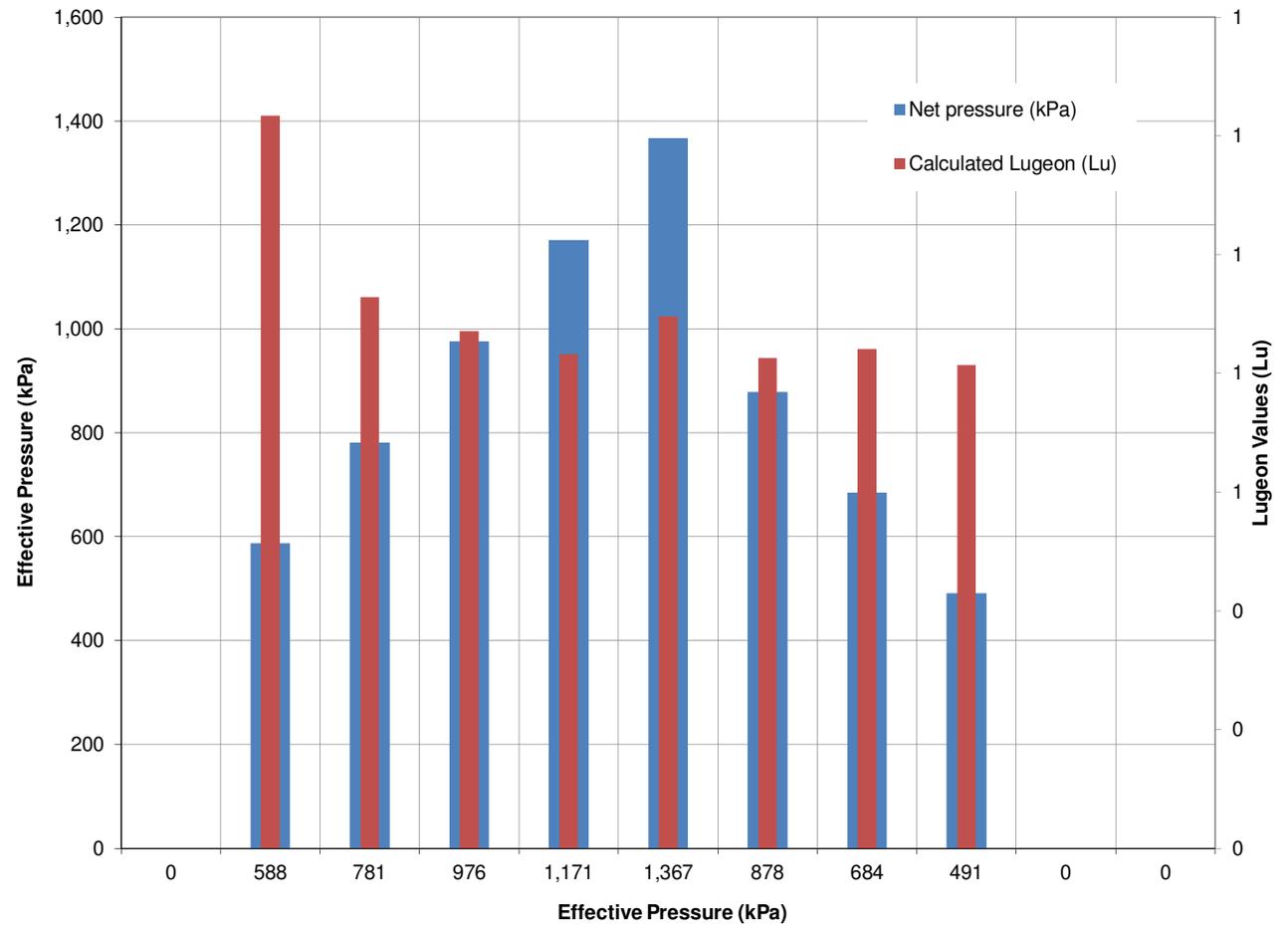


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.73	587.54	1.23	1.79E-07
0.73	781.12	0.93	1.35E-07
0.85	975.82	0.87	1.26E-07
0.98	1171.22	0.83	1.21E-07
1.23	1367.12	0.90	1.30E-07
0.73	878.36	0.83	1.20E-07
0.58	684.15	0.84	1.22E-07
0.40	491.46	0.81	1.18E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend
 Result

Date : 19/06/2013
Author : Alexis Valenza

Date	<input type="text" value="19/06/2013"/>	Depth to water level :	<input type="text" value="22"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="161"/> m
Hole No.	<input type="text" value="1215"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="4"/>	Vertical depth :	<input type="text" value="161"/> m
Test interval	<input type="text" value="159"/> to <input type="text" value="162"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.43"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="137.4"/> m
Packer inflation pressure :	<input type="text" value="3090"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0270	0.68	587.54	1.1	9.19E-08	1.67E-07
B	10	0.0270	0.68	781.12	0.9	6.91E-08	1.25E-07
C	10	0.0320	0.80	975.82	0.8	6.56E-08	1.19E-07
D	10	0.0350	0.88	1171.22	0.7	5.98E-08	1.08E-07
E	10	0.0390	0.98	1367.12	0.7	5.71E-08	1.03E-07
Dr	10	0.0290	0.73	878.36	0.8	6.60E-08	1.20E-07
Cr	10	0.0210	0.53	684.15	0.8	6.14E-08	1.11E-07
Br	10	0.0190	0.48	491.46	1.0	7.73E-08	1.40E-07
Ar							
Minimum					0.7	5.7E-08	1.0E-07
Average					0.8	6.7E-08	1.2E-07
Maximum					1.1	9.2E-08	1.7E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

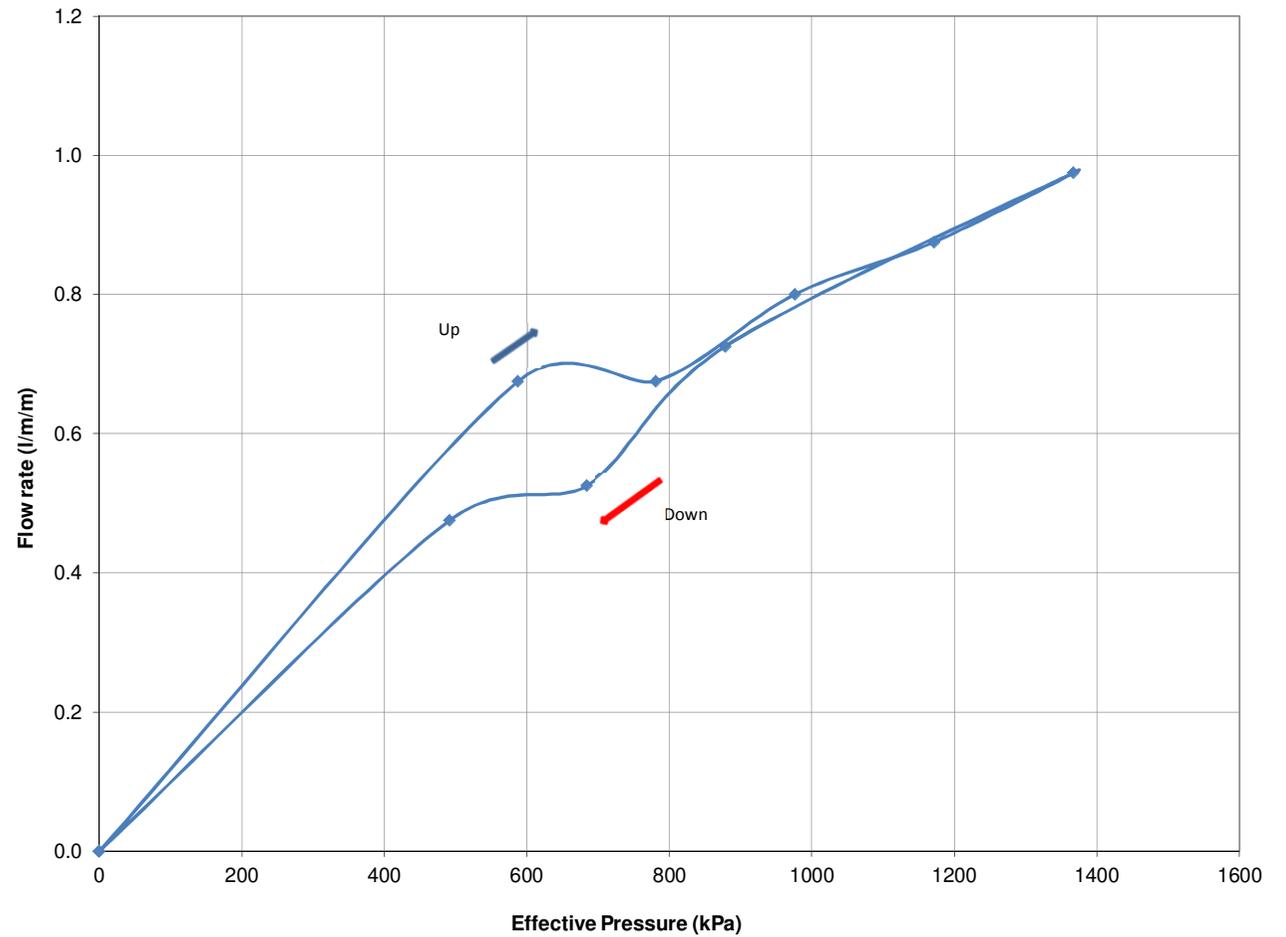
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.68	587.54	1.15	1.67E-07
0.68	781.12	0.86	1.25E-07
0.80	975.82	0.82	1.19E-07
0.88	1171.22	0.75	1.08E-07
0.98	1367.12	0.71	1.03E-07
0.73	878.36	0.83	1.20E-07
0.53	684.15	0.77	1.11E-07
0.48	491.46	0.97	1.40E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

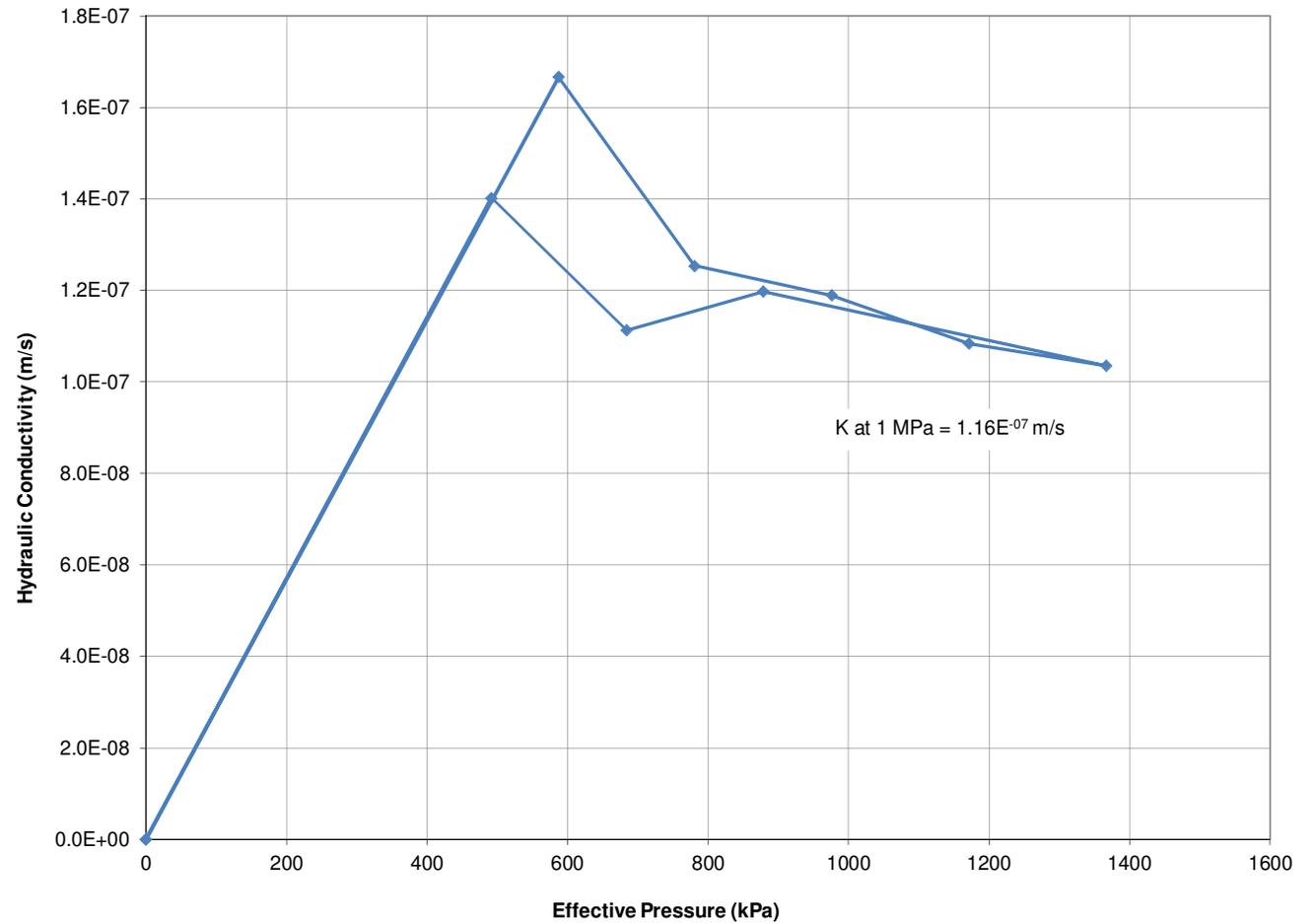


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.68	587.54	1.15	1.67E-07
0.68	781.12	0.86	1.25E-07
0.80	975.82	0.82	1.19E-07
0.88	1171.22	0.75	1.08E-07
0.98	1367.12	0.71	1.03E-07
0.73	878.36	0.83	1.20E-07
0.53	684.15	0.77	1.11E-07
0.48	491.46	0.97	1.40E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

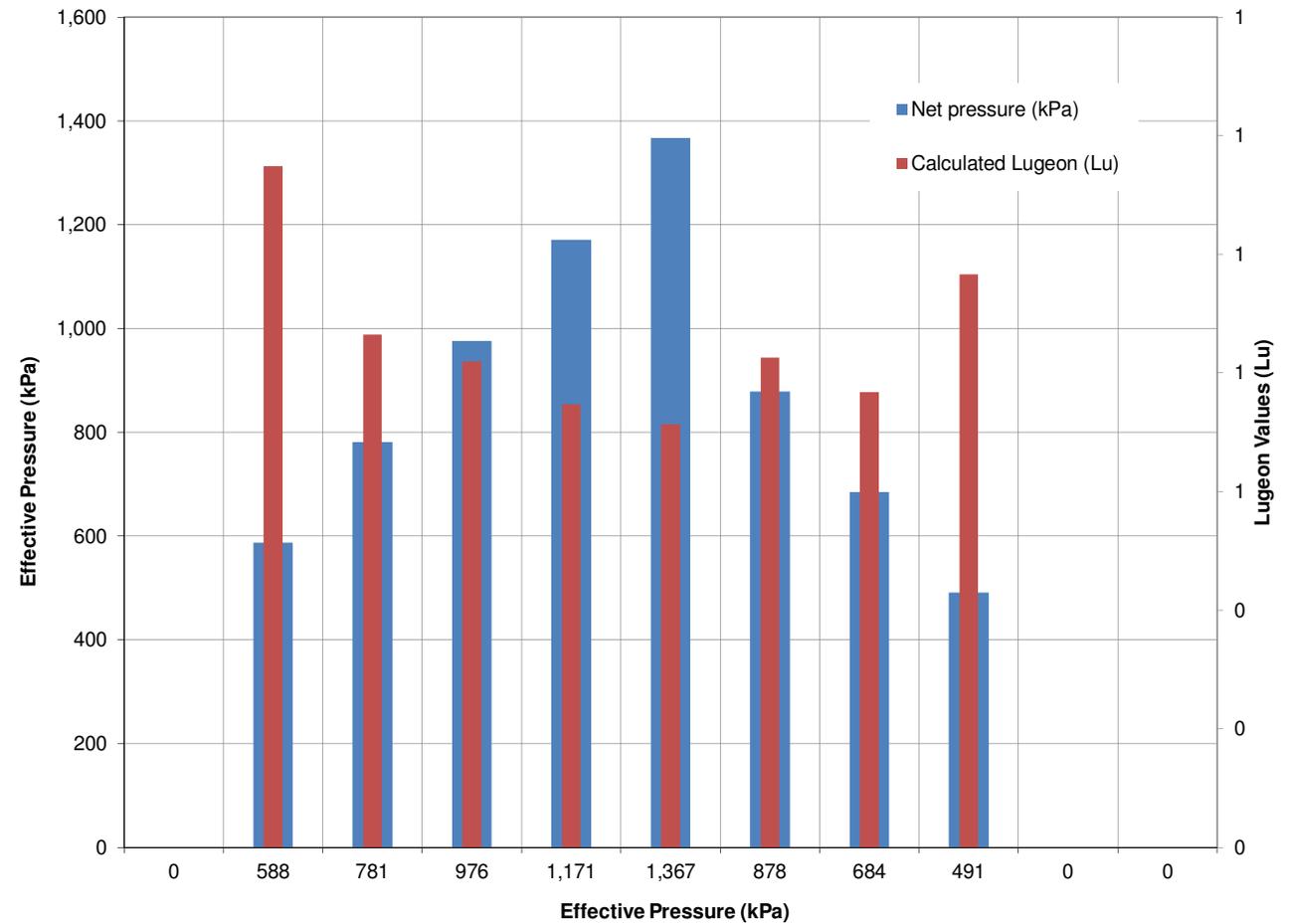


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.68	587.54	1.15	1.67E-07
0.68	781.12	0.86	1.25E-07
0.80	975.82	0.82	1.19E-07
0.88	1171.22	0.75	1.08E-07
0.98	1367.12	0.71	1.03E-07
0.73	878.36	0.83	1.20E-07
0.53	684.15	0.77	1.11E-07
0.48	491.46	0.97	1.40E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend
 Result

Date : 20/06/2013
Author : Alexis Valenza

Date	<input type="text" value="20/06/2013"/>	Depth to water level :	<input type="text" value="21.5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="134"/> m
Hole No.	<input type="text" value="1215"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="5"/>	Vertical depth :	<input type="text" value="134"/> m
Test interval	<input type="text" value="132"/> to <input type="text" value="136"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="31.43"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="114.3"/> m
Packer inflation pressure :	<input type="text" value="2825"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0240	0.60	582.64	1.0	8.24E-08	1.49E-07
B	10	0.0300	0.75	776.22	1.0	7.73E-08	1.40E-07
C	10	0.0380	0.95	970.92	1.0	7.83E-08	1.42E-07
D	10	0.0500	1.25	1166.32	1.1	8.57E-08	1.55E-07
E	10	0.0650	1.63	1362.22	1.2	9.54E-08	1.73E-07
Dr	10	0.0390	0.98	873.46	1.1	8.93E-08	1.62E-07
Cr	10	0.0310	0.78	679.24	1.1	9.13E-08	1.65E-07
Br	10	0.0170	0.43	486.55	0.9	6.99E-08	1.27E-07
Ar							
Minimum					0.9	7.0E-08	1.3E-07
Average					1.0	8.2E-08	1.5E-07
Maximum					1.2	9.5E-08	1.7E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

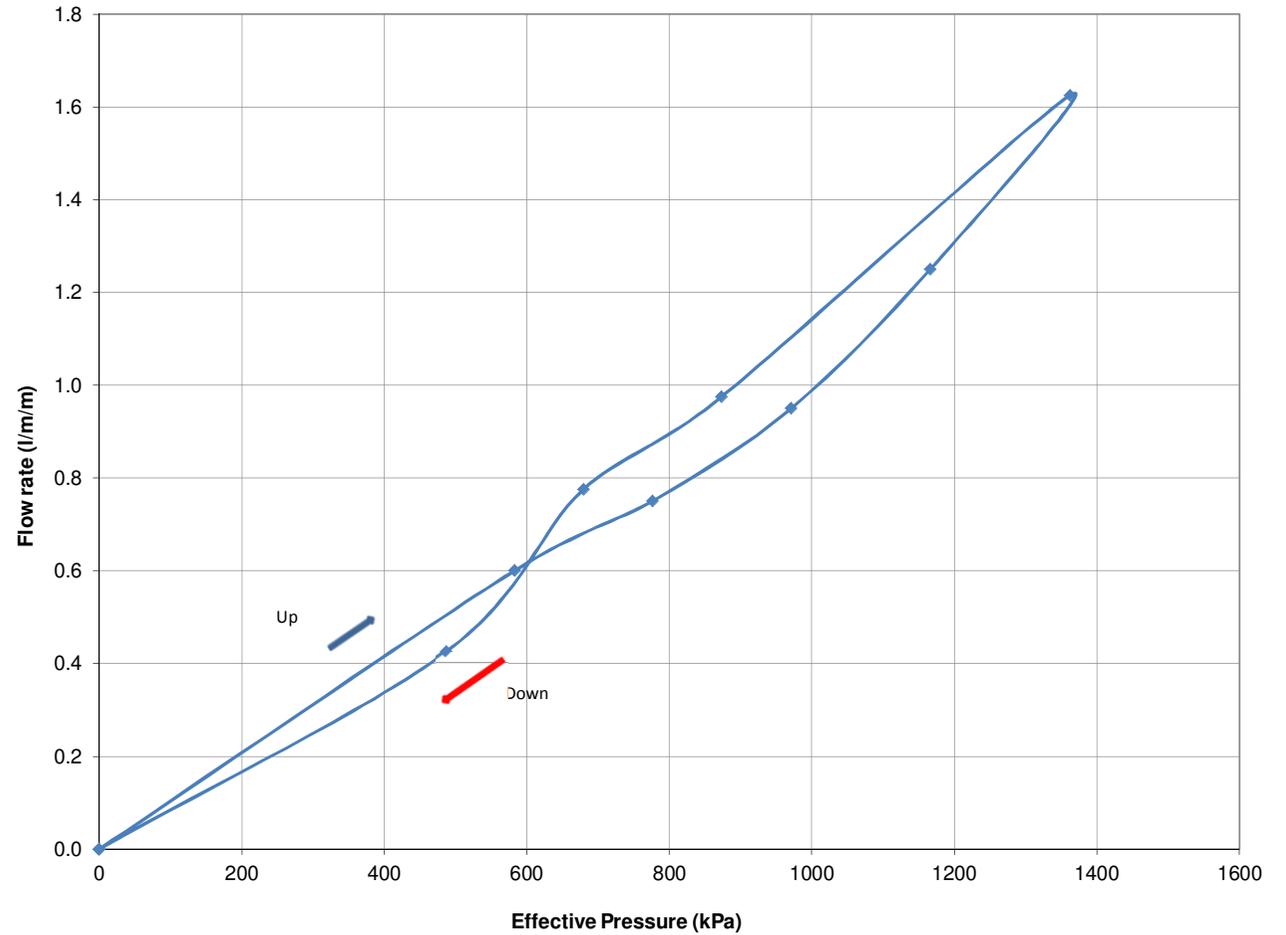
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.60	582.64	1.03	1.49E-07
0.75	776.22	0.97	1.40E-07
0.95	970.92	0.98	1.42E-07
1.25	1166.32	1.07	1.55E-07
1.63	1362.22	1.19	1.73E-07
0.98	873.46	1.12	1.62E-07
0.78	679.24	1.14	1.65E-07
0.43	486.55	0.87	1.27E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

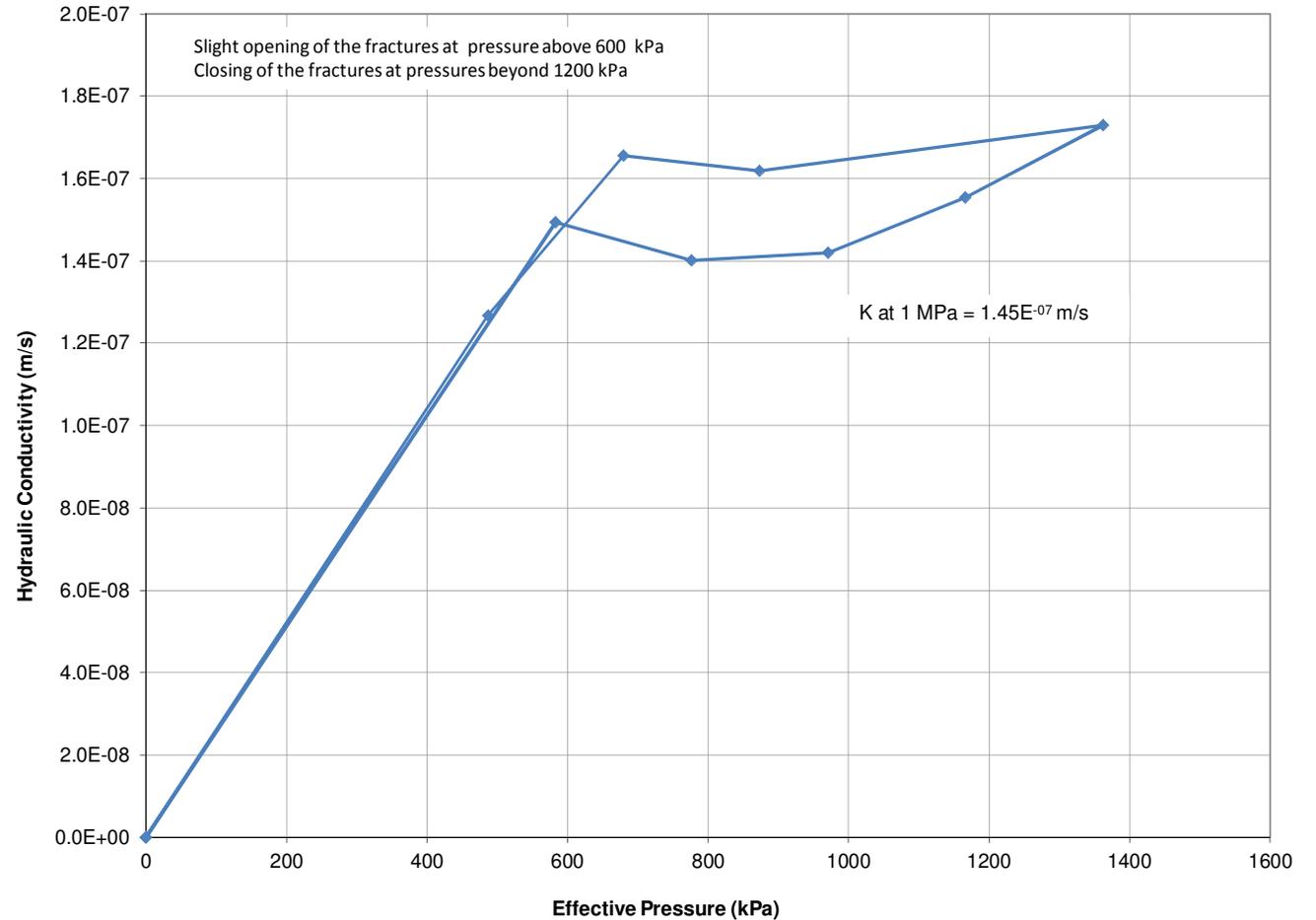


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.60	582.64	1.03	1.49E-07
0.75	776.22	0.97	1.40E-07
0.95	970.92	0.98	1.42E-07
1.25	1166.32	1.07	1.55E-07
1.63	1362.22	1.19	1.73E-07
0.98	873.46	1.12	1.62E-07
0.78	679.24	1.14	1.65E-07
0.43	486.55	0.87	1.27E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

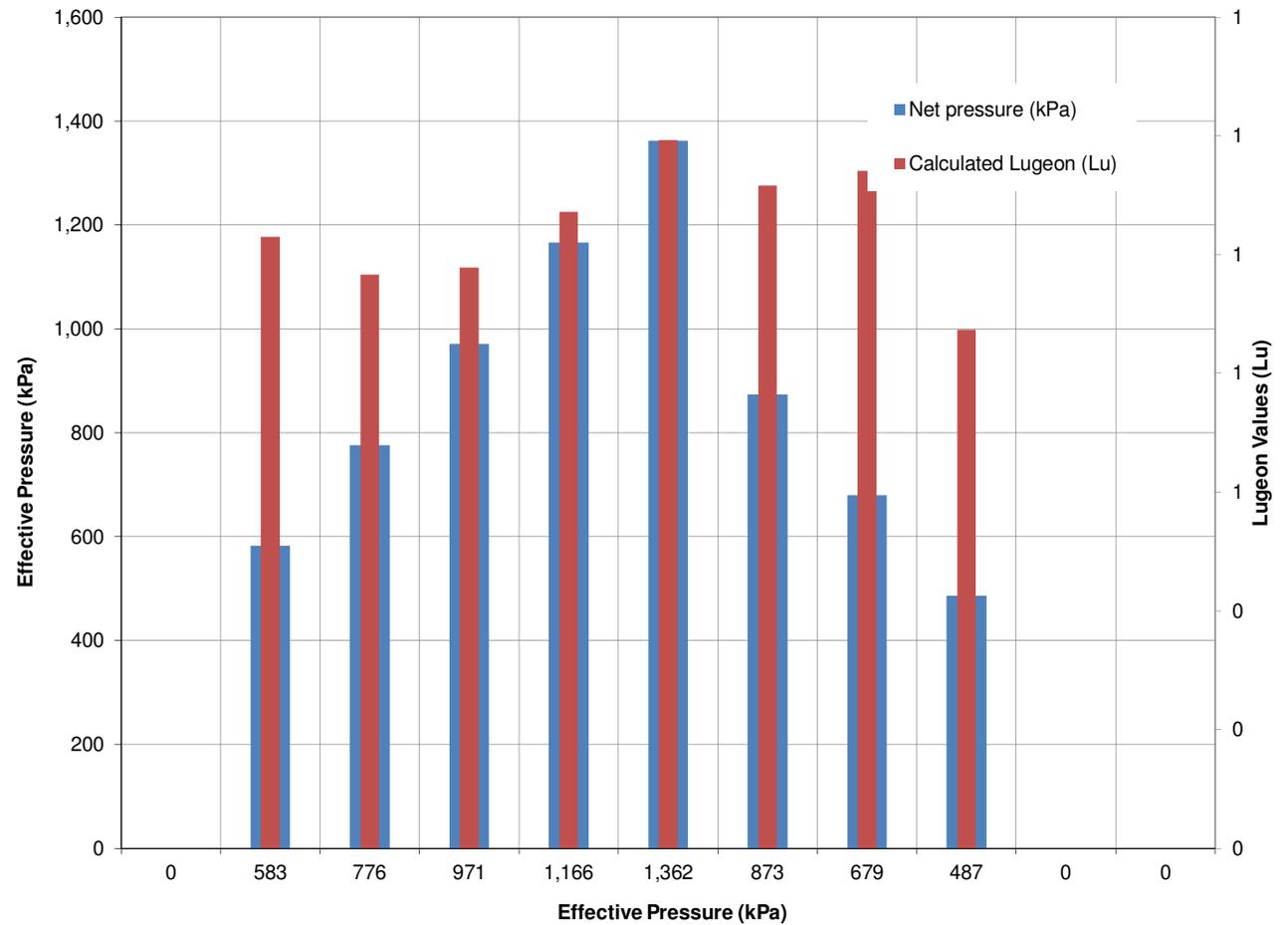


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.60	582.64	1.03	1.49E-07
0.75	776.22	0.97	1.40E-07
0.95	970.92	0.98	1.42E-07
1.25	1166.32	1.07	1.55E-07
1.63	1362.22	1.19	1.73E-07
0.98	873.46	1.12	1.62E-07
0.78	679.24	1.14	1.65E-07
0.43	486.55	0.87	1.27E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



LPDD1304

Packer Test Interval

39m to 58m
02/07/2013



LPDD1304
Packer Test Interval
71m to 75m
02/07/2013



LPDD1304
Packer Test Interval
118m to 122m
02/08/2013



LPDD1304
Packer Test Interval
195m to 199m
01/07/2013



Packers test pressure calculation sheet

Legend

Result

Date : 01/07/2013
Author : Alexis Valenza

Date	<input type="text" value="01/07/2013"/>	Depth to water level :	<input type="text" value="7.8"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="197"/> m
Hole No.	<input type="text" value="1304"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="1"/>	Vertical depth :	<input type="text" value="197"/> m
Test interval	<input type="text" value="195"/> to <input type="text" value="199"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="2.06"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="196.9"/> m
Packer inflation pressure :	<input type="text" value="3592"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0200	0.50	448.28	1.1	8.92E-08	1.62E-07
B	10	0.0310	0.78	641.86	1.2	9.66E-08	1.75E-07
C	10	0.0400	1.00	836.56	1.2	9.56E-08	1.73E-07
D	10	0.0480	1.20	1031.97	1.2	9.30E-08	1.69E-07
E	10	0.0590	1.48	1227.86	1.2	9.61E-08	1.74E-07
Dr	10	0.0400	1.00	739.10	1.4	1.08E-07	1.96E-07
Cr	10	0.0310	0.78	544.89	1.4	1.14E-07	2.06E-07
Br	10	0.0240	0.60	352.20	1.7	1.36E-07	2.47E-07
Ar							
Minimum					1.1	8.9E-08	1.6E-07
Average					1.3	1.0E-07	1.9E-07
Maximum					1.7	1.4E-07	2.5E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

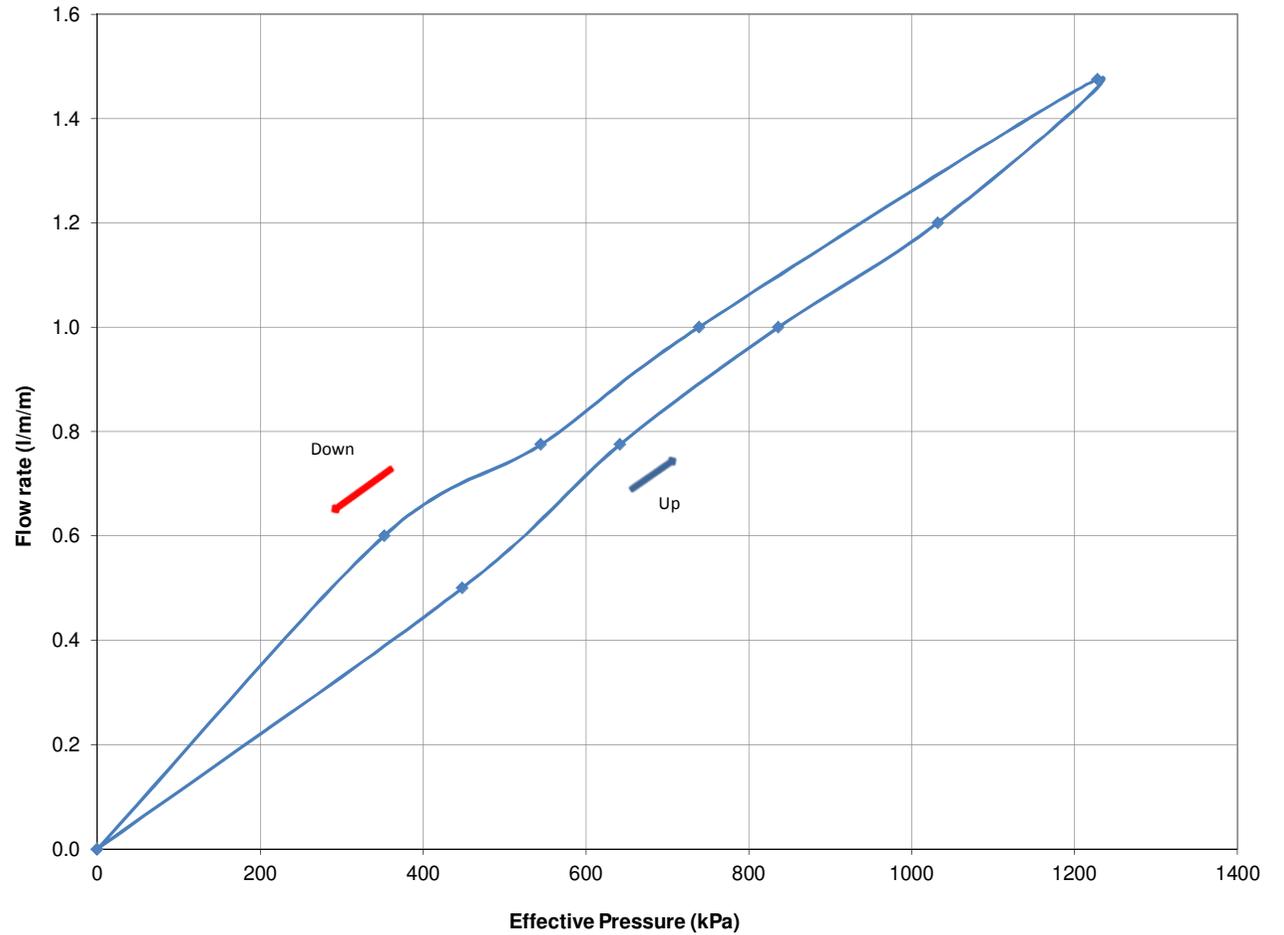
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.50	448.28	1.12	1.62E-07
0.78	641.86	1.21	1.75E-07
1.00	836.56	1.20	1.73E-07
1.20	1031.97	1.16	1.69E-07
1.48	1227.86	1.20	1.74E-07
1.00	739.10	1.35	1.96E-07
0.78	544.89	1.42	2.06E-07
0.60	352.20	1.70	2.47E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

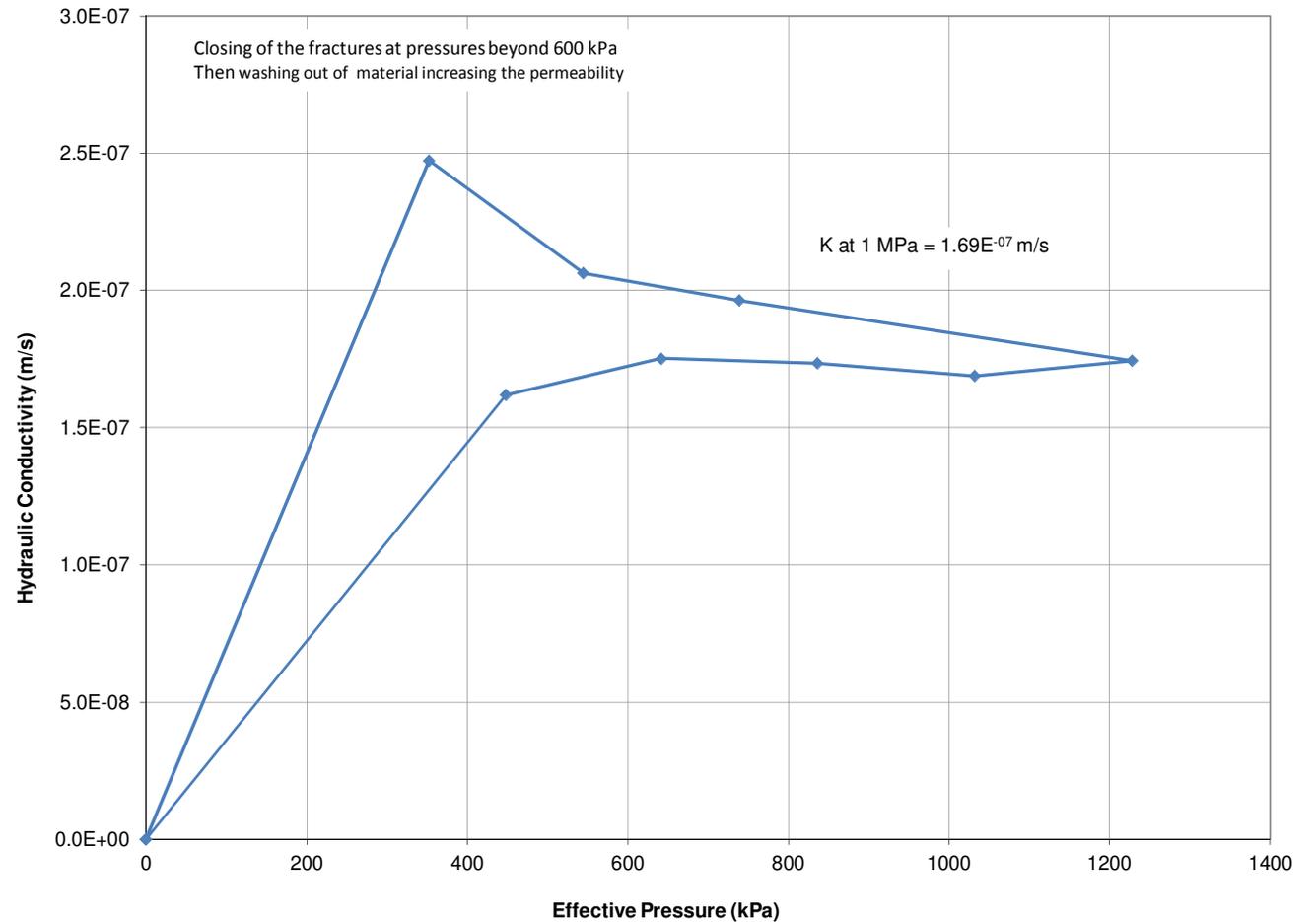


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.50	448.28	1.12	1.62E-07
0.78	641.86	1.21	1.75E-07
1.00	836.56	1.20	1.73E-07
1.20	1031.97	1.16	1.69E-07
1.48	1227.86	1.20	1.74E-07
1.00	739.10	1.35	1.96E-07
0.78	544.89	1.42	2.06E-07
0.60	352.20	1.70	2.47E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

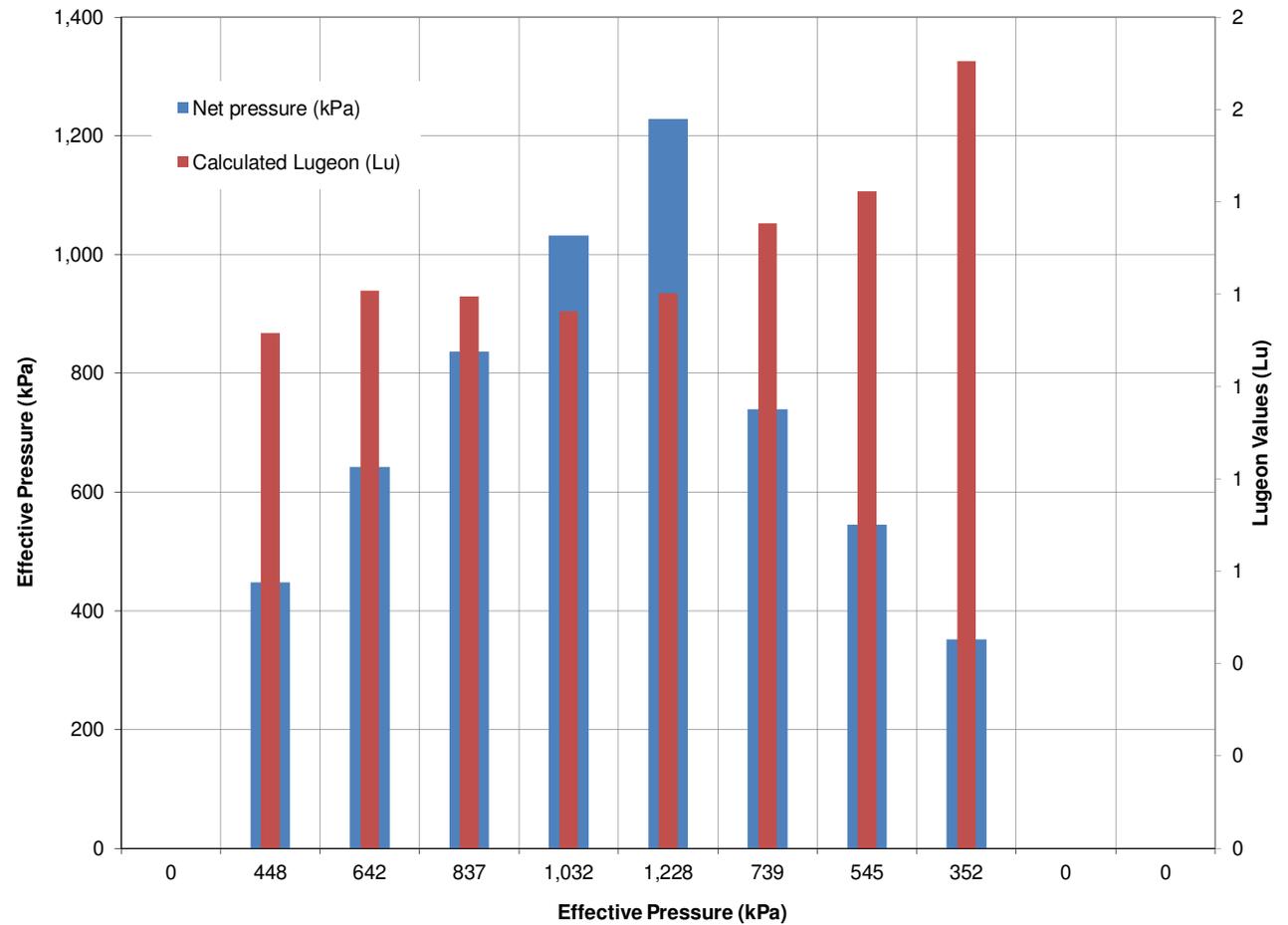


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.50	448.28	1.12	1.62E-07
0.78	641.86	1.21	1.75E-07
1.00	836.56	1.20	1.73E-07
1.20	1031.97	1.16	1.69E-07
1.48	1227.86	1.20	1.74E-07
1.00	739.10	1.35	1.96E-07
0.78	544.89	1.42	2.06E-07
0.60	352.20	1.70	2.47E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend
 Result

Date : 02/07/2013
Author : Alexis Valenza

Date	<input type="text" value="02/07/2013"/>	Depth to water level :	<input type="text" value="7.8"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="120"/> m
Hole No.	<input type="text" value="1304"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="2"/>	Vertical depth :	<input type="text" value="120"/> m
Test interval	<input type="text" value="118"/> to <input type="text" value="122"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="2.06"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="119.9"/> m
Packer inflation pressure :	<input type="text" value="2822"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.5450	13.63	448.28	30.4	2.43E-06	4.41E-06
B							
C							
D							
E							
Dr							
Cr							
Br							
Ar							
					Minimum	30.4	2.4E-06
					Average	30.4	2.4E-06
					Maximum	30.4	2.4E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:

Hole No.

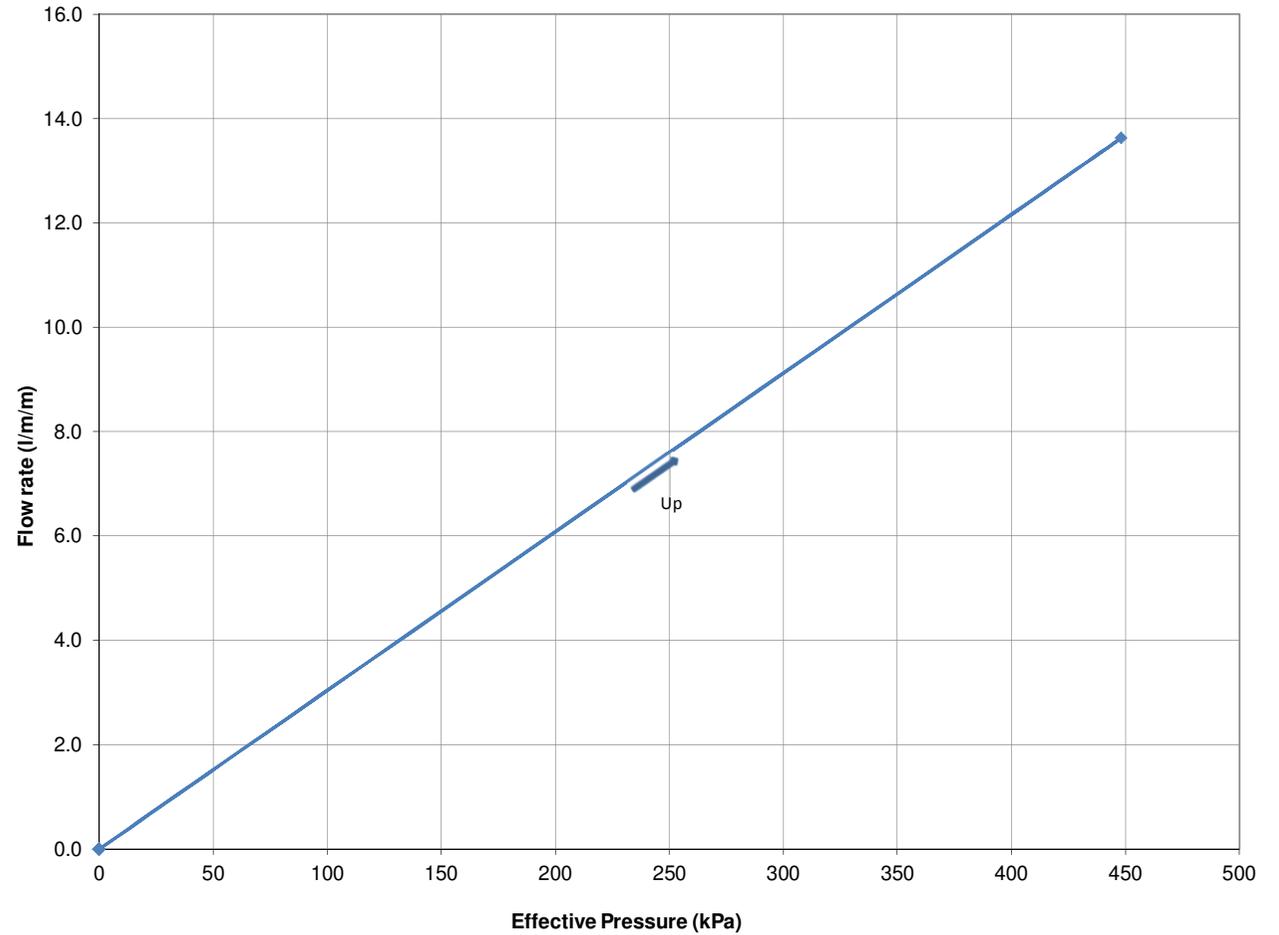
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.63	448.28	30.39	4.41E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers Test Results

Site Location:

Hole No.

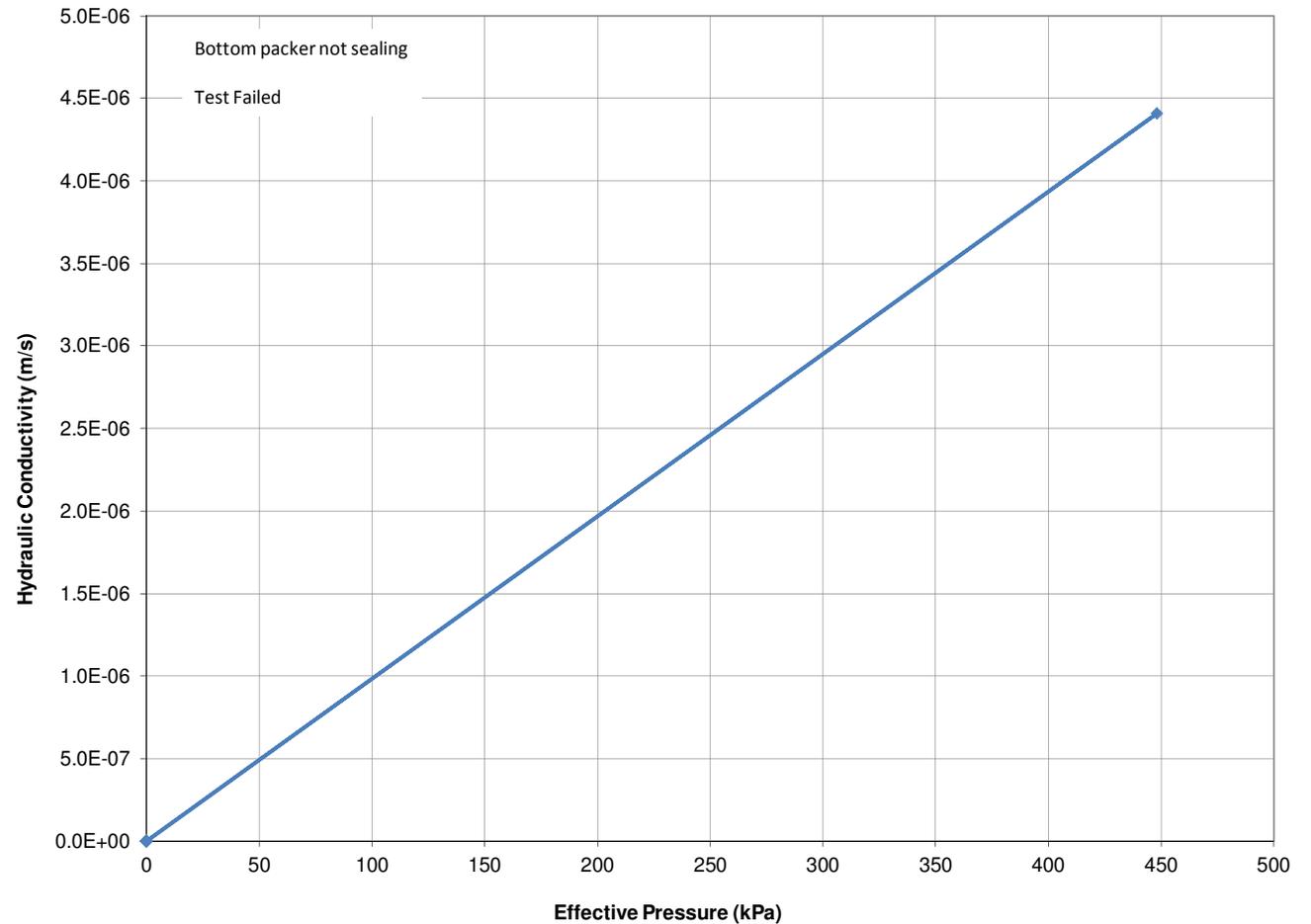
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.63	448.28	30.39	4.41E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

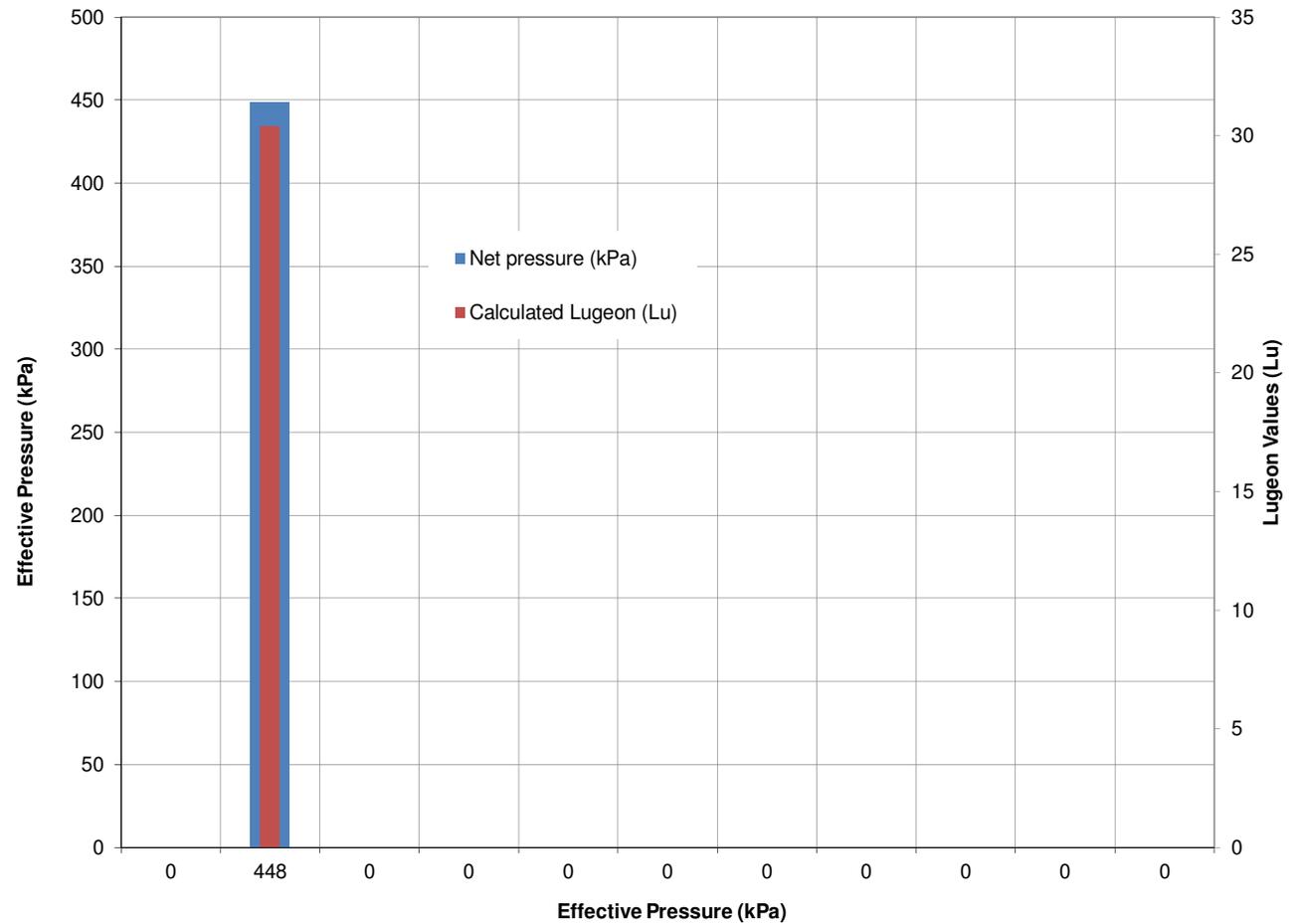


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.63	448.28	30.39	4.41E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 02/07/2013
Author : Alexis Valenza

Date	<input type="text" value="02/07/2013"/>	Depth to water level :	<input type="text" value="7.8"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="72"/> m
Hole No.	<input type="text" value="1304"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="3"/>	Vertical depth :	<input type="text" value="72"/> m
Test interval	<input type="text" value="71"/> to <input type="text" value="74"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="2.06"/> deg
Test length	<input type="text" value="3"/> m	True depth :	<input type="text" value="72.0"/> m
Packer inflation pressure :	<input type="text" value="2342"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.0010	0.03	448.28	0.1	5.95E-09	1.02E-08	
B	10	0.0020	0.07	641.86	0.1	8.31E-09	1.43E-08	
C	10	0.0030	0.10	836.56	0.1	9.56E-09	1.64E-08	
D	10	0.0040	0.13	1031.97	0.1	1.03E-08	1.78E-08	
E	10	0.0070	0.23	1227.86	0.2	1.52E-08	2.61E-08	
Dr	10	0.0040	0.13	739.10	0.2	1.44E-08	2.48E-08	
Cr	10	0.0030	0.10	544.89	0.2	1.47E-08	2.52E-08	
Br	10	0.0020	0.07	352.20	0.2	1.51E-08	2.60E-08	
Ar								
					Minimum	0.1	5.9E-09	1.0E-08
					Average	0.1	1.1E-08	2.0E-08
					Maximum	0.2	1.5E-08	2.6E-08

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

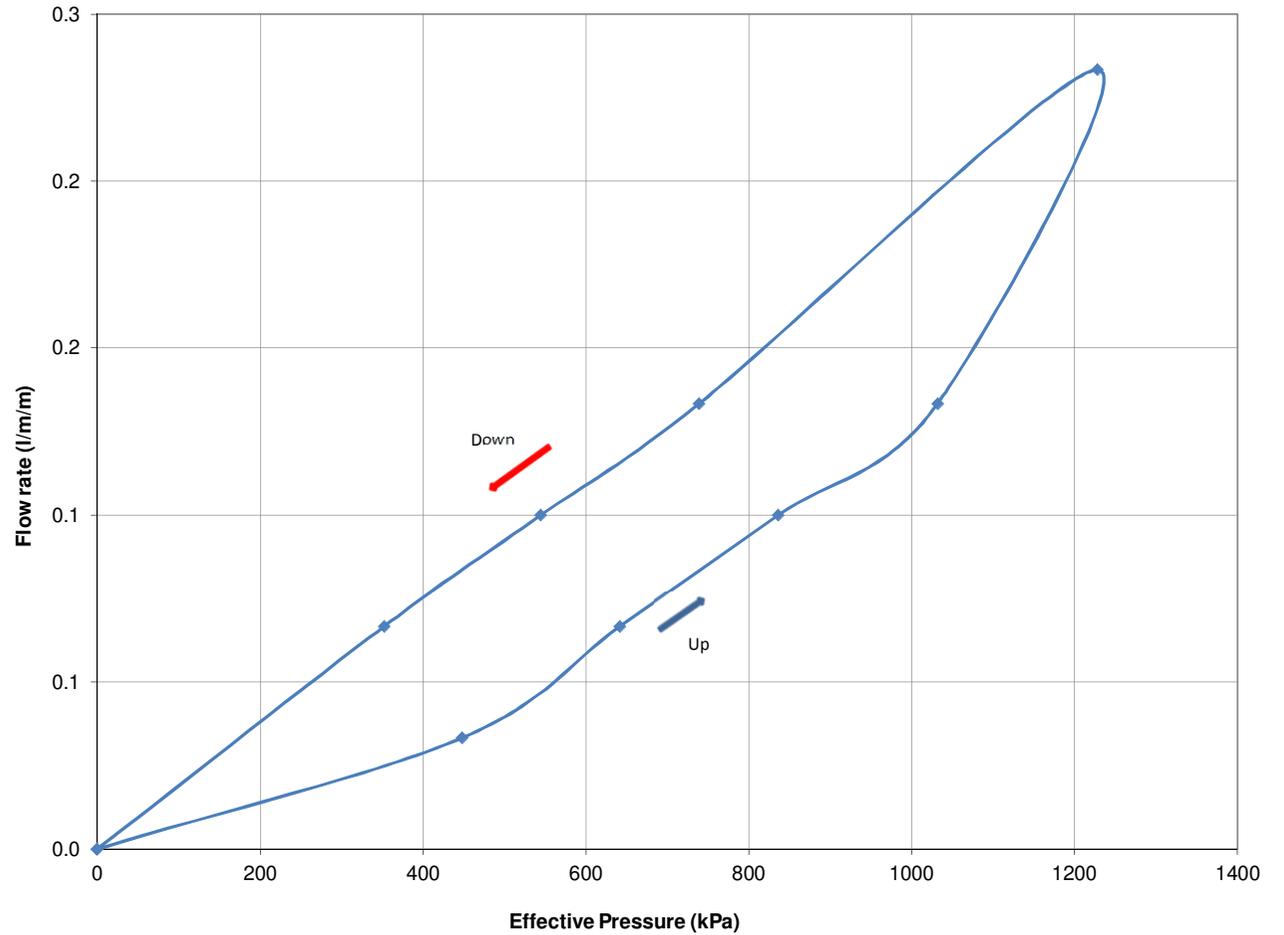
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.03	448.28	0.07	1.02E-08
0.07	641.86	0.10	1.43E-08
0.10	836.56	0.12	1.64E-08
0.13	1031.97	0.13	1.78E-08
0.23	1227.86	0.19	2.61E-08
0.13	739.10	0.18	2.48E-08
0.10	544.89	0.18	2.52E-08
0.07	352.20	0.19	2.60E-08
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

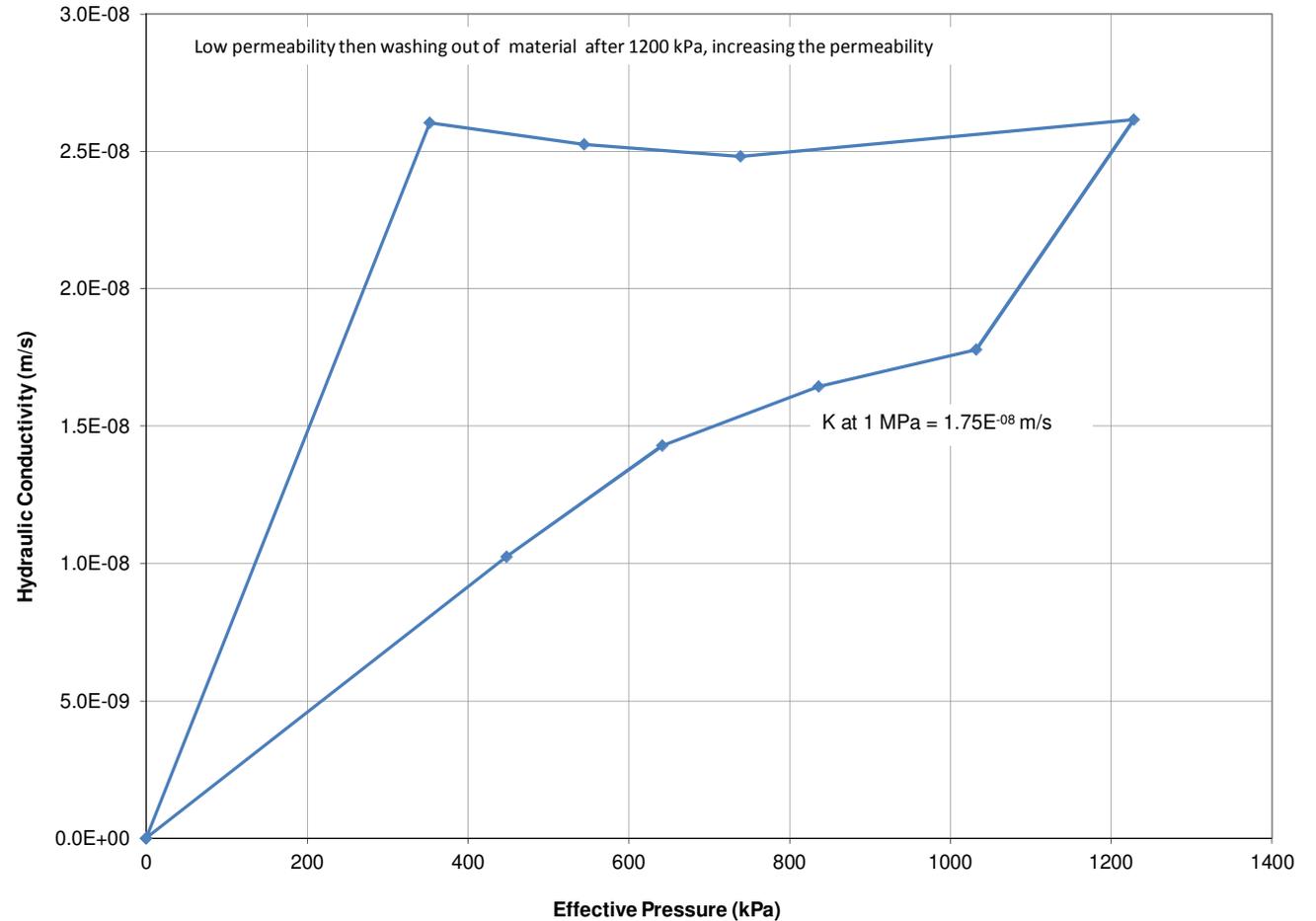


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.03	448.28	0.07	1.02E-08
0.07	641.86	0.10	1.43E-08
0.10	836.56	0.12	1.64E-08
0.13	1031.97	0.13	1.78E-08
0.23	1227.86	0.19	2.61E-08
0.13	739.10	0.18	2.48E-08
0.10	544.89	0.18	2.52E-08
0.07	352.20	0.19	2.60E-08
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

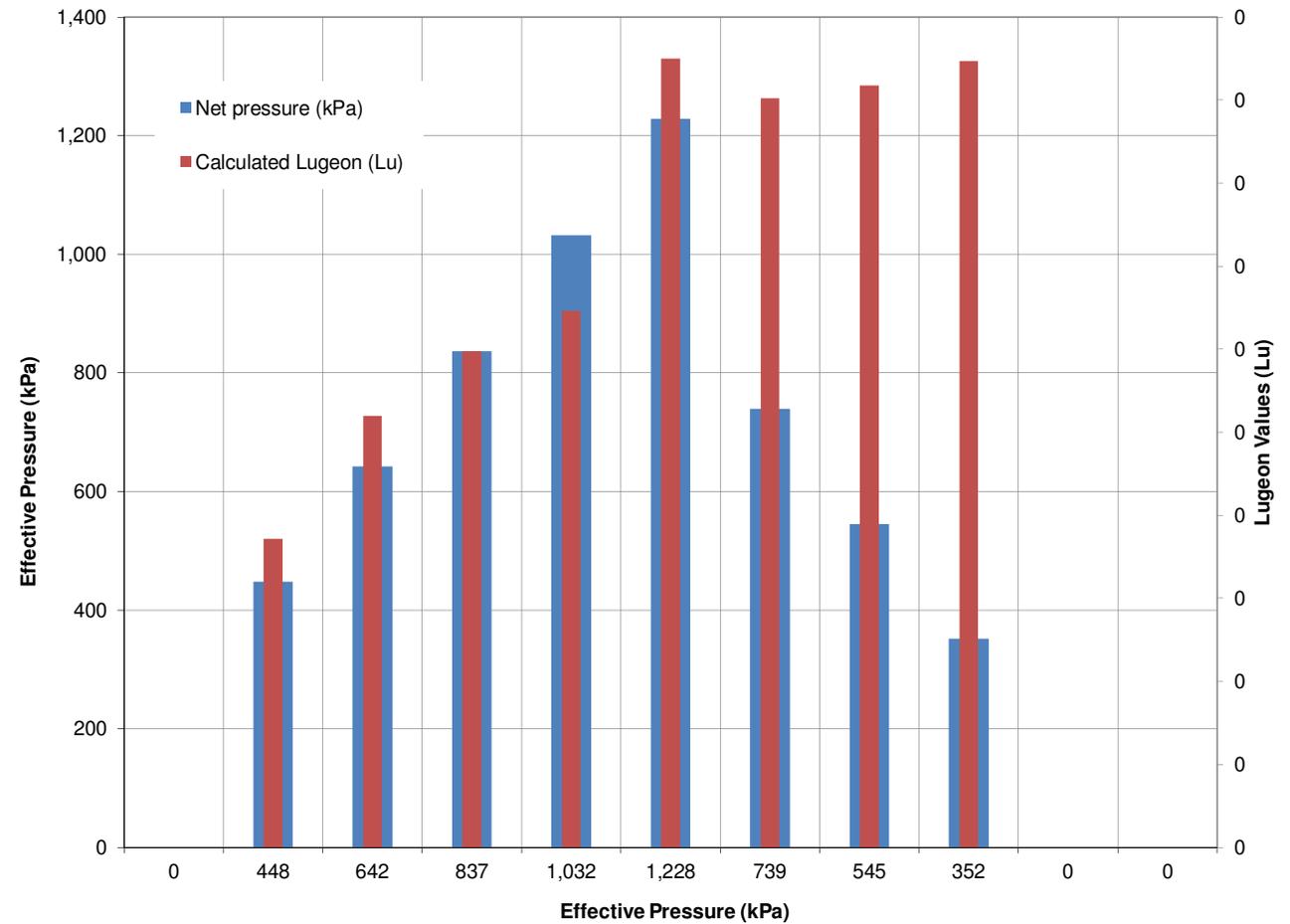


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.03	448.28	0.07	1.02E-08
0.07	641.86	0.10	1.43E-08
0.10	836.56	0.12	1.64E-08
0.13	1031.97	0.13	1.78E-08
0.23	1227.86	0.19	2.61E-08
0.13	739.10	0.18	2.48E-08
0.10	544.89	0.18	2.52E-08
0.07	352.20	0.19	2.60E-08
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 02/07/2013
Author : Alexis Valenza

Date	<input type="text" value="02/07/2013"/>	Depth to water level :	<input type="text" value="7.8"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="40"/> m
Hole No.	<input type="text" value="1304"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="4"/>	Vertical depth :	<input type="text" value="40"/> m
Test interval	<input type="text" value="39"/> to <input type="text" value="42"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="2.06"/> deg
Test length	<input type="text" value="3"/> m	True depth :	<input type="text" value="40.0"/> m
Packer inflation pressure :	<input type="text" value="2022"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A							
B							
C							
D							
E							
Dr							
Cr							
Br							
Ar							
Minimum					0.0	0.0E+00	0.0E+00
Average					0.0	0.0E+00	#DIV/0!
Maximum					0.0	0.0E+00	0.0E+00

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:

Hole No.

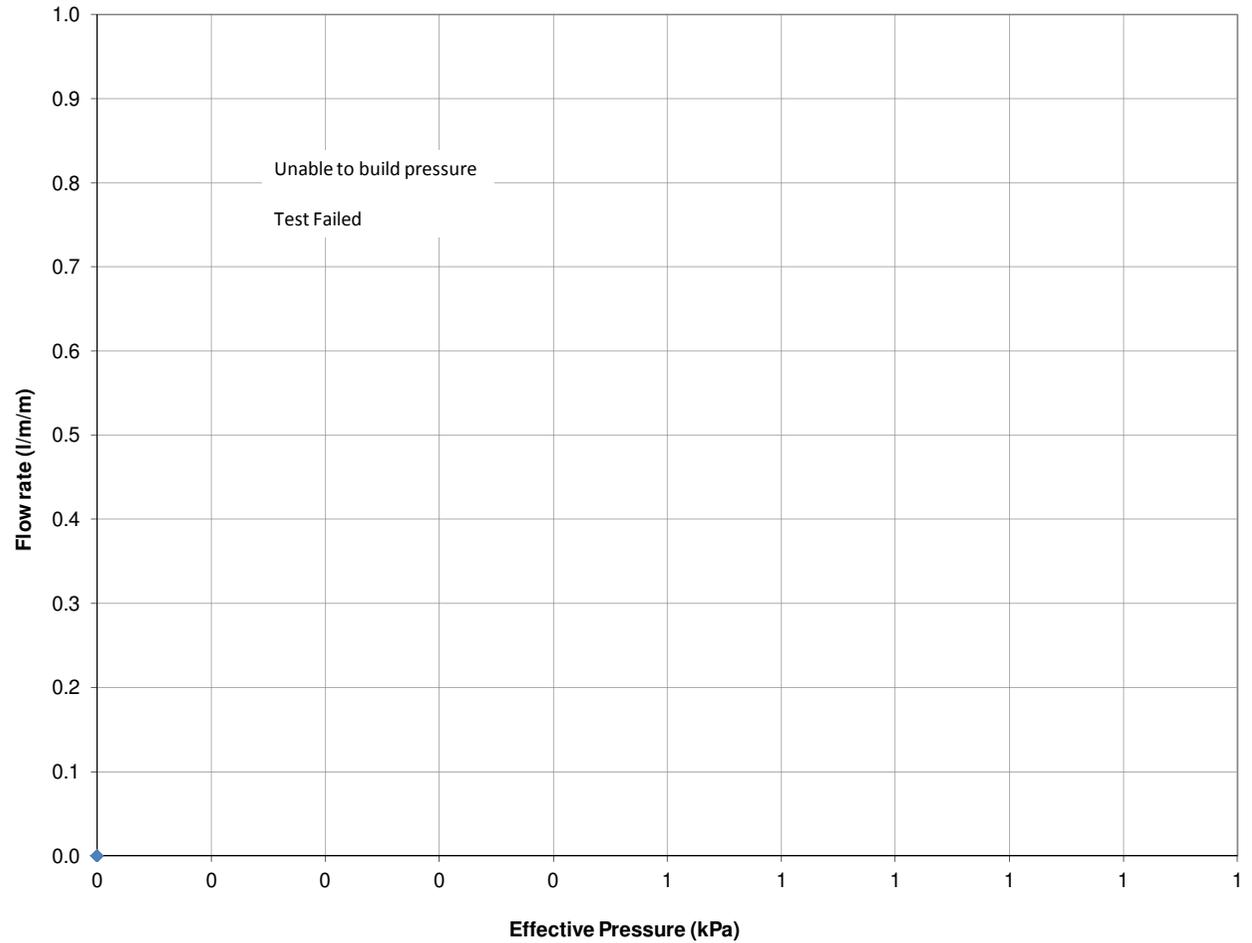
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers Test Results

Site Location:

Hole No.

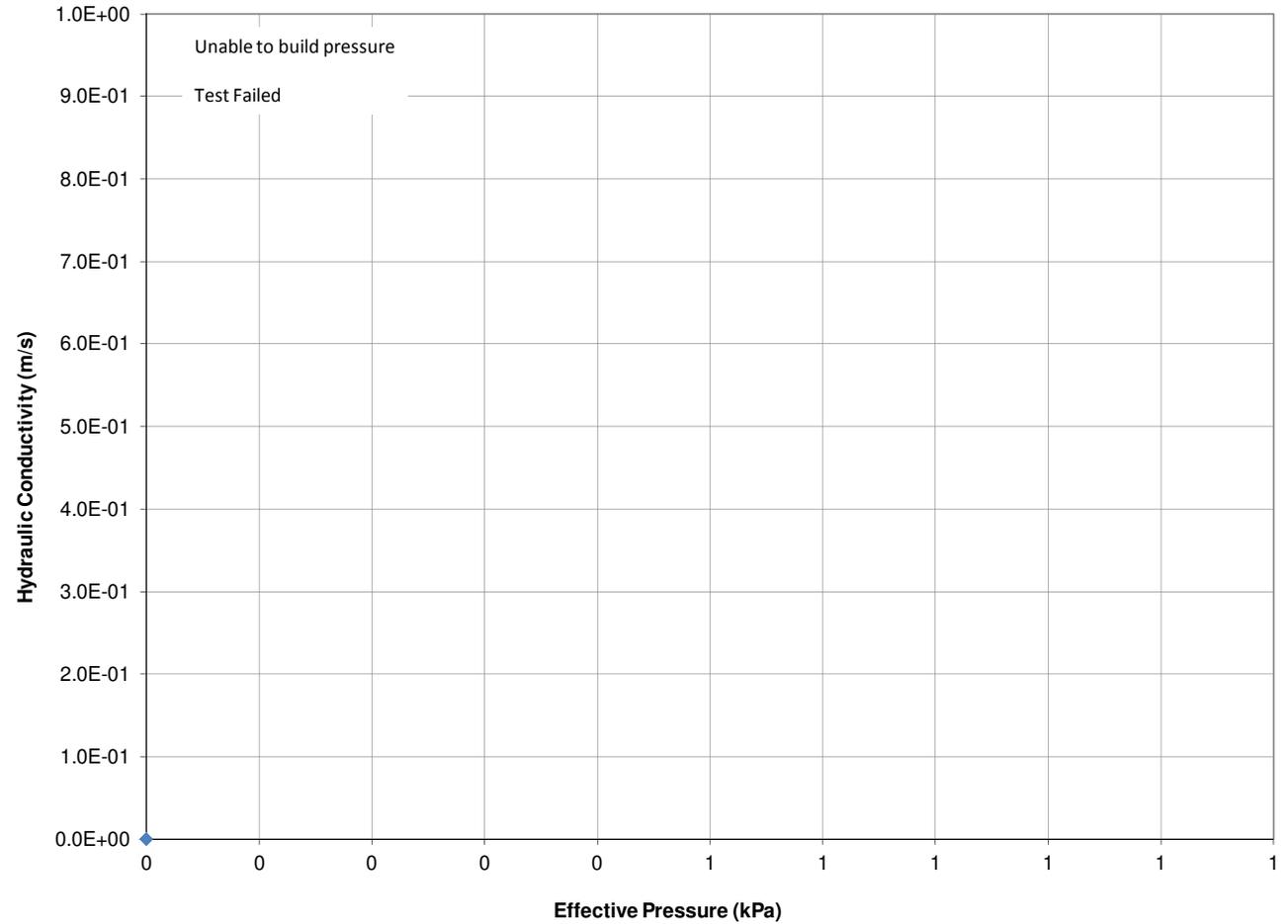
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

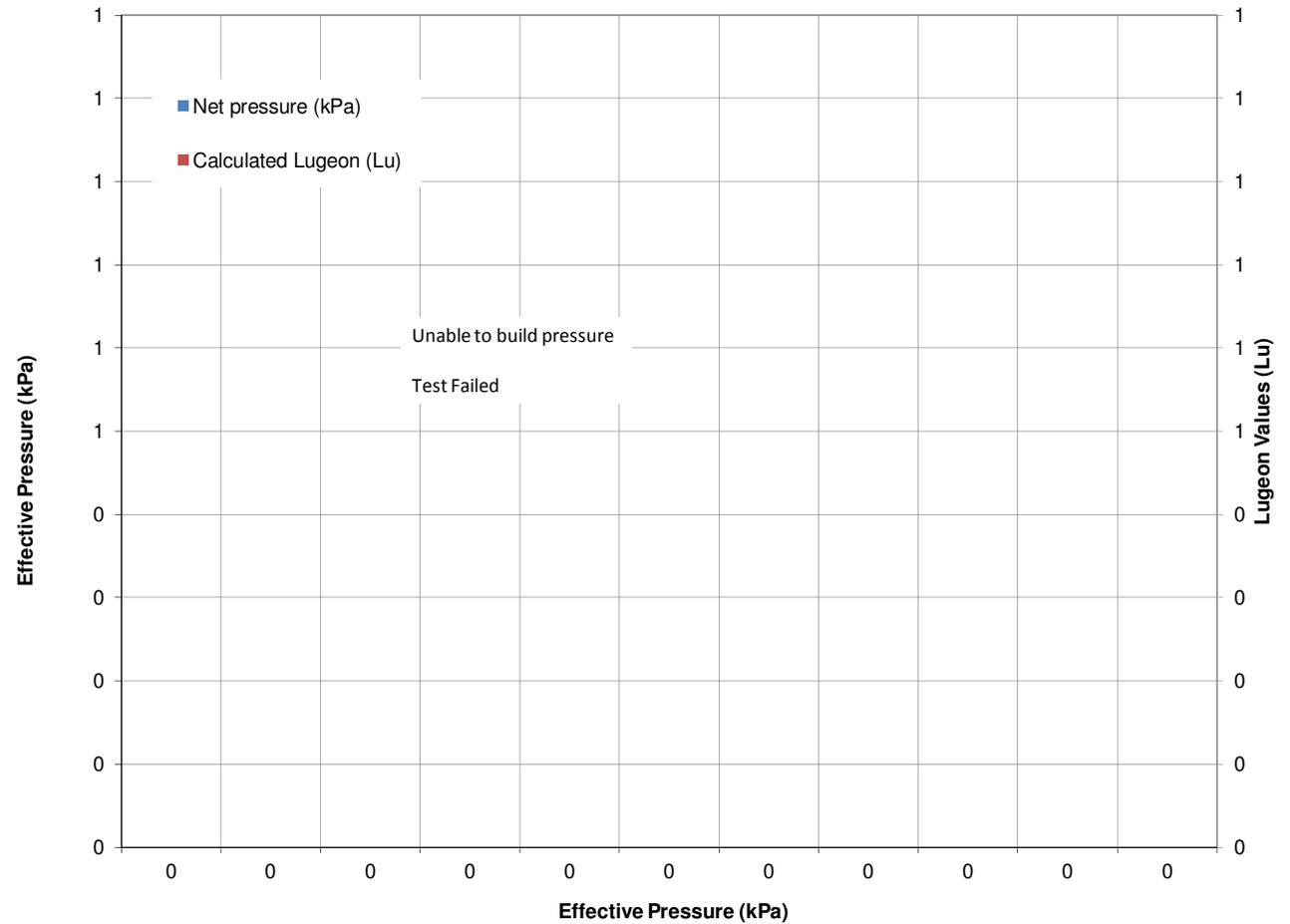


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 09/07/2013
Author : Alexis Valenza

Date	<input type="text" value="09/07/2013"/>	Depth to water level :	<input type="text" value="28.5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="220.5"/> m
Hole No.	<input type="text" value="1306"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="1"/>	Vertical depth :	<input type="text" value="220.5"/> m
Test interval	<input type="text" value="219"/> to <input type="text" value="222"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="34.99"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="180.6"/> m
Packer inflation pressure :	<input type="text" value="3620"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.0430	1.08	651.29	1.7	1.32E-07	2.39E-07
B	10	0.0360	0.90	844.86	1.1	8.52E-08	1.55E-07
C	10	0.0430	1.08	1039.57	1.0	8.27E-08	1.50E-07
D	10	0.0530	1.33	1234.97	1.1	8.58E-08	1.56E-07
E	10	0.0550	1.38	1430.87	1.0	7.69E-08	1.39E-07
Dr	10	0.0390	0.98	942.11	1.0	8.28E-08	1.50E-07
Cr	10	0.0340	0.85	747.89	1.1	9.09E-08	1.65E-07
Br	10	0.0250	0.63	555.20	1.1	9.01E-08	1.63E-07
Ar							
Minimum					1.0	7.7E-08	1.4E-07
Average					1.1	8.9E-08	1.6E-07
Maximum					1.7	1.3E-07	2.4E-07

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

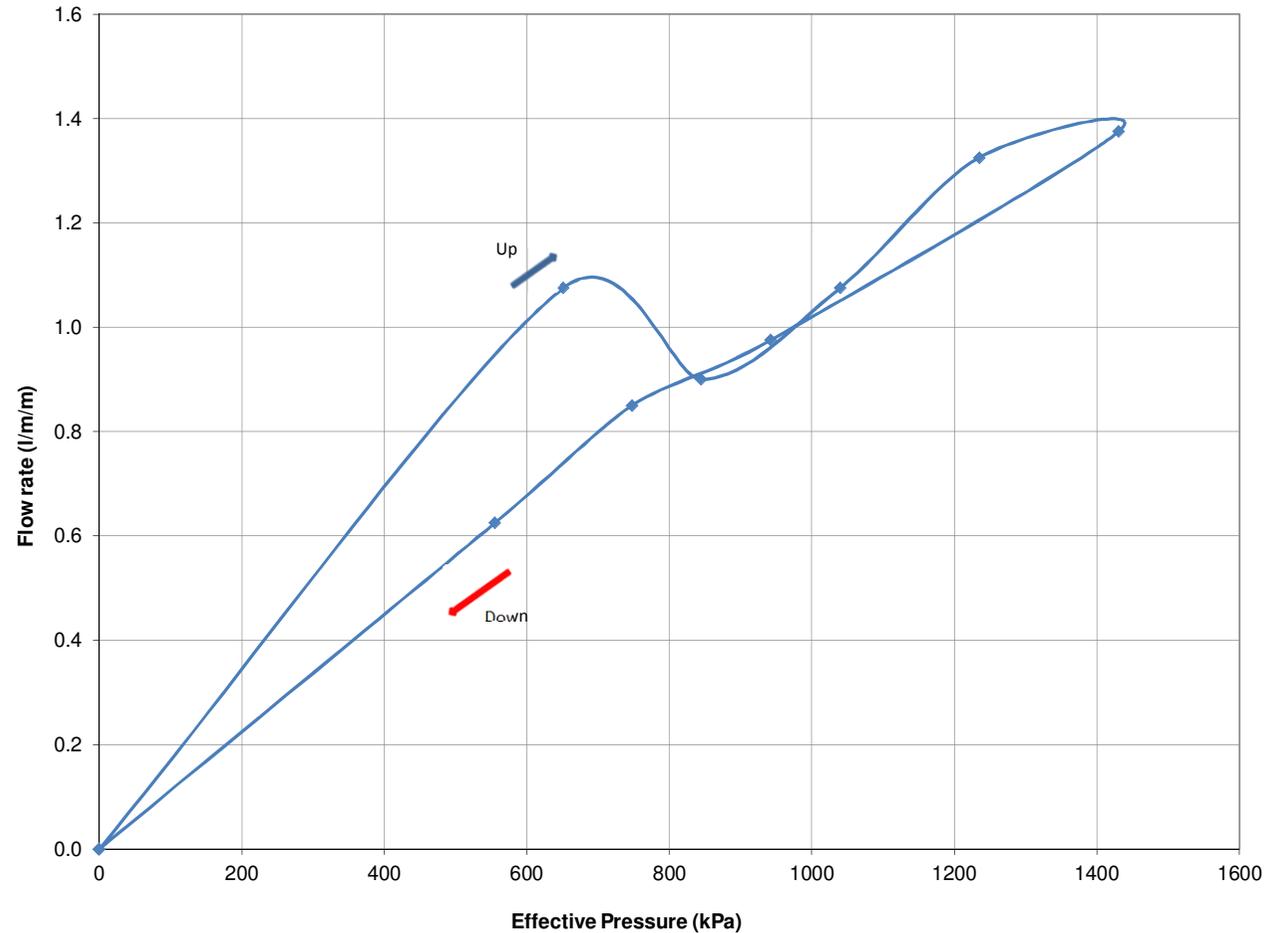
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.08	651.29	1.65	2.39E-07
0.90	844.86	1.07	1.55E-07
1.08	1039.57	1.03	1.50E-07
1.33	1234.97	1.07	1.56E-07
1.38	1430.87	0.96	1.39E-07
0.98	942.11	1.03	1.50E-07
0.85	747.89	1.14	1.65E-07
0.63	555.20	1.13	1.63E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

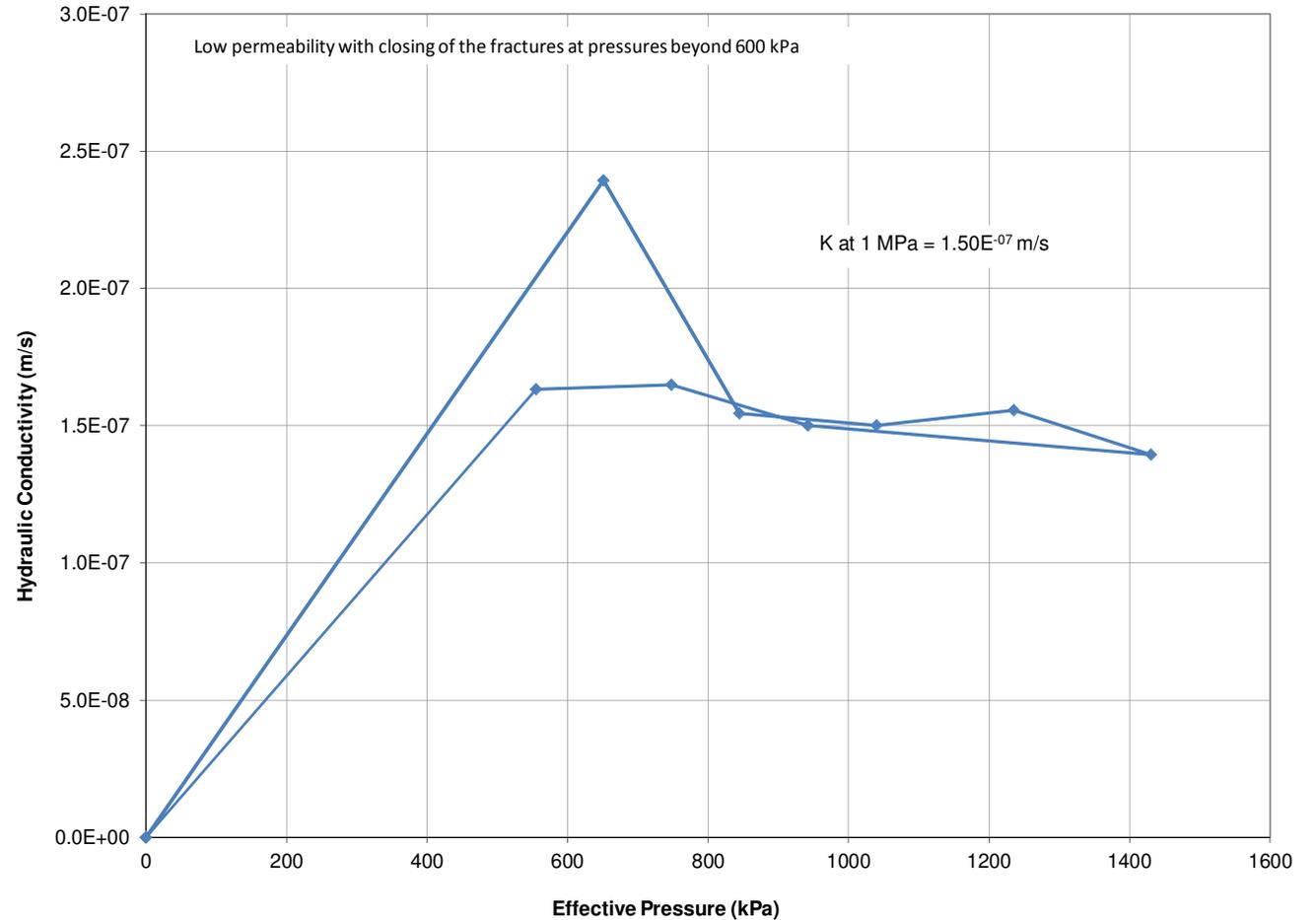


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.08	651.29	1.65	2.39E-07
0.90	844.86	1.07	1.55E-07
1.08	1039.57	1.03	1.50E-07
1.33	1234.97	1.07	1.56E-07
1.38	1430.87	0.96	1.39E-07
0.98	942.11	1.03	1.50E-07
0.85	747.89	1.14	1.65E-07
0.63	555.20	1.13	1.63E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

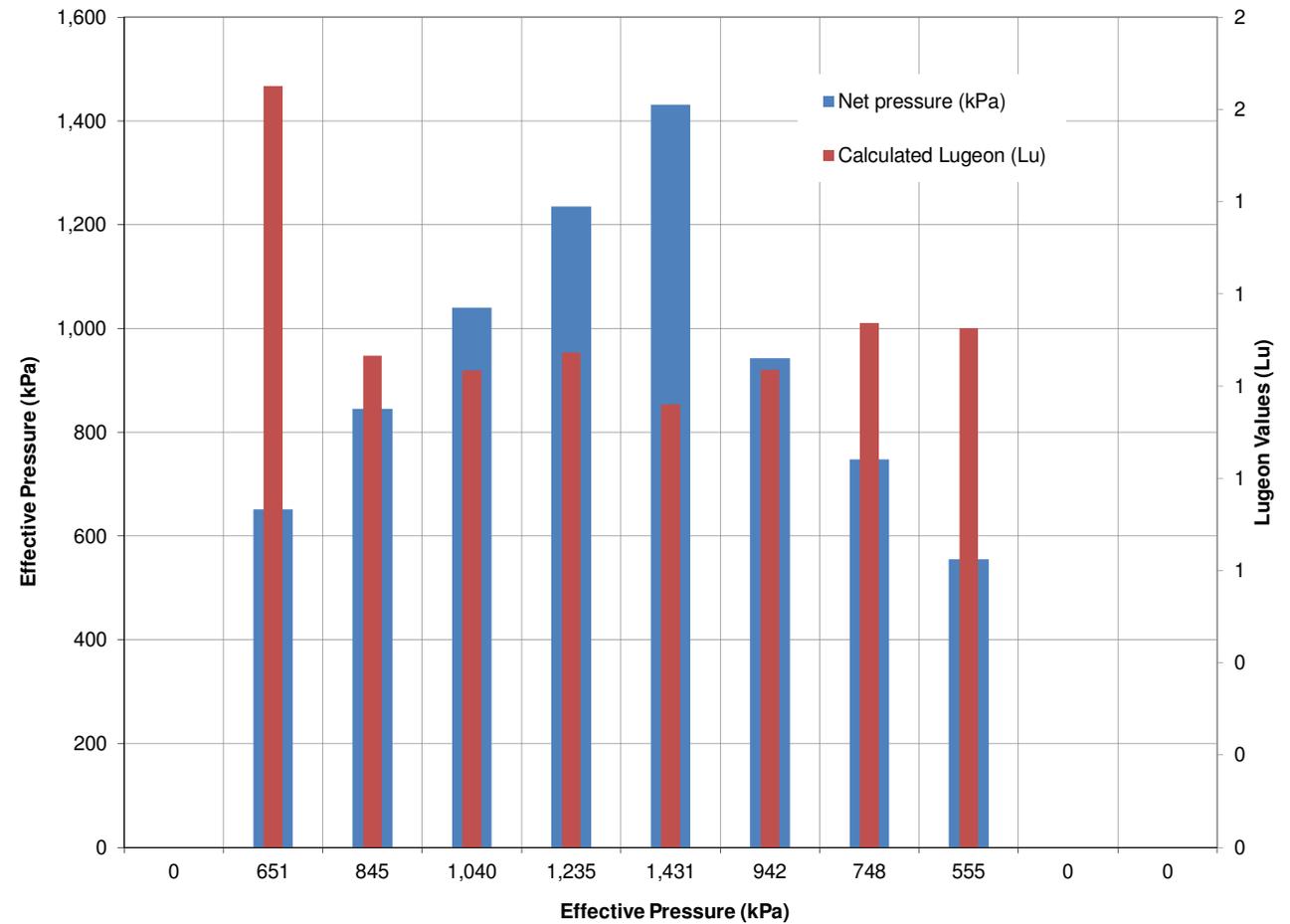


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
1.08	651.29	1.65	2.39E-07
0.90	844.86	1.07	1.55E-07
1.08	1039.57	1.03	1.50E-07
1.33	1234.97	1.07	1.56E-07
1.38	1430.87	0.96	1.39E-07
0.98	942.11	1.03	1.50E-07
0.85	747.89	1.14	1.65E-07
0.63	555.20	1.13	1.63E-07
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 09/07/2013
Author : Alexis Valenza

Date	<input type="text" value="09/07/2013"/>	Depth to water level :	<input type="text" value="28.5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="183"/> m
Hole No.	<input type="text" value="1306"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="2"/>	Vertical depth :	<input type="text" value="183"/> m
Test interval	<input type="text" value="182"/> to <input type="text" value="185"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="34.99"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="149.9"/> m
Packer inflation pressure :	<input type="text" value="3245"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	5	0.2970	14.85	651.29	22.8	1.82E-06	3.31E-06	
B	5	0.3240	16.20	723.70	22.4	1.79E-06	3.25E-06	
C	5	0.3400	17.00	747.89	22.7	1.82E-06	3.30E-06	
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	22.4	1.8E-06	3.2E-06
					Average	22.6	1.8E-06	3.3E-06
					Maximum	22.8	1.8E-06	3.3E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

Hydraulic Conductivity
 $K (m/s) = \text{Flow rate (m}^3/s) \times LN ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:

Hole No.

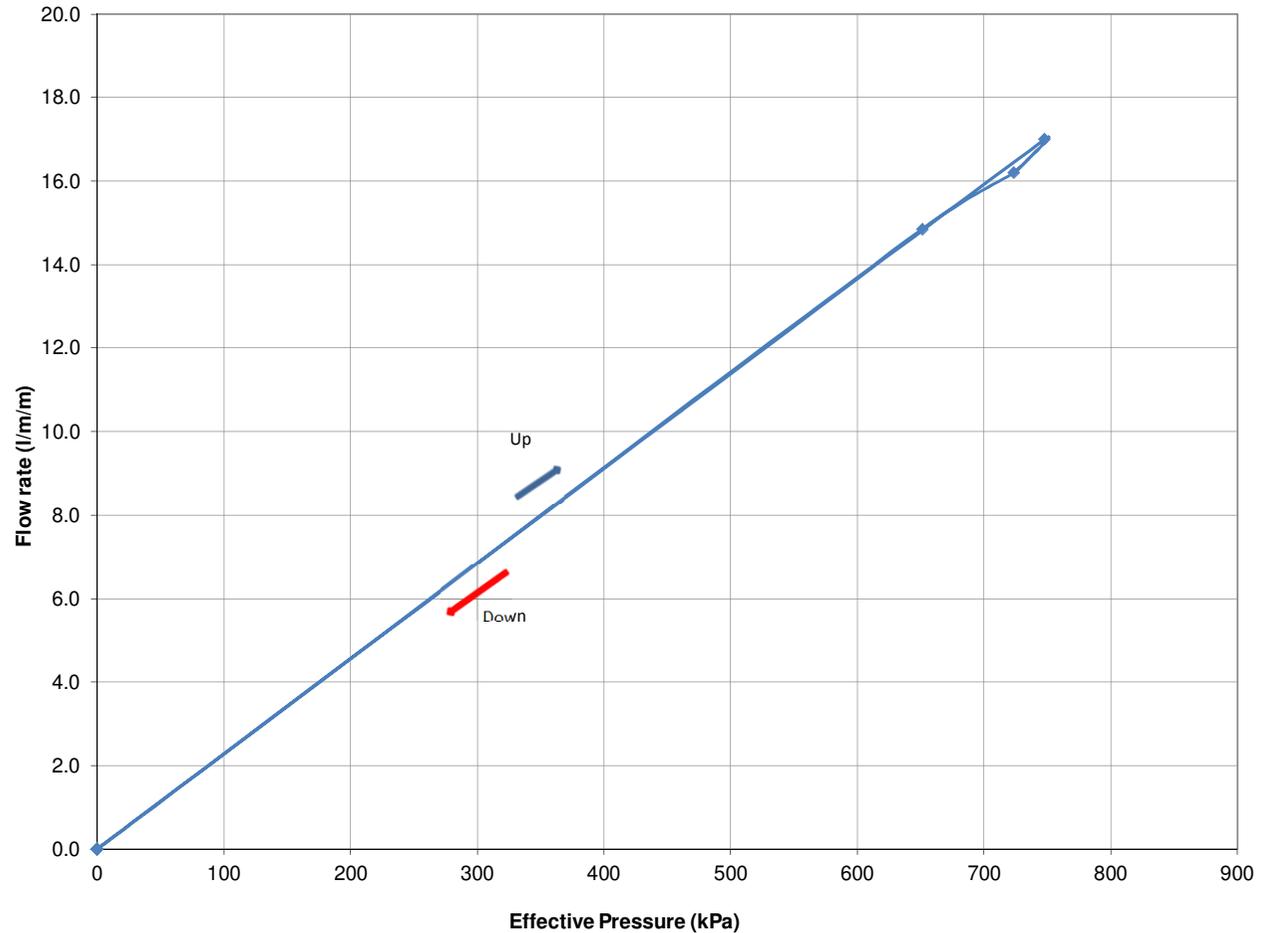
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
14.85	651.29	22.80	3.31E-06
16.20	723.70	22.38	3.25E-06
17.00	747.89	22.73	3.30E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

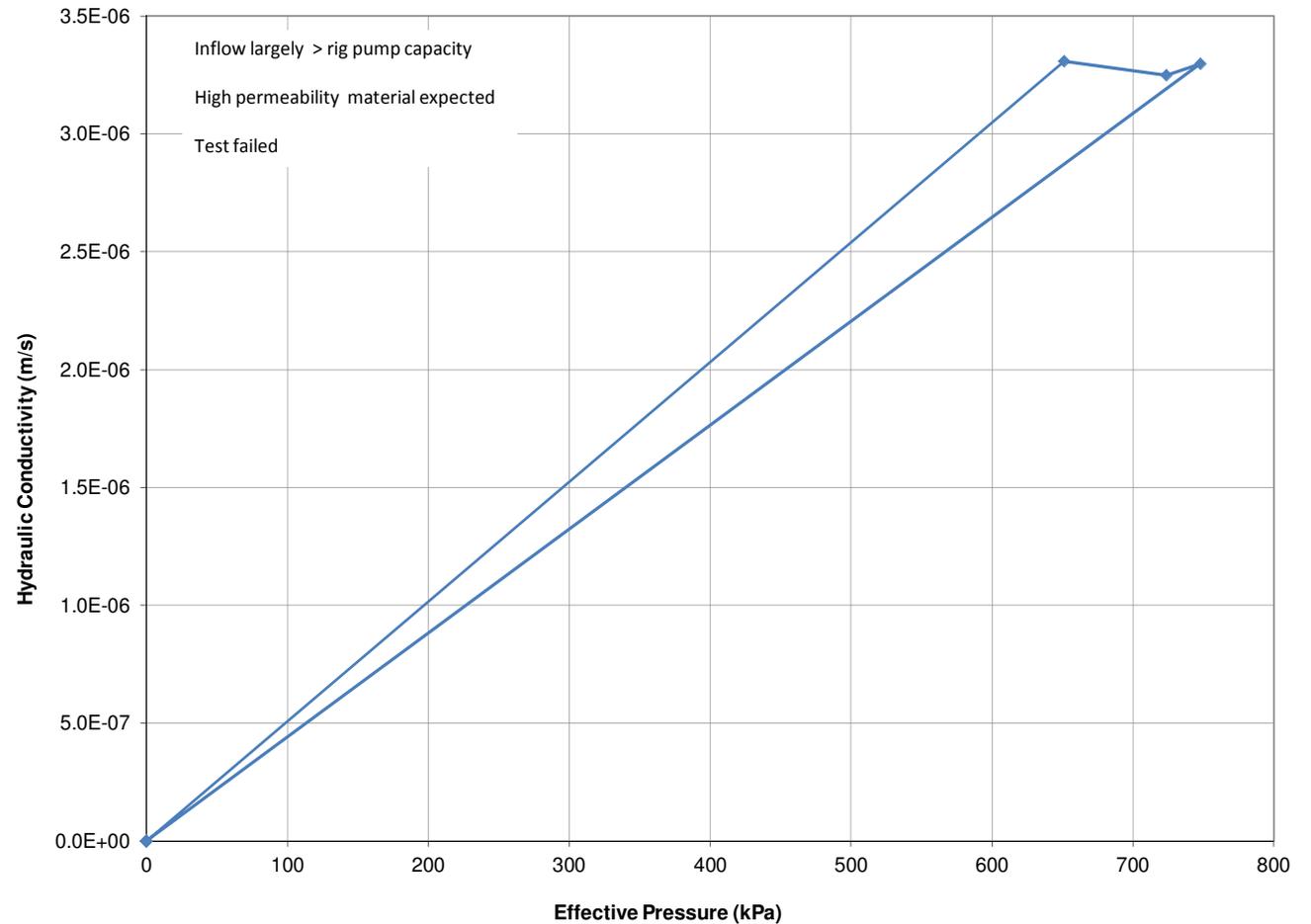


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
14.85	651.29	22.80	3.31E-06
16.20	723.70	22.38	3.25E-06
17.00	747.89	22.73	3.30E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

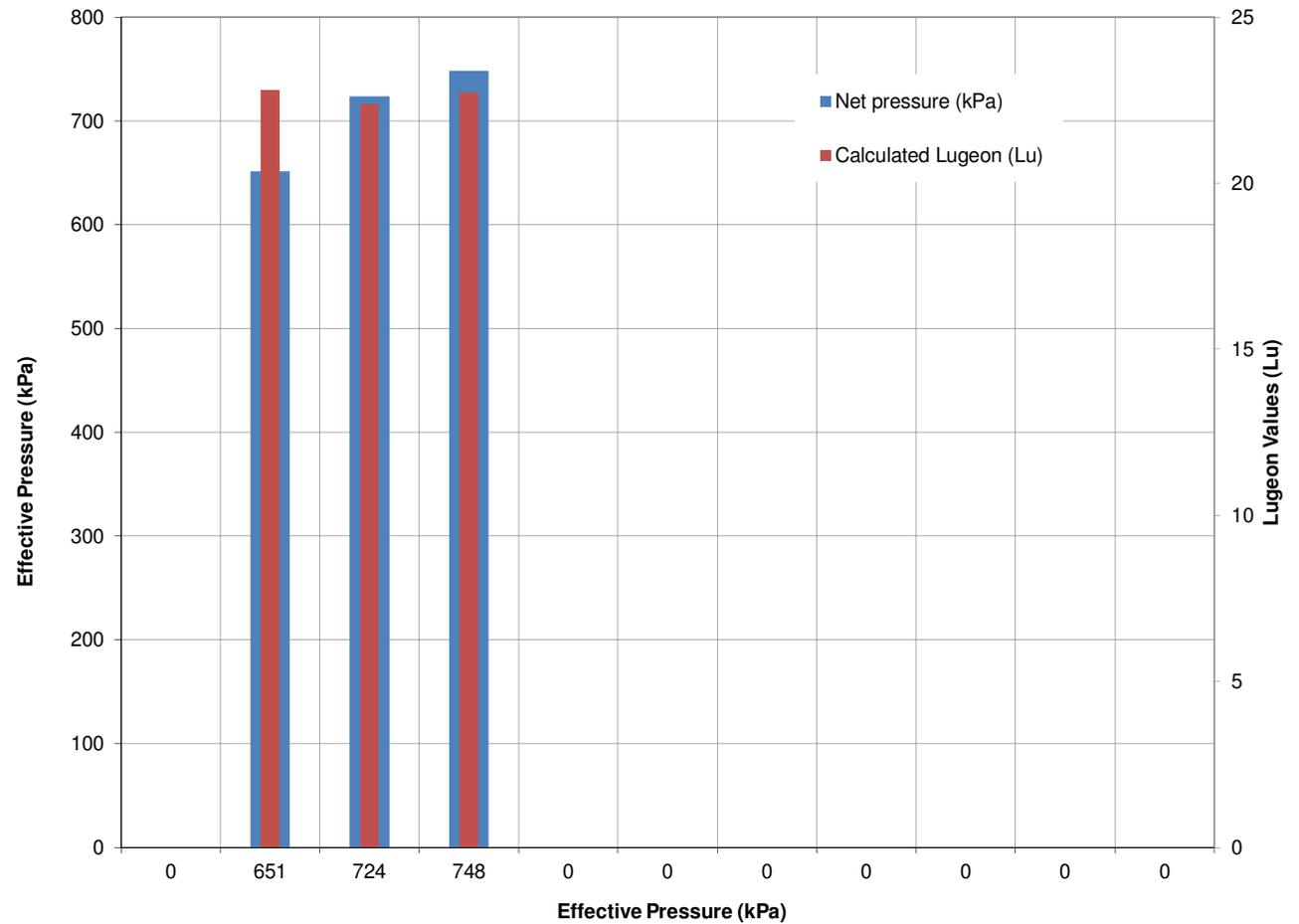


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
14.85	651.29	22.80	3.31E-06
16.20	723.70	22.38	3.25E-06
17.00	747.89	22.73	3.30E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 09/07/2013
Author : Alexis Valenza

Date	<input type="text" value="09/07/2013"/>	Depth to water level :	<input type="text" value="28.5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="157.5"/> m
Hole No.	<input type="text" value="1306"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="3"/>	Vertical depth :	<input type="text" value="157.5"/> m
Test interval	<input type="text" value="156"/> to <input type="text" value="159"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="34.99"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="129.0"/> m
Packer inflation pressure :	<input type="text" value="2990"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.6610	16.53	651.29	25.4	2.03E-06	3.68E-06	
B	4	0.2960	18.50	747.89	24.7	1.98E-06	3.59E-06	
C	2	0.1000	12.50	555.20	22.5	1.80E-06	3.27E-06	
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	22.5	1.8E-06	3.3E-06
					Average	23.8	1.9E-06	3.5E-06
					Maximum	25.4	2.0E-06	3.7E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

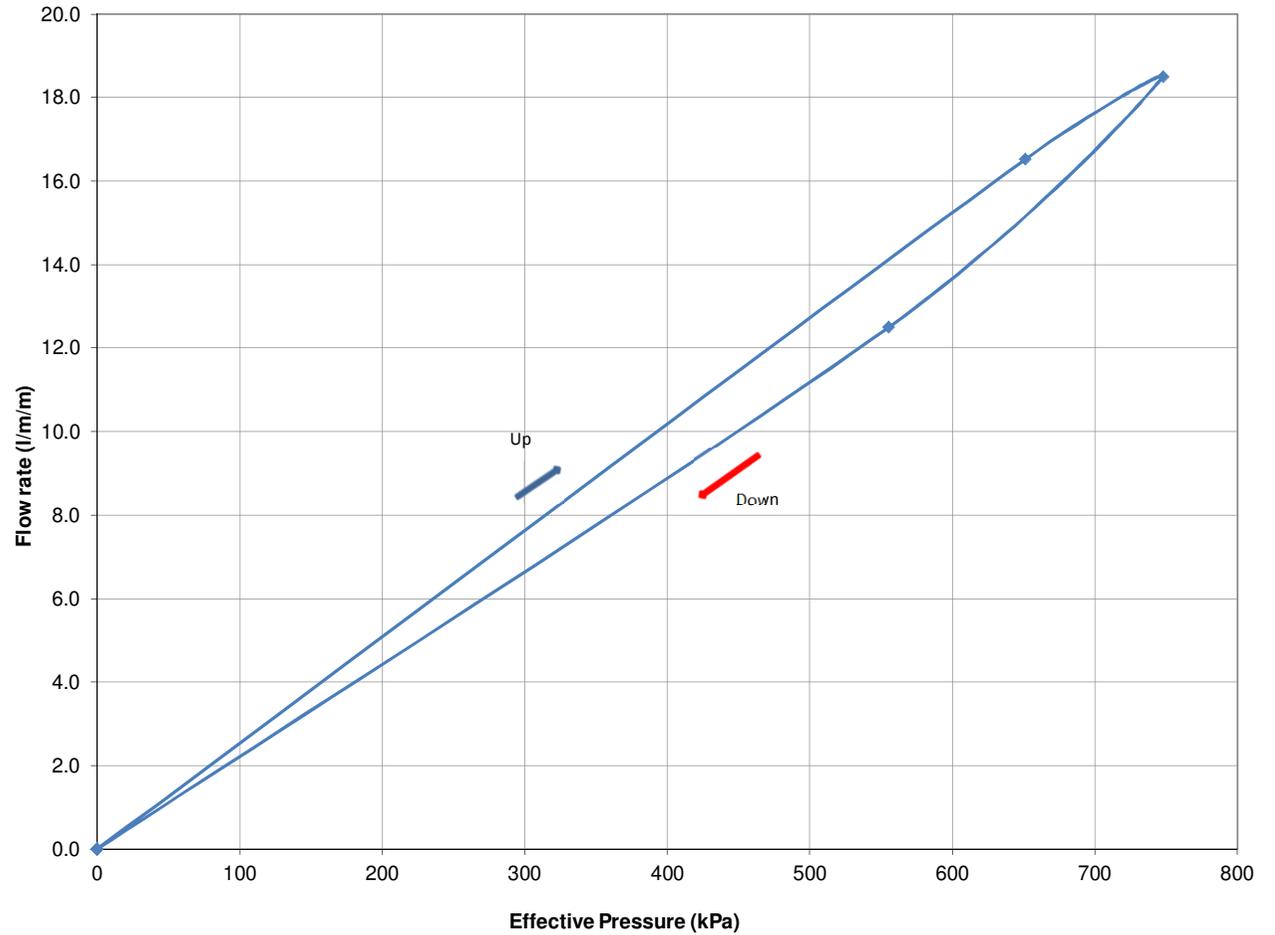
Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
16.53	651.29	25.37	3.68E-06
18.50	747.89	24.74	3.59E-06
12.50	555.20	22.51	3.27E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

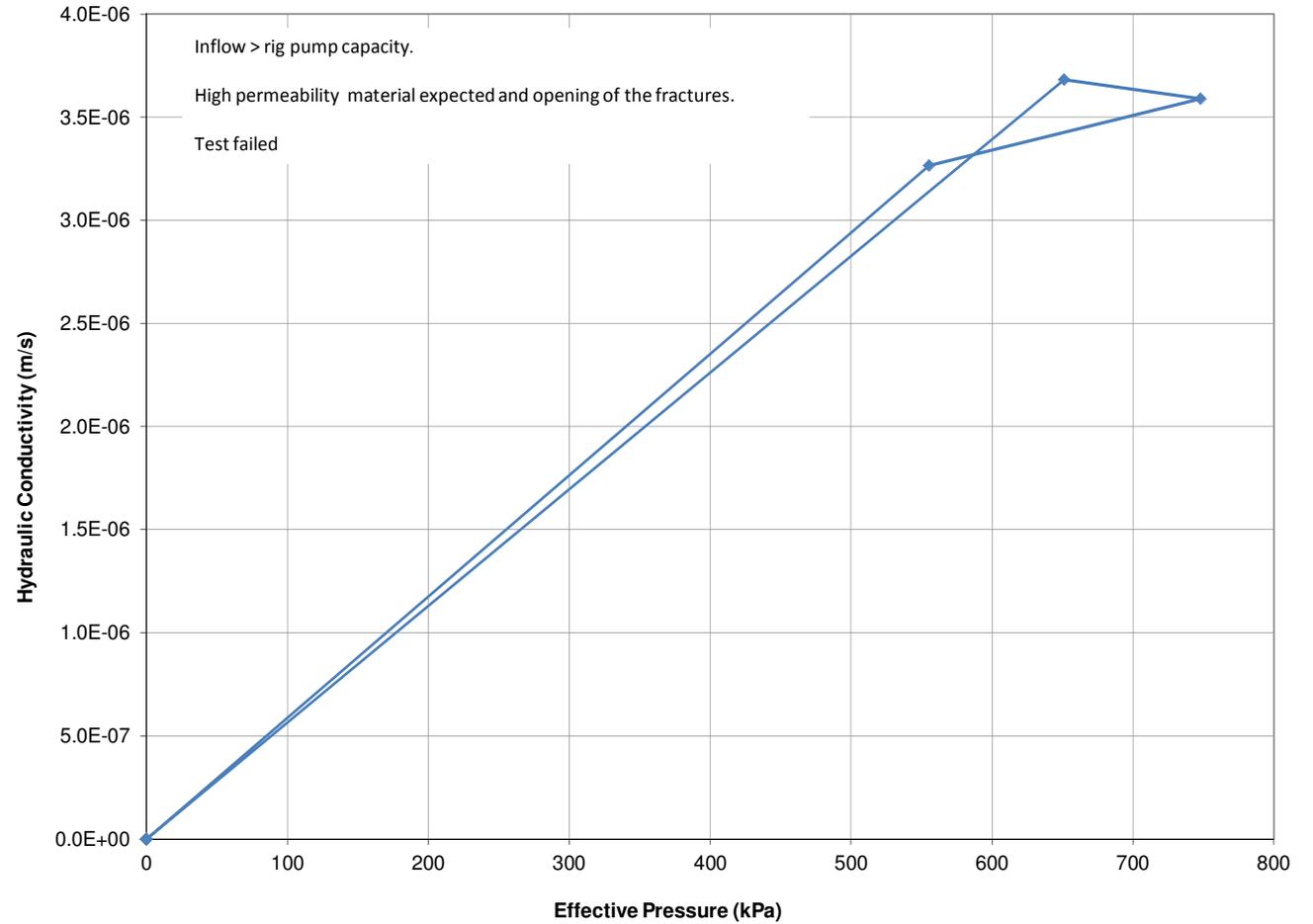


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
16.53	651.29	25.37	3.68E-06
18.50	747.89	24.74	3.59E-06
12.50	555.20	22.51	3.27E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

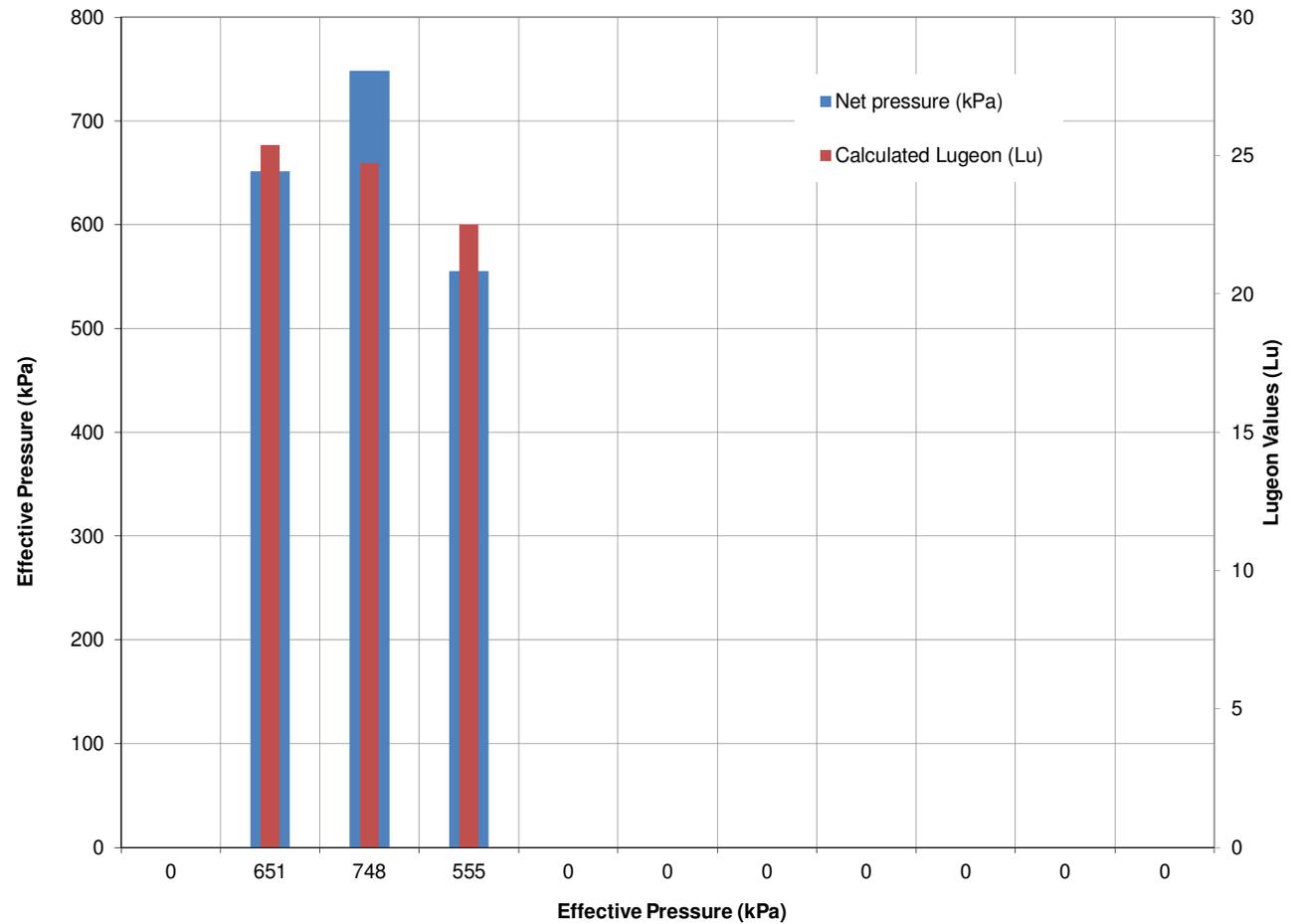


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
16.53	651.29	25.37	3.68E-06
18.50	747.89	24.74	3.59E-06
12.50	555.20	22.51	3.27E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 09/07/2013
Author : Alexis Valenza

Date	<input type="text" value="09/07/2013"/>	Depth to water level :	<input type="text" value="28.5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="93.5"/> m
Hole No.	<input type="text" value="1306"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="4"/>	Vertical depth :	<input type="text" value="93.5"/> m
Test interval	<input type="text" value="92"/> to <input type="text" value="95"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="34.99"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="76.6"/> m
Packer inflation pressure :	<input type="text" value="2350"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	9	0.5500	16.08	651.29	24.7	1.98E-06	3.58E-06	
B	1	0.0420	10.50	459.94	22.8	1.83E-06	3.31E-06	
C								
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	22.8	1.8E-06	3.3E-06
					Average	23.5	1.9E-06	3.4E-06
					Maximum	24.7	2.0E-06	3.6E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

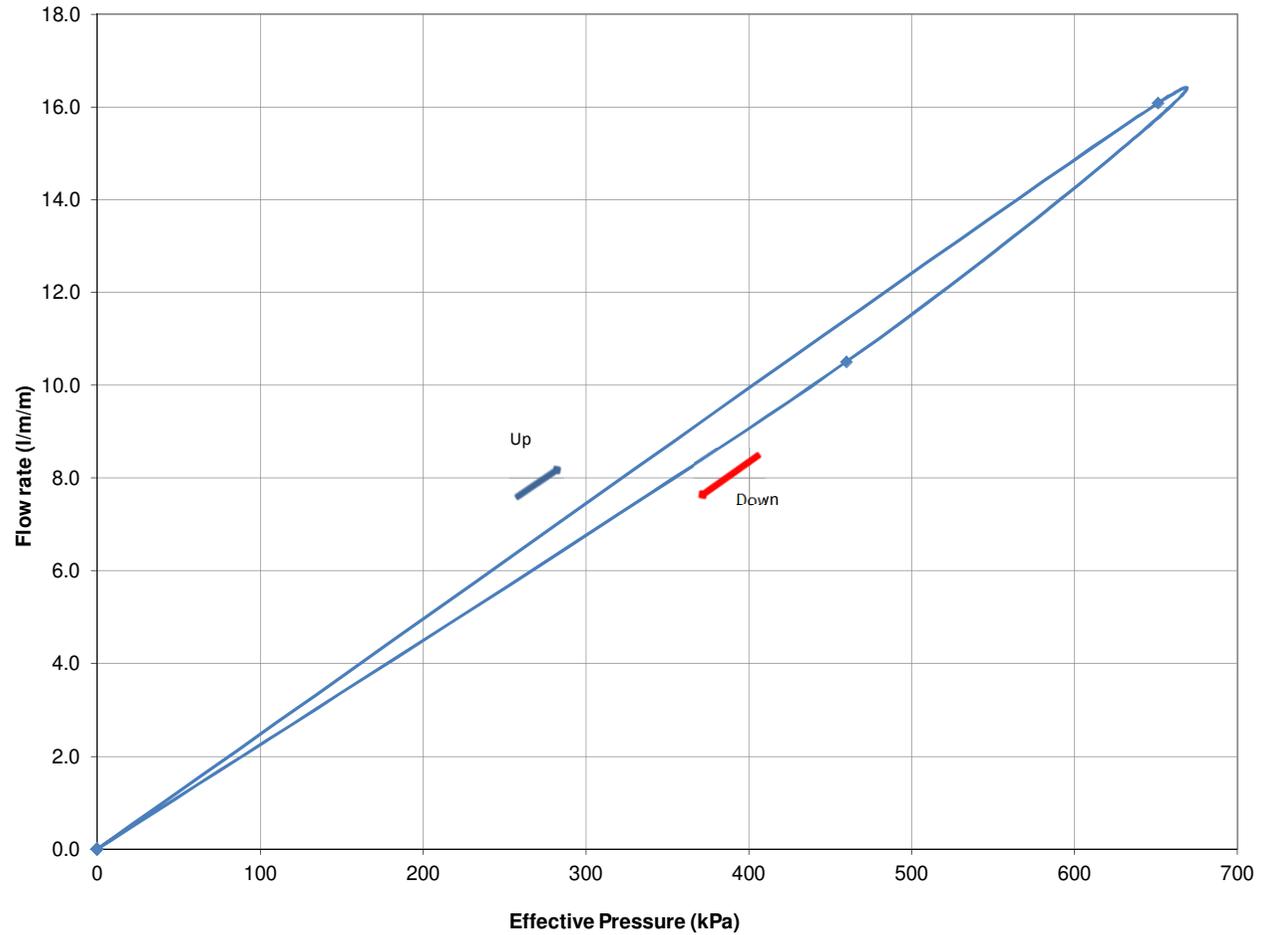
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times LN \text{ ((2m} \times \text{Test length (m)) / Hole Diameter (m))} / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
16.08	651.29	24.69	3.58E-06
10.50	459.94	22.83	3.31E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

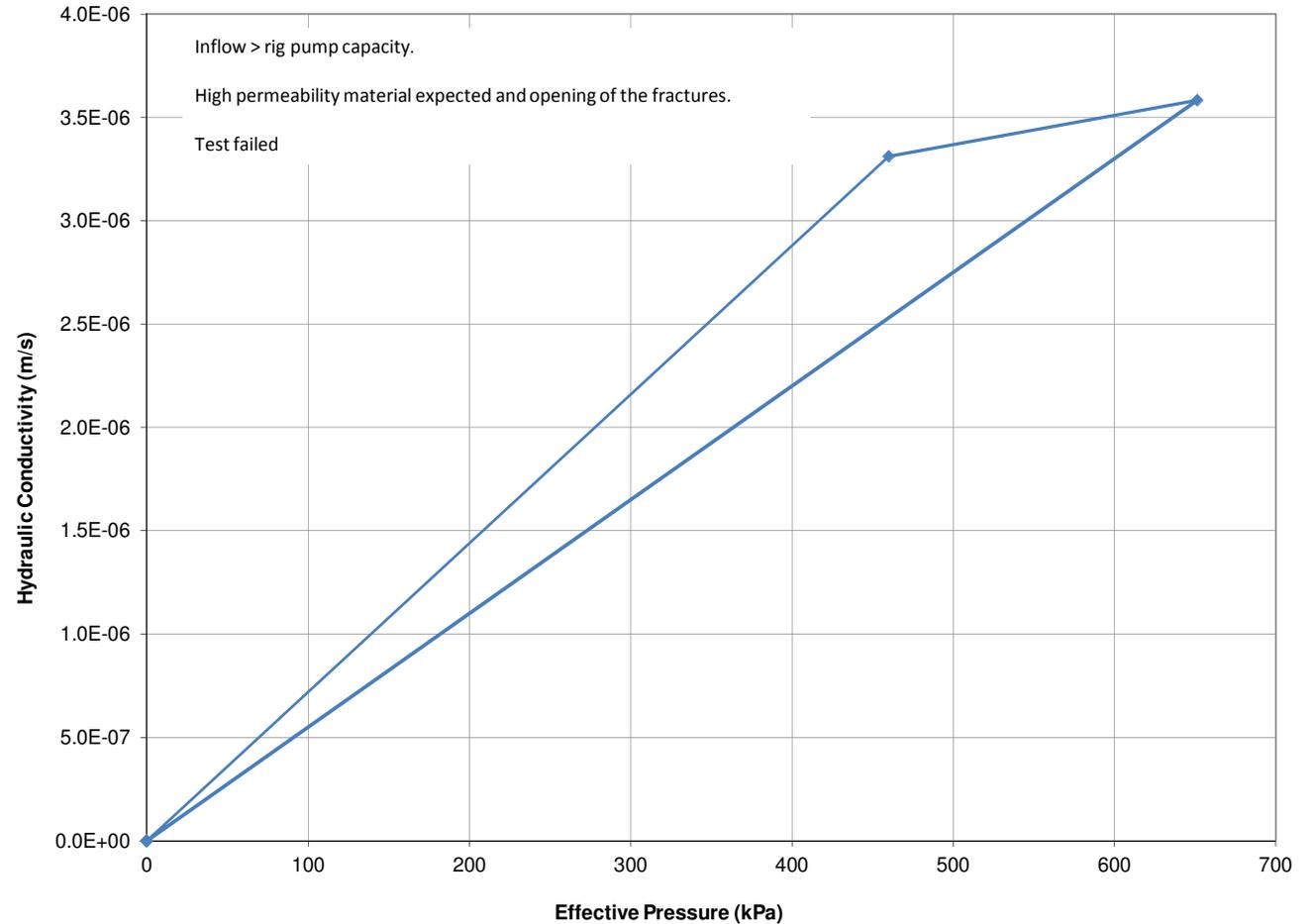


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
16.08	651.29	24.69	3.58E-06
10.50	459.94	22.83	3.31E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

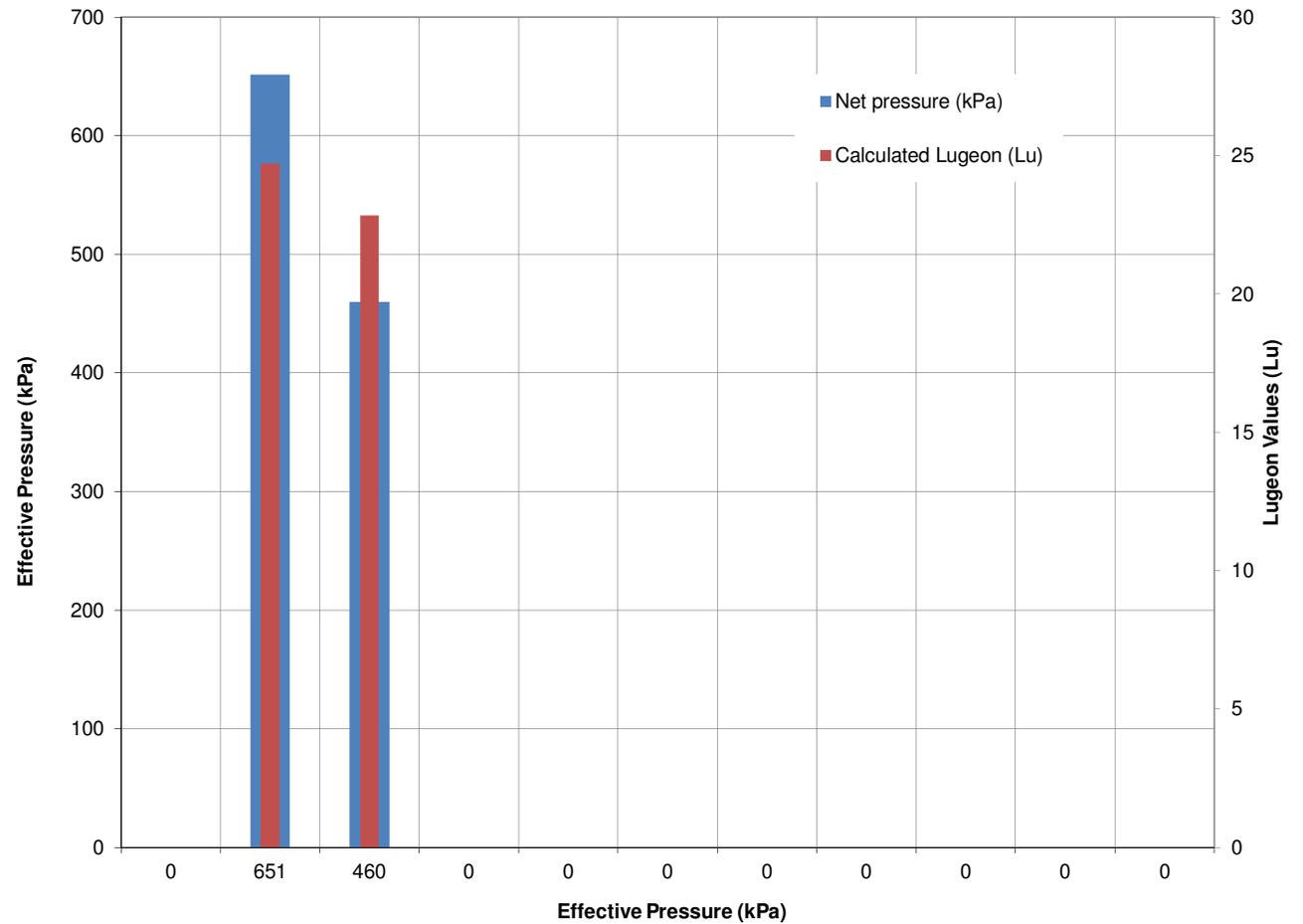


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
16.08	651.29	24.69	3.58E-06
10.50	459.94	22.83	3.31E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 09/07/2013
Author : Alexis Valenza

Date	<input type="text" value="09/07/2013"/>	Depth to water level :	<input type="text" value="28.5"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="57.5"/> m
Hole No.	<input type="text" value="1306"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="5"/>	Vertical depth :	<input type="text" value="57.5"/> m
Test interval	<input type="text" value="56"/> to <input type="text" value="59"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="34.99"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="47.1"/> m
Packer inflation pressure :	<input type="text" value="1990"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	1	0.0770	19.25	574.37	33.5	2.68E-06	4.86E-06
B							
C							
D							
E							
Dr							
Cr							
Br							
Ar							
				Minimum	33.5	2.7E-06	4.9E-06
				Average	33.5	2.7E-06	4.9E-06
				Maximum	33.5	2.7E-06	4.9E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

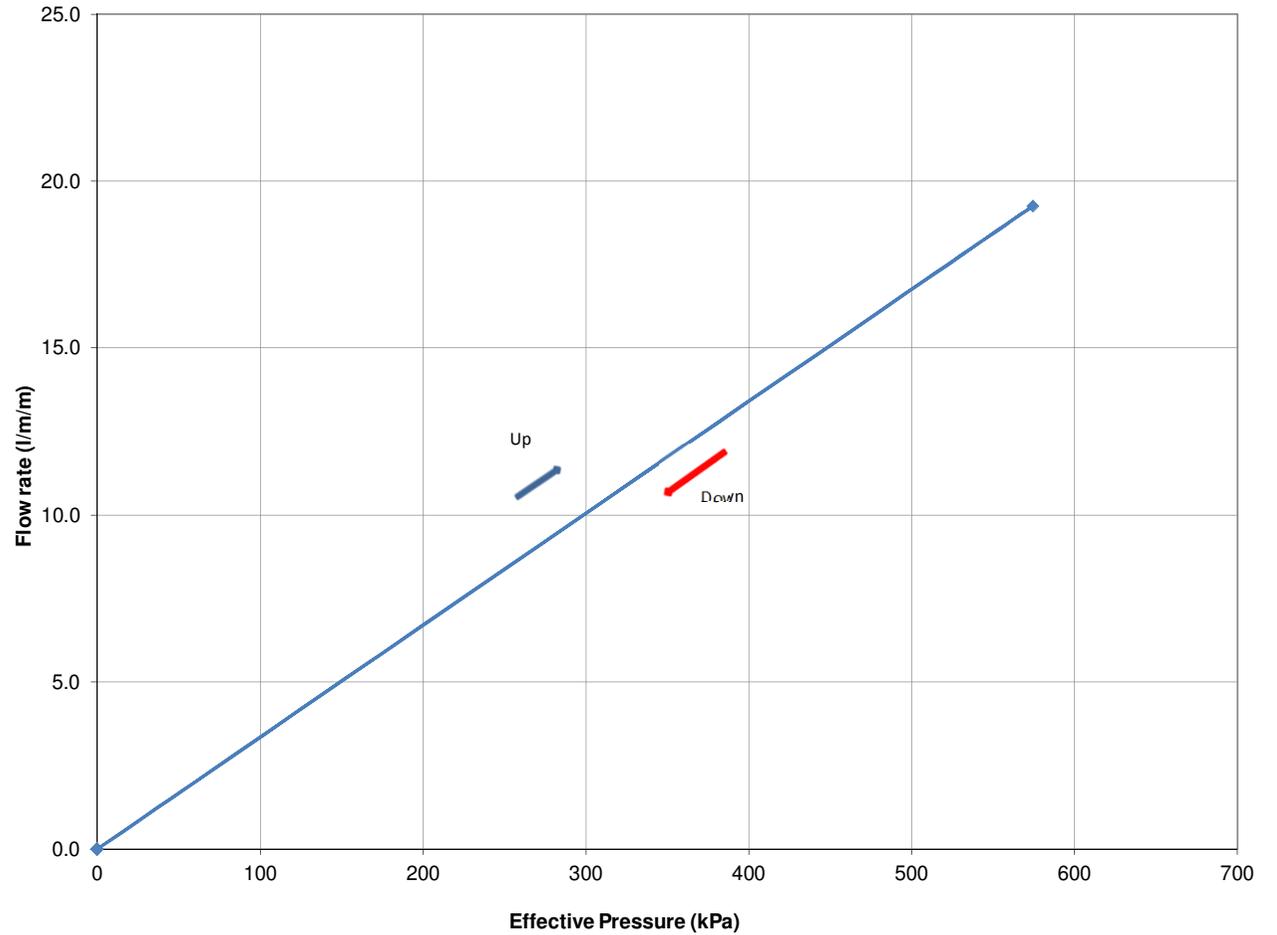
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
19.25	574.37	33.52	4.86E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers Test Results

Site Location:

Hole No.

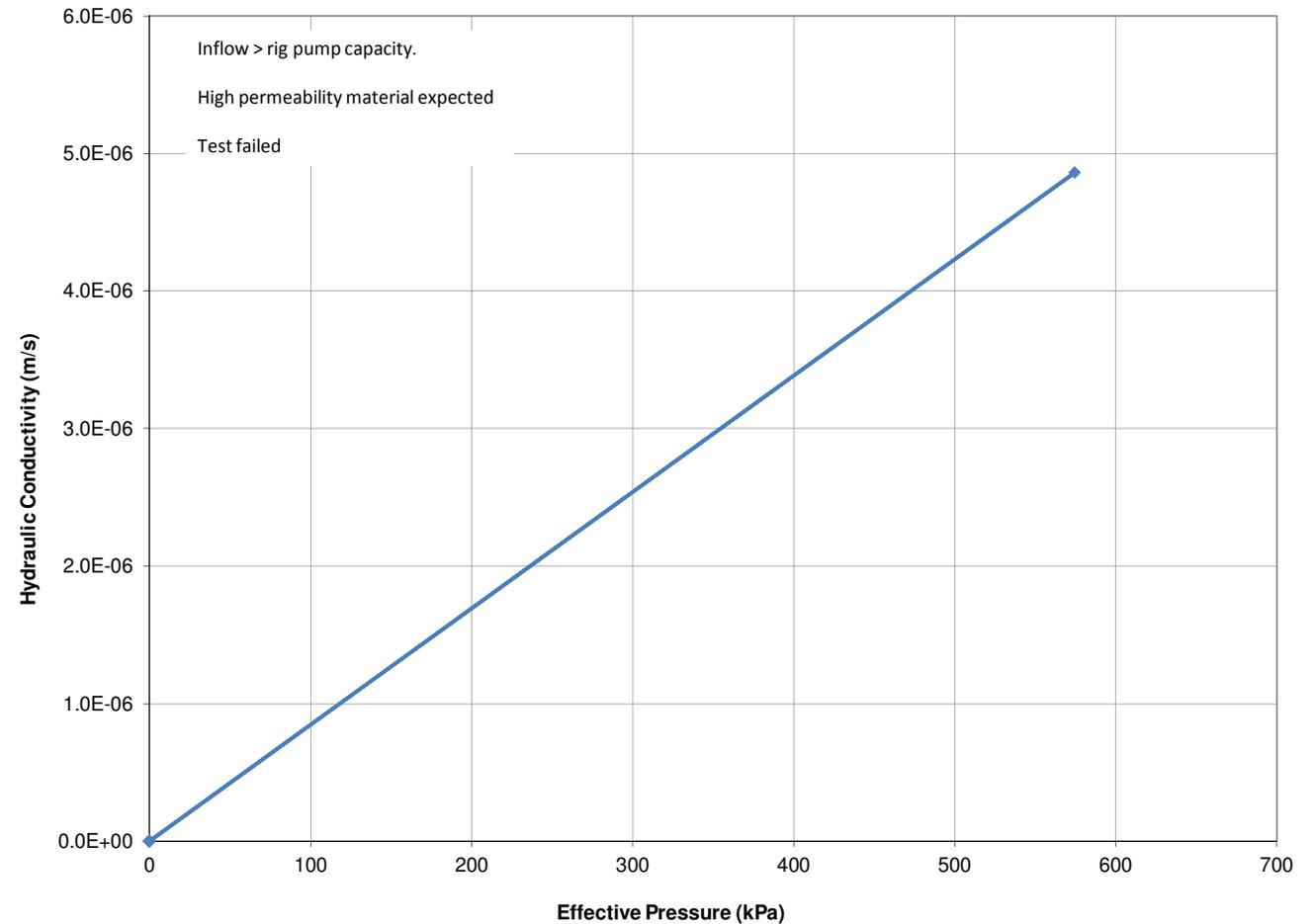
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
19.25	574.37	33.52	4.86E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

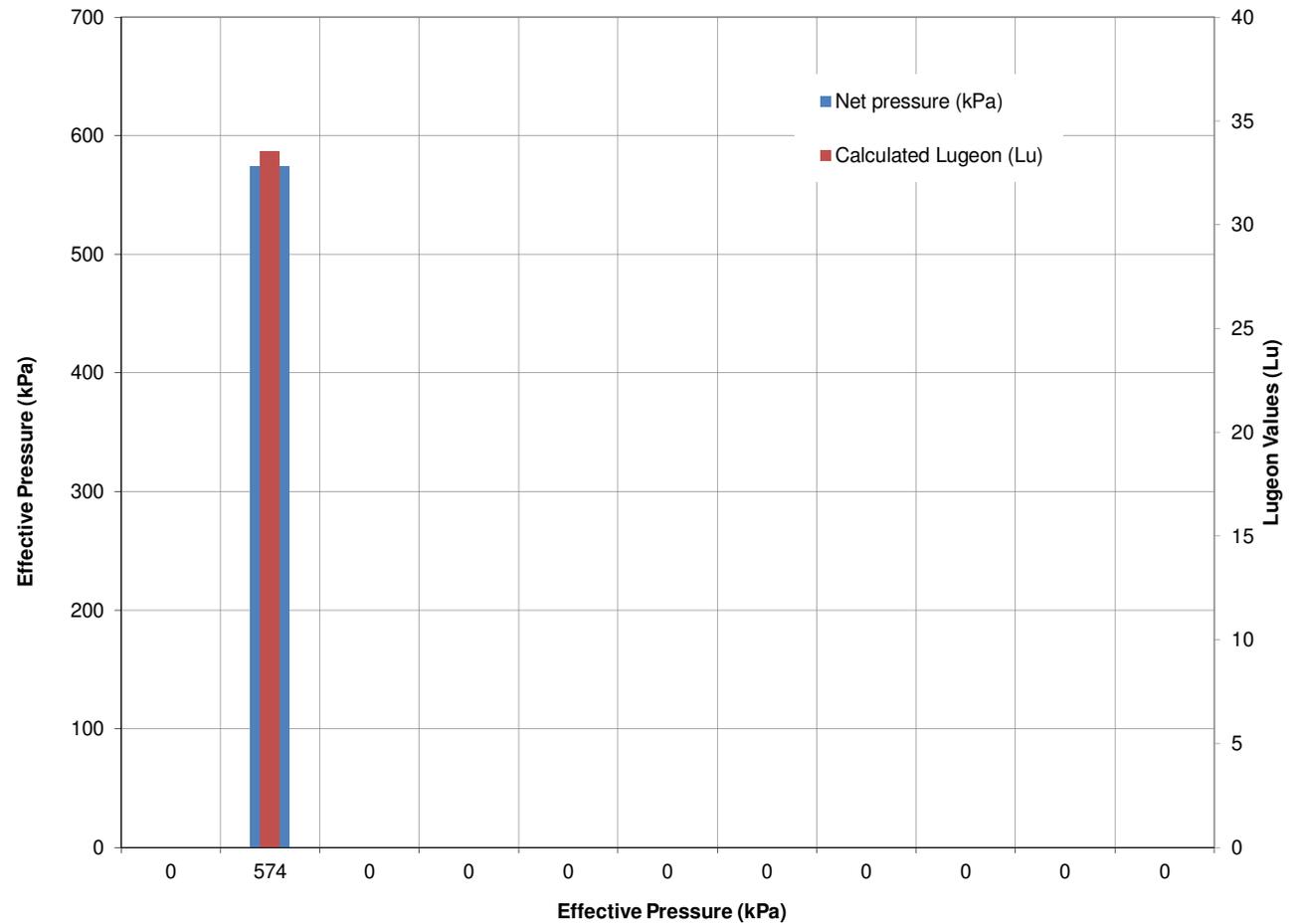


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
19.25	574.37	33.52	4.86E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



LPDD1310
Packer Test Interval
92m to 96m
17/07/2013



LPDD1310
Packer Test Interval
132m to 136m
17/07/2013



LPDD1310

Packer Test Interval

173m to 177m
17/07/2013



LPDD1310
Packer Test Interval
274m to 278m
16/07/2013



Packers test pressure calculation sheet

Legend

Result

Date : 16/07/2013
Author : Alexis Valenza

Date	<input type="text" value="16/07/2013"/>	Depth to water level :	<input type="text" value="20"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="275.5"/> m
Hole No.	<input type="text" value="1310"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="1"/>	Vertical depth :	<input type="text" value="275.5"/> m
Test interval	<input type="text" value="274"/> to <input type="text" value="277"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="16"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="264.8"/> m
Packer inflation pressure :	<input type="text" value="4255"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.4800	12.00	567.93	21.1	1.69E-06	3.06E-06	
B	10	0.6300	15.75	761.50	20.7	1.65E-06	3.00E-06	
C								
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	20.7	1.7E-06	3.0E-06
					Average	20.8	1.7E-06	3.0E-06
					Maximum	21.1	1.7E-06	3.1E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:

Hole No.

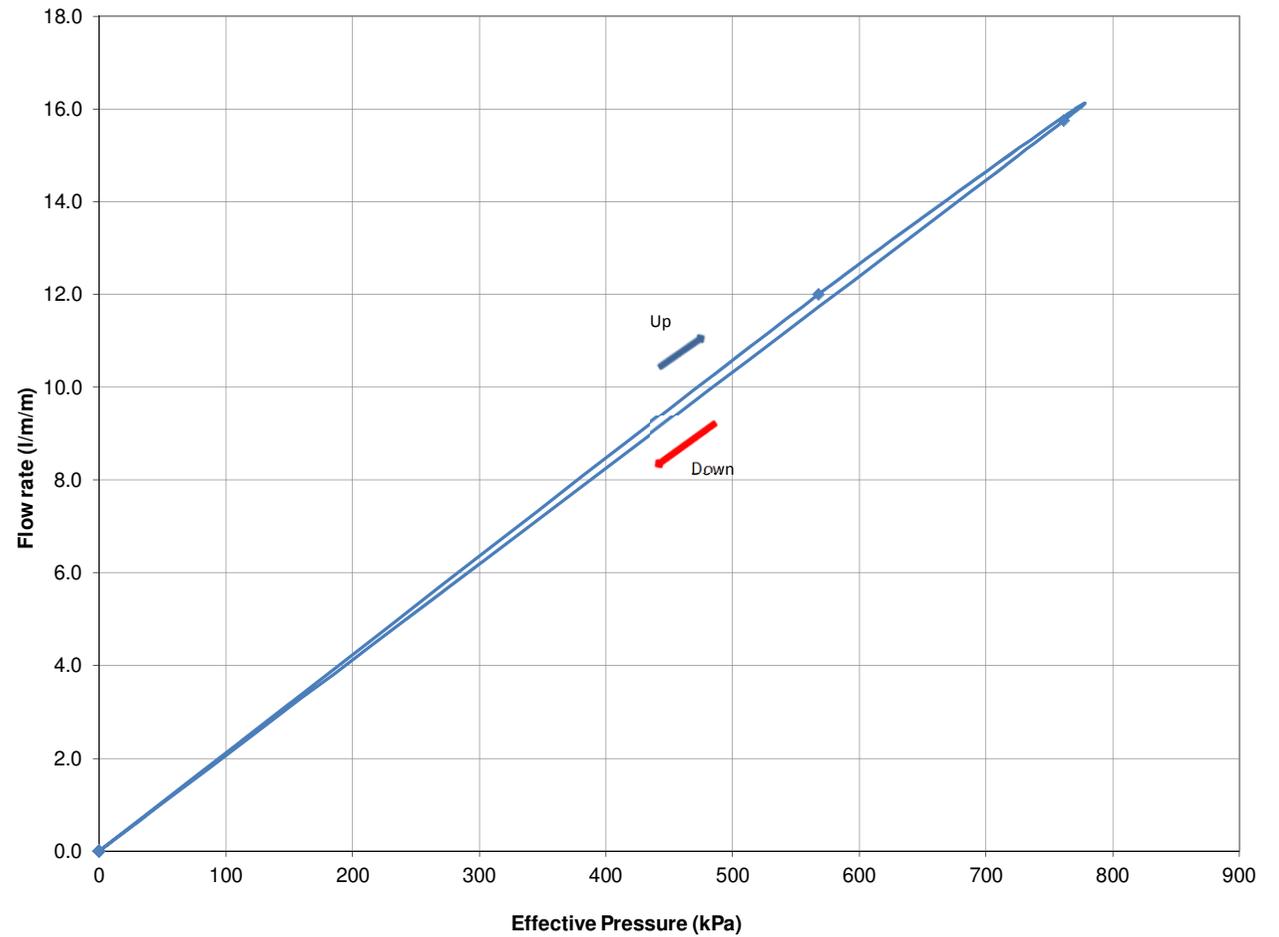
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
12.00	567.93	21.13	3.06E-06
15.75	761.50	20.68	3.00E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

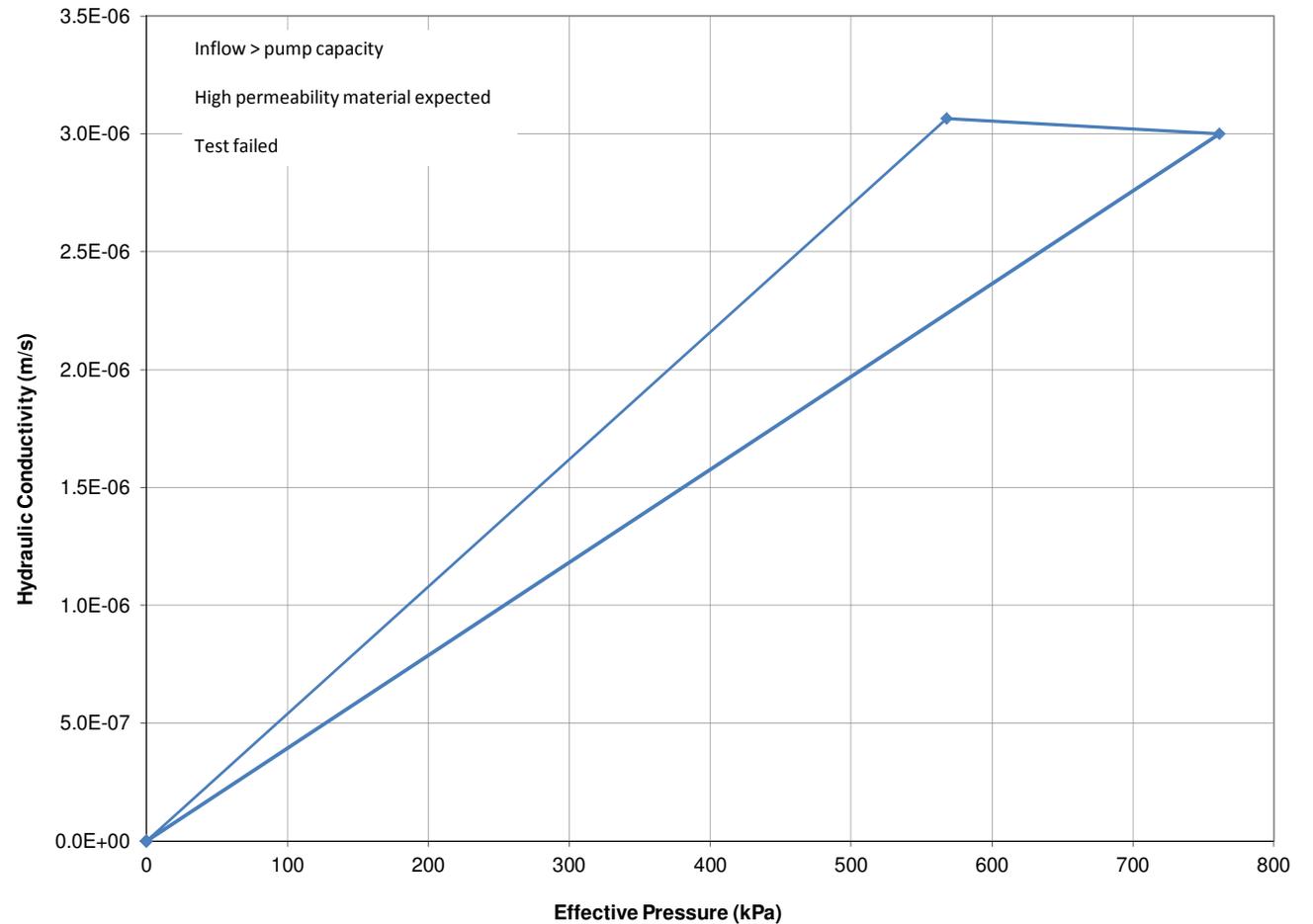


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
12.00	567.93	21.13	3.06E-06
15.75	761.50	20.68	3.00E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

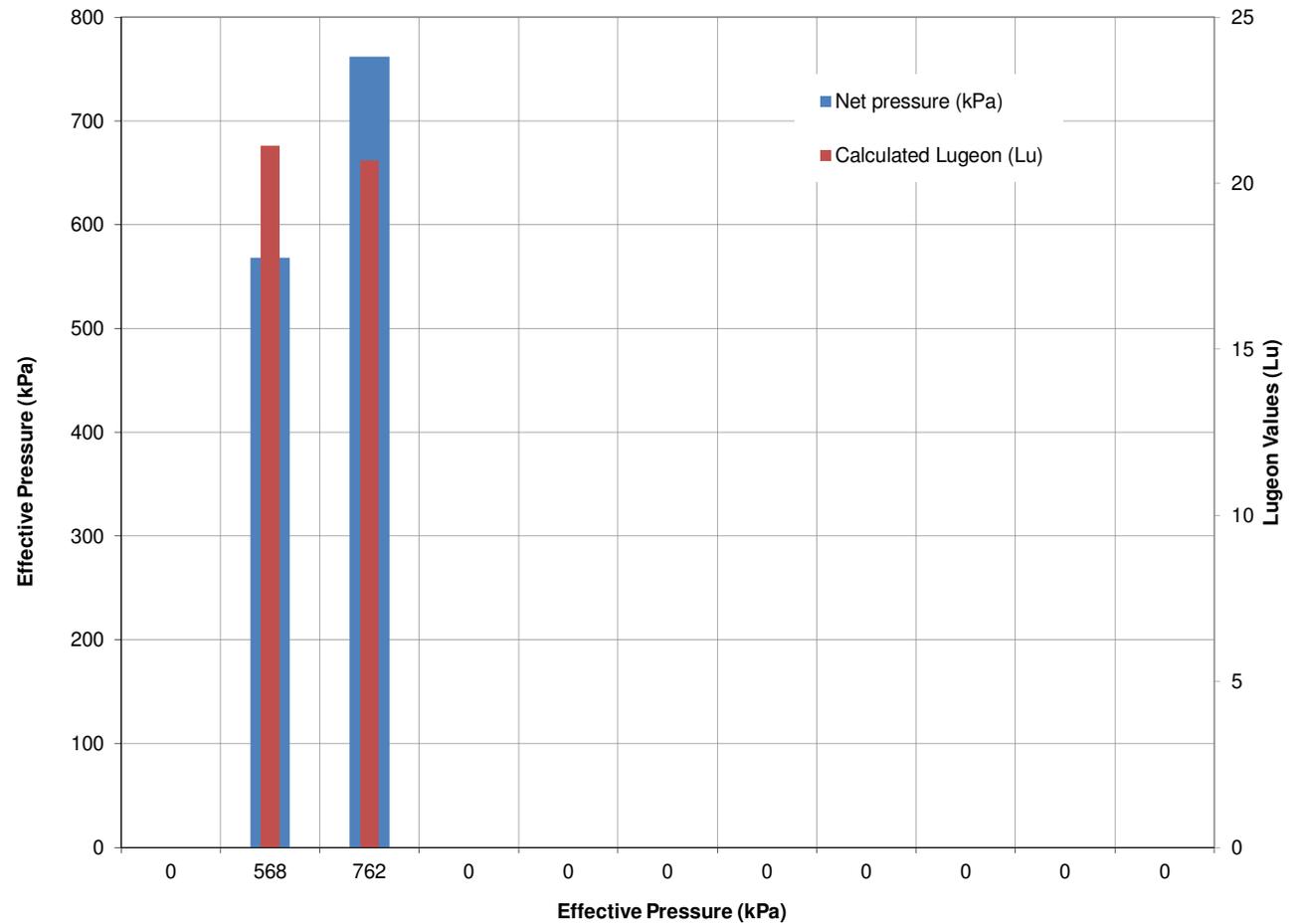


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
12.00	567.93	21.13	3.06E-06
15.75	761.50	20.68	3.00E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 16/07/2013
Author : Alexis Valenza

Date	<input type="text" value="16/07/2013"/>	Depth to water level :	<input type="text" value="20"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="202.5"/> m
Hole No.	<input type="text" value="1310"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="2"/>	Vertical depth :	<input type="text" value="202.5"/> m
Test interval	<input type="text" value="201"/> to <input type="text" value="204"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="16"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="194.7"/> m
Packer inflation pressure :	<input type="text" value="3525"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.6310	15.78	567.93	27.8	2.22E-06	4.03E-06	
B	10	0.7040	17.60	703.28	25.0	2.00E-06	3.63E-06	
C	10	0.5890	14.73	471.84	31.2	2.50E-06	4.53E-06	
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	25.0	2.0E-06	3.6E-06
					Average	27.3	2.2E-06	4.1E-06
					Maximum	31.2	2.5E-06	4.5E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

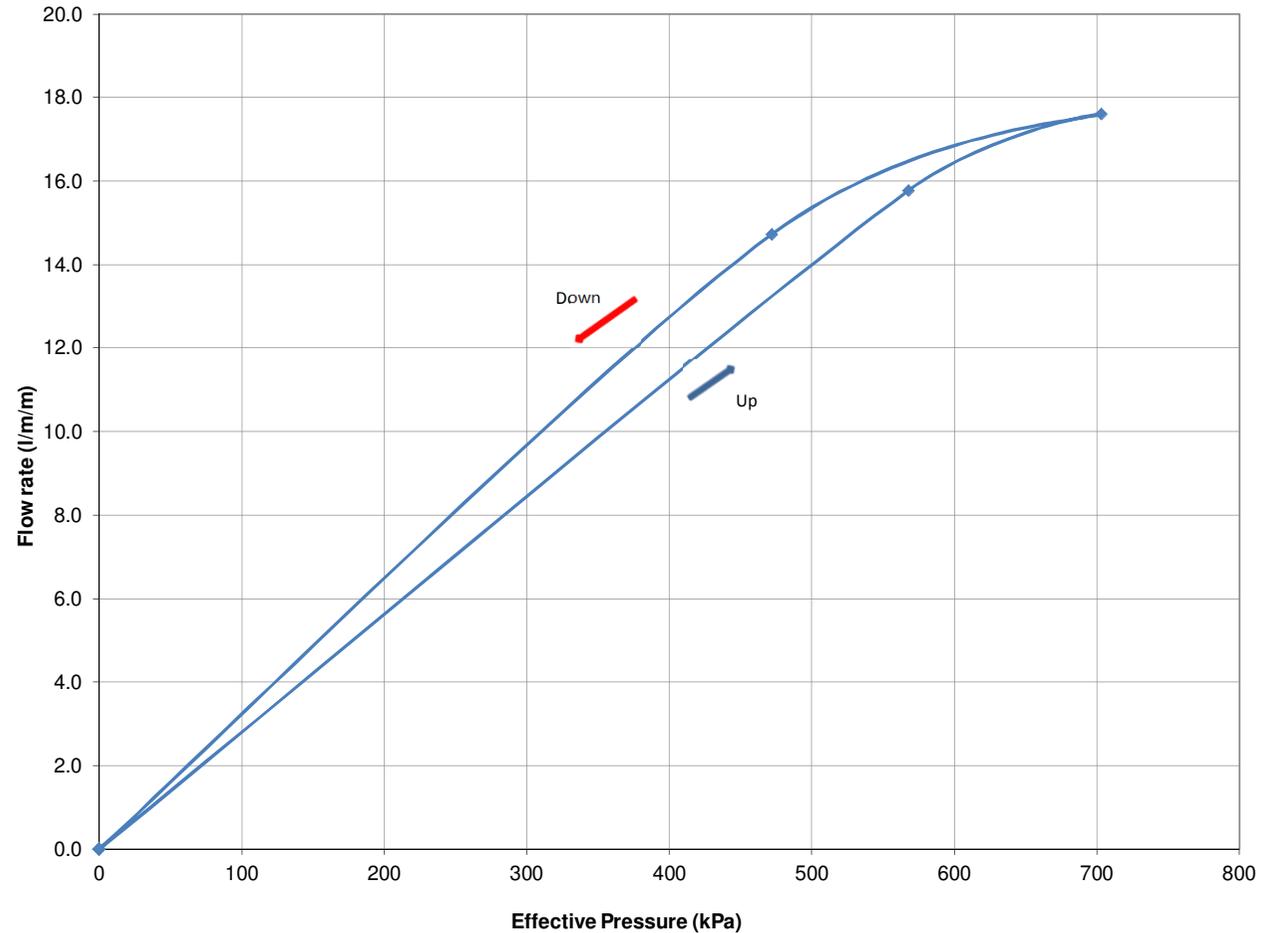
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
15.78	567.93	27.78	4.03E-06
17.60	703.28	25.03	3.63E-06
14.73	471.84	31.21	4.53E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

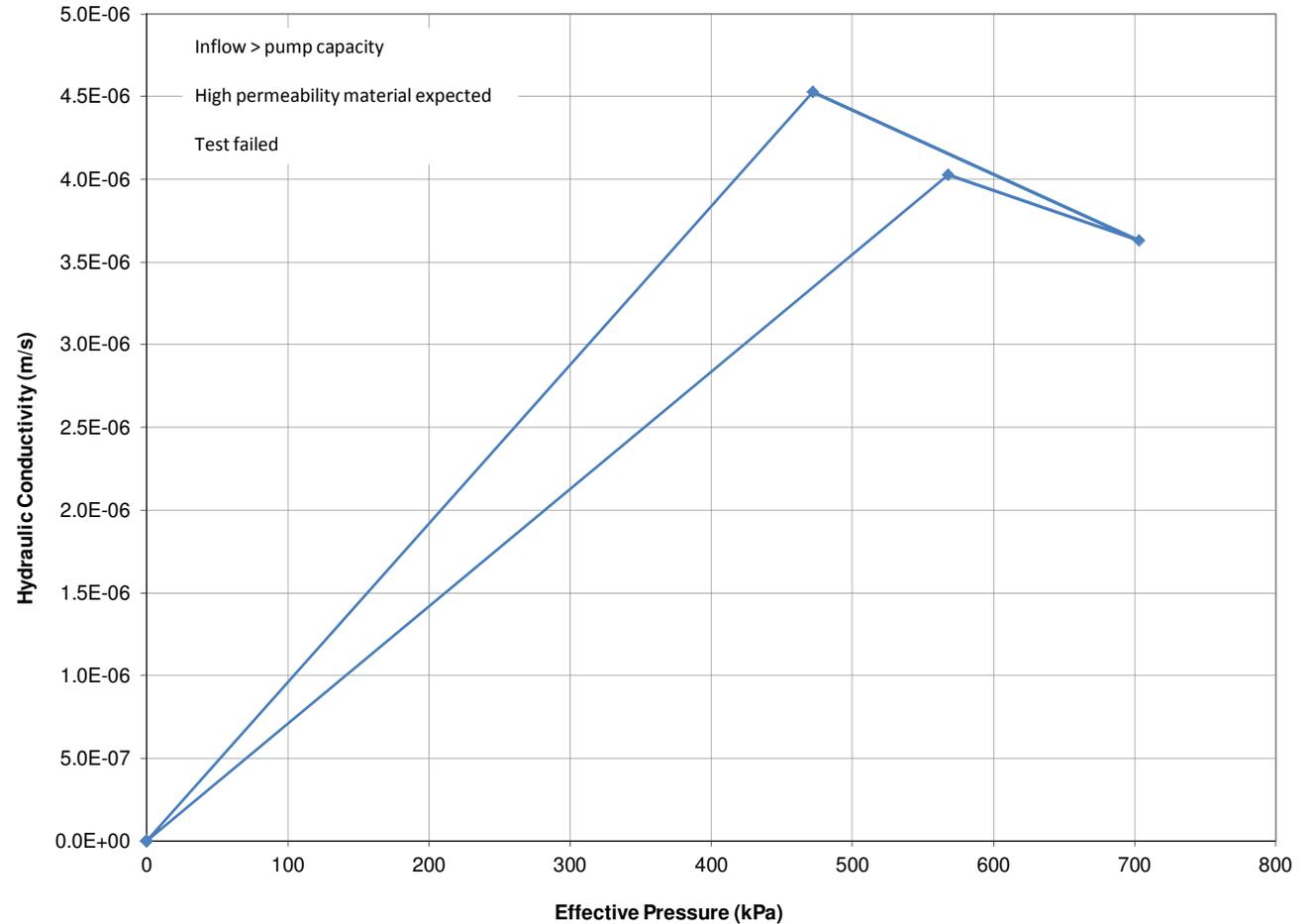


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
15.78	567.93	27.78	4.03E-06
17.60	703.28	25.03	3.63E-06
14.73	471.84	31.21	4.53E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

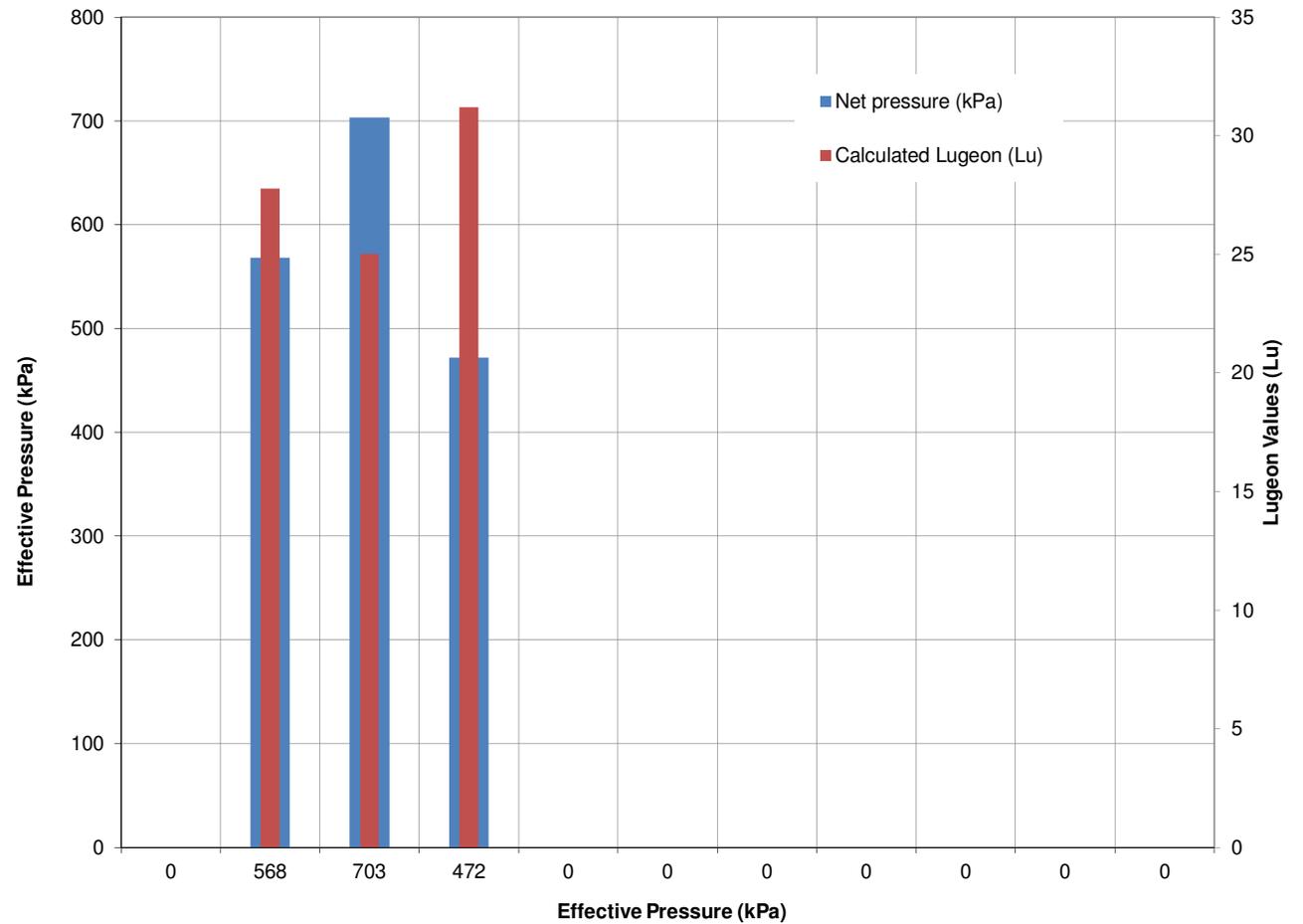


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
15.78	567.93	27.78	4.03E-06
17.60	703.28	25.03	3.63E-06
14.73	471.84	31.21	4.53E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 17/07/2013
Author : Alexis Valenza

Date	<input type="text" value="17/07/2013"/>	Depth to water level :	<input type="text" value="20"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="174.5"/> m
Hole No.	<input type="text" value="1310"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="3"/>	Vertical depth :	<input type="text" value="174.5"/> m
Test interval	<input type="text" value="173"/> to <input type="text" value="176"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="16"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="167.7"/> m
Packer inflation pressure :	<input type="text" value="3245"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.5410	13.53	567.93	23.8	1.91E-06	3.45E-06
B	10	0.6640	16.60	761.50	21.8	1.74E-06	3.16E-06
C	10	0.7520	18.80	956.21	19.7	1.57E-06	2.85E-06
D	10	0.8440	21.10	1151.61	18.3	1.47E-06	2.66E-06
E	10	0.8970	22.43	1249.51	17.9	1.44E-06	2.60E-06
Dr	10	0.7090	17.73	858.75	20.6	1.65E-06	2.99E-06
Cr	10	0.6080	15.20	664.53	22.9	1.83E-06	3.32E-06
Br	10	0.5050	12.63	471.84	26.8	2.14E-06	3.88E-06
Ar							
Minimum					17.9	1.4E-06	2.6E-06
Average					21.1	1.7E-06	3.1E-06
Maximum					26.8	2.1E-06	3.9E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

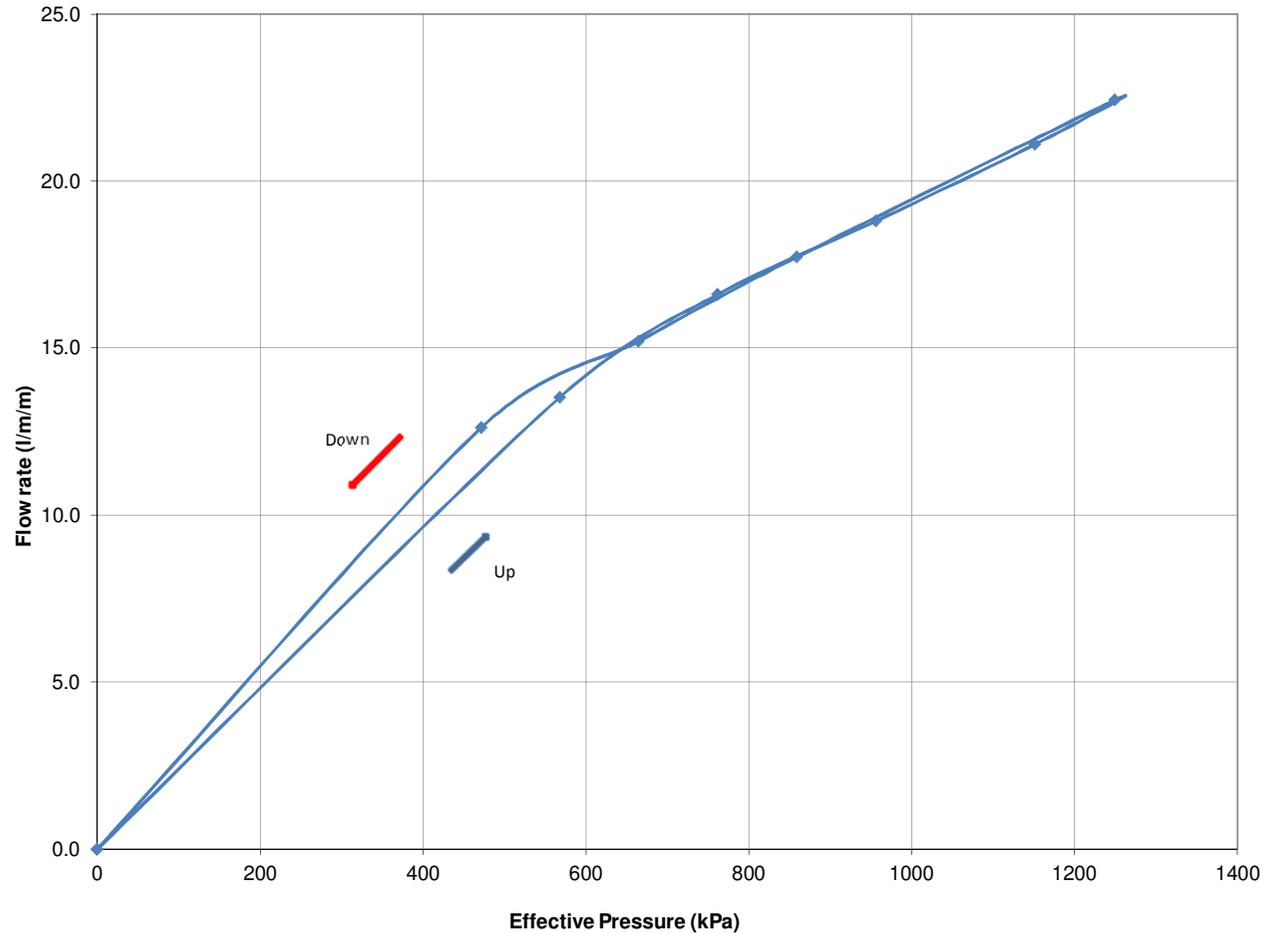
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.53	567.93	23.81	3.45E-06
16.60	761.50	21.80	3.16E-06
18.80	956.21	19.66	2.85E-06
21.10	1151.61	18.32	2.66E-06
22.43	1249.51	17.95	2.60E-06
17.73	858.75	20.64	2.99E-06
15.20	664.53	22.87	3.32E-06
12.63	471.84	26.76	3.88E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

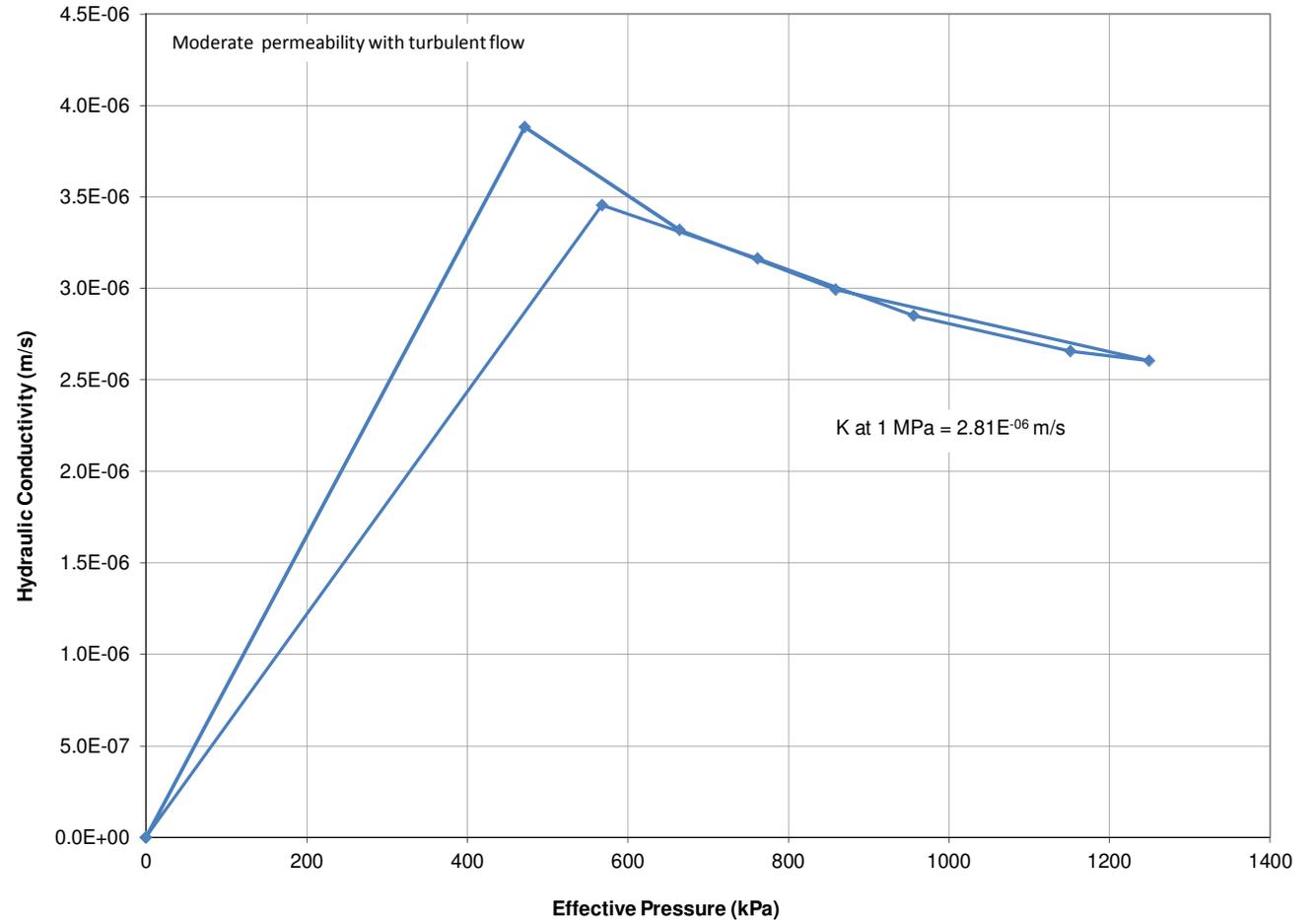


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.53	567.93	23.81	3.45E-06
16.60	761.50	21.80	3.16E-06
18.80	956.21	19.66	2.85E-06
21.10	1151.61	18.32	2.66E-06
22.43	1249.51	17.95	2.60E-06
17.73	858.75	20.64	2.99E-06
15.20	664.53	22.87	3.32E-06
12.63	471.84	26.76	3.88E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

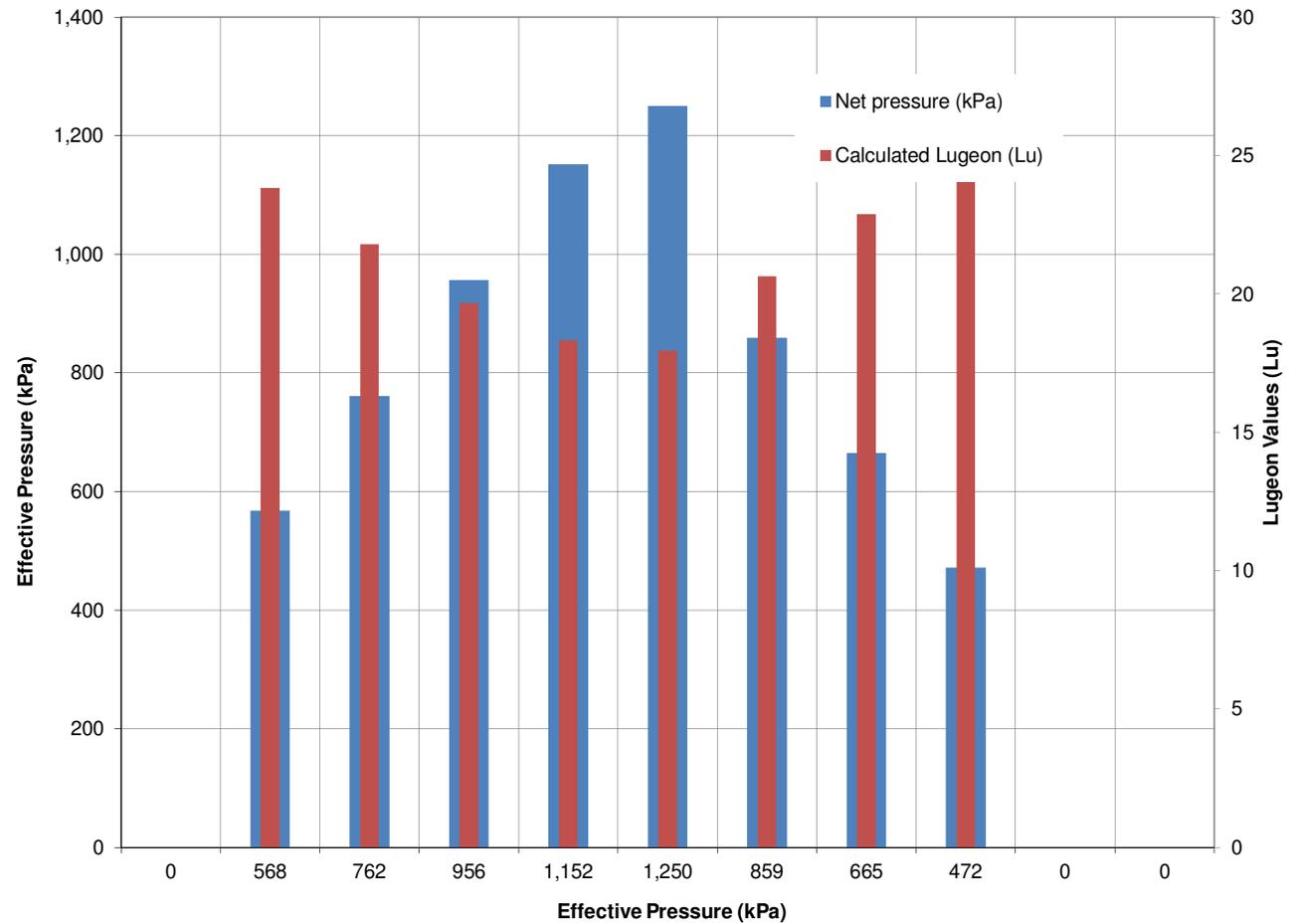


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.53	567.93	23.81	3.45E-06
16.60	761.50	21.80	3.16E-06
18.80	956.21	19.66	2.85E-06
21.10	1151.61	18.32	2.66E-06
22.43	1249.51	17.95	2.60E-06
17.73	858.75	20.64	2.99E-06
15.20	664.53	22.87	3.32E-06
12.63	471.84	26.76	3.88E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 17/07/2013
Author : Alexis Valenza

Date	<input type="text" value="17/07/2013"/>	Depth to water level :	<input type="text" value="20"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="133.5"/> m
Hole No.	<input type="text" value="1310"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="4"/>	Vertical depth :	<input type="text" value="133.5"/> m
Test interval	<input type="text" value="132"/> to <input type="text" value="135"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="16"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="128.3"/> m
Packer inflation pressure :	<input type="text" value="2835"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.2650	6.63	567.93	11.7	9.33E-07	1.69E-06	
B	10	0.4310	10.78	761.50	14.1	1.13E-06	2.05E-06	
C	10	0.9020	22.55	956.21	23.6	1.89E-06	3.42E-06	
D	8	0.6900	20.41	858.75	23.8	1.90E-06	3.45E-06	
E	10	0.5530	13.83	471.84	29.3	2.34E-06	4.25E-06	
Dr								
Cr								
Br								
Ar								
					Minimum	11.7	9.3E-07	1.7E-06
					Average	19.0	1.5E-06	3.0E-06
					Maximum	29.3	2.3E-06	4.2E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

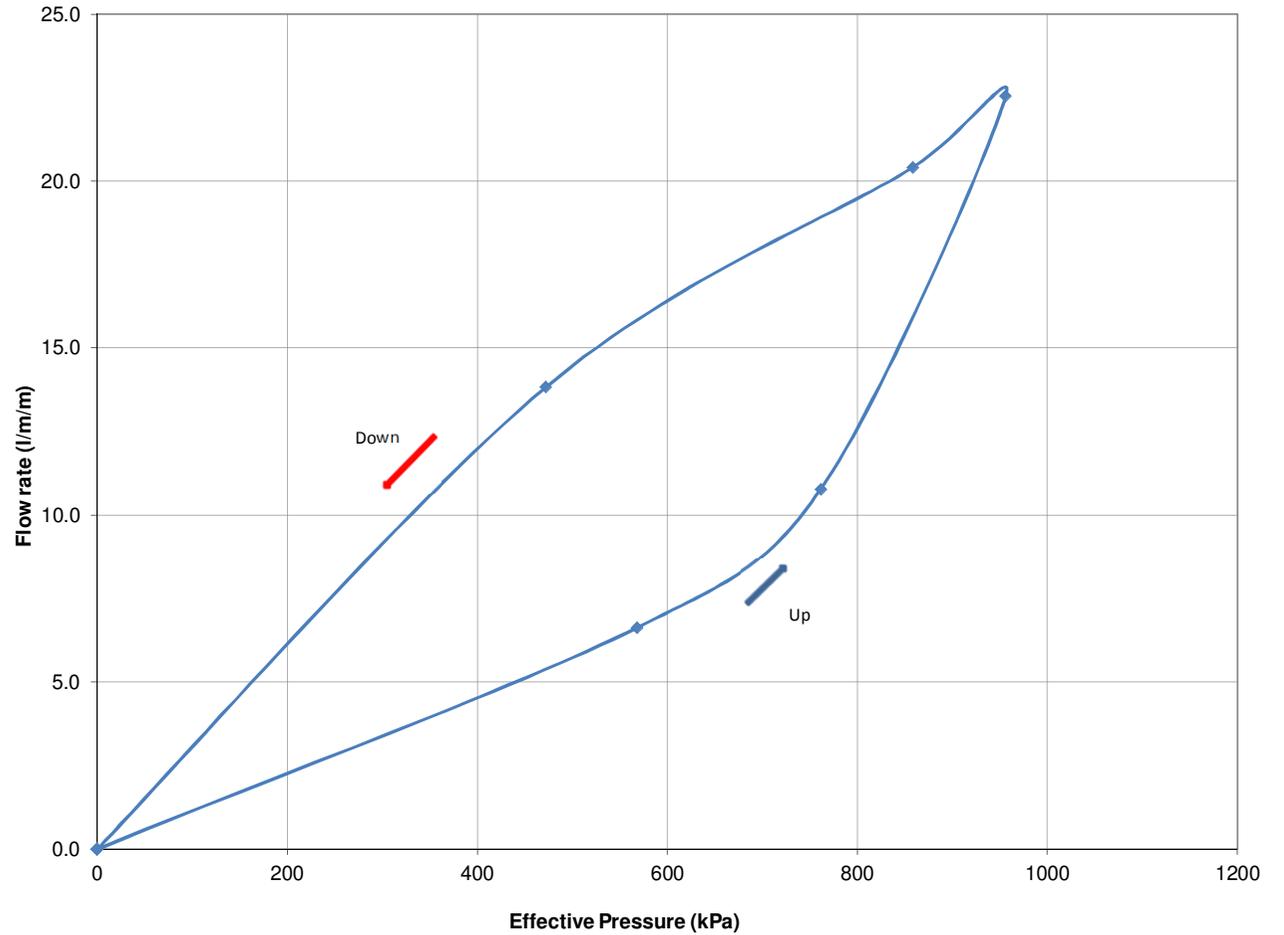
Hydraulic Conductivity
K (m/s) = Flow rate (m³/s) x LN ((2m x Test length (m)) / Hole Diameter (m)) / 2 π x Test length (m) x Net head above water table at centre of test section (m)

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
6.63	567.93	11.67	1.69E-06
10.78	761.50	14.15	2.05E-06
22.55	956.21	23.58	3.42E-06
20.41	858.75	23.77	3.45E-06
13.83	471.84	29.30	4.25E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

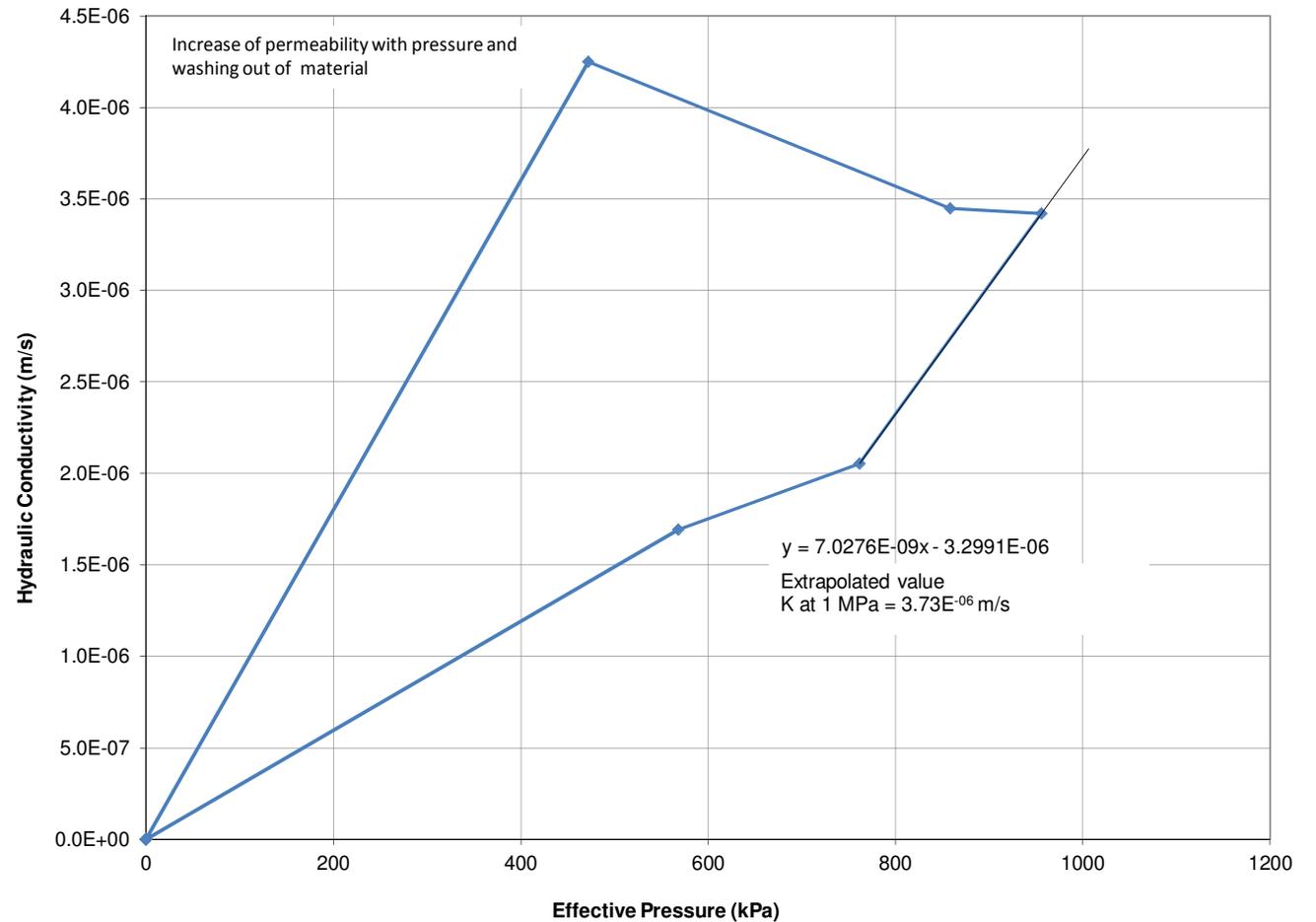


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
6.63	567.93	11.67	1.69E-06
10.78	761.50	14.15	2.05E-06
22.55	956.21	23.58	3.42E-06
20.41	858.75	23.77	3.45E-06
13.83	471.84	29.30	4.25E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

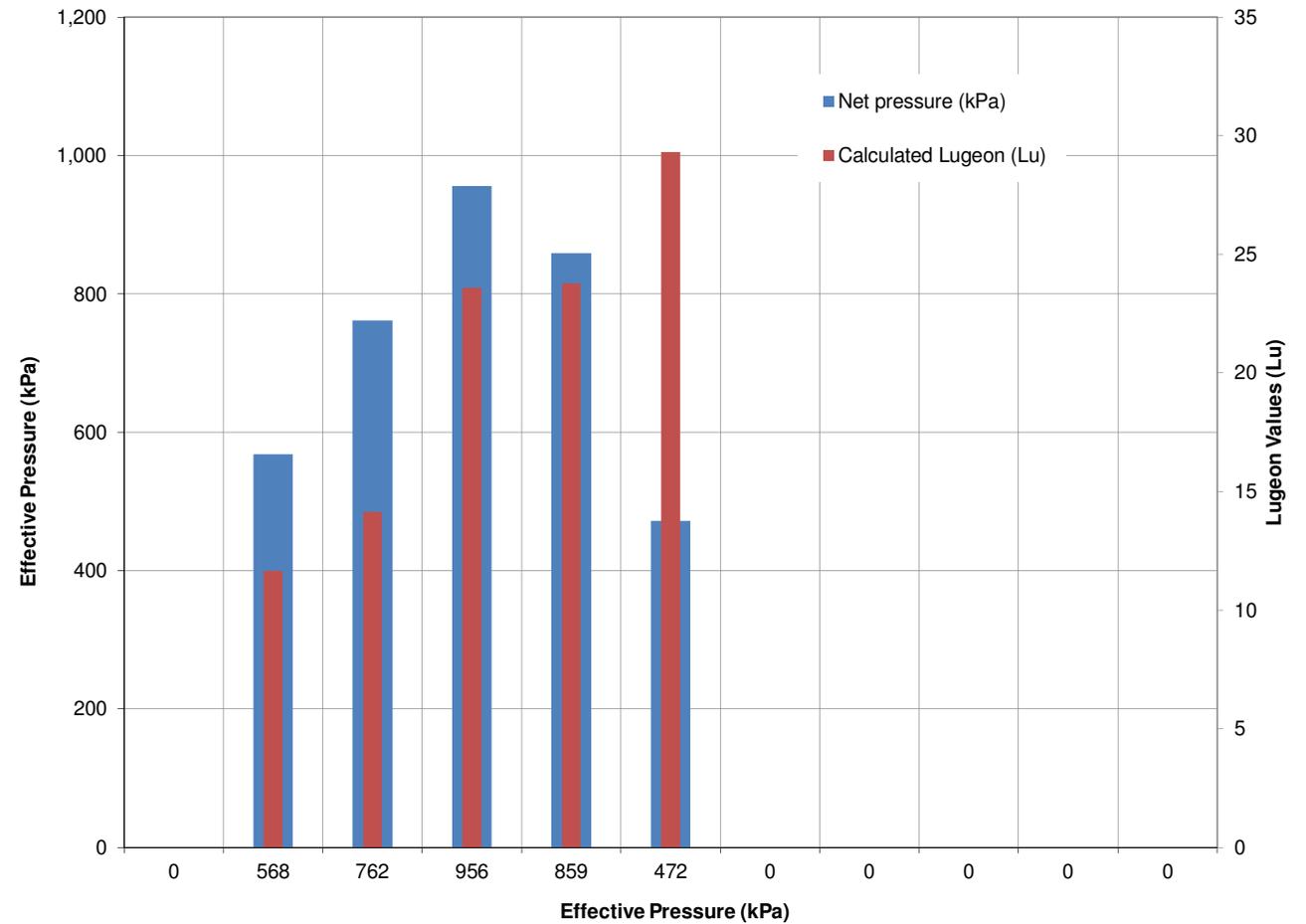


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
6.63	567.93	11.67	1.69E-06
10.78	761.50	14.15	2.05E-06
22.55	956.21	23.58	3.42E-06
20.41	858.75	23.77	3.45E-06
13.83	471.84	29.30	4.25E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 17/07/2013
Author : Alexis Valenza

Date	<input type="text" value="17/07/2013"/>	Depth to water level :	<input type="text" value="20"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="93.5"/> m
Hole No.	<input type="text" value="1310"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="5"/>	Vertical depth :	<input type="text" value="93.5"/> m
Test interval	<input type="text" value="92"/> to <input type="text" value="95"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="16"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="89.9"/> m
Packer inflation pressure :	<input type="text" value="2435"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.7690	19.23	471.84	40.7	3.26E-06	5.91E-06	
B	10	0.8650	21.63	558.29	38.7	3.10E-06	5.62E-06	
C								
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	38.7	3.1E-06	5.6E-06
					Average	39.4	3.2E-06	5.8E-06
					Maximum	40.7	3.3E-06	5.9E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

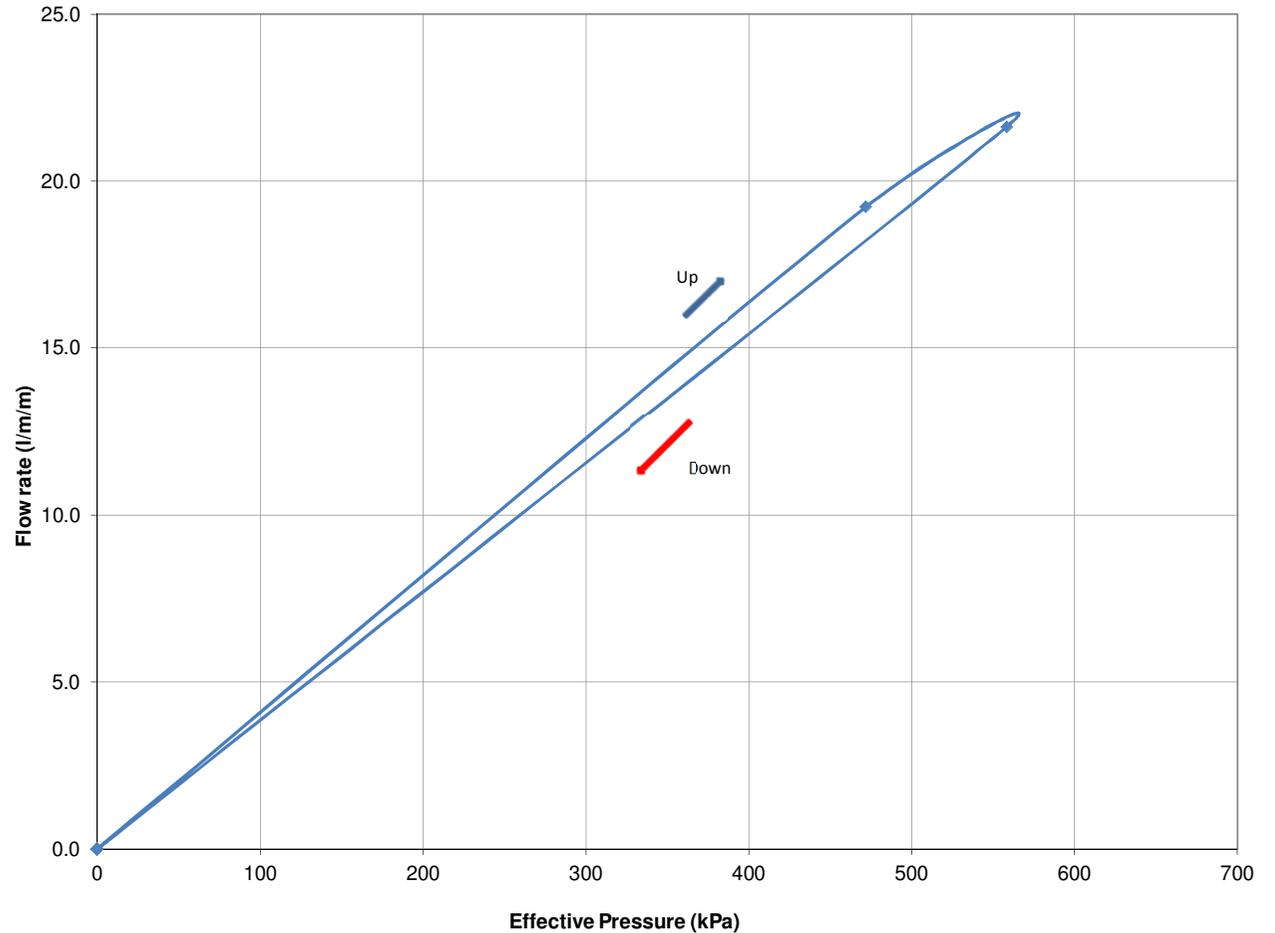
Hydraulic Conductivity
 $K (m/s) = \text{Flow rate (m}^3/s) \times LN ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
19.23	471.84	40.74	5.91E-06
21.63	558.29	38.73	5.62E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers Test Results

Site Location:

Hole No.

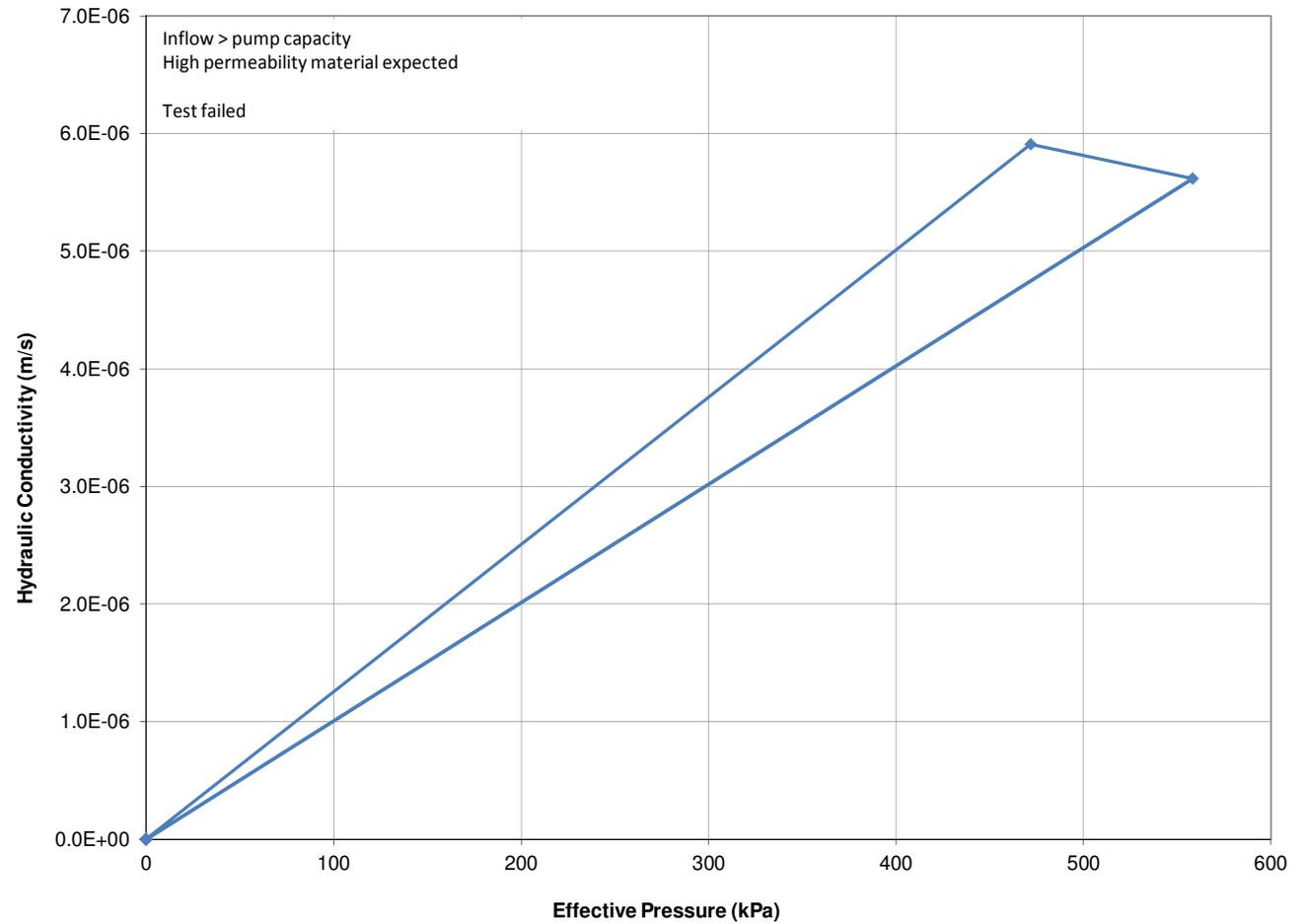
Test No.

Test interval to m

Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
19.23	471.84	40.74	5.91E-06
21.63	558.29	38.73	5.62E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

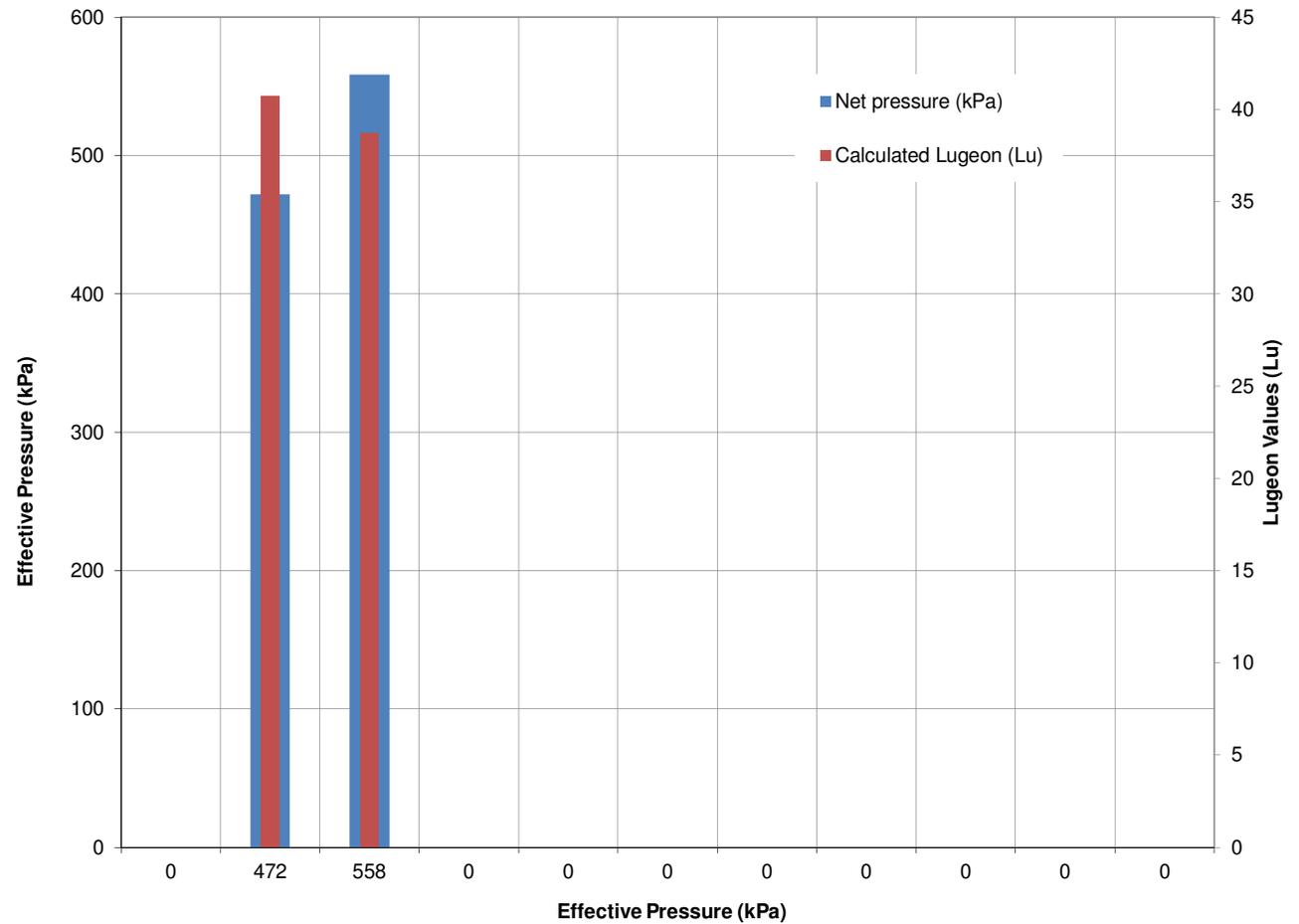


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
19.23	471.84	40.74	5.91E-06
21.63	558.29	38.73	5.62E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



LPDD1312
Packer Test Interval
128m to 131m
25/07/2013



LPDD1312
Packer Test Interval
175m to 178m
25/07/2013



LPDD1312
Packer Test Interval
196m to 199m
25/07/2013



LPDD1312
Packer Test Interval
218m to 221m
24/07/2013



Packers test pressure calculation sheet

Legend

Result

Date : 24/07/2013
Author : Alexis Valenza

Date	<input type="text" value="24/07/2013"/>	Depth to water level :	<input type="text" value="24.7"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="219.5"/> m
Hole No.	<input type="text" value="1312"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="1"/>	Vertical depth :	<input type="text" value="219.5"/> m
Test interval	<input type="text" value="218"/> to <input type="text" value="220"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="19.6"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="206.8"/> m
Packer inflation pressure :	<input type="text" value="3648"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.5260	13.15	614.02	21.4	1.71E-06	3.11E-06	
B	10	0.6090	15.23	710.63	21.4	1.71E-06	3.11E-06	
C	10	0.4510	11.28	517.93	21.8	1.74E-06	3.16E-06	
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	21.4	1.7E-06	3.1E-06
					Average	21.5	1.7E-06	3.1E-06
					Maximum	21.8	1.7E-06	3.2E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

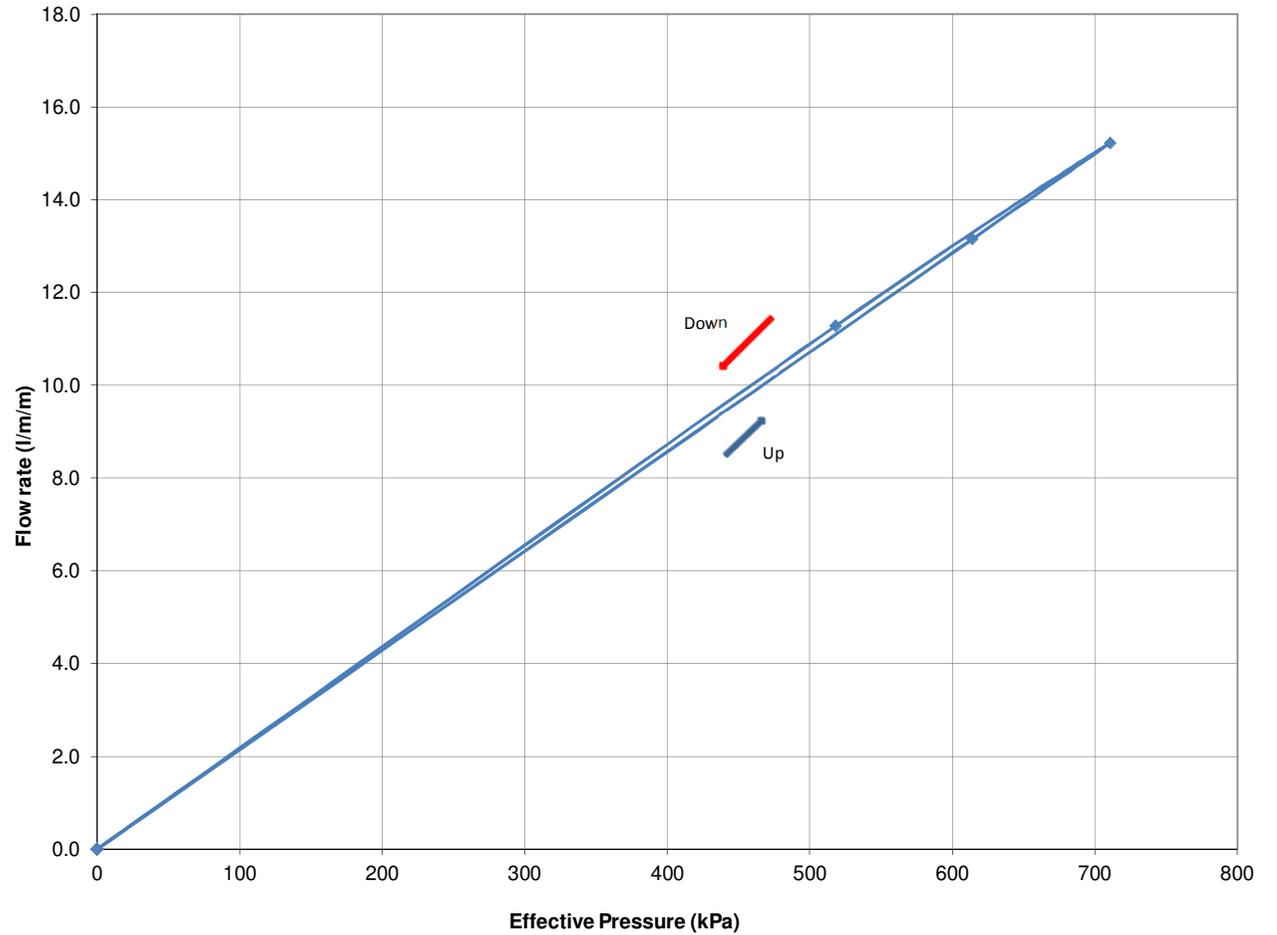
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.15	614.02	21.42	3.11E-06
15.23	710.63	21.42	3.11E-06
11.28	517.93	21.77	3.16E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

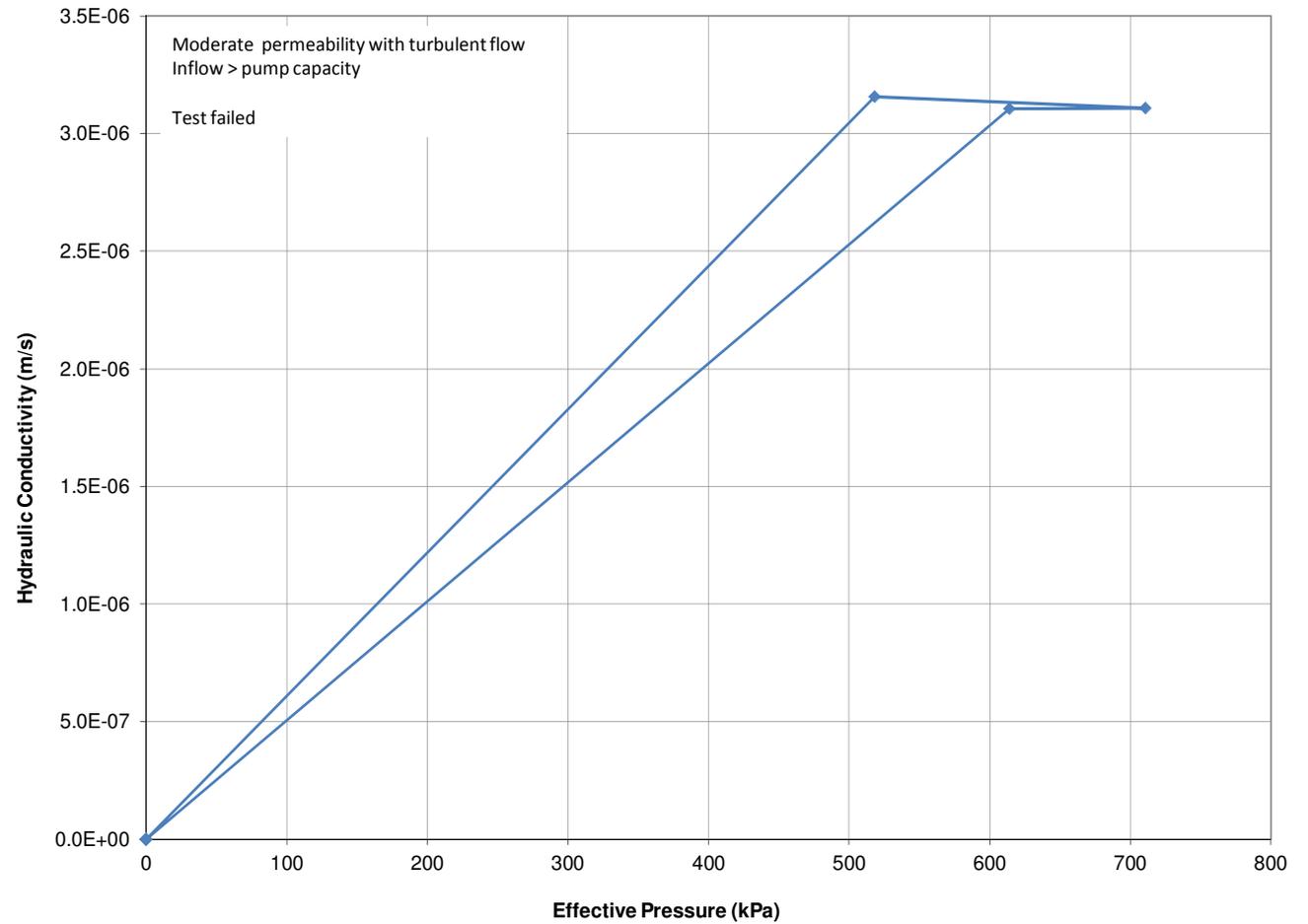


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.15	614.02	21.42	3.11E-06
15.23	710.63	21.42	3.11E-06
11.28	517.93	21.77	3.16E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

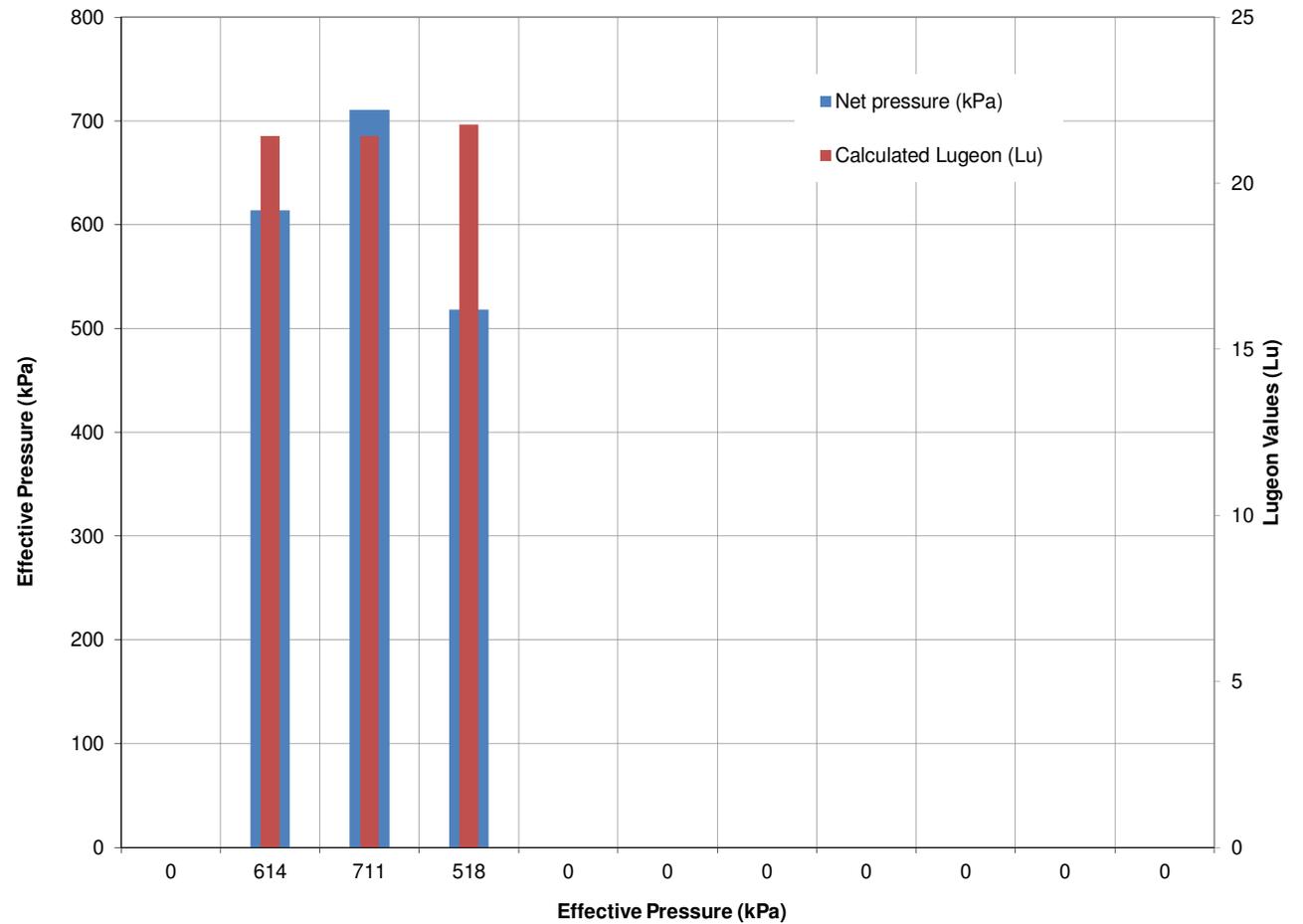


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
13.15	614.02	21.42	3.11E-06
15.23	710.63	21.42	3.11E-06
11.28	517.93	21.77	3.16E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 25/07/2013
Author : Alexis Valenza

Date	<input type="text" value="25/07/2013"/>	Depth to water level :	<input type="text" value="24.7"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="199.5"/> m
Hole No.	<input type="text" value="1312"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="2"/>	Vertical depth :	<input type="text" value="199.5"/> m
Test interval	<input type="text" value="195"/> to <input type="text" value="198"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="19.6"/> deg
Test length	<input type="text" value="4"/> m	True depth :	<input type="text" value="187.9"/> m
Packer inflation pressure :	<input type="text" value="3448"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	0.2390	5.98	614.02	9.7	7.78E-07	1.41E-06	
B	10	0.6820	17.05	807.60	21.1	1.69E-06	3.06E-06	
C	10	0.8810	22.03	517.93	42.5	3.40E-06	6.17E-06	
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	9.7	7.8E-07	1.4E-06
					Average	20.8	1.7E-06	3.5E-06
					Maximum	42.5	3.4E-06	6.2E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

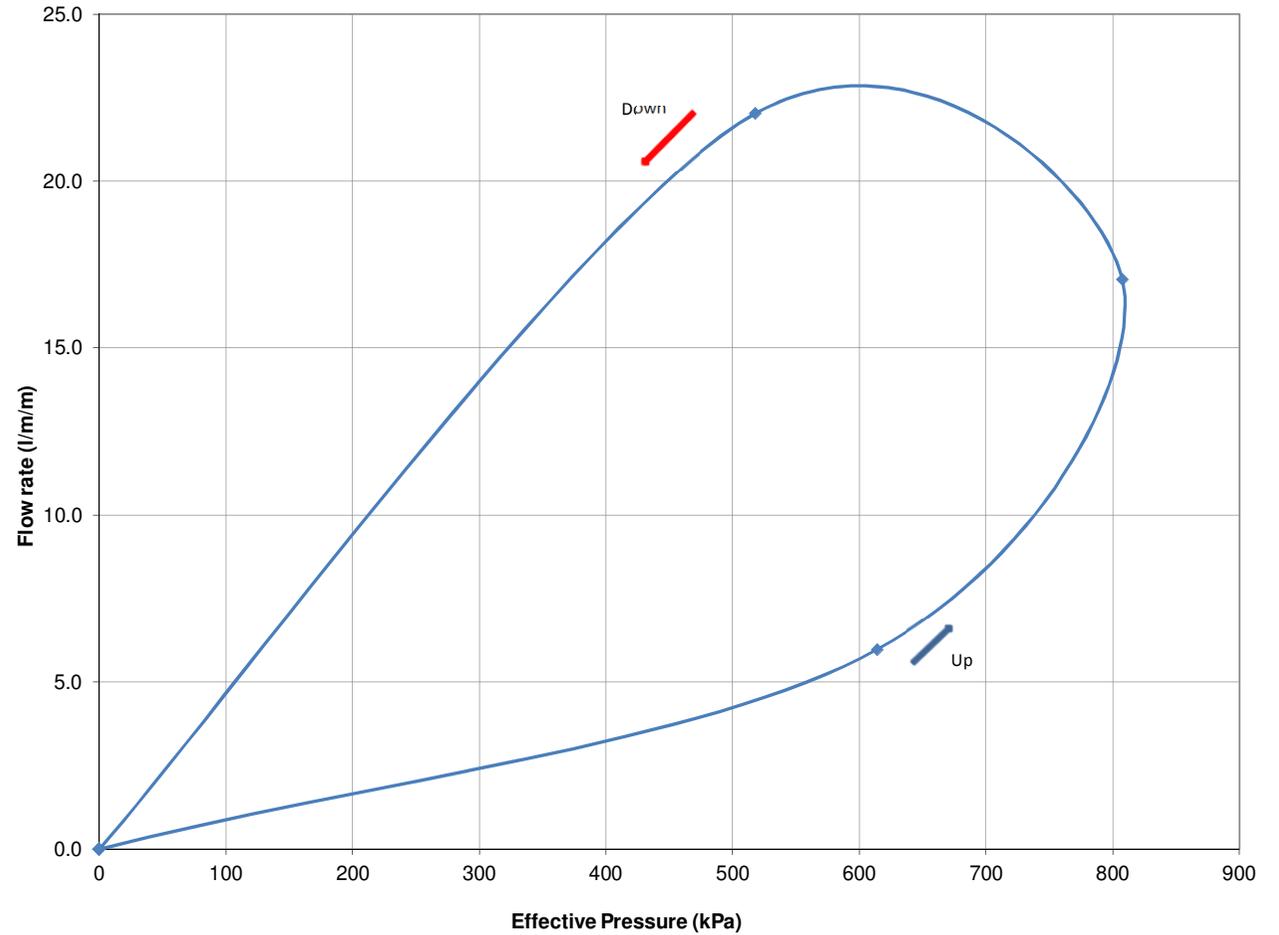
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
5.98	614.02	9.73	1.41E-06
17.05	807.60	21.11	3.06E-06
22.03	517.93	42.52	6.17E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

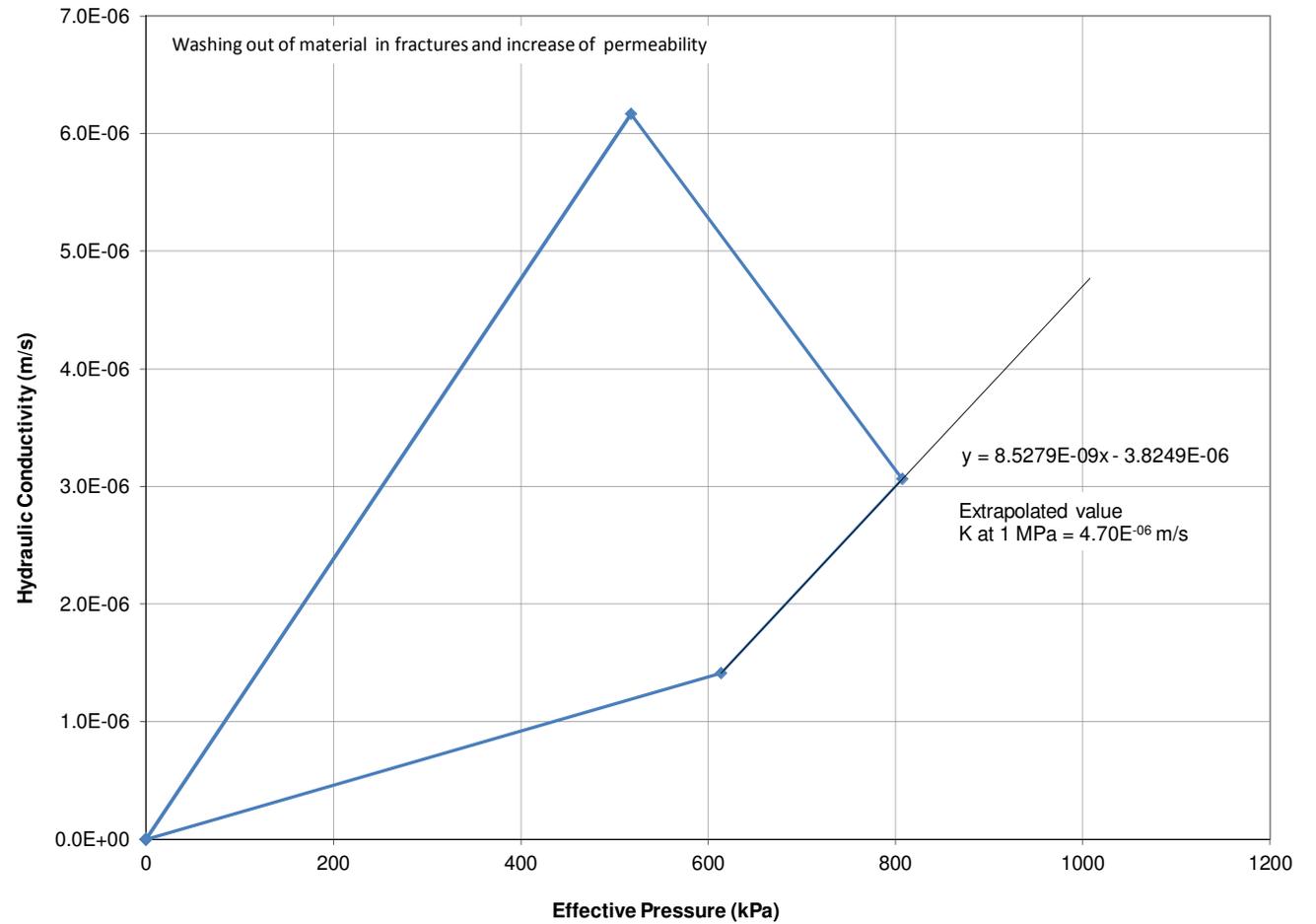


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
5.98	614.02	9.73	1.41E-06
17.05	807.60	21.11	3.06E-06
22.03	517.93	42.52	6.17E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

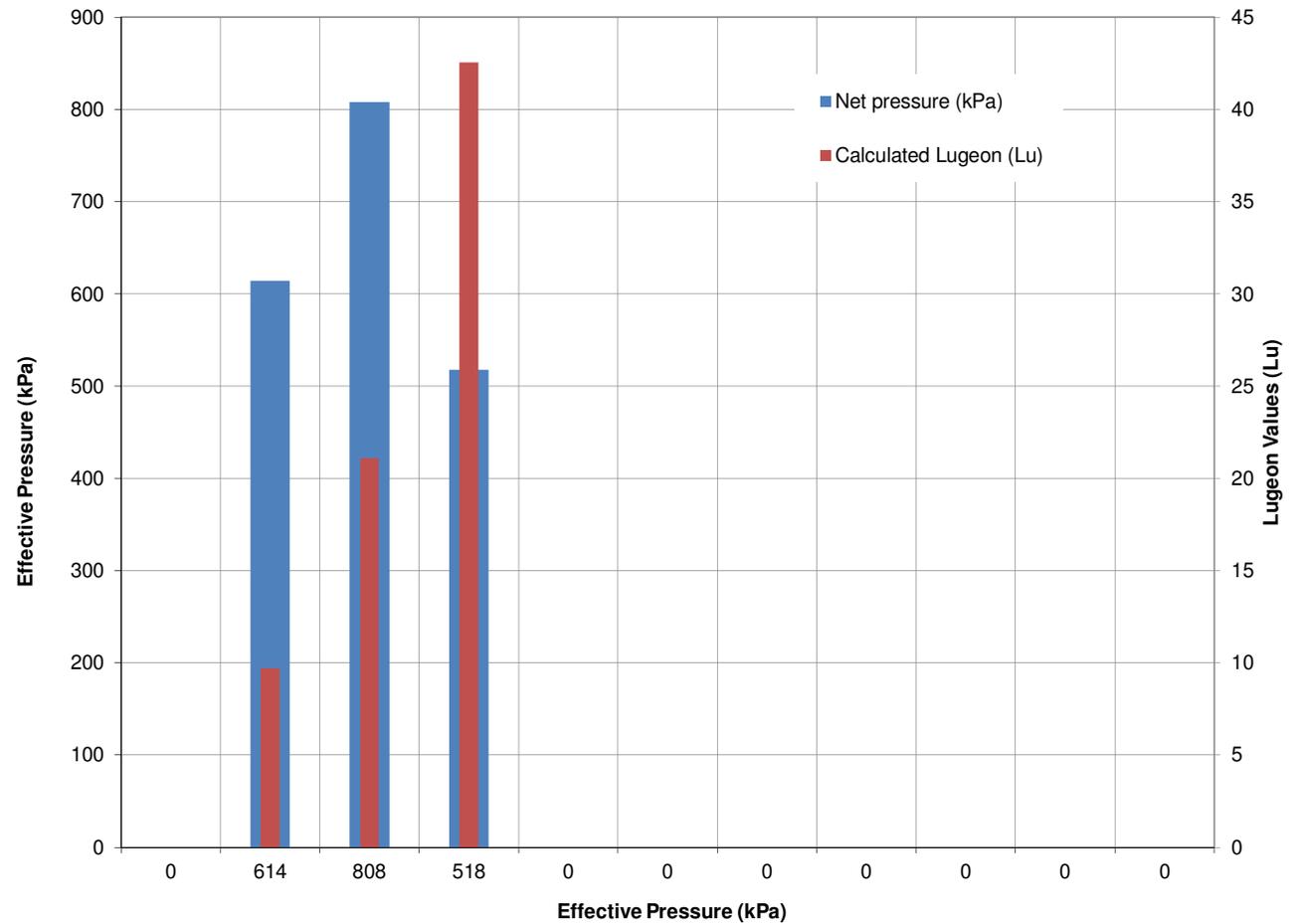


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
5.98	614.02	9.73	1.41E-06
17.05	807.60	21.11	3.06E-06
22.03	517.93	42.52	6.17E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 25/07/2013
Author : Alexis Valenza

Date	<input type="text" value="25/07/2013"/>	Depth to water level :	<input type="text" value="24.7"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="176.5"/> m
Hole No.	<input type="text" value="1312"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="3"/>	Vertical depth :	<input type="text" value="176.5"/> m
Test interval	<input type="text" value="175"/> to <input type="text" value="177"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="19.6"/> deg
Test length	<input type="text" value="3"/> m	True depth :	<input type="text" value="166.3"/> m
Packer inflation pressure :	<input type="text" value="3218"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula	
A	10	1.0330	34.43	614.02	56.1	4.49E-06	7.71E-06	
B	10	0.8890	29.63	517.93	57.2	4.58E-06	7.87E-06	
C								
D								
E								
Dr								
Cr								
Br								
Ar								
					Minimum	56.1	4.5E-06	7.7E-06
					Average	56.5	4.5E-06	7.8E-06
					Maximum	57.2	4.6E-06	7.9E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

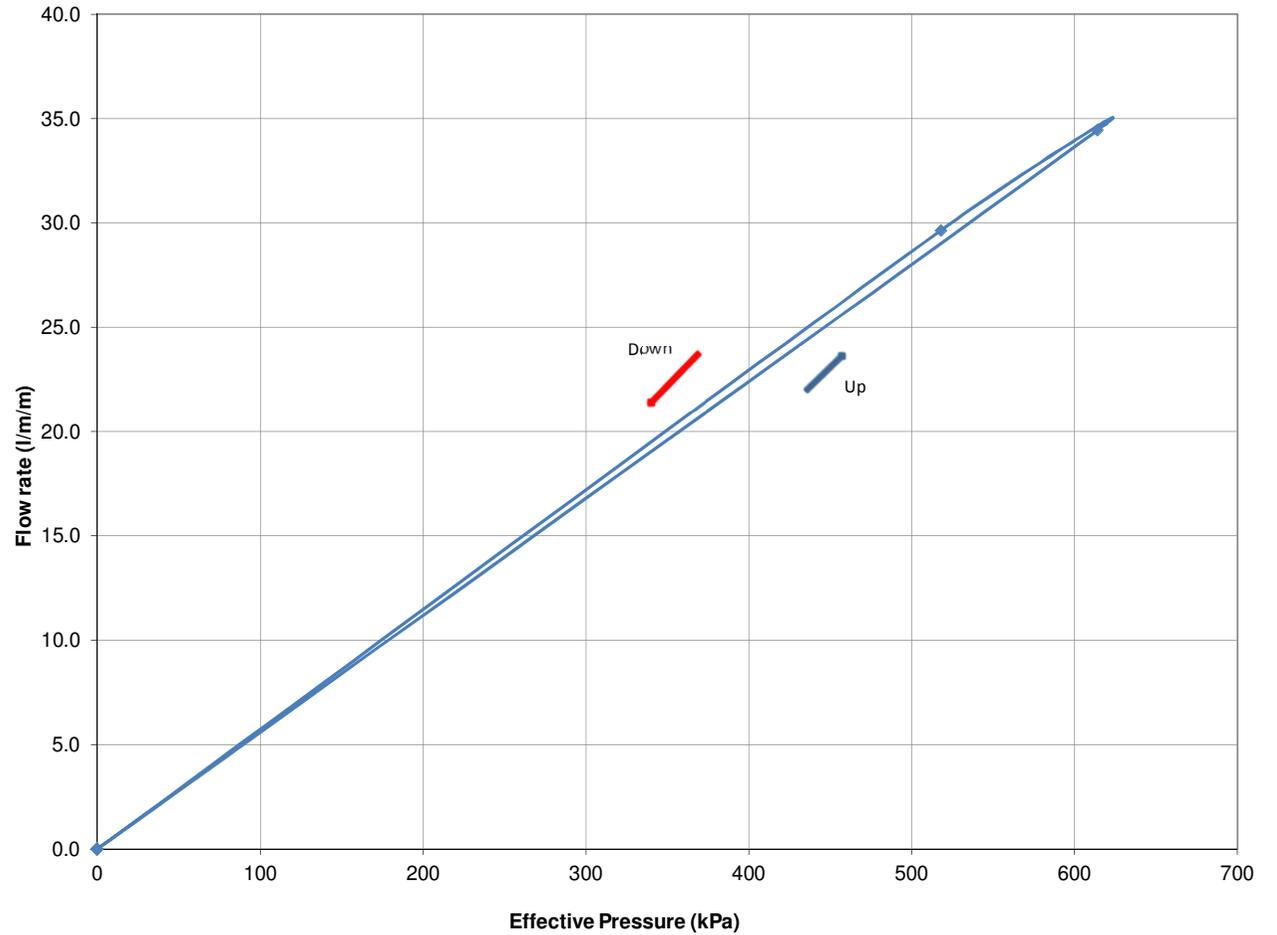
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
34.43	614.02	56.08	7.71E-06
29.63	517.93	57.21	7.87E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

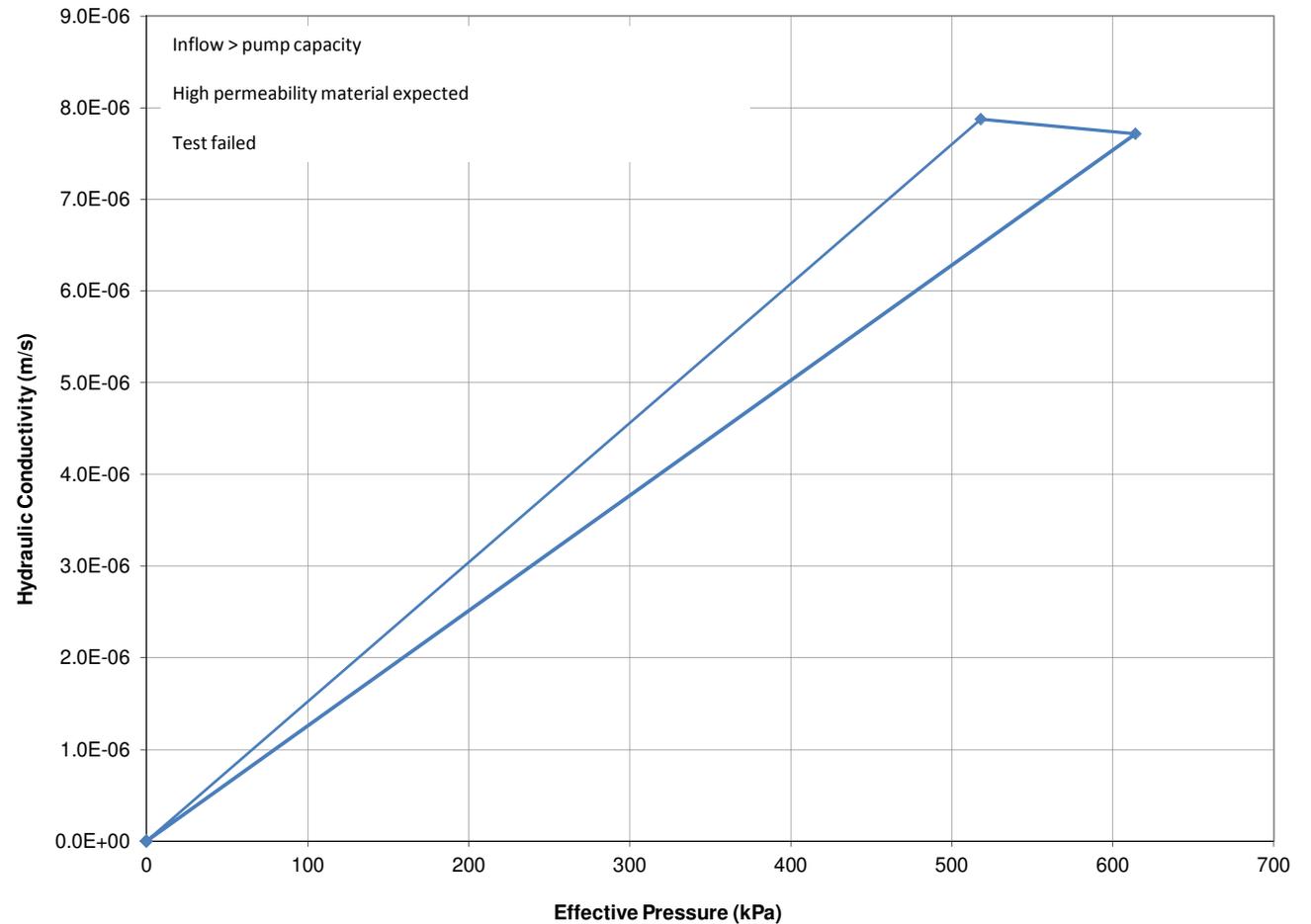


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
34.43	614.02	56.08	7.71E-06
29.63	517.93	57.21	7.87E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

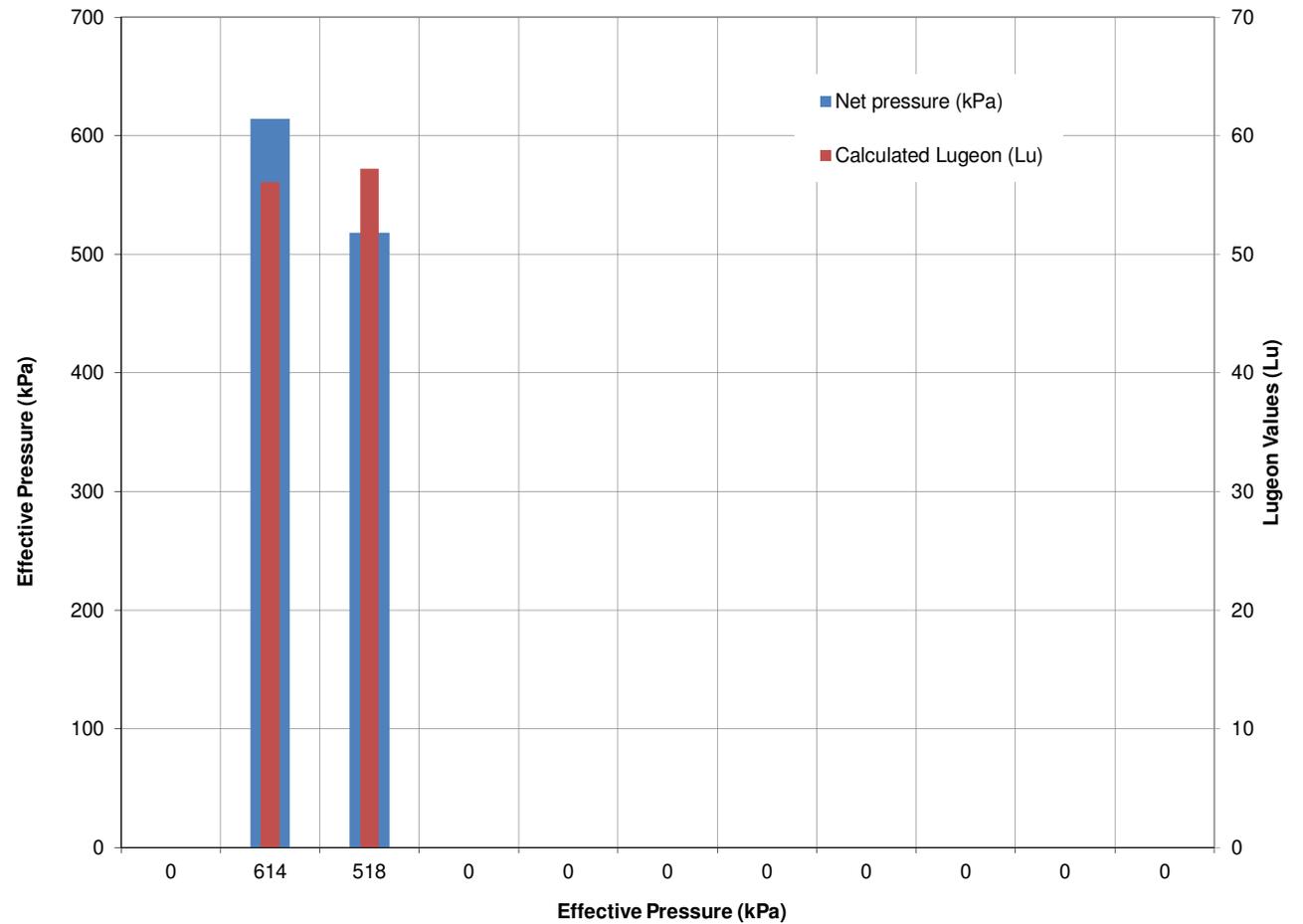


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
34.43	614.02	56.08	7.71E-06
29.63	517.93	57.21	7.87E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00



Packers test pressure calculation sheet

Legend

Result

Date : 25/07/2013
Author : Alexis Valenza

Date	<input type="text" value="25/07/2013"/>	Depth to water level :	<input type="text" value="24"/> m
Site Location:	<input type="text" value="Long Plains"/>	Depth of middle packer interval :	<input type="text" value="128.5"/> m
Hole No.	<input type="text" value="1312"/>	Height of gauge above ground :	<input type="text" value="0.5"/> m
Test No.	<input type="text" value="4"/>	Vertical depth :	<input type="text" value="128.5"/> m
Test interval	<input type="text" value="128"/> to <input type="text" value="129"/> m	Angle (from vertical, 0 if vertical):	<input type="text" value="19.6"/> deg
Test length	<input type="text" value="3"/> m	True depth :	<input type="text" value="121.1"/> m
Packer inflation pressure :	<input type="text" value="2745"/> kPa	Hole diameter :	<input type="text" value="0.096"/> m (HQ=96mm)
Casing stickup :	<input type="text" value="1"/> m	Flowmeter Type:	<input type="text" value="Manuflow MES25LCD5"/>

Step	Duration of test (min)	Total water loss (m ³)	Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Lugeon formula	K (m/s) Hoek and Bray formula
A	10	0.1750	5.83	607.16	9.6	7.69E-07	1.32E-06
B	10	0.1770	5.90	800.73	7.4	5.89E-07	1.01E-06
C	10	1.0120	33.73	995.43	33.9	2.71E-06	4.66E-06
D	10	1.0360	34.53	897.98	38.5	3.08E-06	5.29E-06
E	10	0.8770	29.23	703.76	41.5	3.32E-06	5.71E-06
Dr	10	0.6470	21.57	511.07	42.2	3.38E-06	5.81E-06
Cr							
Br							
Ar							
Minimum					7.4	5.9E-07	1.0E-06
Average					25.8	2.1E-06	4.0E-06
Maximum					42.2	3.4E-06	5.8E-06

Lugeon value
Water loss of 1litre/min/metre of test section at an effective pressure of 1 MPA

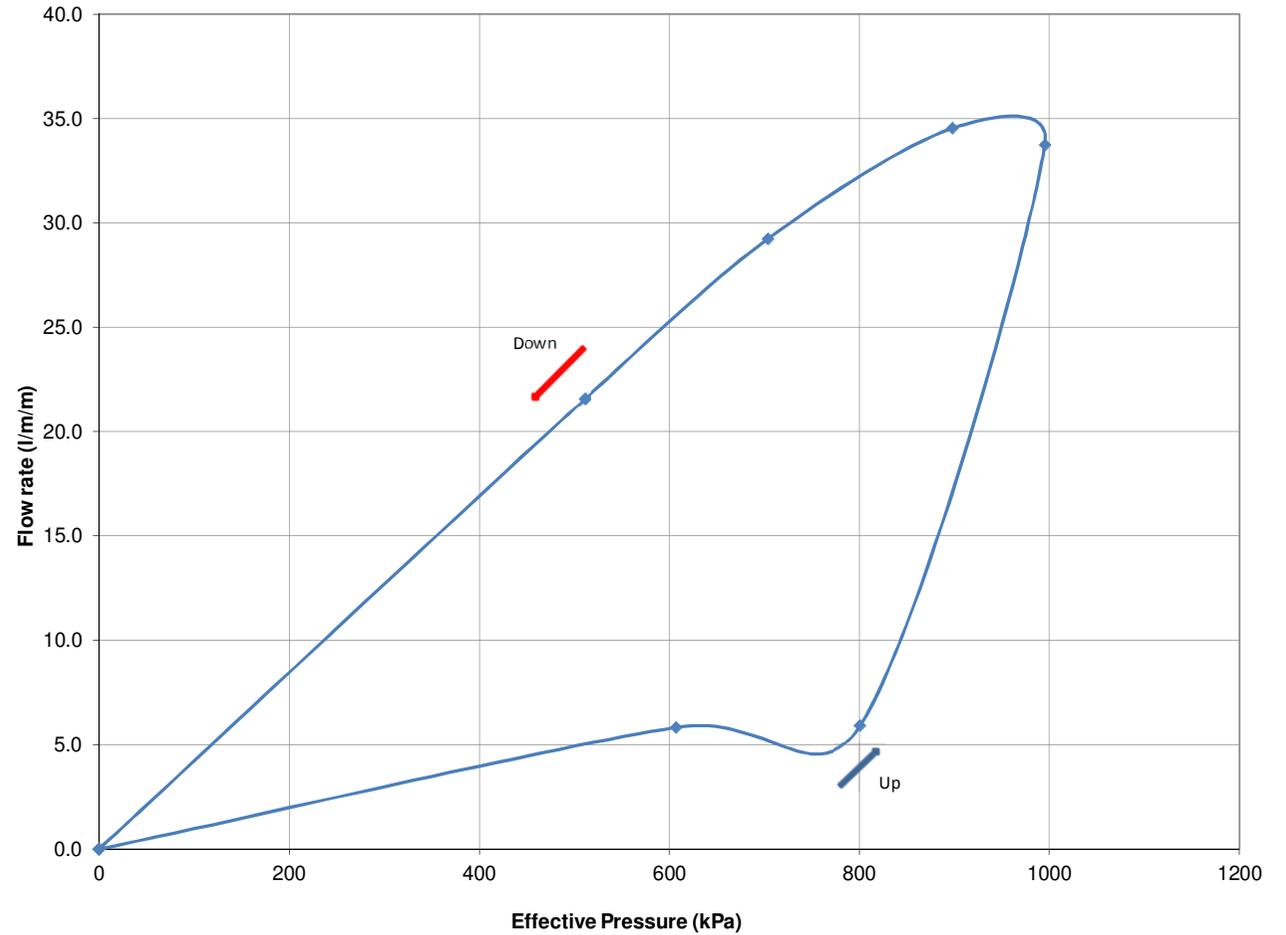
Hydraulic Conductivity
 $K \text{ (m/s)} = \text{Flow rate (m}^3\text{/s)} \times \text{LN} ((2m \times \text{Test length (m)}) / \text{Hole Diameter (m)}) / 2 \pi \times \text{Test length (m)} \times \text{Net head above water table at centre of test section (m)}$

Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
5.83	607.16	9.61	1.32E-06
5.90	800.73	7.37	1.01E-06
33.73	995.43	33.89	4.66E-06
34.53	897.98	38.46	5.29E-06
29.23	703.76	41.54	5.71E-06
21.57	511.07	42.20	5.81E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

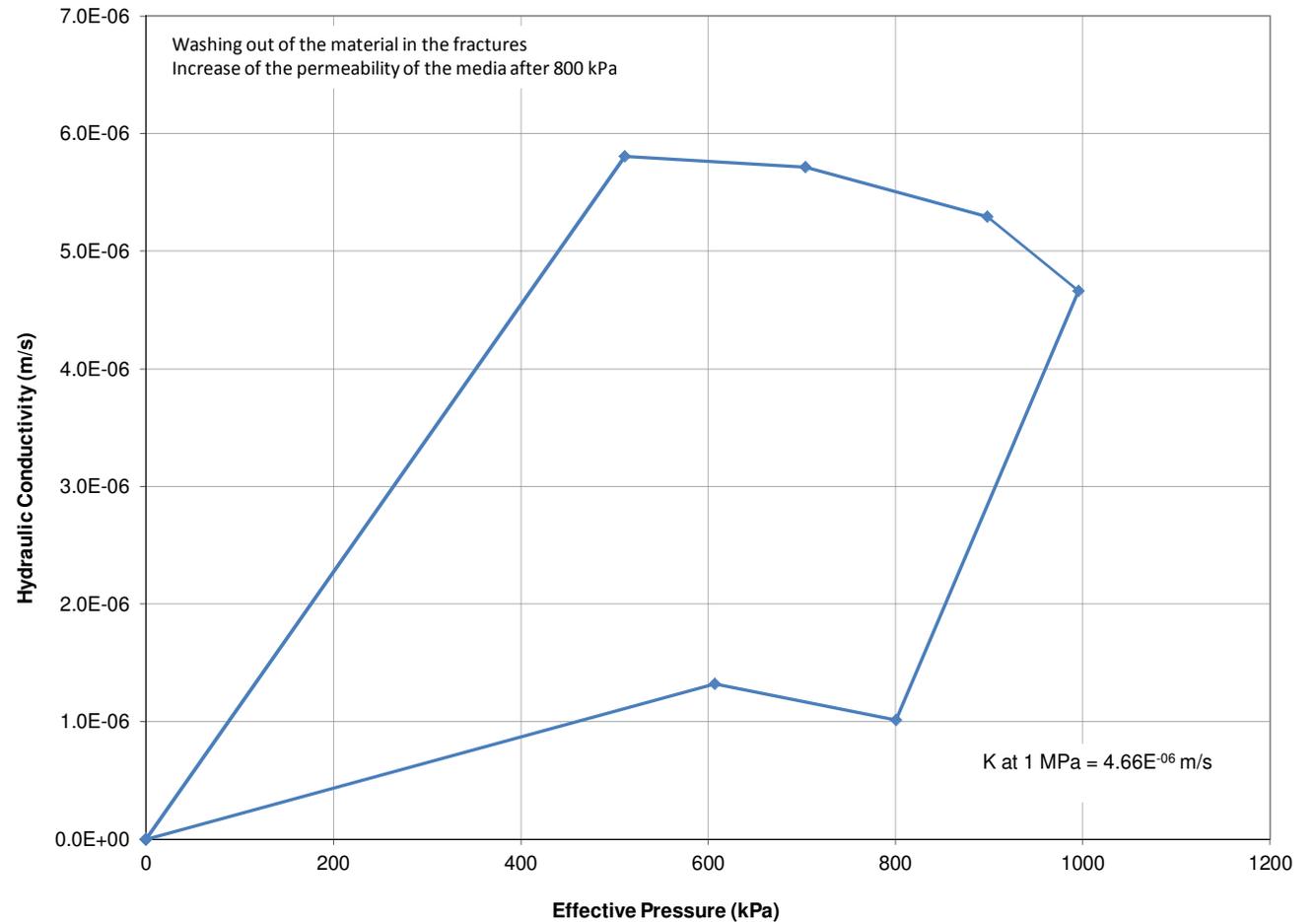


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
5.83	607.16	9.61	1.32E-06
5.90	800.73	7.37	1.01E-06
33.73	995.43	33.89	4.66E-06
34.53	897.98	38.46	5.29E-06
29.23	703.76	41.54	5.71E-06
21.57	511.07	42.20	5.81E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00

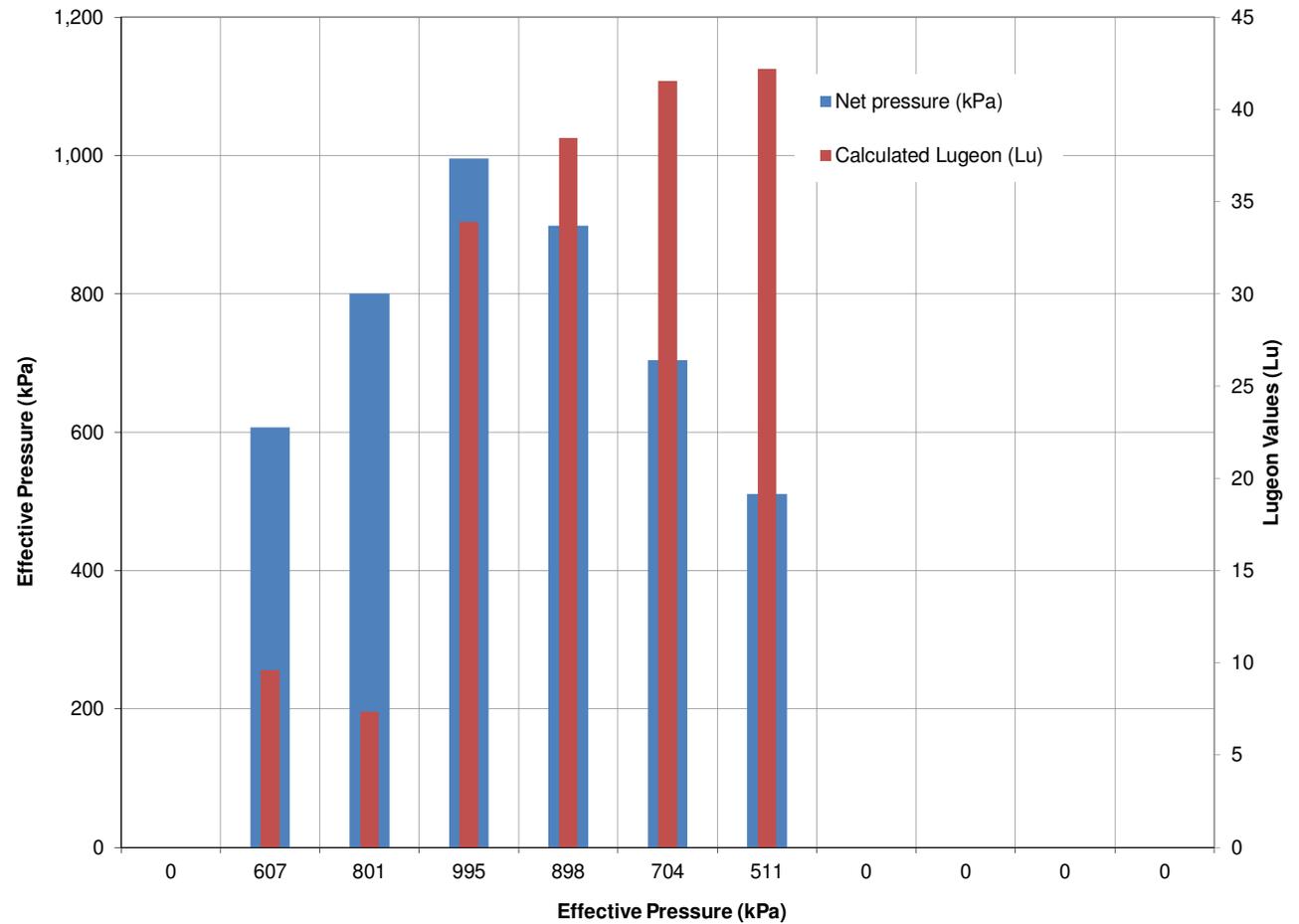


Packers Test Results

Site Location:
 Hole No.
 Test No.
 Test interval to m
 Date

Effective Pressure / Flow rate Chart

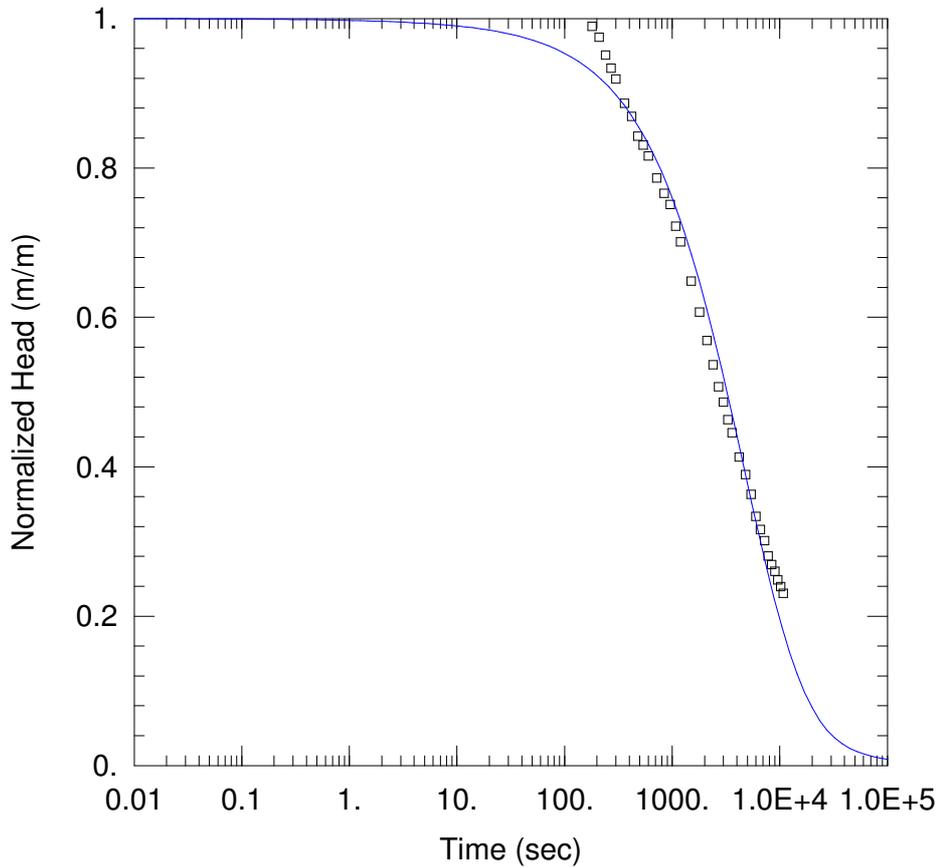
Take (L/min/m)	Net pressure (kPa)	Calculated Lugeon (Lu)	K (m/s) Hoek and Bray formula
0.00	0.00	0.00	0.00E+00
5.83	607.16	9.61	1.32E-06
5.90	800.73	7.37	1.01E-06
33.73	995.43	33.89	4.66E-06
34.53	897.98	38.46	5.29E-06
29.23	703.76	41.54	5.71E-06
21.57	511.07	42.20	5.81E-06
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00
0.00	0.00	0.00	0.00E+00





Appendix D

Falling Head Test Results



TEST 1

Data Set: D:\...\1204-test1.aqt

Date: 08/29/13

Time: 18:50:44

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1204)

Initial Displacement: 3.006 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

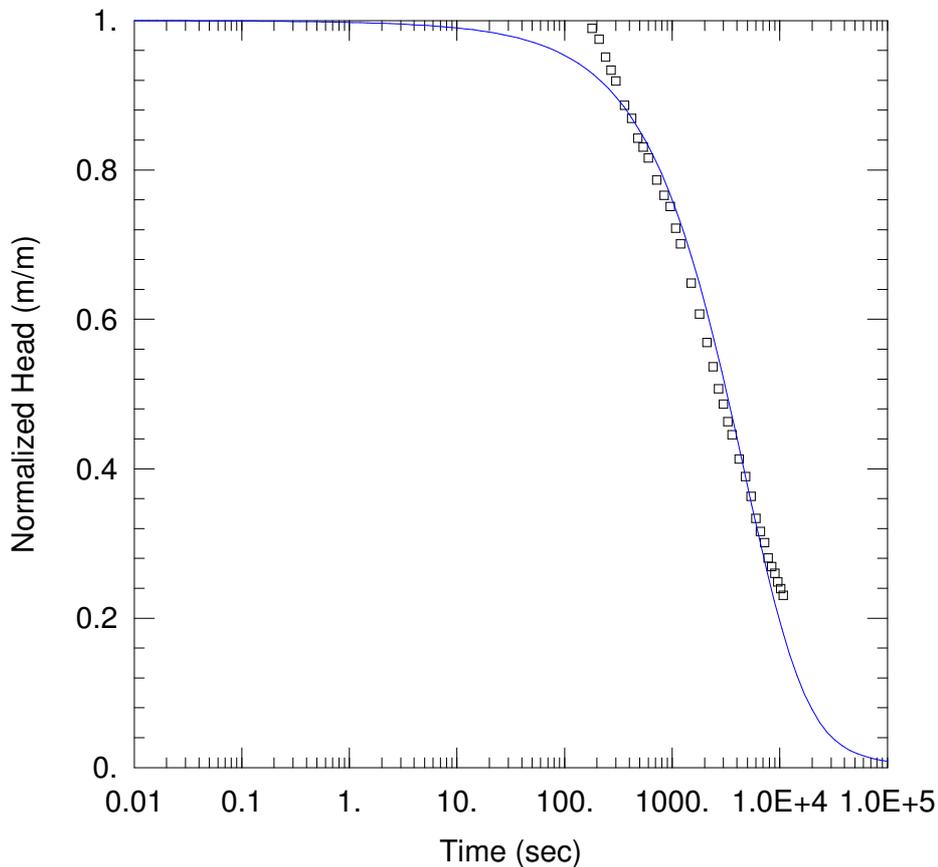
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 7.856E-7 m²/sec

S = 0.002834



TEST 1

Data Set: D:\...\1204-test1.aqt

Date: 08/29/13

Time: 18:51:04

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1204)

Initial Displacement: 3.006 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

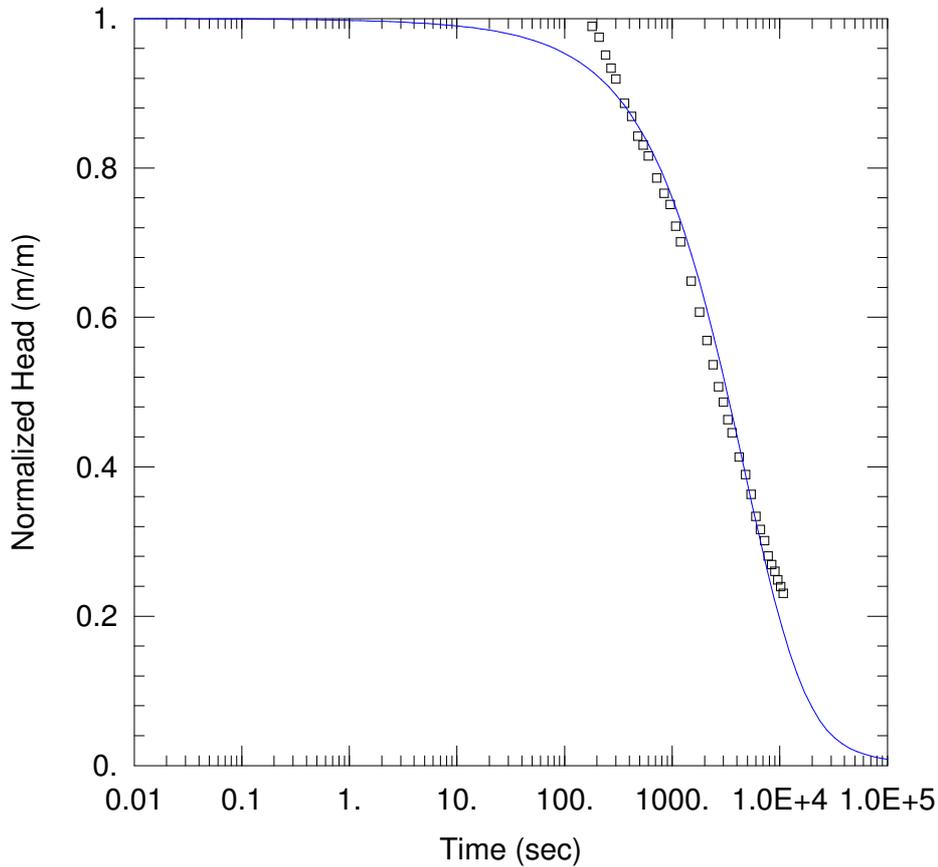
Solution Method: Dougherty-Babu

T = 7.856E-7 m²/sec

S = 0.002834

Kz/Kr = 1.

Sw = 0.



TEST 1

Data Set: D:\...\1204-test1.aqt

Date: 08/29/13

Time: 18:51:32

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

WELL DATA (1204)

Initial Displacement: 3.006 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

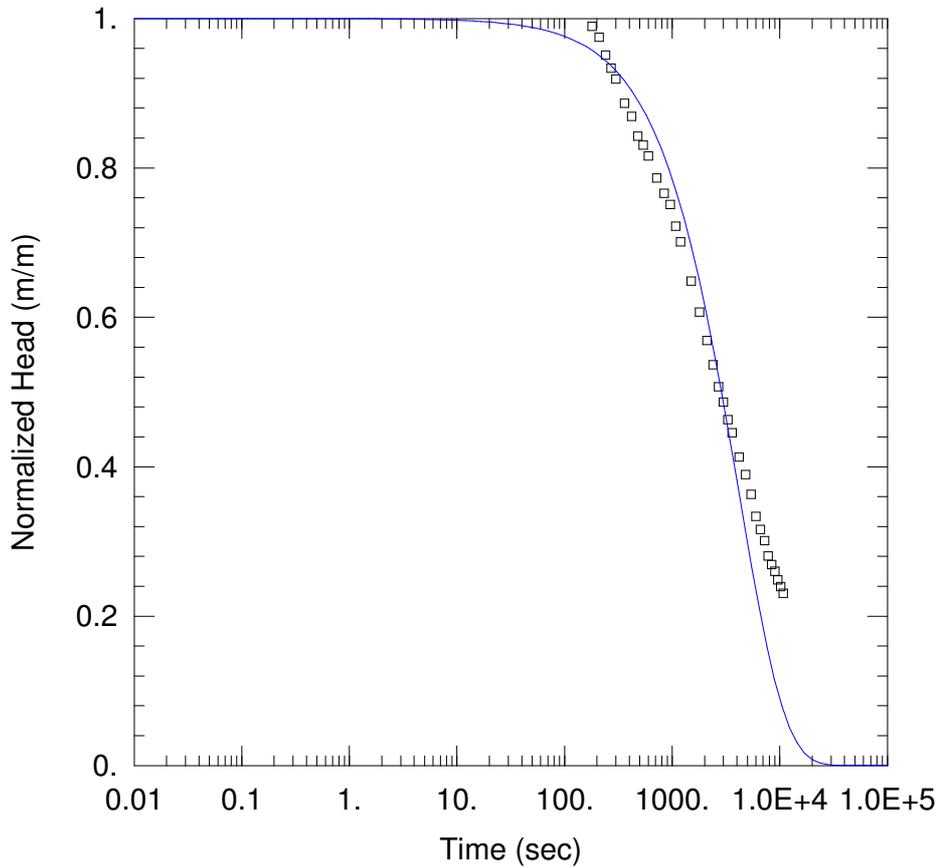
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 1.819E-9 m/sec

Ss = 6.562E-6 m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1204-test1.aqt

Date: 08/29/13

Time: 18:51:59

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1204)

Initial Displacement: 3.006 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

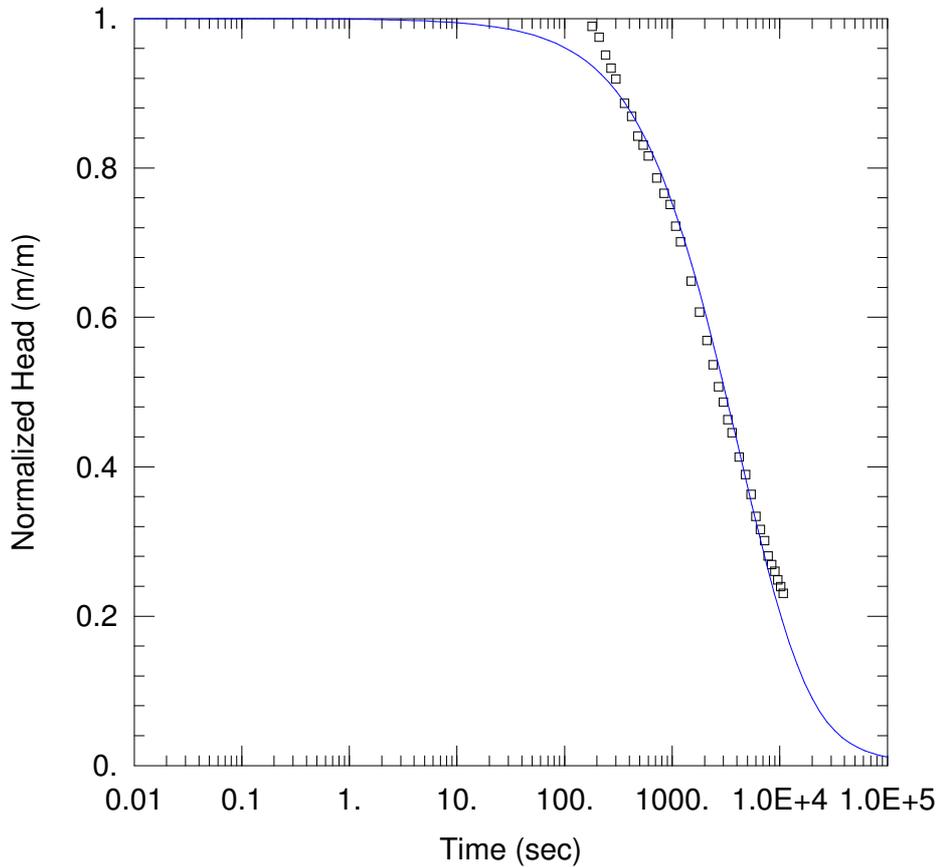
SOLUTION

Aquifer Model: Confined

Solution Method: Butler

K = 3.411E-9 m/sec

Le = 0.1 m



TEST 1

Data Set: D:\...\1204-test1.aqt

Date: 08/29/13

Time: 18:54:02

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1204)

Initial Displacement: 3.006 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

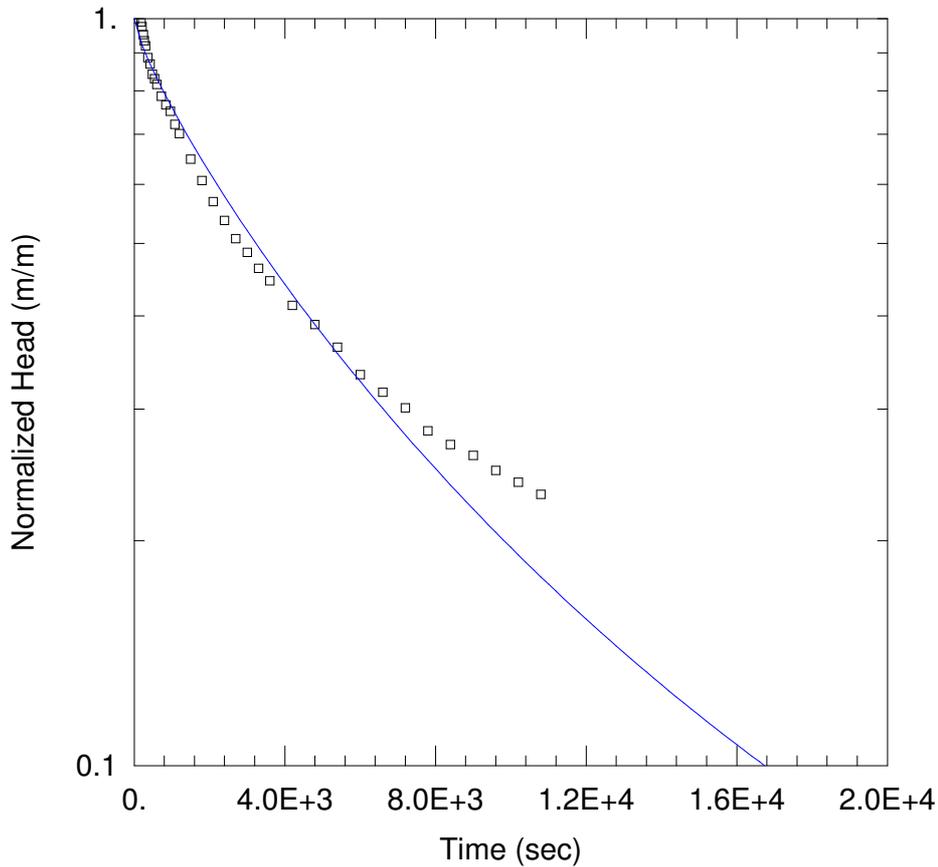
Solution Method: Barker-Black

T = 5.96E-7 m²/sec

S = 1.0E-10

K' = 4.638E-9 m/sec

Ss' = 3.041E-5 m⁻¹



TEST 1

Data Set: D:\...\1204-test1.aqt

Date: 08/29/13

Time: 18:55:08

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

WELL DATA (1204)

Initial Displacement: 3.006 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

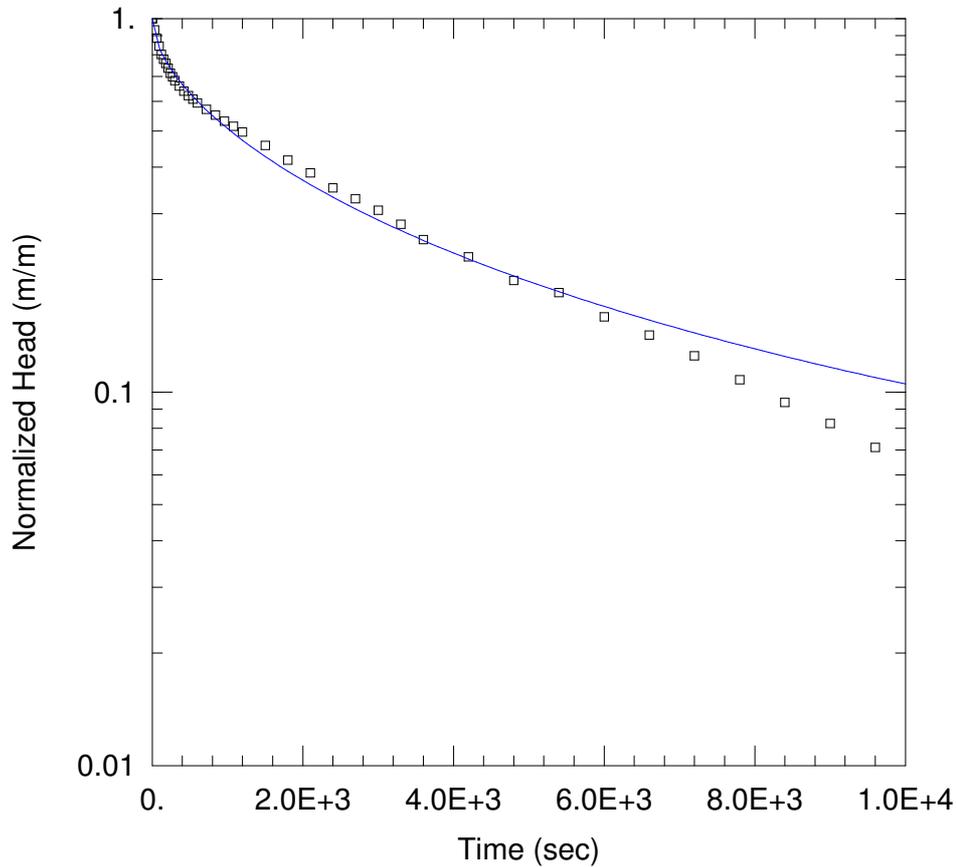
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 1.818E-9 m/sec

Ss = 6.435E-6 m⁻¹

Kz/Kr = 1.



TEST 2

Data Set: D:\...\1204-test2.aqt

Date: 08/29/13

Time: 19:08:47

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1204)

Initial Displacement: 3.113 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

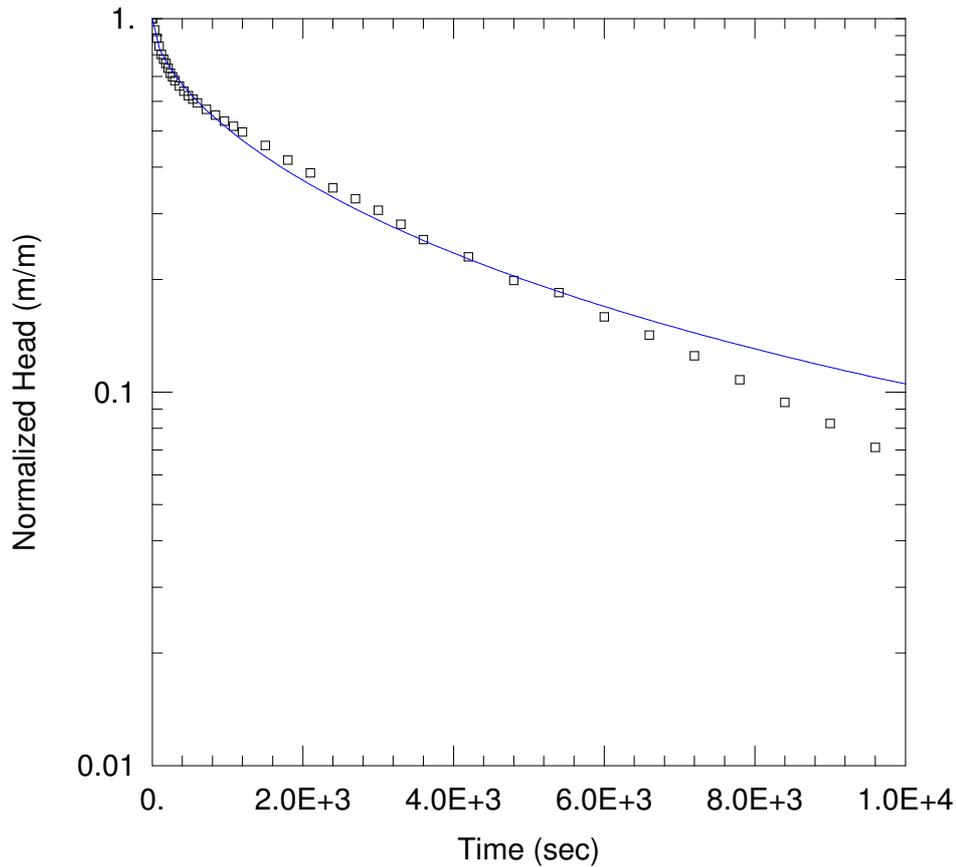
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 6.862E-7 m²/sec

S = 0.1919



TEST 2

Data Set: D:\...\1204-test2.aqt

Date: 08/29/13

Time: 19:09:11

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1204)

Initial Displacement: 3.113 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

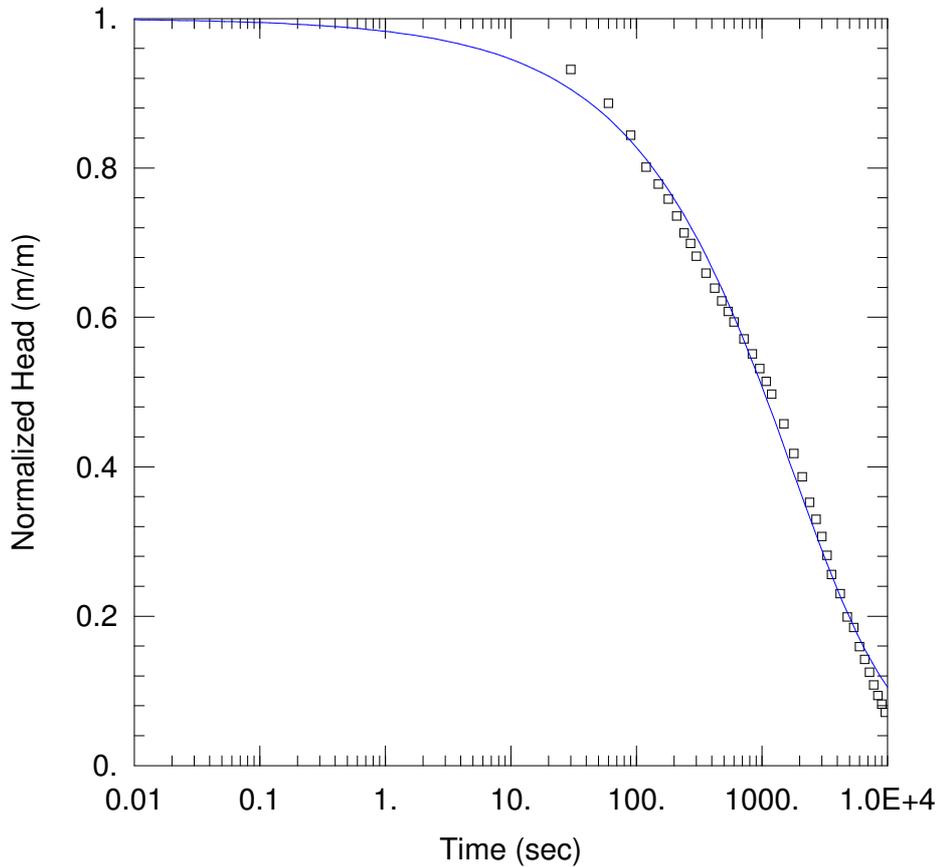
Solution Method: Dougherty-Babu

T = 6.862E-7 m²/sec

S = 0.1919

Kz/Kr = 1.

Sw = 0.



TEST 2

Data Set: D:\...\1204-test2.aqt

Date: 08/29/13

Time: 19:09:44

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

WELL DATA (1204)

Initial Displacement: 3.113 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

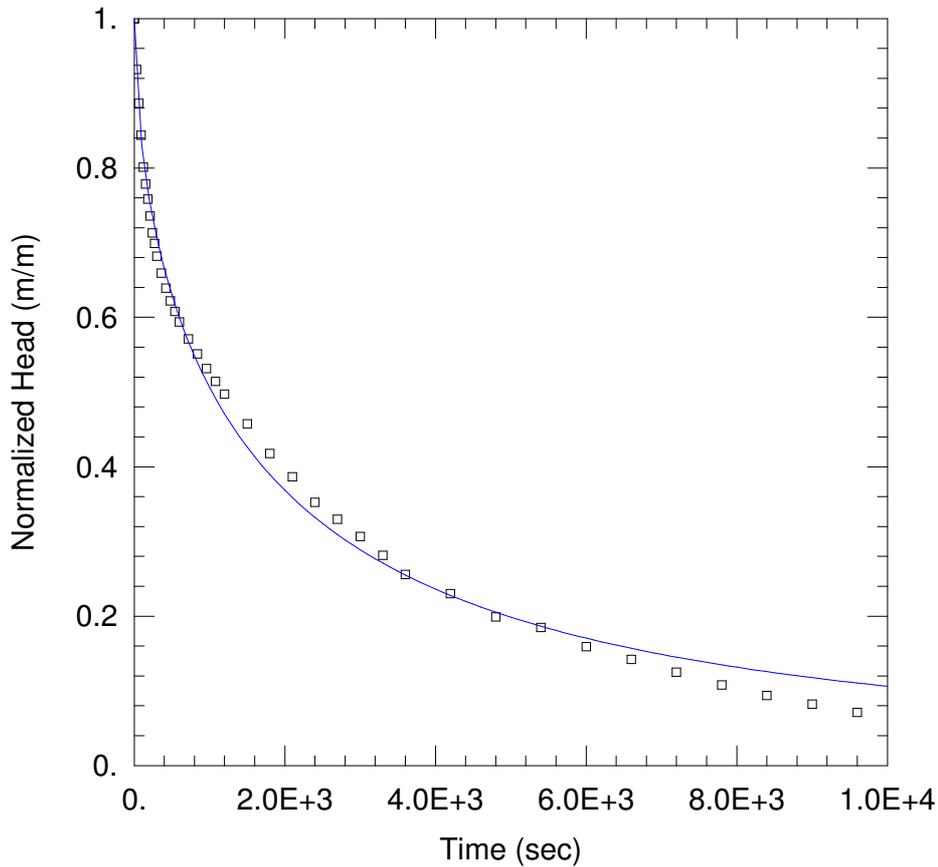
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 1.588E-9 m/sec

Ss = 0.000445 m⁻¹

Kz/Kr = 1.



TEST 2

Data Set: D:\...\1204-test2.aqt

Date: 08/29/13

Time: 19:11:00

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1204)

Initial Displacement: 3.113 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

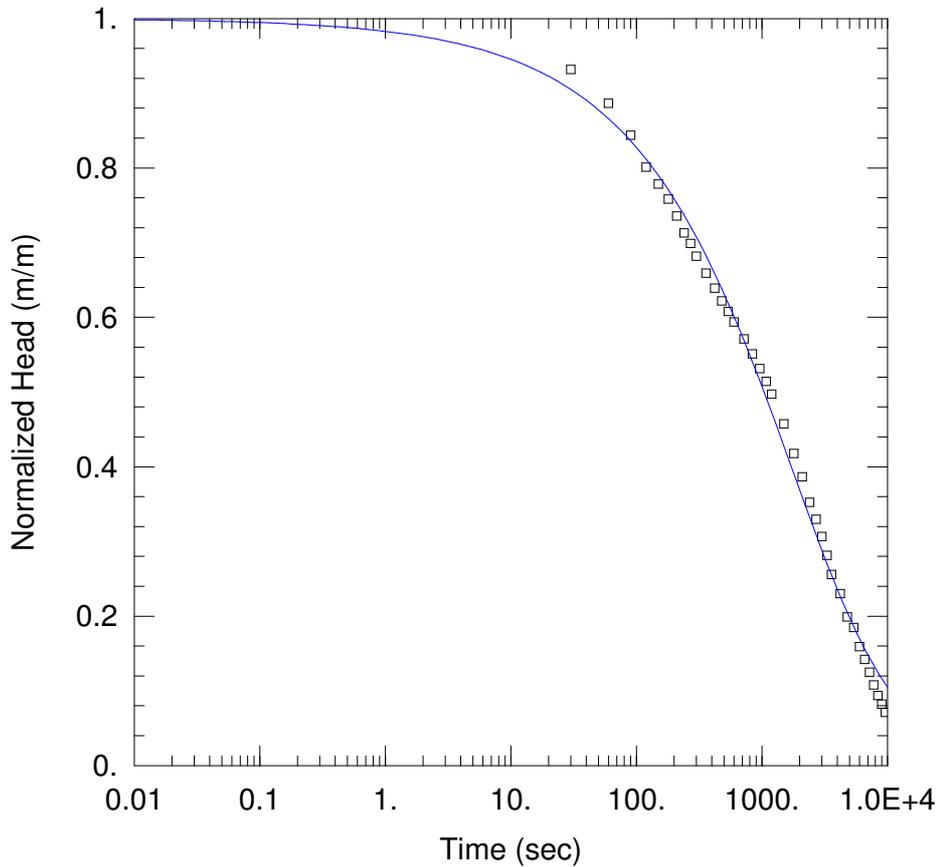
Solution Method: Barker-Black

T = 6.694E-7 m²/sec

S = 2.491E-5

K' = 2.331E-6 m/sec

Ss' = 0.0004727 m⁻¹



TEST 2

Data Set: D:\...\1204-test2.aqt

Date: 08/29/13

Time: 19:11:22

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1204

Test Date: 06/08/2013

AQUIFER DATA

Saturated Thickness: 431.8 m

WELL DATA (1204)

Initial Displacement: 3.113 m

Static Water Column Height: 430.9 m

Total Well Penetration Depth: 431.8 m

Screen Length: 431.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

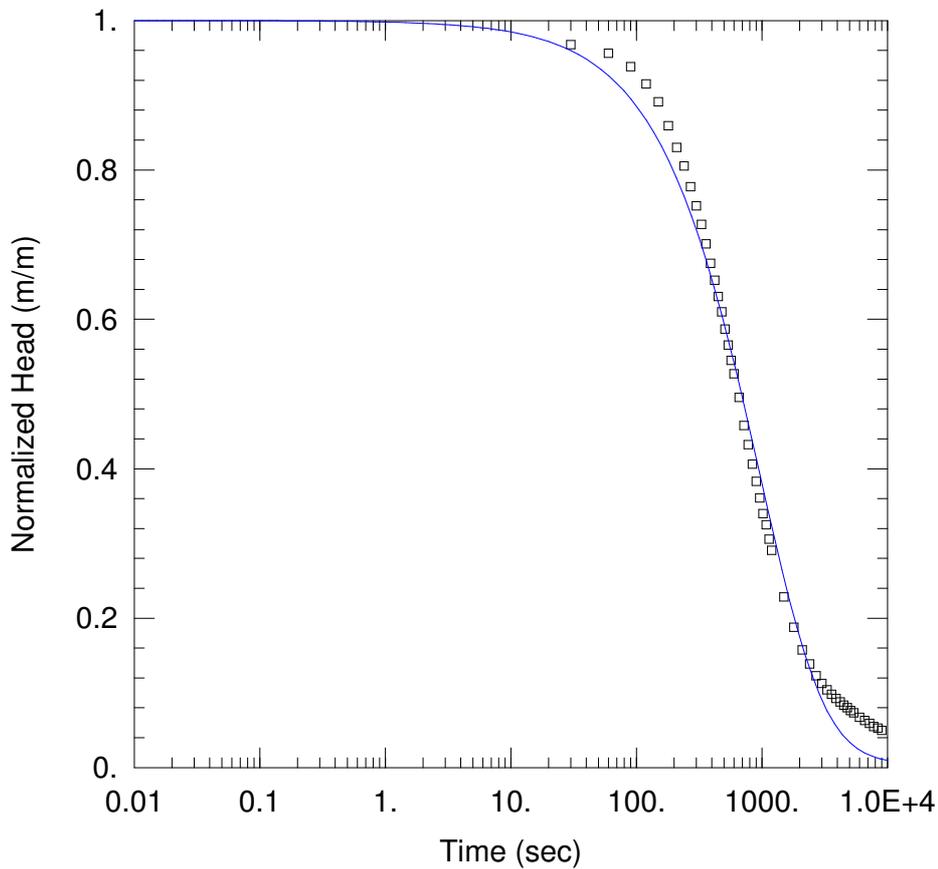
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 1.589E-9 m/sec

Ss = 0.0004402 m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1205-test1.aqt

Date: 09/02/13

Time: 12:53:29

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1205)

Initial Displacement: 13.99 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

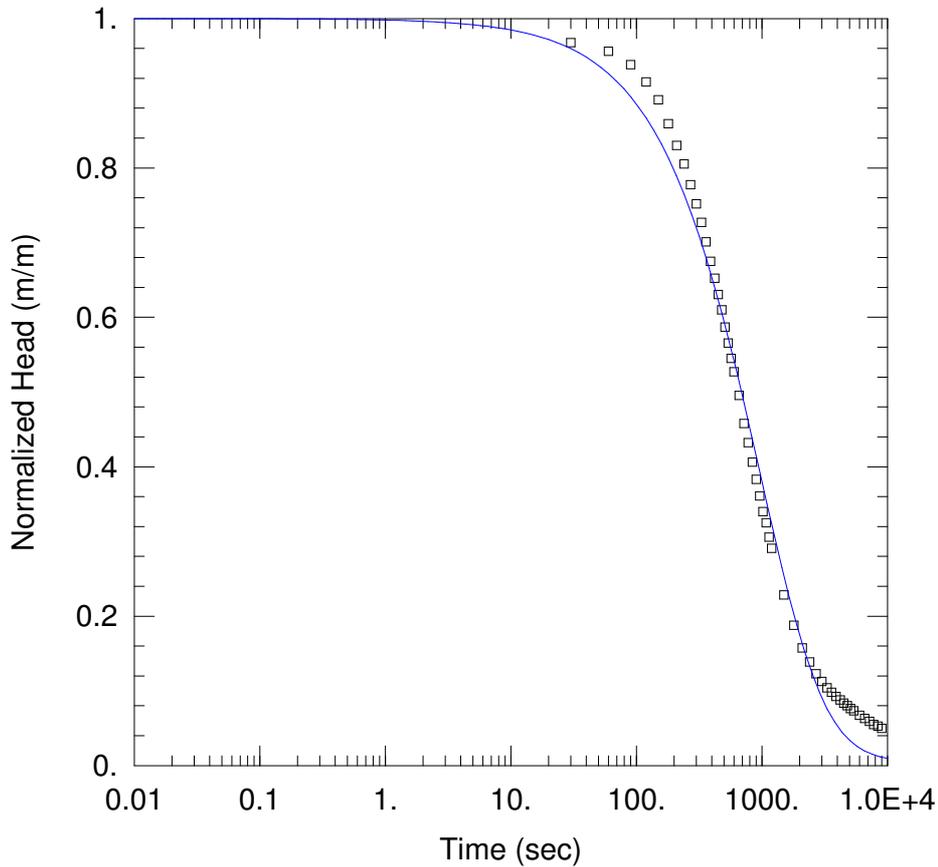
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 7.705E-6 m²/sec

S = 5.108E-6



TEST 1

Data Set: D:\...\1205-test1.aqt

Date: 09/02/13

Time: 12:54:19

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1205)

Initial Displacement: 13.99 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

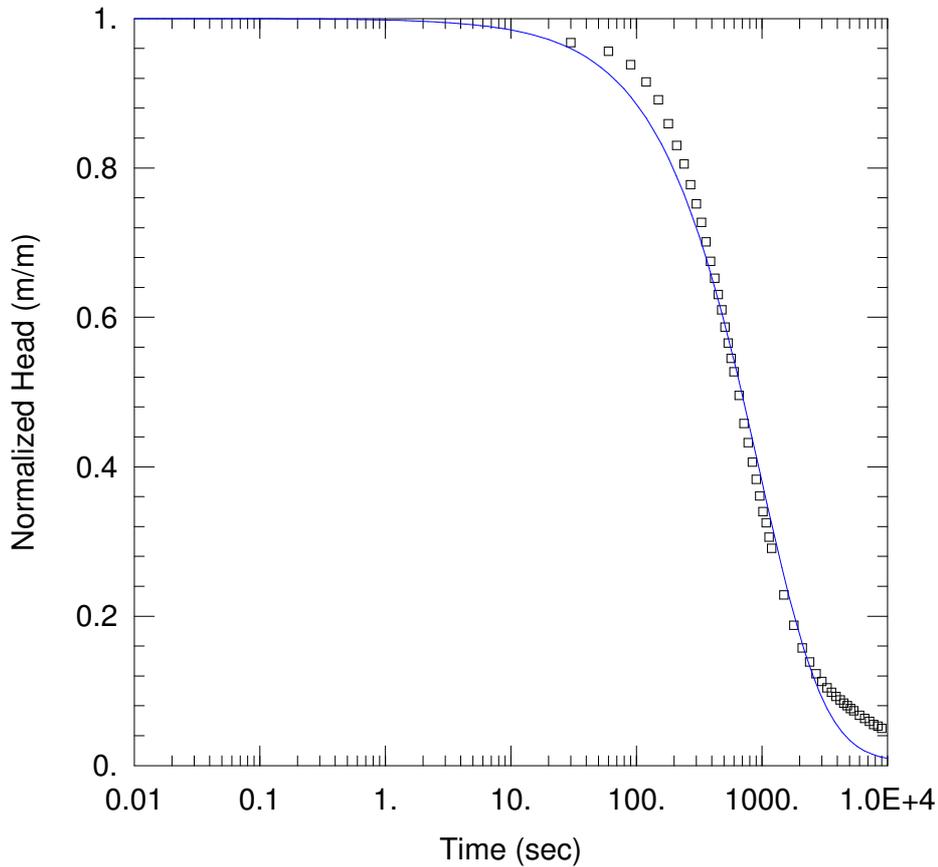
Solution Method: Dougherty-Babu

T = 7.707E-6 m²/sec

S = 5.088E-6

Kz/Kr = 1.

Sw = 0.



TEST 1

Data Set: D:\...\1205-test1.aqt

Date: 09/02/13

Time: 12:54:40

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

WELL DATA (1205)

Initial Displacement: 13.99 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

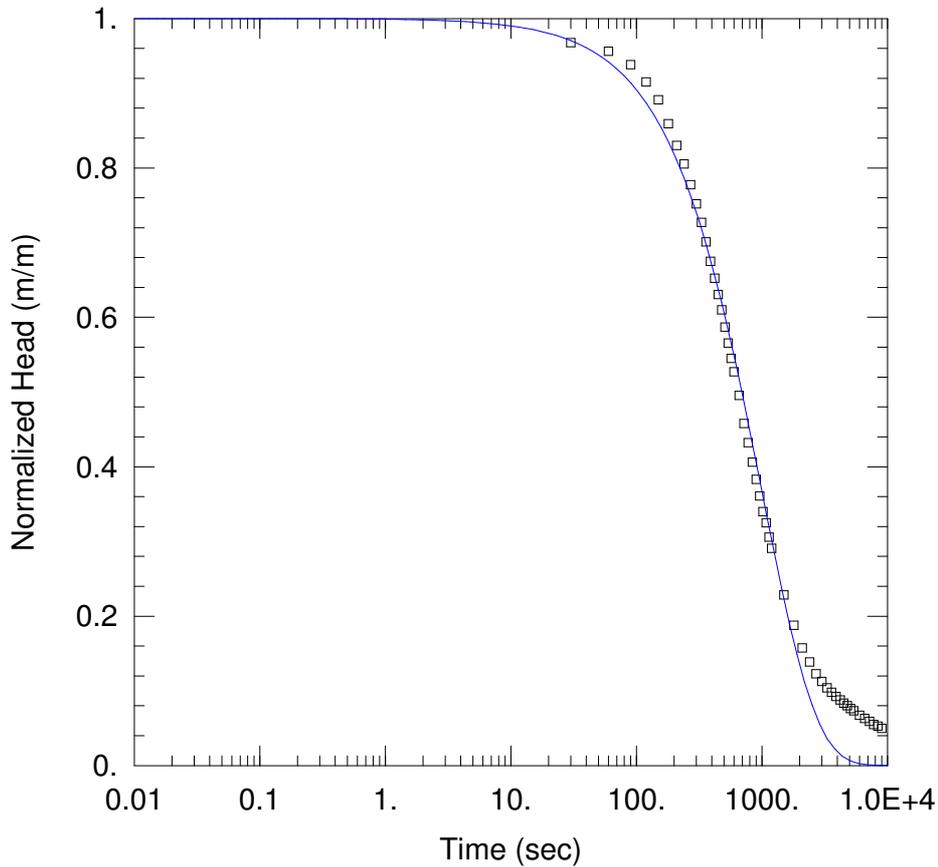
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 3.194E-8 m/sec

Ss = 2.229E-8 m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1205-test1.aqt

Date: 09/02/13

Time: 12:55:17

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1205)

Initial Displacement: 13.99 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

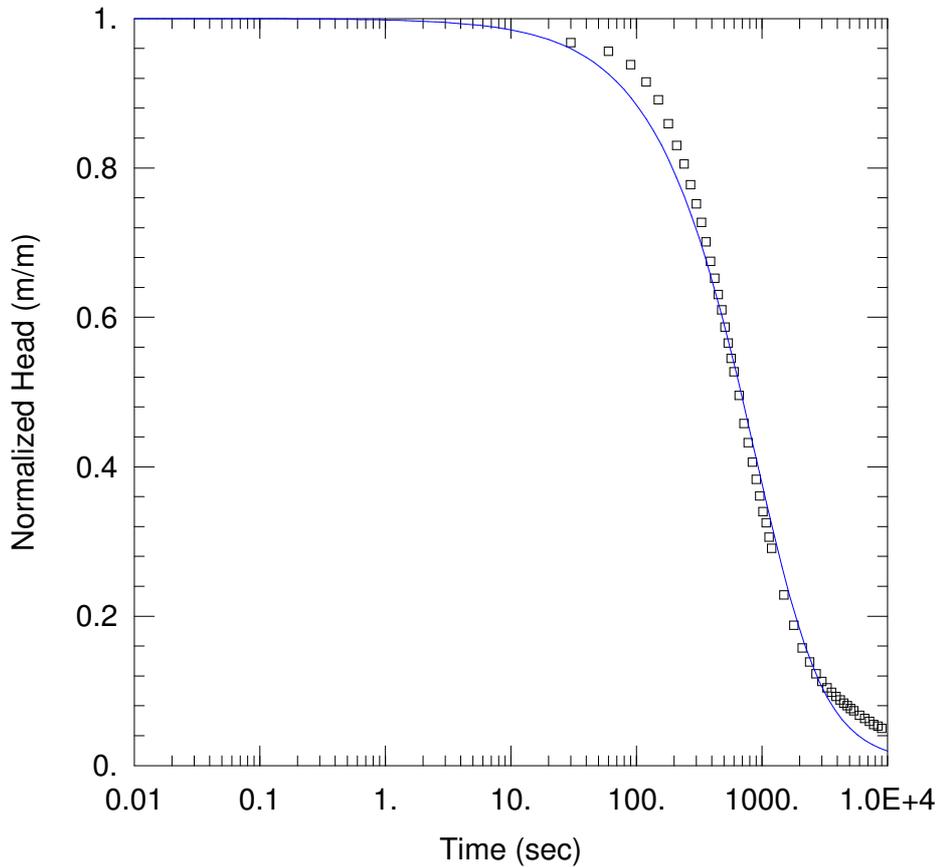
SOLUTION

Aquifer Model: Confined

Solution Method: Butler

K = 2.541E-8 m/sec

Le = 1000. m



TEST 1

Data Set: D:\...\1205-test1.aqt

Date: 09/02/13

Time: 12:57:45

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1205)

Initial Displacement: 13.99 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

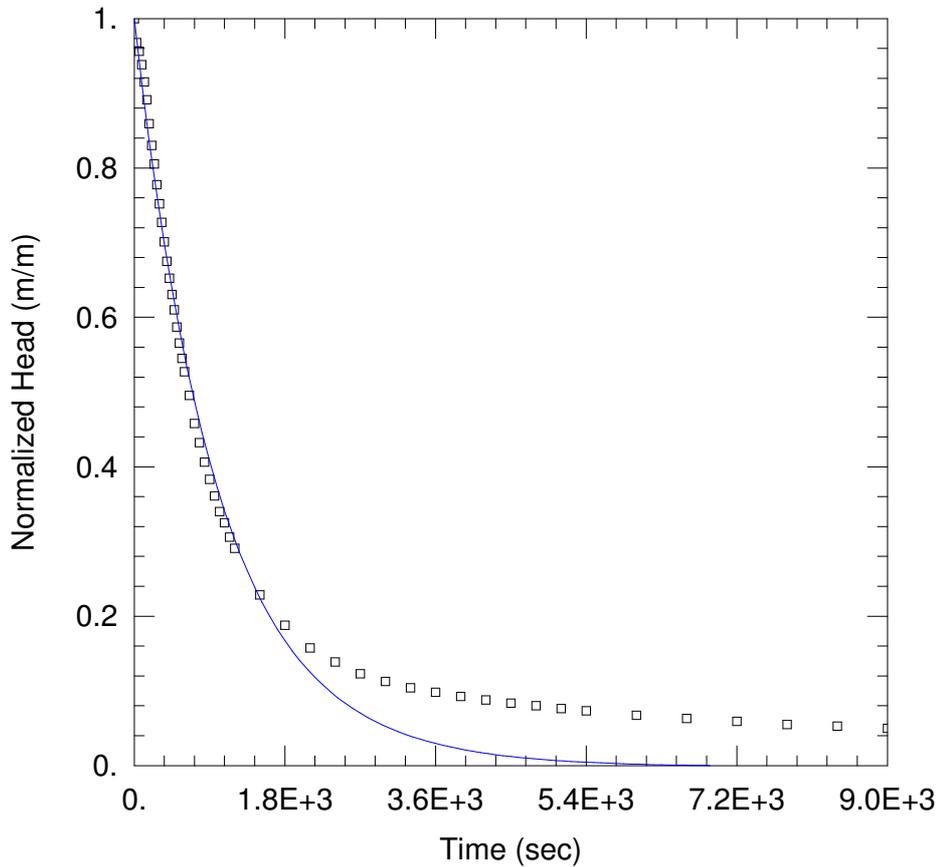
Solution Method: Barker-Black

T = 3.867E-6 m²/sec

S = 1.0E-10

K' = 1.72E-9 m/sec

Ss' = 1.6E-5 m⁻¹



TEST 1

Data Set: D:\...\1205-test1.aqt

Date: 09/02/13

Time: 12:58:29

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

WELL DATA (1205)

Initial Displacement: 13.99 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

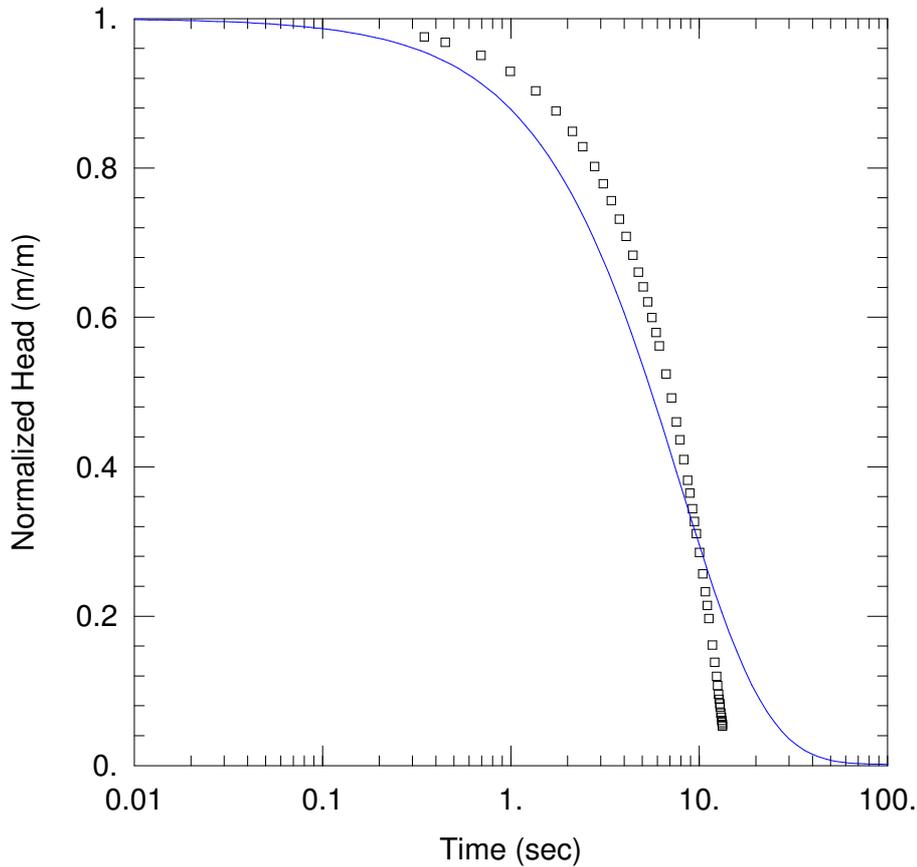
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 3.735E-8 m/sec

Ss = 4.161E-13 m⁻¹

Kz/Kr = 1.



TEST 2

Data Set: D:\...\1205-test2.aqt

Date: 09/02/13

Time: 13:09:32

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1205)

Initial Displacement: 14.05 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

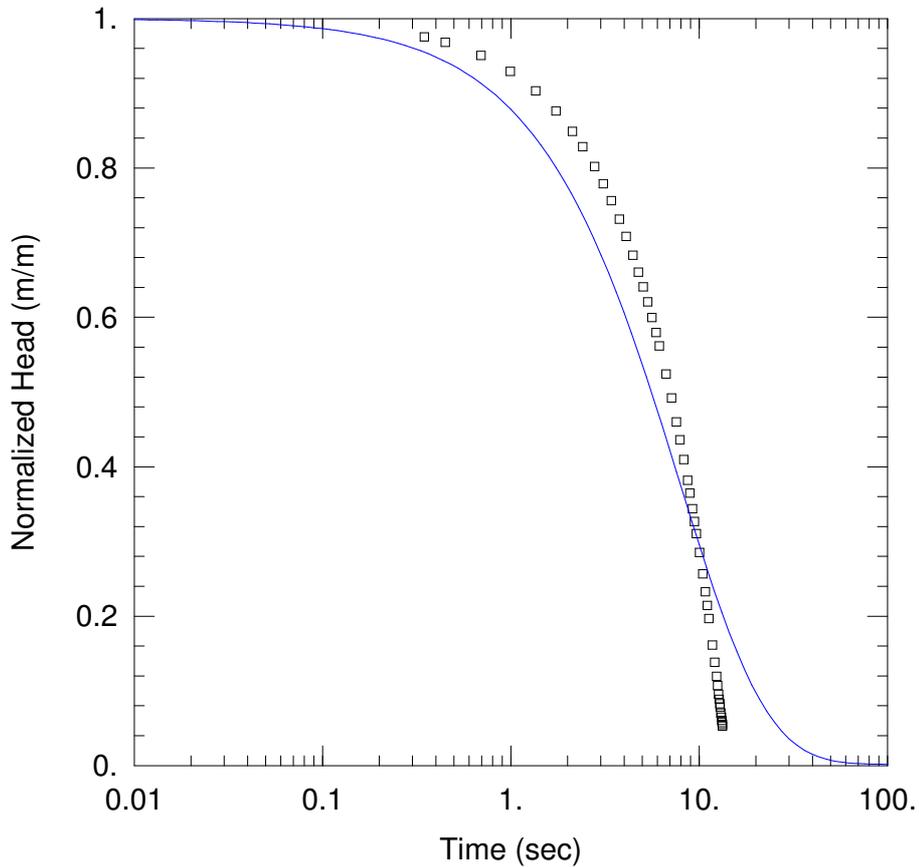
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 0.003455 m²/sec

S = 1.0E-20



TEST 2

Data Set: D:\...\1205-test2.aqt

Date: 09/02/13

Time: 13:10:31

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1205)

Initial Displacement: 14.05 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

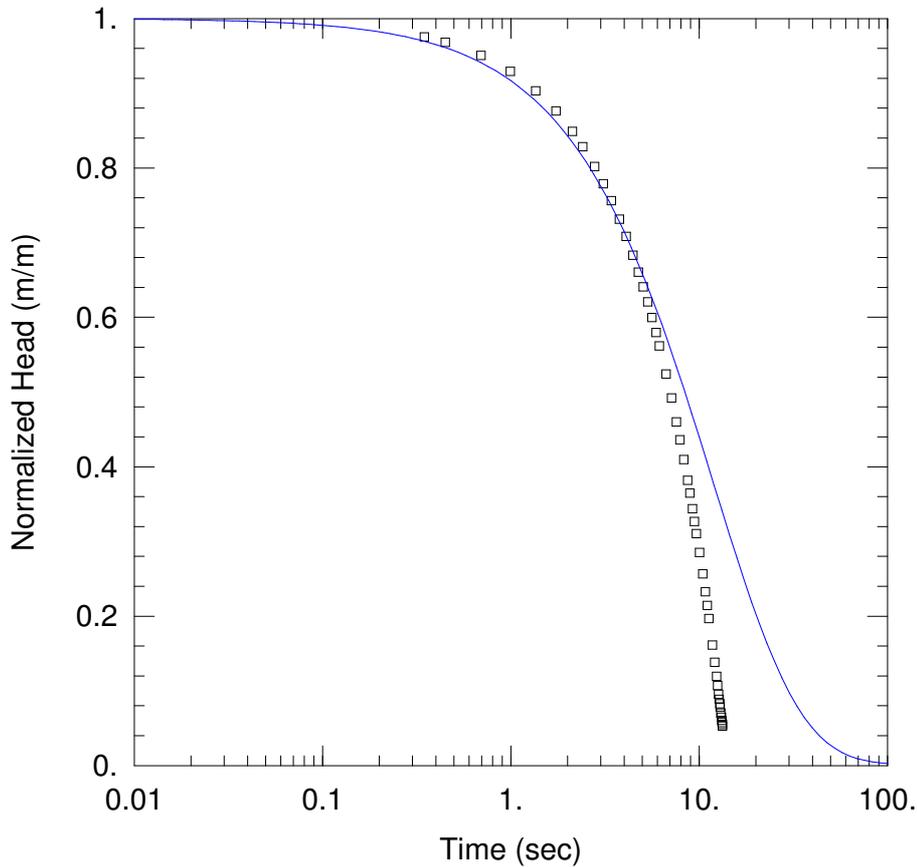
Solution Method: Dougherty-Babu

T = 0.003455 m²/sec

S = 1.0E-20

Kz/Kr = 1.

Sw = 0.



TEST 2

Data Set: D:\...\1205-test2.aqt

Date: 09/02/13

Time: 13:11:49

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

WELL DATA (1205)

Initial Displacement: 14.05 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

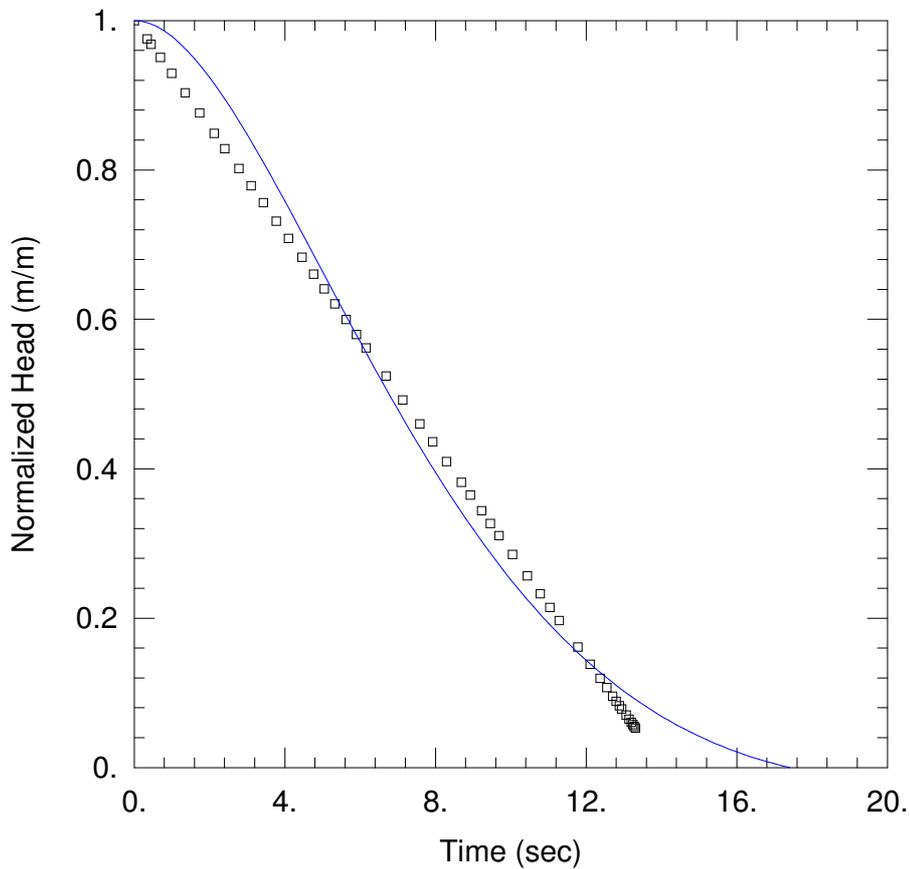
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 9.548E-6 m/sec

Ss = 4.161E-23 m⁻¹

Kz/Kr = 1.



TEST 2

Data Set: D:\...\1205-test2.aqt

Date: 09/02/13

Time: 13:13:18

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1205)

Initial Displacement: 14.05 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

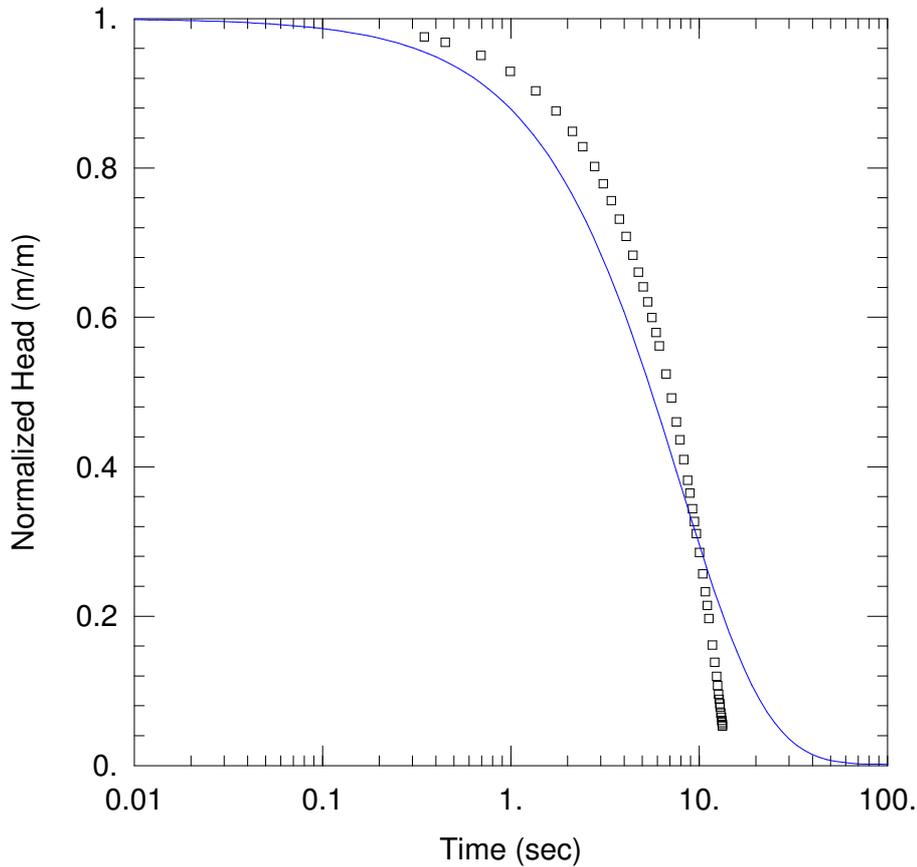
SOLUTION

Aquifer Model: Confined

Solution Method: Butler

K = 3.644E-6 m/sec

Le = 205.5 m



TEST 2

Data Set: D:\...\1205-test2.aqt

Date: 09/02/13

Time: 13:14:11

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1205)

Initial Displacement: 14.05 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

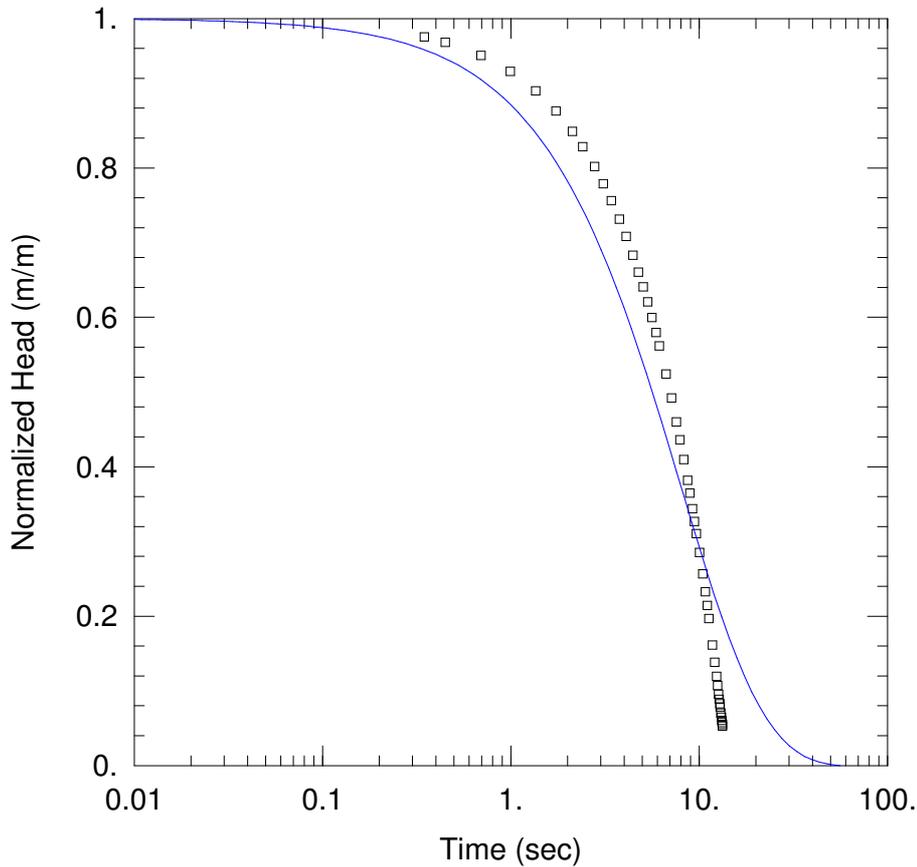
Solution Method: Barker-Black

T = 0.001793 m²/sec

S = 4.194E-19

K' = 1.497E-15 m/sec

Ss' = 2.159E-12 m⁻¹



TEST 2

Data Set: D:\...\1205-test2.aqt

Date: 09/02/13

Time: 13:14:46

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1205

Test Date: 15/08/2013

AQUIFER DATA

Saturated Thickness: 240.3 m

WELL DATA (1205)

Initial Displacement: 14.05 m

Static Water Column Height: 240.3 m

Total Well Penetration Depth: 240.3 m

Screen Length: 240.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

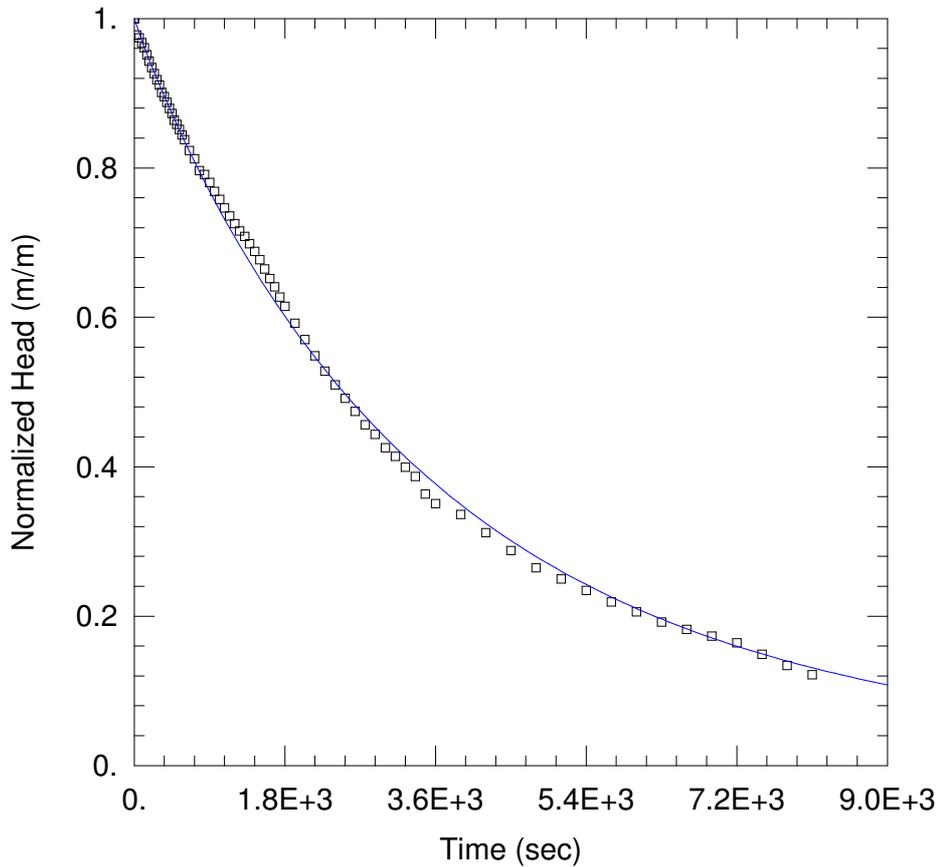
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 4.601E-6 m/sec

Ss = 1.261E-19 m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1215-test1.aqt

Date: 09/02/13

Time: 14:37:43

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 16.55 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

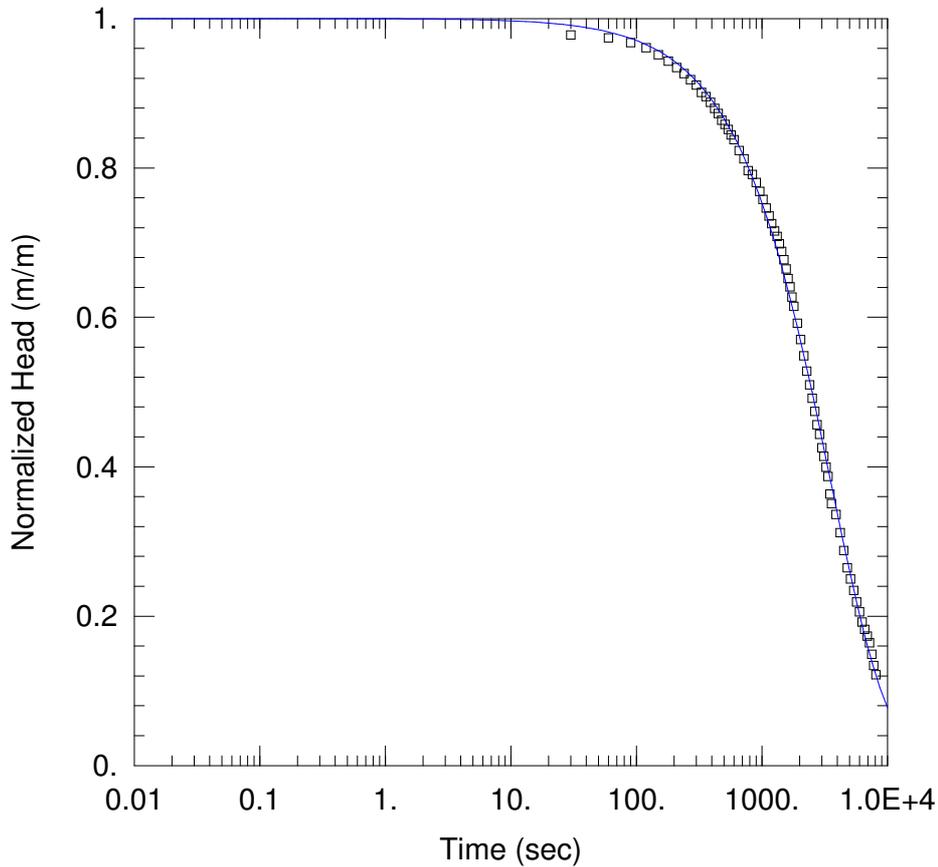
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 3.903E-6 m²/sec

S = 1.253E-10



TEST 1

Data Set: D:\...\1215-test1.aqt

Date: 09/02/13

Time: 14:38:40

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 16.55 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

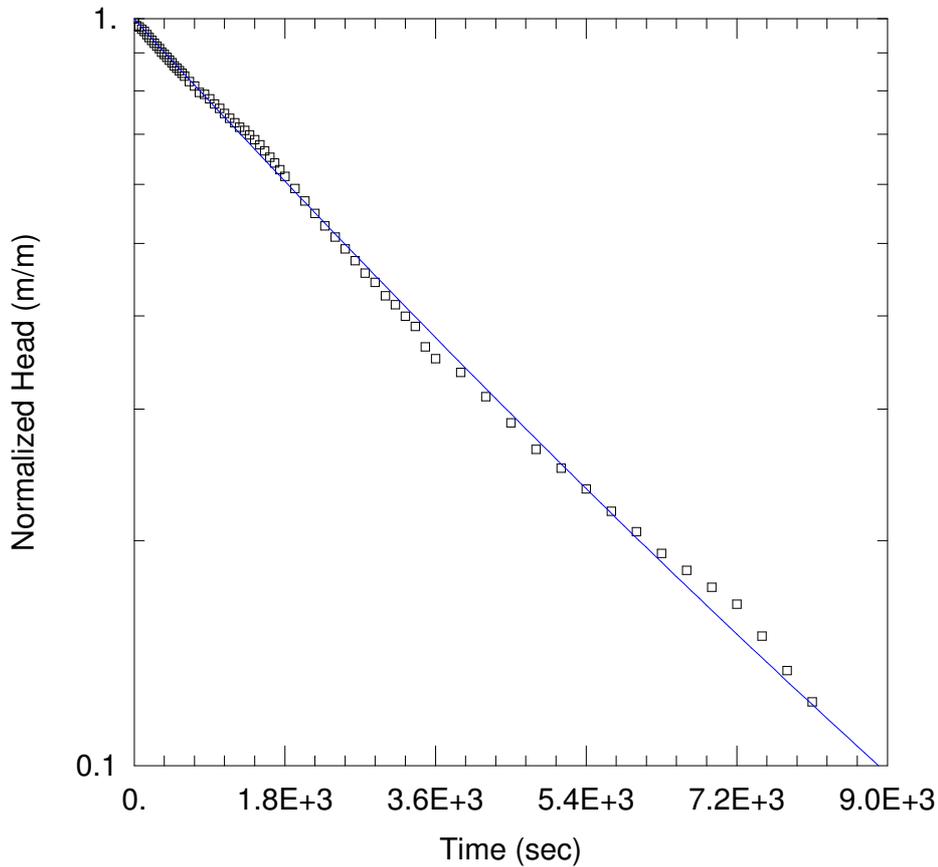
Solution Method: Dougherty-Babu

T = 7.682E-6 m²/sec

S = 1.0E-20

Kz/Kr = 1.

Sw = 0.



TEST 1

Data Set: D:\...\1215-test1.aqt

Date: 09/02/13

Time: 14:39:05

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

WELL DATA (1215)

Initial Displacement: 16.55 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

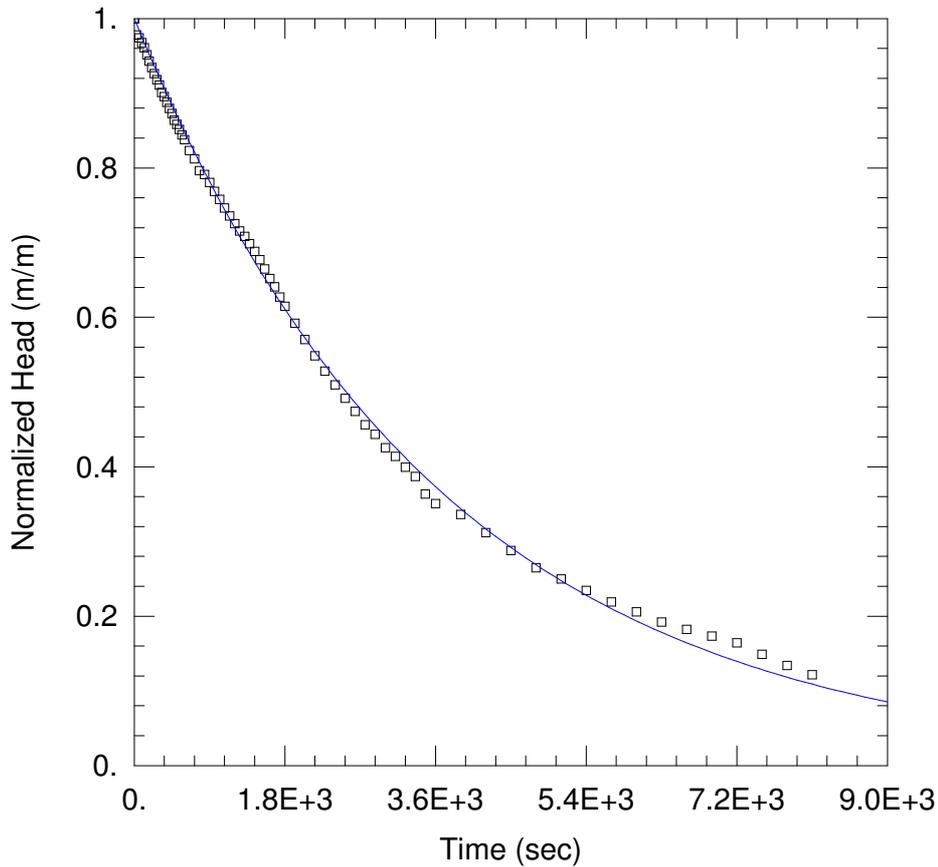
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 2.551E-8 m/sec

Ss = 3.32E-23 m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1215-test1.aqt

Date: 09/02/13

Time: 14:39:18

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 16.55 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

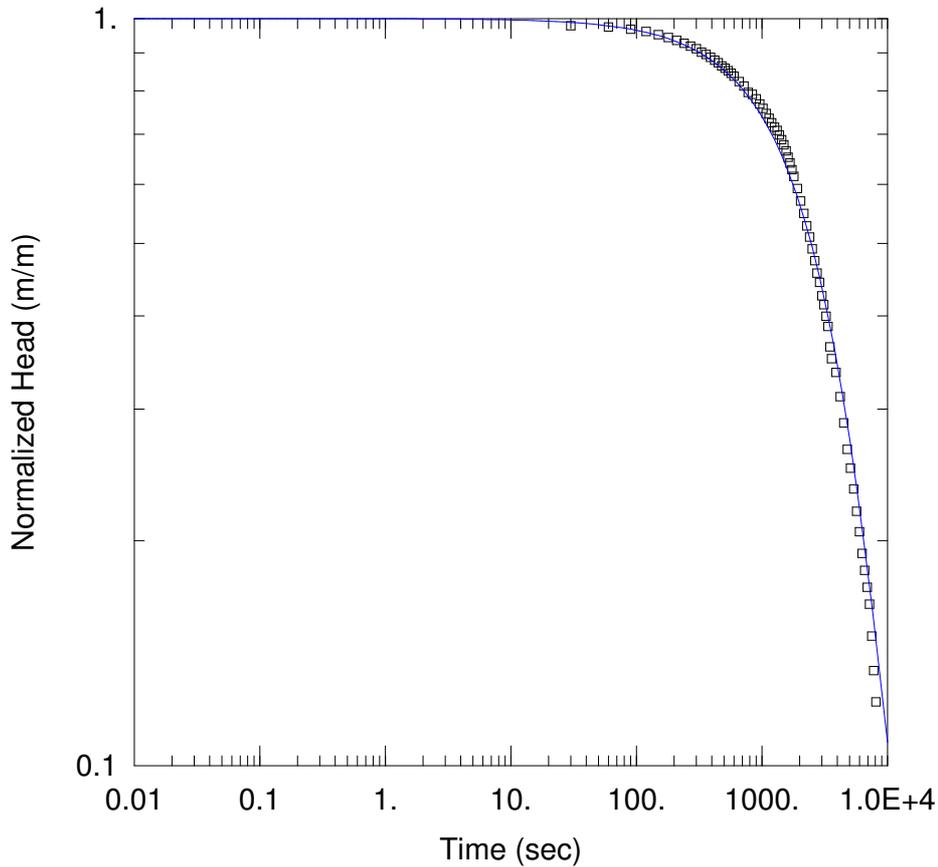
SOLUTION

Aquifer Model: Confined

Solution Method: Butler

K = 5.541E-9 m/sec

Le = 0.1 m



TEST 1

Data Set: D:\...\1215-test1.aqt

Date: 09/02/13

Time: 14:39:47

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 16.55 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

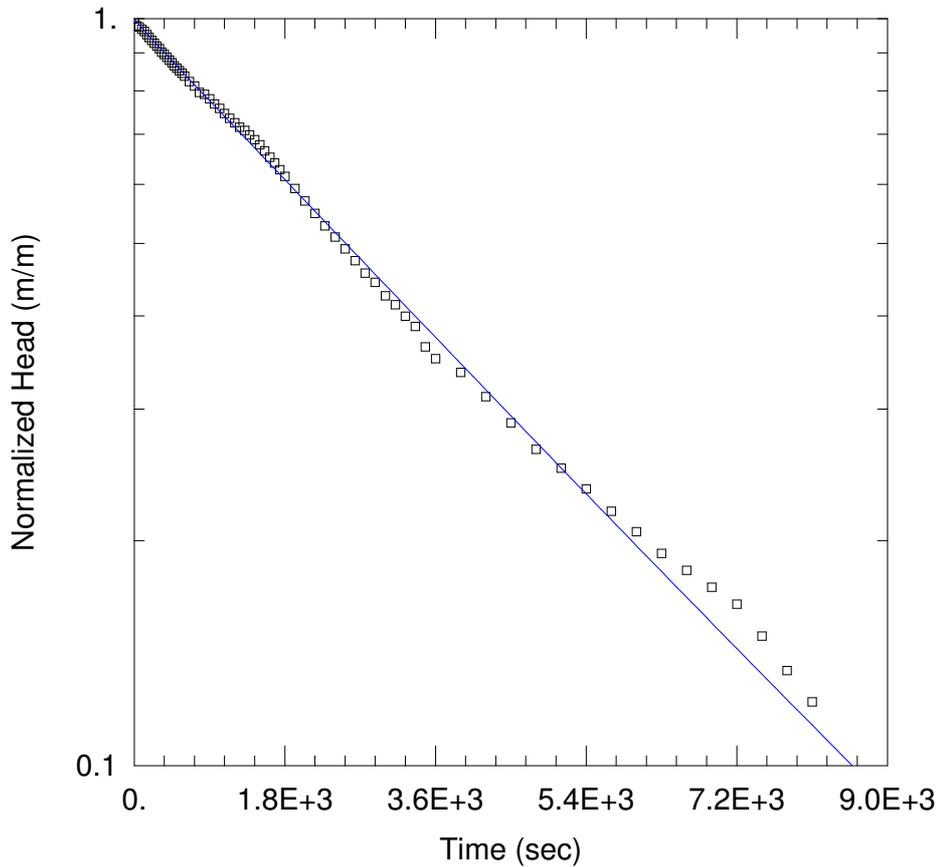
Solution Method: Barker-Black

T = 1.286E-6 m²/sec

S = 5.027E-13

K' = 1.0E-10 m/sec

Ss' = 4.243E-6 m⁻¹



TEST 1

Data Set: D:\...\1215-test1.aqt

Date: 09/02/13

Time: 14:40:32

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

WELL DATA (1215)

Initial Displacement: 16.55 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

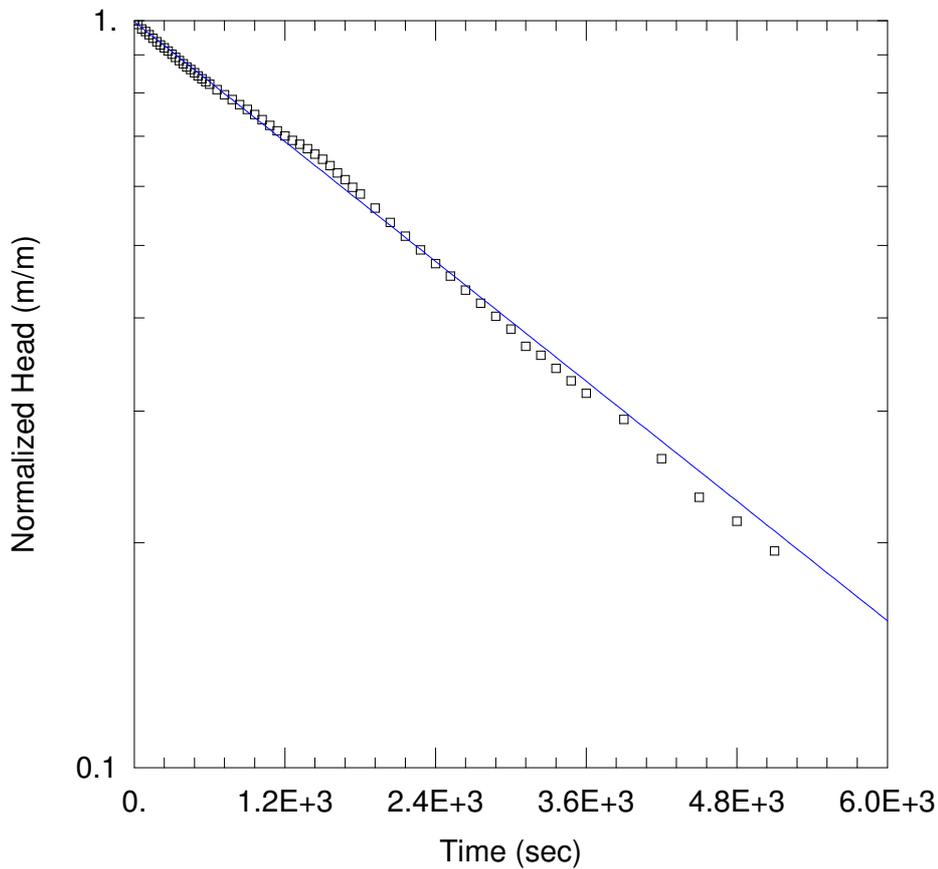
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 8.378E-9 m/sec

Ss = 1.684E-10 m⁻¹

Kz/Kr = 1.



TEST 2

Data Set: D:\...\1215-test2.aqt

Date: 09/02/13

Time: 14:48:33

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 15.18 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

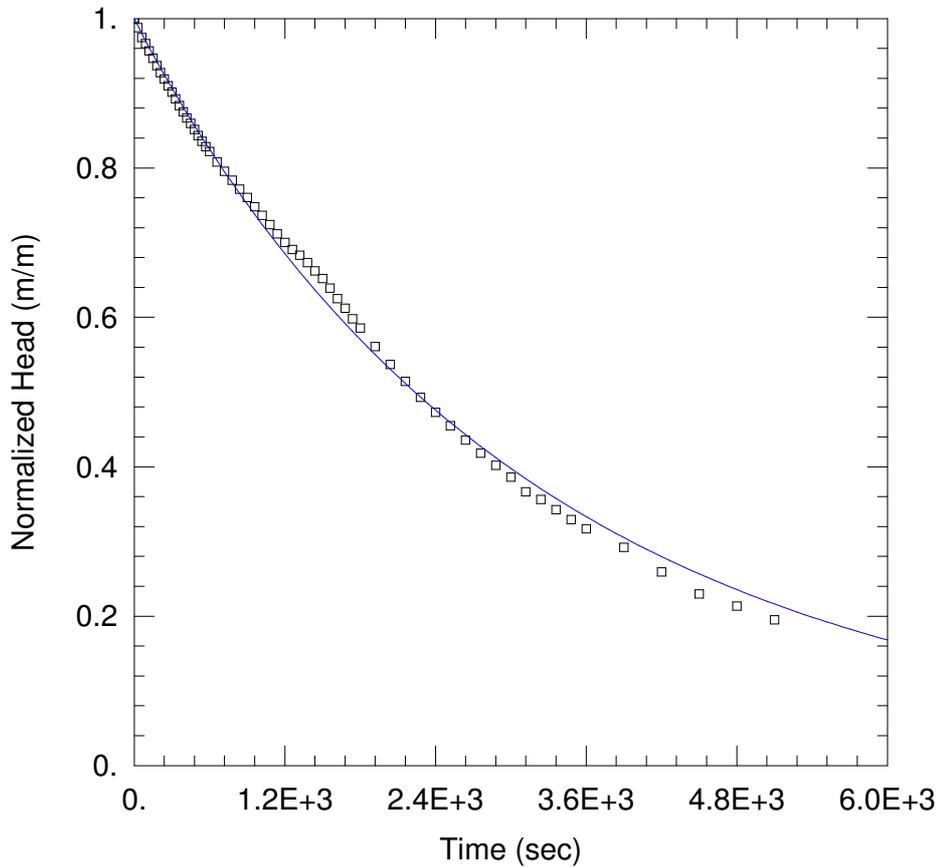
SOLUTION

Aquifer Model: Confined

Solution Method: Bower-Rice

K = 9.153E-9 m/sec

y0 = 15.12 m



TEST 2

Data Set: D:\...\1215-test2.aqt

Date: 09/02/13

Time: 14:49:04

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 15.18 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

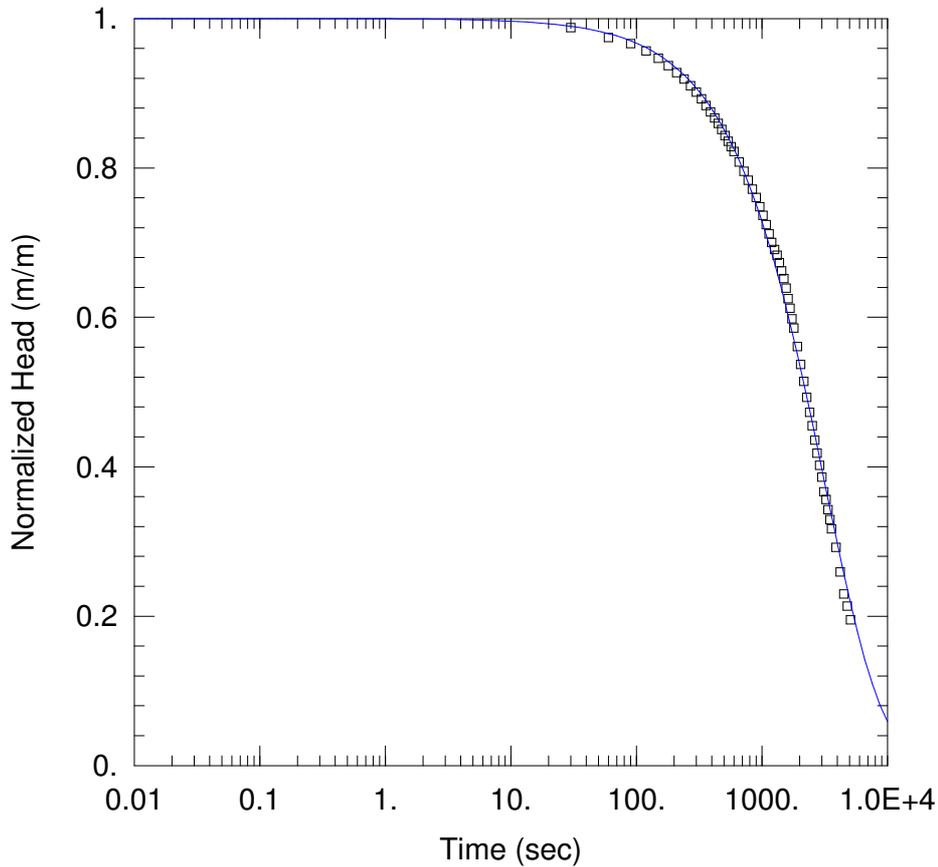
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 8.624E-6 m²/sec

S = 1.0E-20



TEST 2

Data Set: D:\...\1215-test2.aqt

Date: 09/02/13

Time: 14:49:27

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 15.18 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

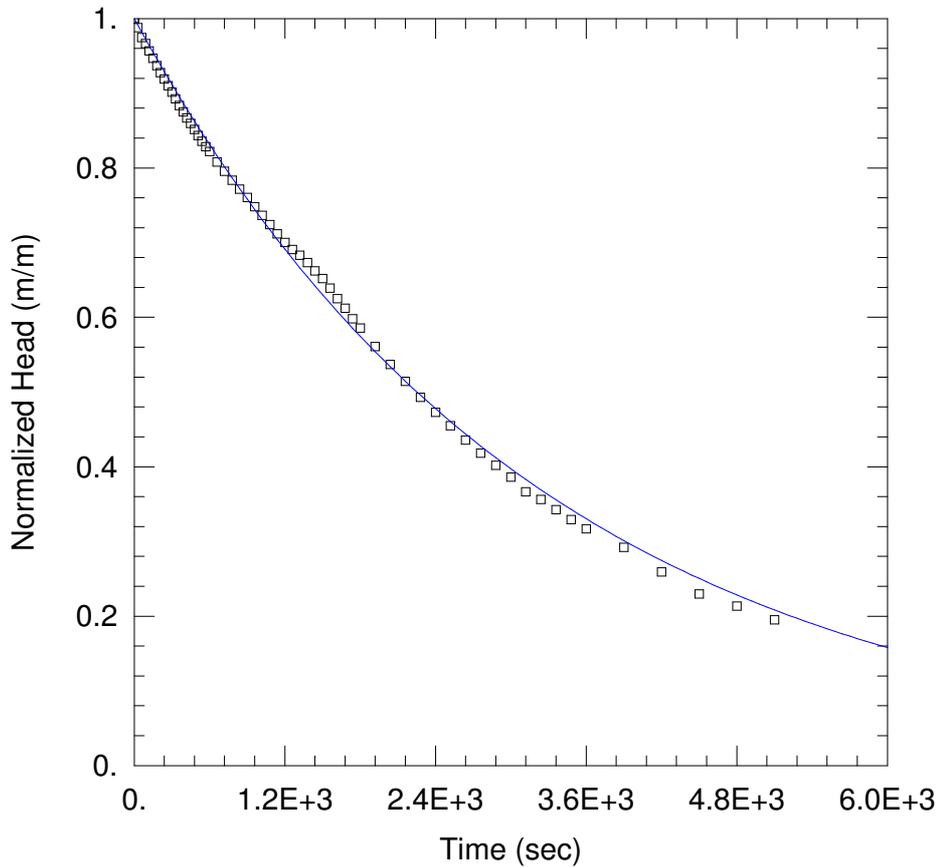
Solution Method: Dougherty-Babu

T = 8.624E-6 m²/sec

S = 1.0E-20

Kz/Kr = 1.

Sw = 0.



TEST 2

Data Set: D:\...\1215-test2.aqt

Date: 09/02/13

Time: 14:49:48

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 15.18 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

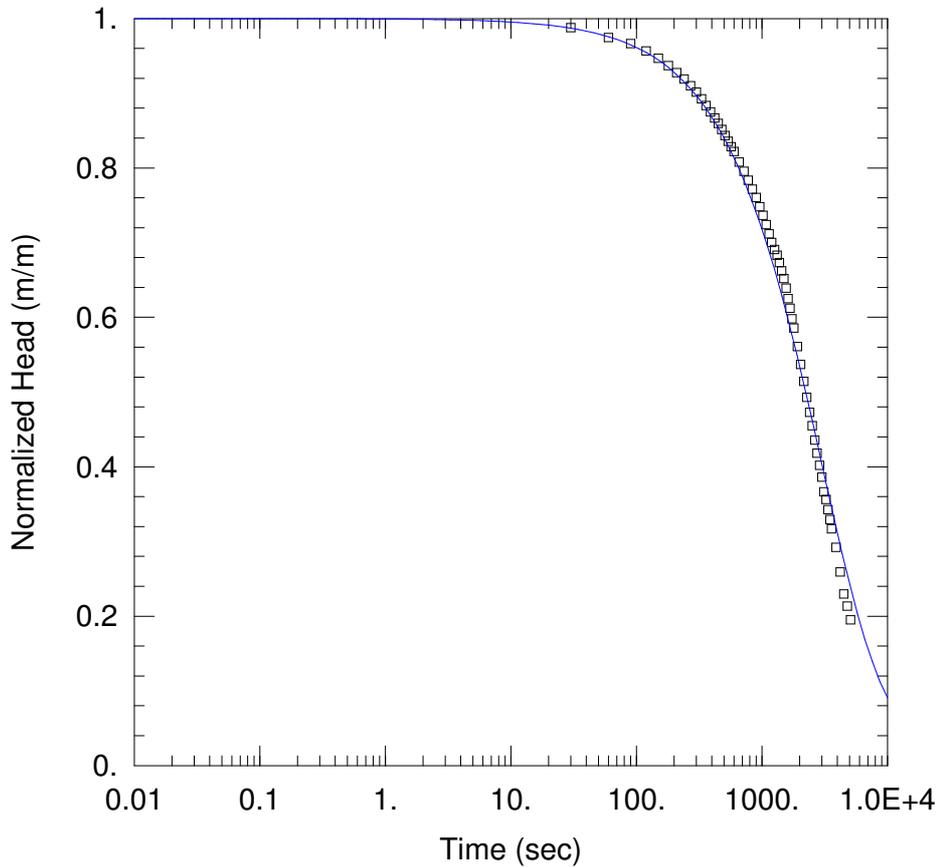
SOLUTION

Aquifer Model: Confined

Solution Method: Butler

K = 6.23E-9 m/sec

Le = 0.1 m



TEST 2

Data Set: D:\...\1215-test2.aqt

Date: 09/02/13

Time: 14:50:25

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1215

Test Date: 28/06/2013

AQUIFER DATA

Saturated Thickness: 301.2 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1215)

Initial Displacement: 15.18 m

Static Water Column Height: 301.2 m

Total Well Penetration Depth: 301.2 m

Screen Length: 301.2 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

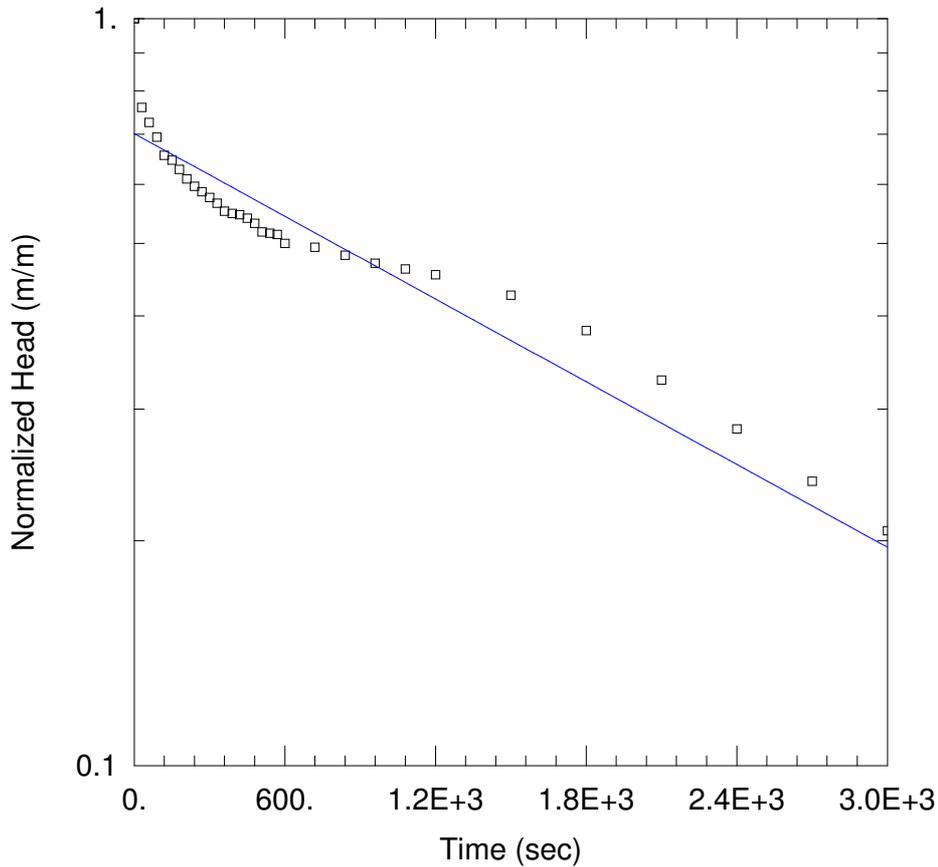
Solution Method: Barker-Black

T = 1.436E-6 m²/sec

S = 1.558E-13

K' = 1.0E-10 m/sec

Ss' = 4.055E-6 m⁻¹



TEST 1

Data Set: D:\...\1304-test1.aqt

Date: 09/02/13

Time: 13:33:29

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 03/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1304)

Initial Displacement: 4.998 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

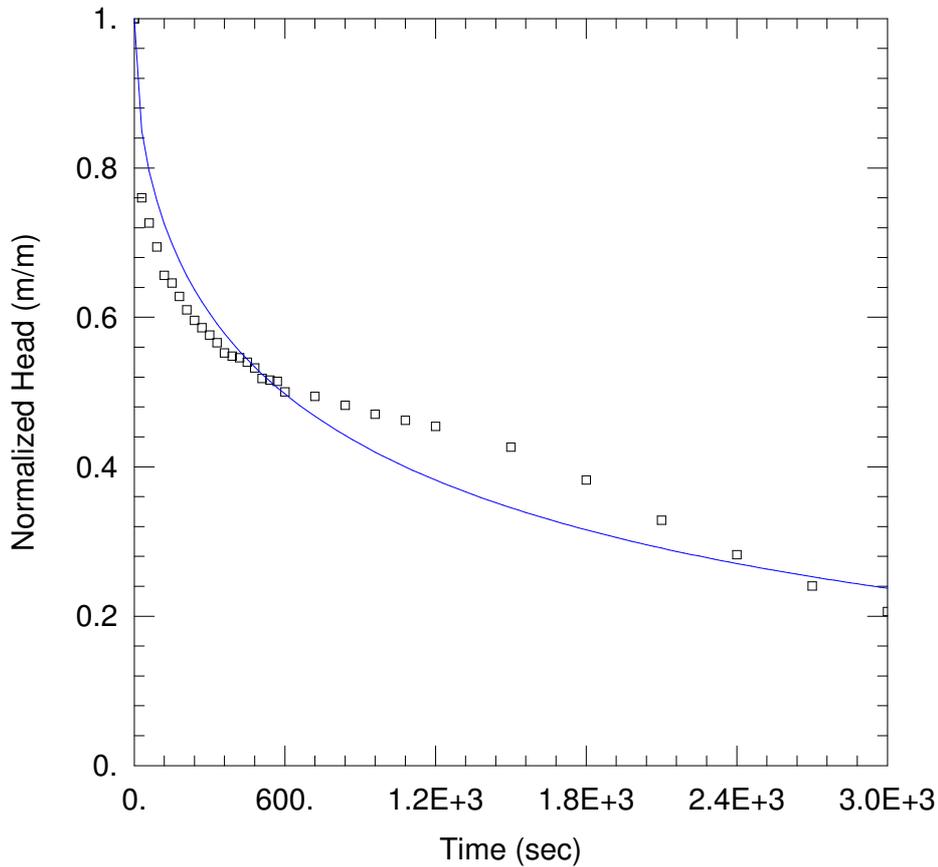
SOLUTION

Aquifer Model: Confined

Solution Method: Hvorslev

K = 1.291E-8 m/sec

y0 = 3.506 m



TEST 1

Data Set: D:\...\1304-test1.aqt

Date: 09/02/13

Time: 13:34:20

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 03/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1304)

Initial Displacement: 4.998 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

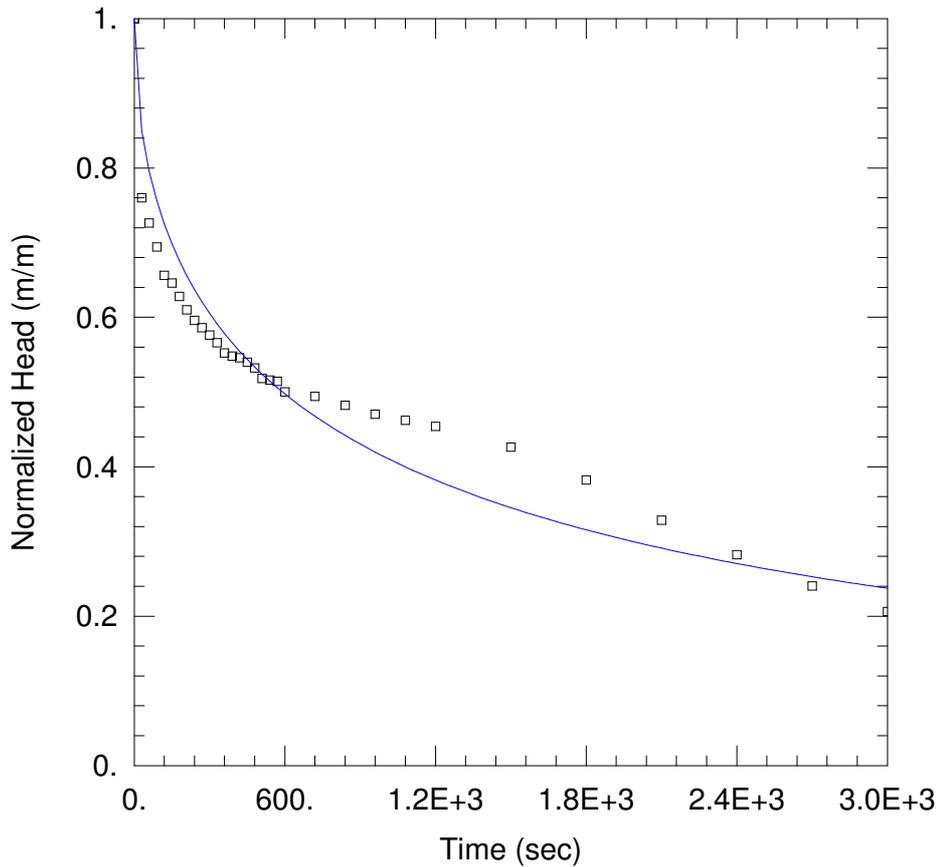
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 4.853E-7 m²/sec

S = 0.8356



TEST 1

Data Set: D:\...\1304-test1.aqt

Date: 09/02/13

Time: 13:34:34

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 03/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1304)

Initial Displacement: 4.998 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

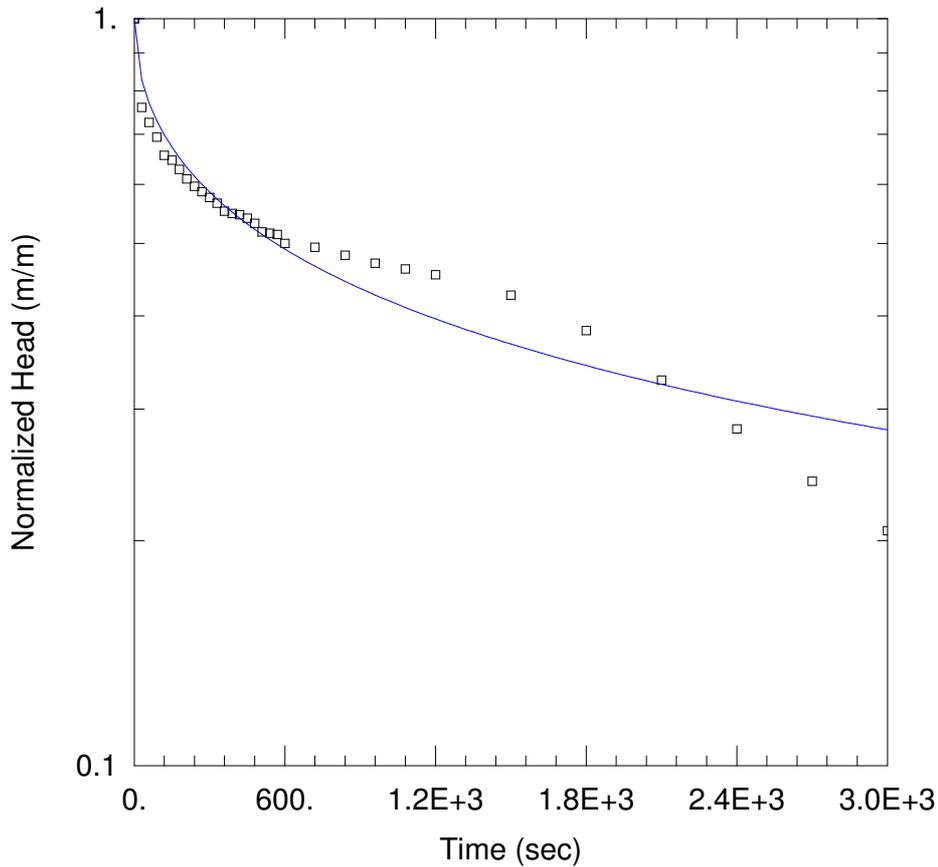
Solution Method: Dougherty-Babu

T = 4.853E-7 m²/sec

S = 0.8356

Kz/Kr = 1.

Sw = 0.



TEST 1

Data Set: D:\...\1304-test1.aqt

Date: 09/02/13

Time: 13:35:39

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 03/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

WELL DATA (1304)

Initial Displacement: 4.998 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

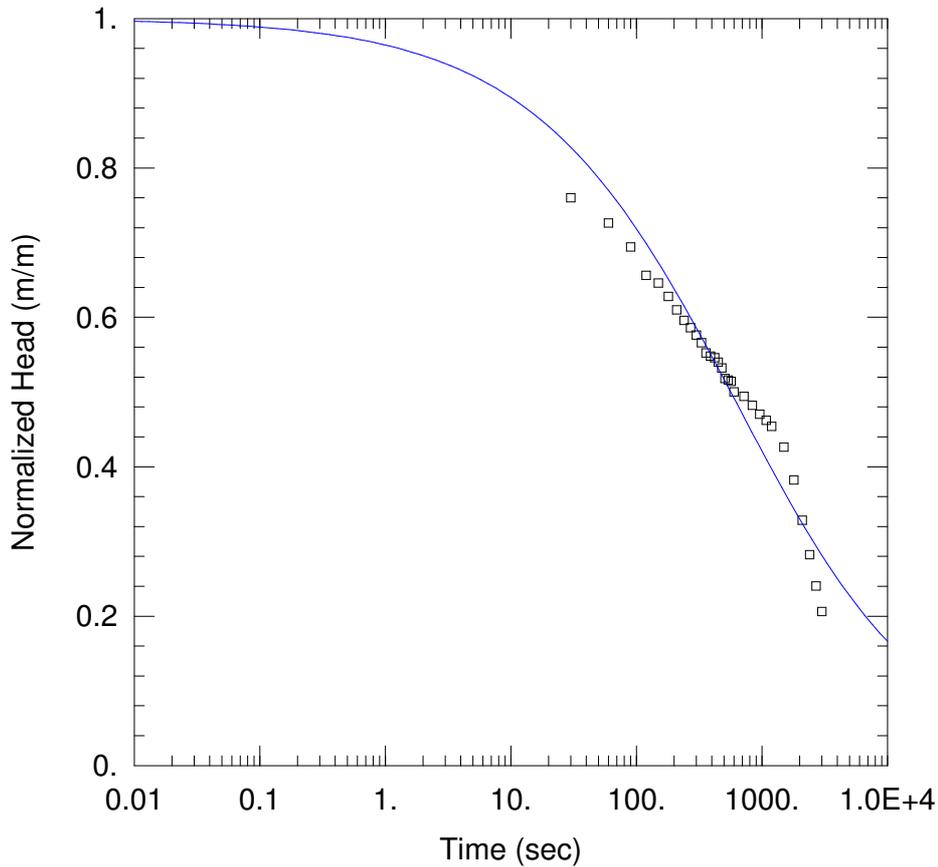
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 1.495E-11 m/sec

Ss = 1. m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1304-test1.aqt

Date: 09/02/13

Time: 13:37:17

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 03/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1304)

Initial Displacement: 4.998 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

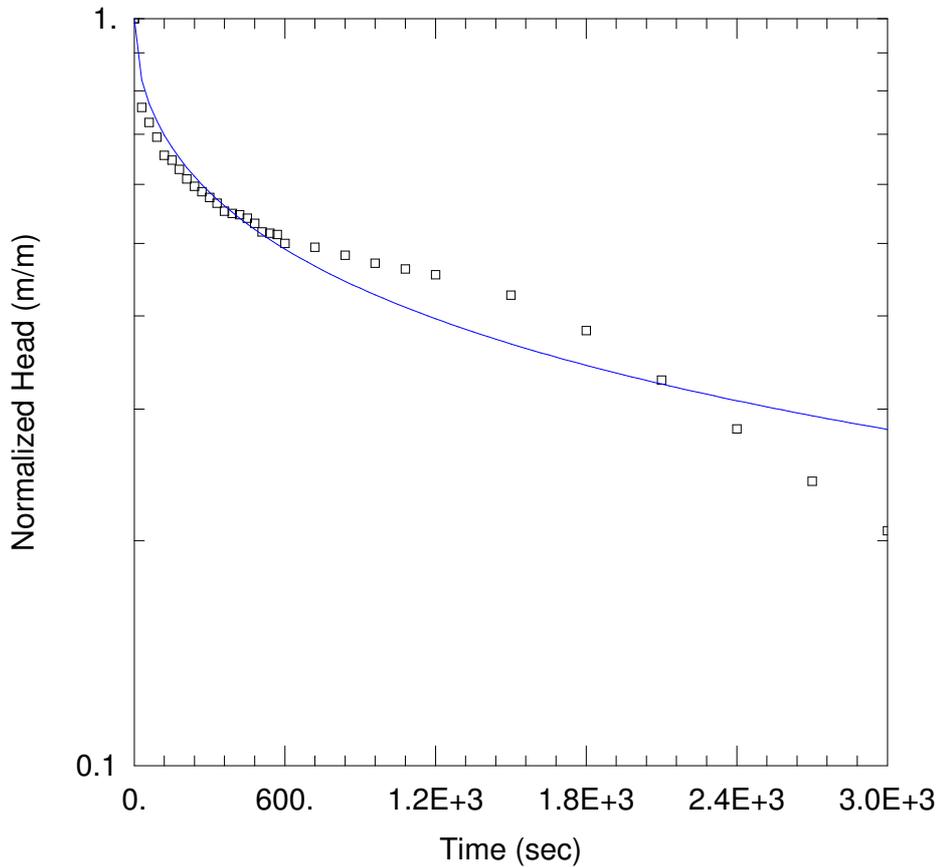
Solution Method: Barker-Black

T = 2.996E-9 m²/sec

S = 200.8

K' = 1.0E-20 m/sec

Ss' = 1.0E-20 m⁻¹



TEST 1

Data Set: D:\...\1304-test1.aqt

Date: 09/02/13

Time: 13:38:07

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 03/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

WELL DATA (1304)

Initial Displacement: 4.998 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

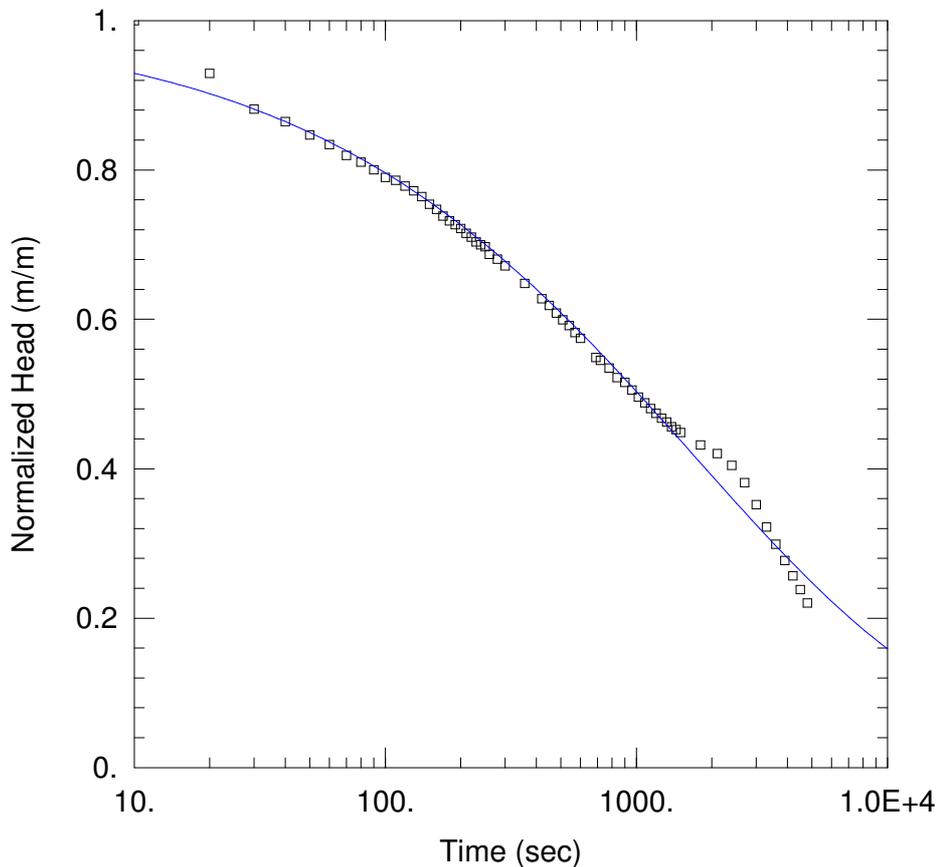
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 4.168E-13 m/sec

Ss = 35.72 m⁻¹

Kz/Kr = 1.



TEST 2

Data Set: D:\...\1304-test2.aqt

Date: 09/02/13

Time: 13:46:07

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 04/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1304)

Initial Displacement: 7.755 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

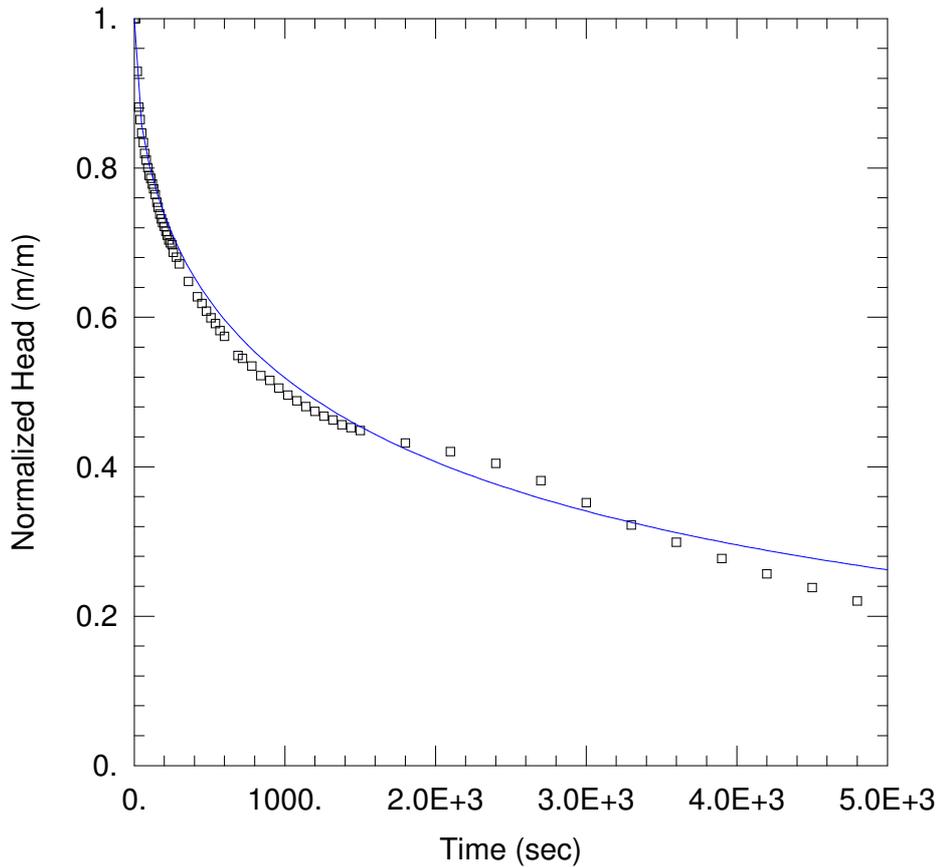
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 2.454E-7 m²/sec

S = 1.



TEST 2

Data Set: D:\...\1304-test2.aqt

Date: 09/02/13

Time: 13:46:59

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 04/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1304)

Initial Displacement: 7.755 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

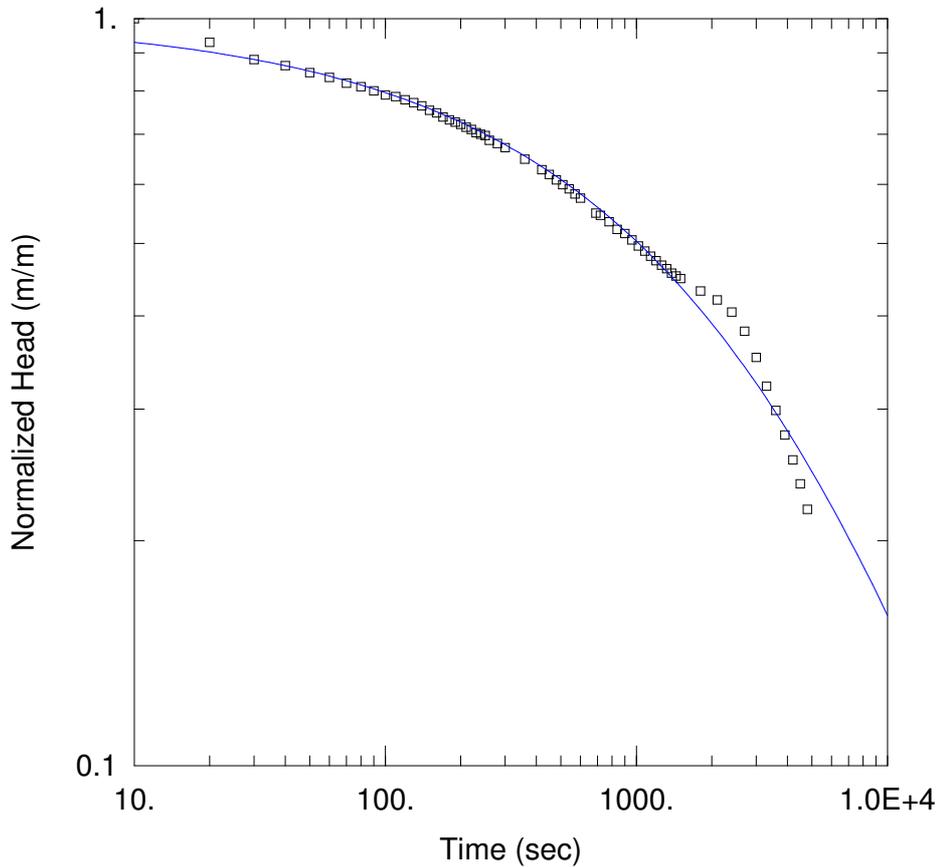
Solution Method: Dougherty-Babu

T = 2.226E-7 m²/sec

S = 1.

Kz/Kr = 1.

Sw = 0.



TEST 2

Data Set: D:\...\1304-test2.aqt

Date: 09/02/13

Time: 13:47:38

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 04/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

WELL DATA (1304)

Initial Displacement: 7.755 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

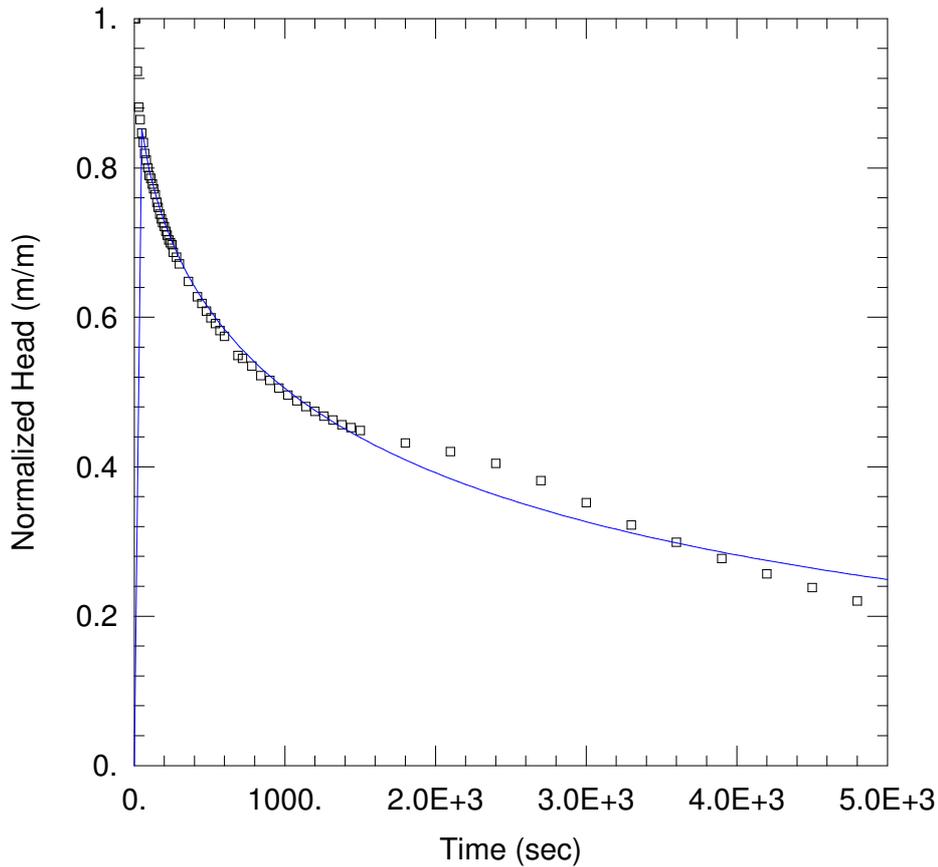
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 1.223E-9 m/sec

Ss = 0.00498 m⁻¹

Kz/Kr = 1.



TEST 2

Data Set: D:\...\1304-test2.aqt

Date: 09/02/13

Time: 13:49:00

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 04/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1304)

Initial Displacement: 7.755 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

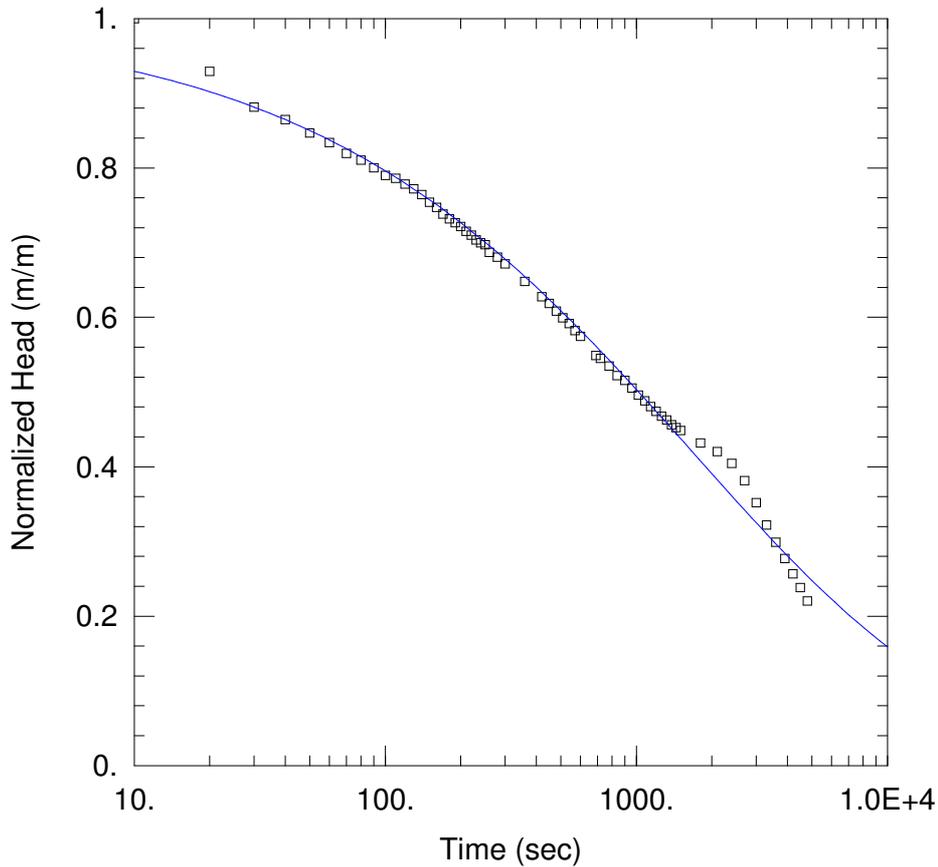
Solution Method: Butler-Zhan

Kr = 1.212E-9 m/sec

Ss = 0.00498 m⁻¹

Kz/Kr = 1.

Le = 1000. m



TEST 2

Data Set: D:\...\1304-test2.aqt

Date: 09/02/13

Time: 13:49:38

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 04/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1304)

Initial Displacement: 7.755 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

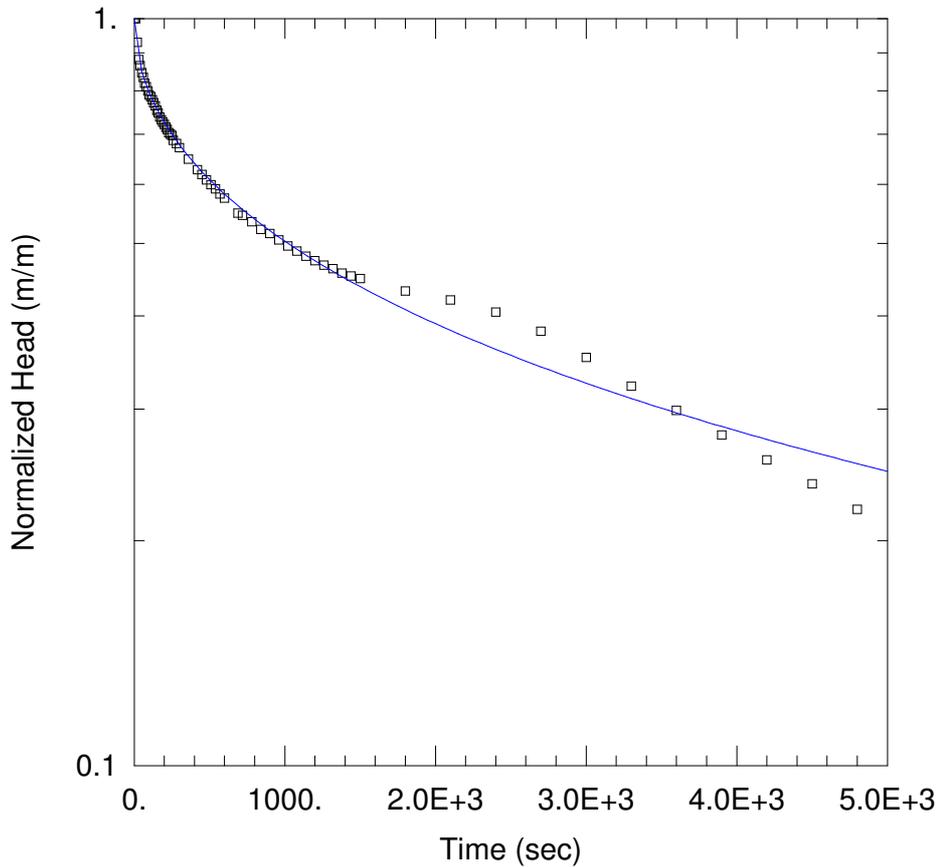
Solution Method: Barker-Black

T = 2.452E-7 m²/sec

S = 1.

K' = 1.0E-20 m/sec

Ss' = 1.0E-20 m⁻¹



TEST 2

Data Set: D:\...\1304-test2.aqt

Date: 09/02/13

Time: 13:50:16

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1304

Test Date: 04/07/2013

AQUIFER DATA

Saturated Thickness: 200.8 m

WELL DATA (1304)

Initial Displacement: 7.755 m

Static Water Column Height: 200.8 m

Total Well Penetration Depth: 200.8 m

Screen Length: 200.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

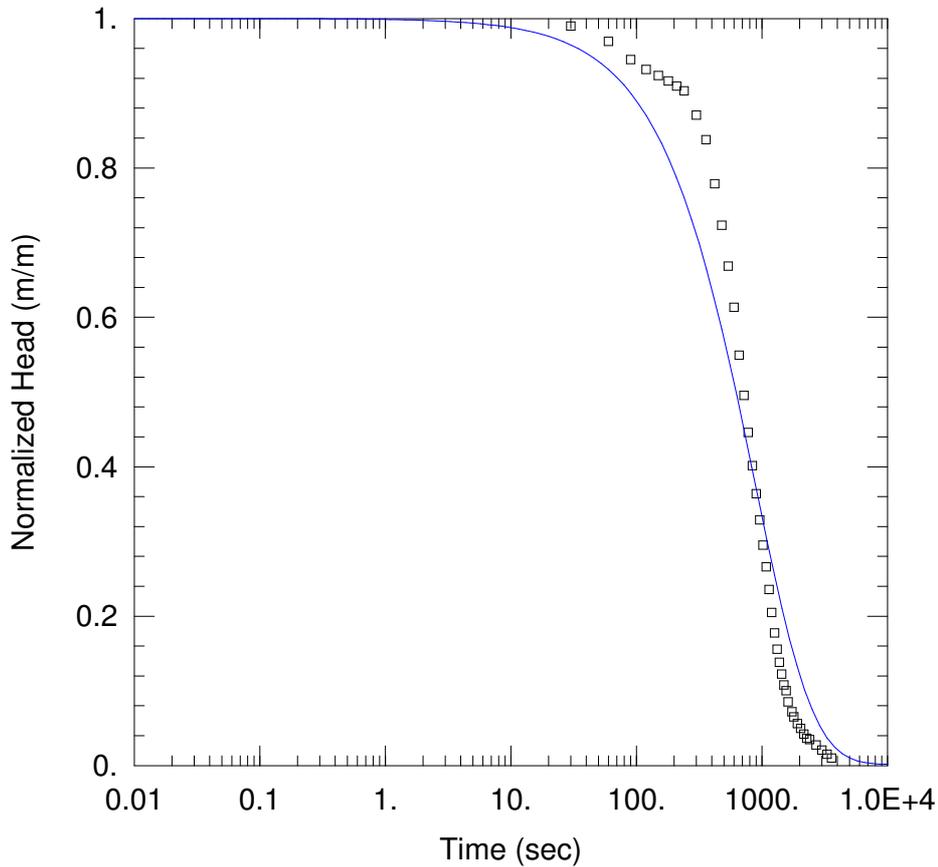
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 1.217E-9 m/sec

Ss = 0.00498 m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1306-test1.aqt

Date: 09/02/13

Time: 15:03:01

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1306)

Initial Displacement: 16.07 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

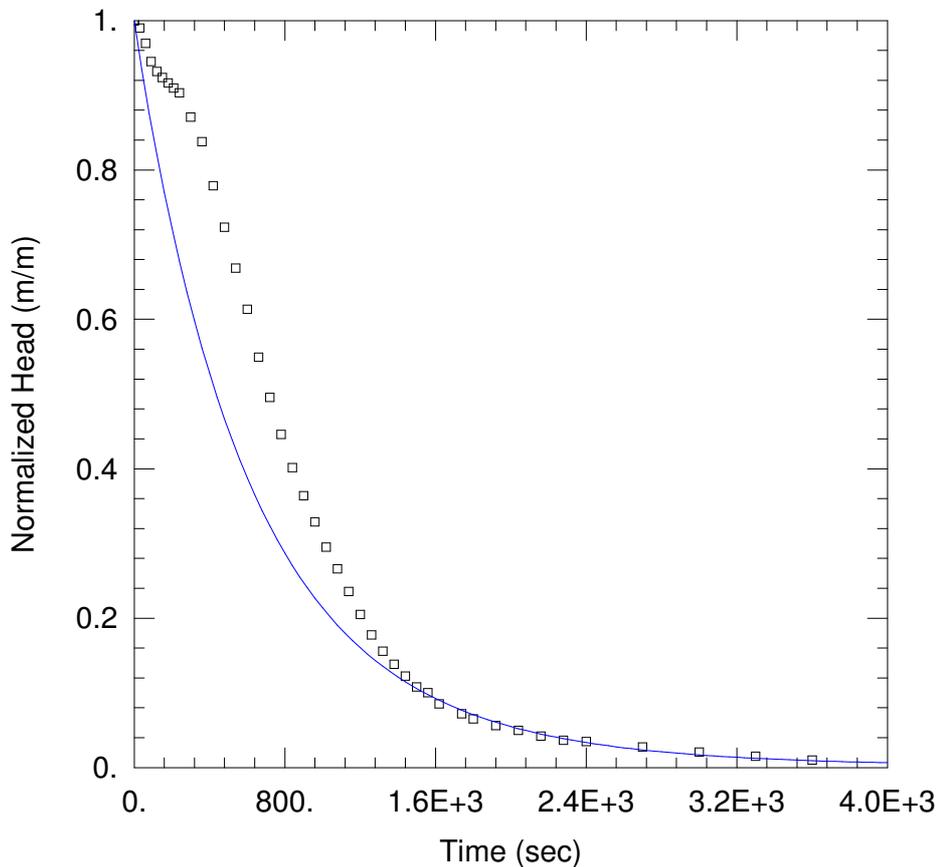
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 3.098E-5 m²/sec

S = 1.0E-20



TEST 1

Data Set: D:\...\1306-test1.aqt

Date: 09/02/13

Time: 15:04:26

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

WELL DATA (1306)

Initial Displacement: 16.07 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

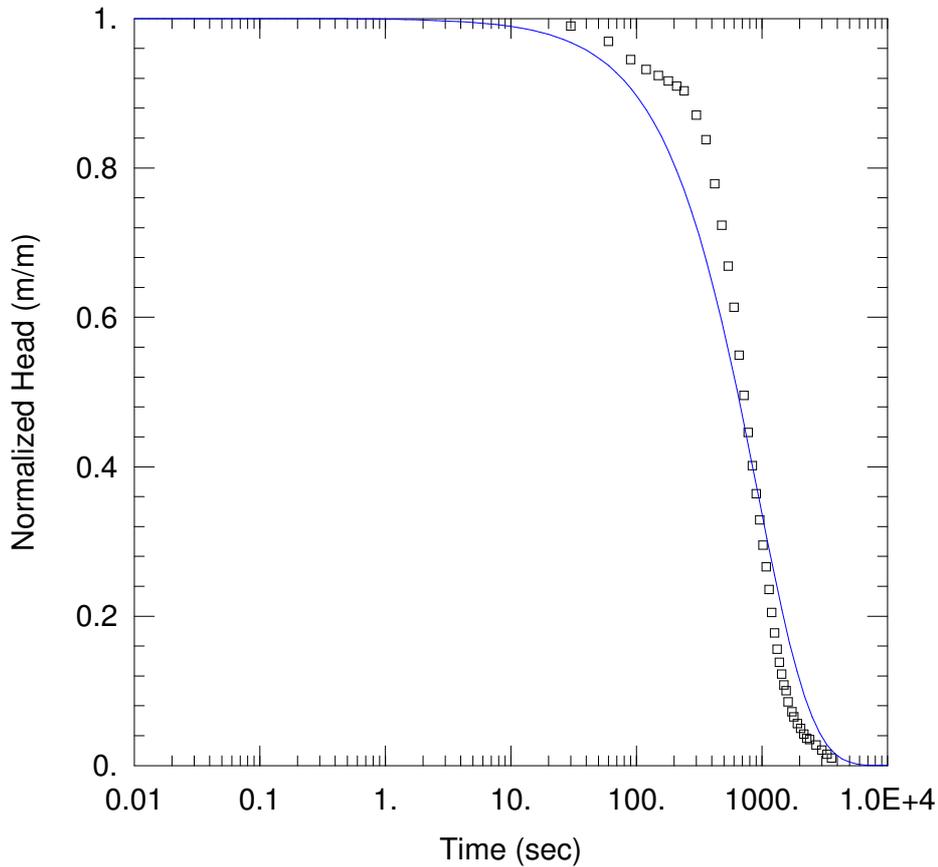
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 1.108E-7 m/sec

Ss = 2.501E-23 m⁻¹

Kz/Kr = 0.001



TEST 1

Data Set: D:\...\1306-test1.aqt

Date: 09/02/13

Time: 15:04:58

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

Anisotropy Ratio (Kz/Kr): 0.001

WELL DATA (1306)

Initial Displacement: 16.07 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

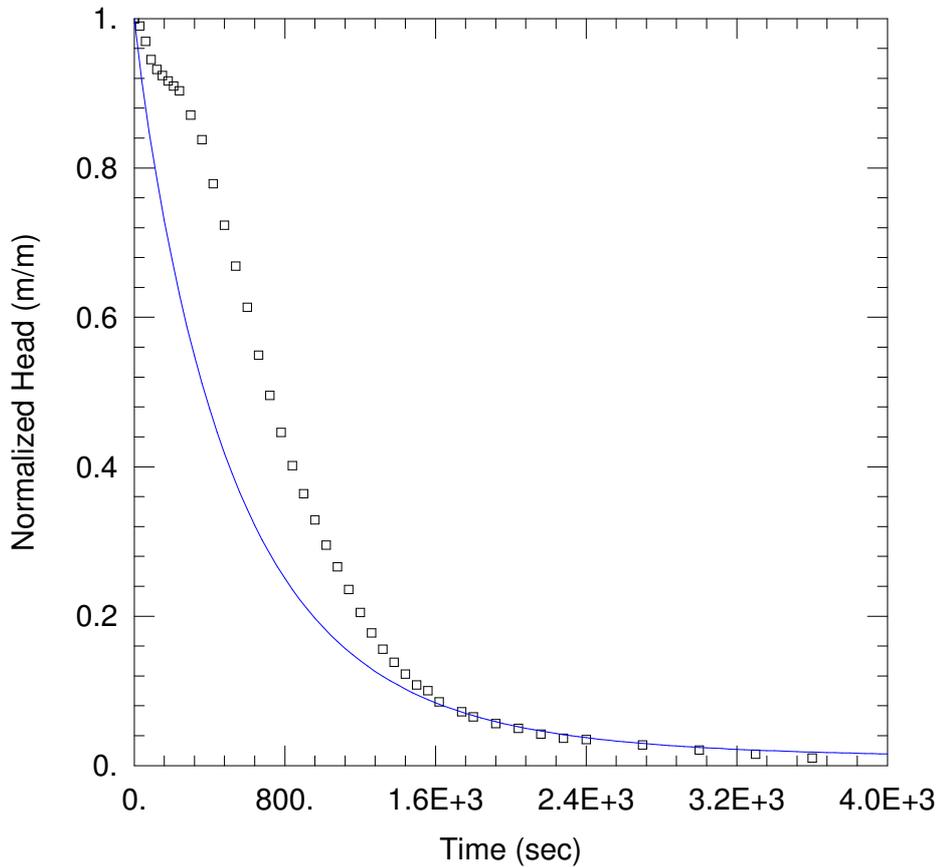
SOLUTION

Aquifer Model: Confined

Solution Method: Butler

K = 1.656E-8 m/sec

Le = 1000. m



TEST 1

Data Set: D:\...\1306-test1.aqt

Date: 09/02/13

Time: 15:05:26

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

Anisotropy Ratio (Kz/Kr): 0.001

WELL DATA (1306)

Initial Displacement: 16.07 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

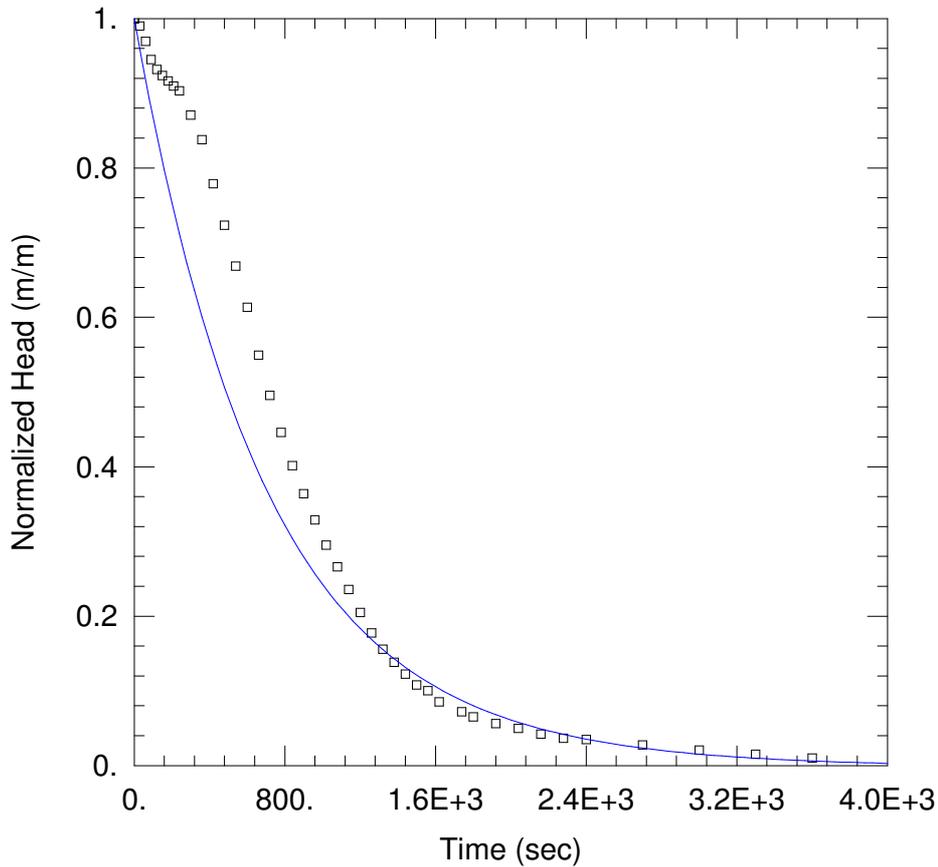
Solution Method: Barker-Black

T = 9.703E-6 m²/sec

S = 1.469E-12

K' = 1.0E-10 m/sec

Ss' = 2.176E-6 m⁻¹



TEST 1

Data Set: D:\...\1306-test1.aqt

Date: 09/02/13

Time: 15:06:02

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

WELL DATA (1306)

Initial Displacement: 16.07 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

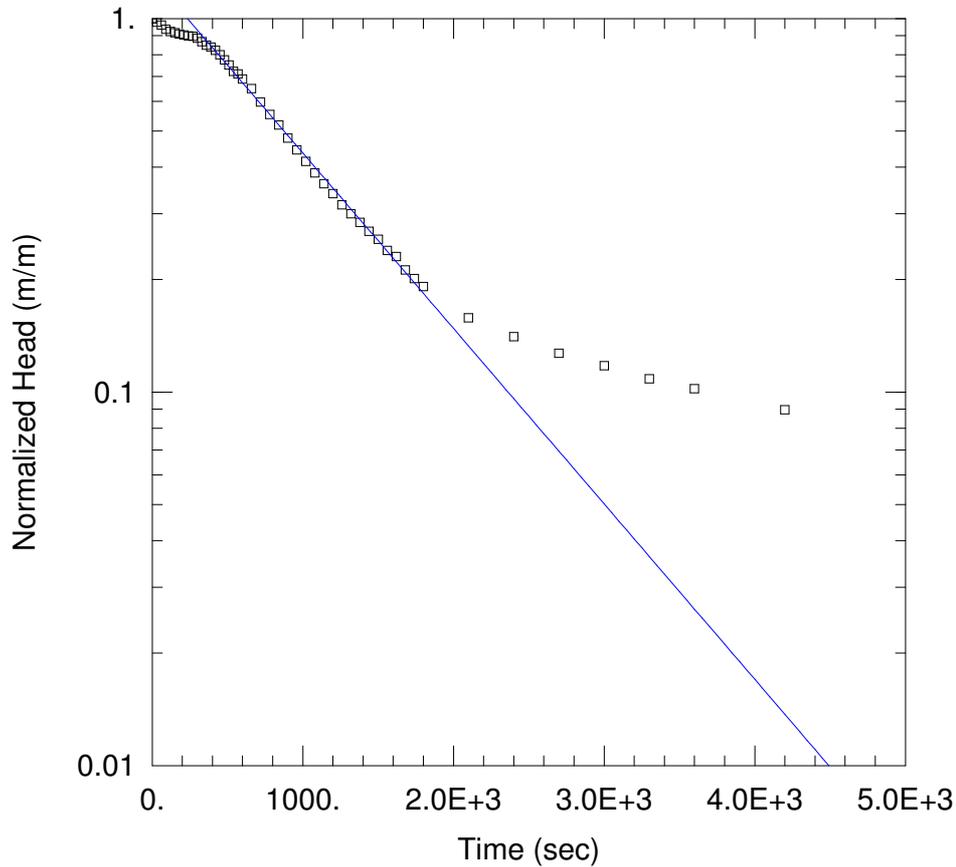
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 3.735E-8 m/sec

Ss = 2.501E-23 m⁻¹

Kz/Kr = 0.1905



TEST 2

Data Set: D:\...\1306-test2.aqt

Date: 09/02/13

Time: 16:34:10

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1306)

Initial Displacement: 16.37 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

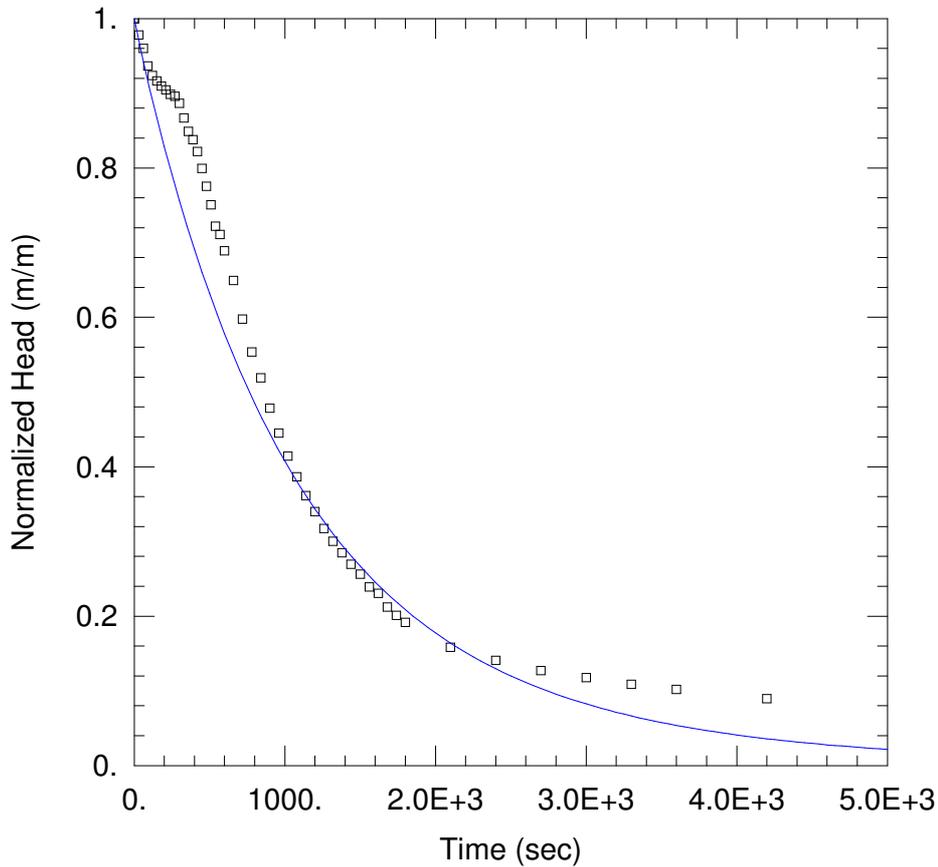
SOLUTION

Aquifer Model: Confined

Solution Method: Bower-Rice

K = 2.504E-8 m/sec

y0 = 21.07 m



TEST 2

Data Set: D:\...\1306-test2.aqt

Date: 09/02/13

Time: 16:35:20

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1306)

Initial Displacement: 16.37 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

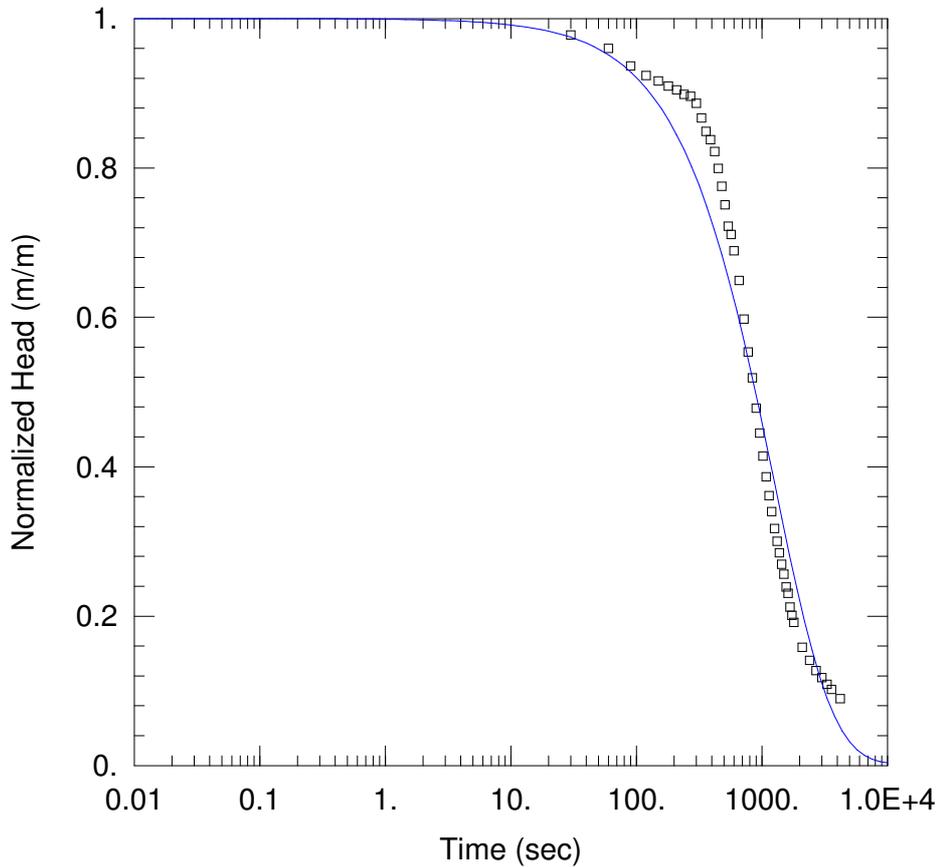
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 2.116E-5 m²/sec

S = 1.995E-17



TEST 2

Data Set: D:\...\1306-test2.aqt

Date: 09/02/13

Time: 16:35:49

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1306)

Initial Displacement: 16.37 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

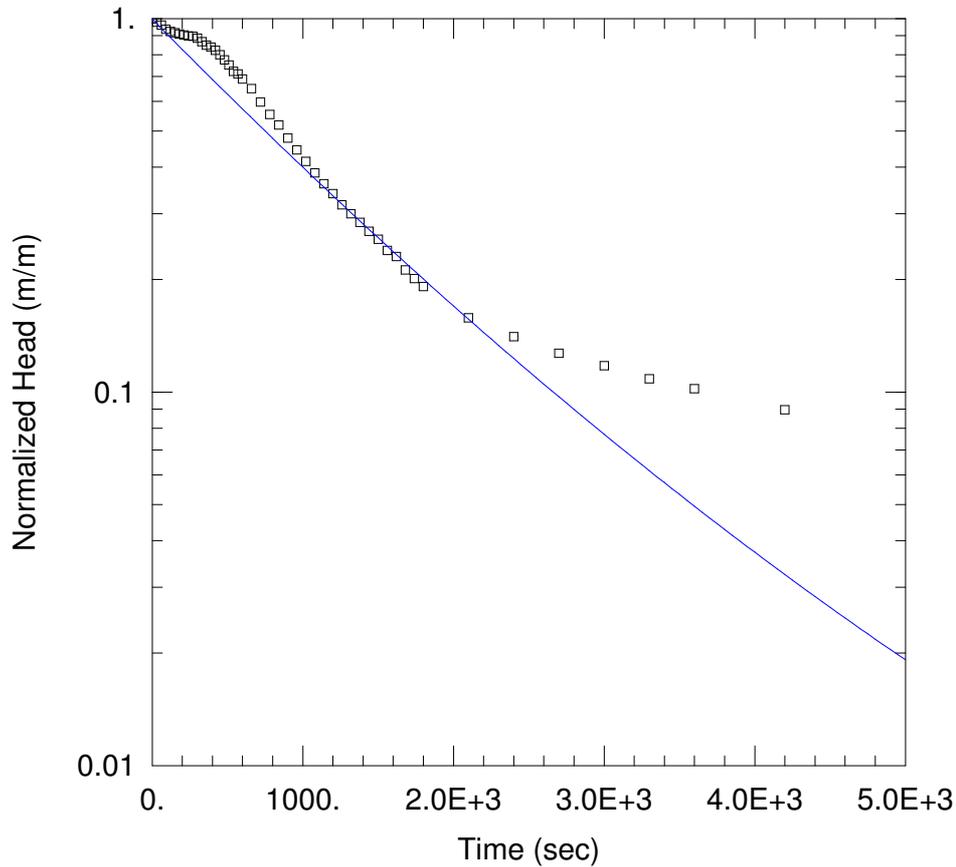
Solution Method: Dougherty-Babu

T = 2.168E-5 m²/sec

S = 1.0E-20

Kz/Kr = 1.

Sw = 0.



TEST 2

Data Set: D:\...\1306-test2.aqt

Date: 09/02/13

Time: 16:36:35

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

WELL DATA (1306)

Initial Displacement: 16.37 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

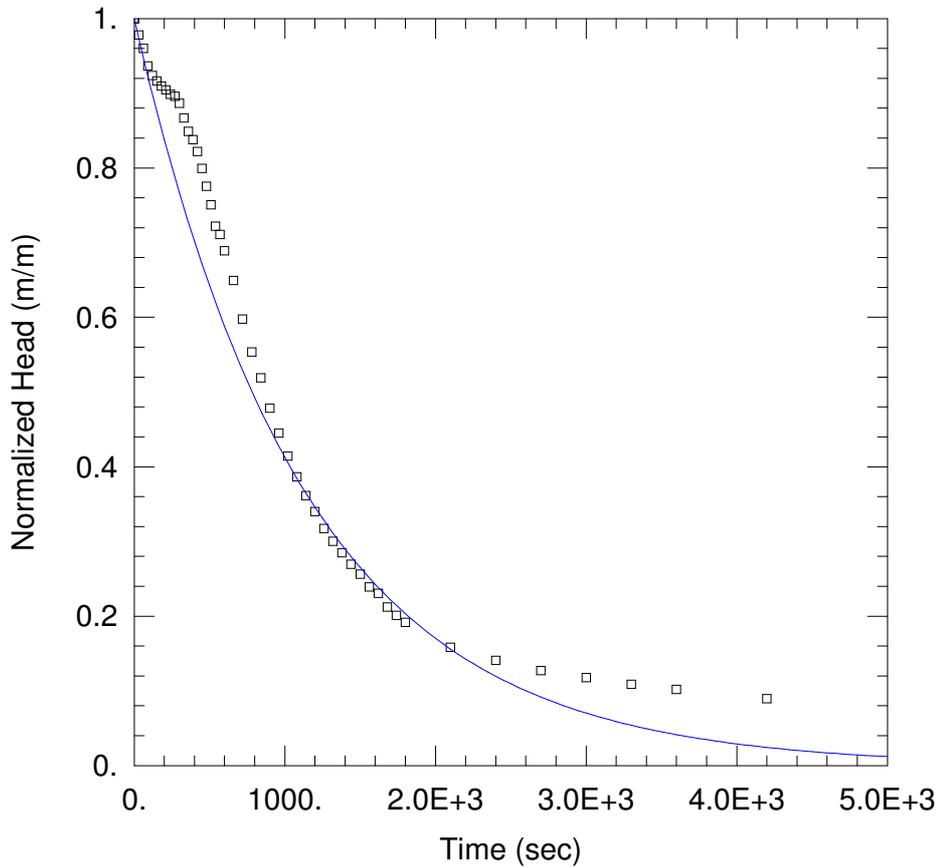
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 6.154E-8 m/sec

Ss = 1.986E-22 m⁻¹

Kz/Kr = 1.



TEST 2

Data Set: D:\...\1306-test2.aqt

Date: 09/02/13

Time: 16:36:52

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1306)

Initial Displacement: 16.37 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

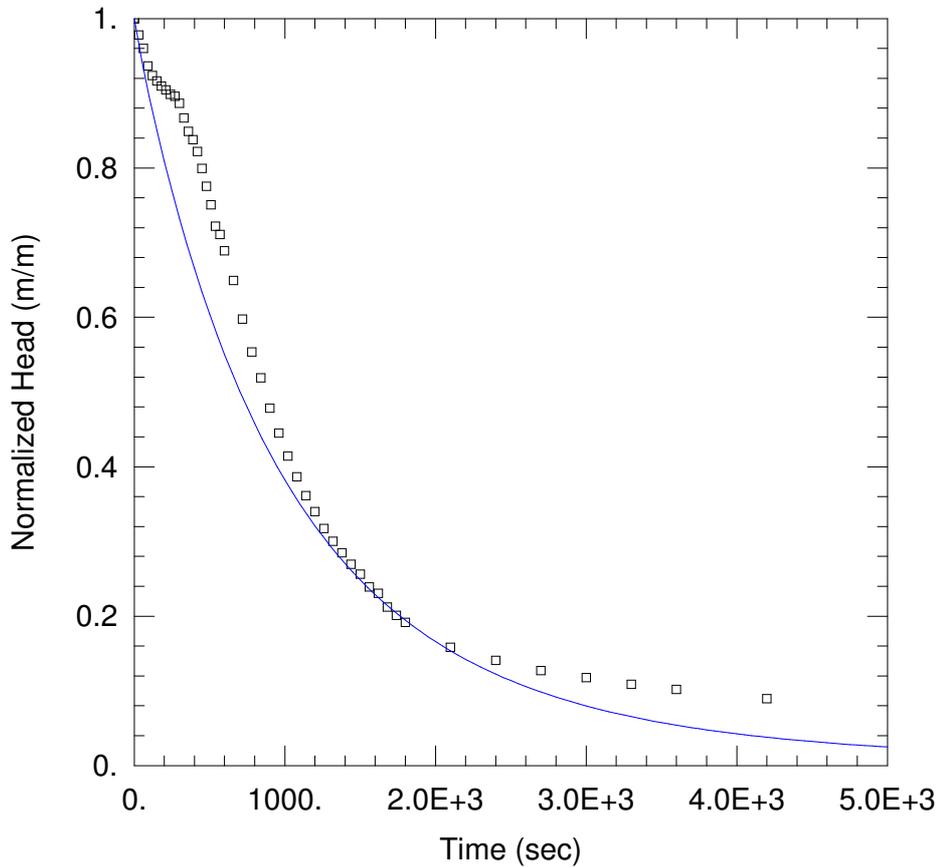
SOLUTION

Aquifer Model: Confined

Solution Method: Butler

K = 1.35E-8 m/sec

Le = 1000. m



TEST 2

Data Set: D:\...\1306-test2.aqt

Date: 09/02/13

Time: 16:38:16

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1306)

Initial Displacement: 16.37 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

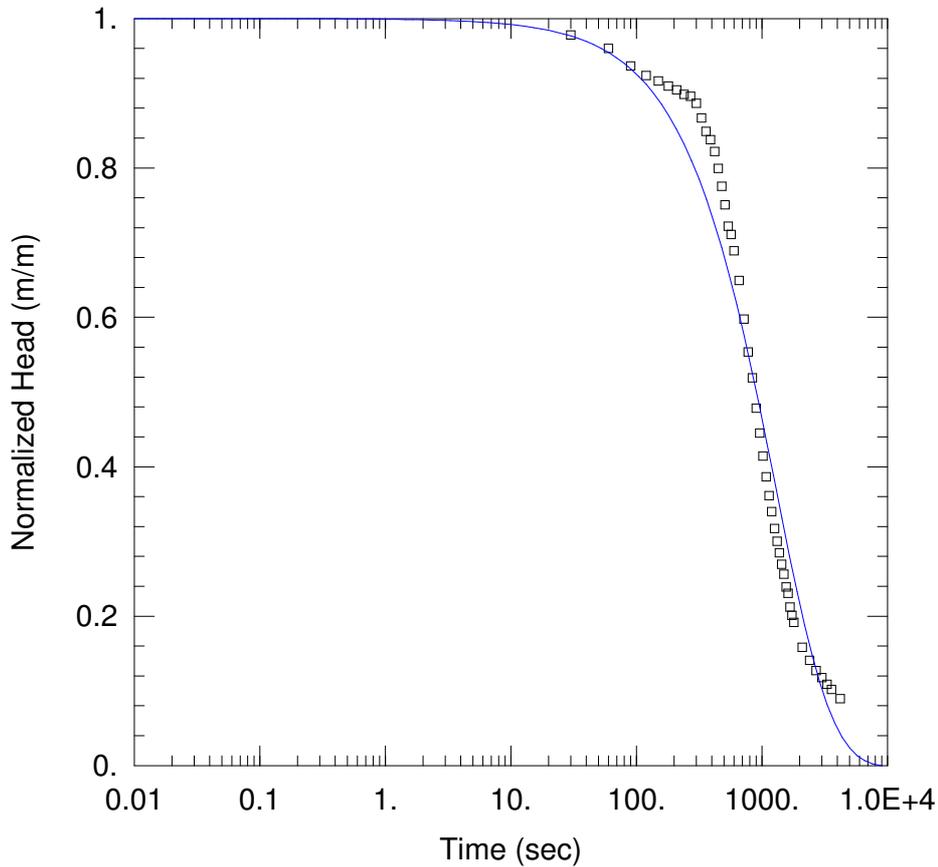
Solution Method: Barker-Black

T = 1.224E-5 m²/sec

S = 1.995E-9

K' = 1.207E-20 m/sec

Ss' = 1.219E-19 m⁻¹



TEST 2

Data Set: D:\...\1306-test2.aqt

Date: 09/02/13

Time: 16:38:30

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1306

Test Date: 10/07/2013

AQUIFER DATA

Saturated Thickness: 399.9 m

WELL DATA (1306)

Initial Displacement: 16.37 m

Static Water Column Height: 399.9 m

Total Well Penetration Depth: 399.9 m

Screen Length: 399.9 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

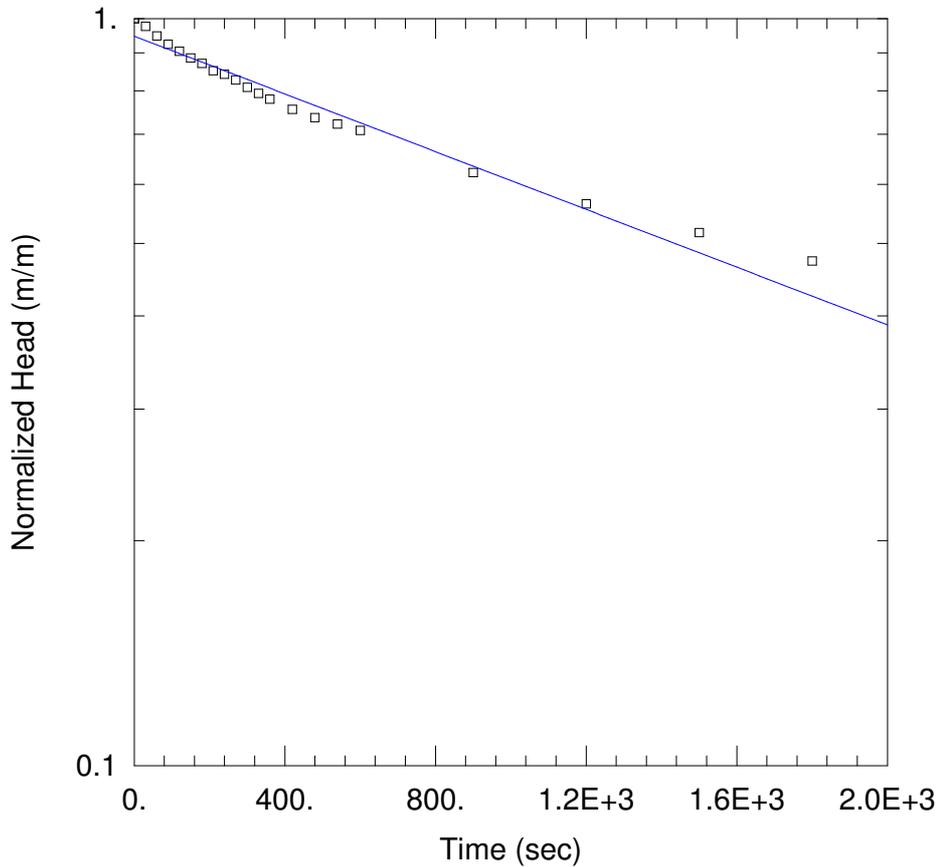
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 1.834E-8 m/sec

Ss = 4.989E-12 m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1310-test1.aqt

Date: 09/02/13

Time: 16:49:58

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1310

Test Date: 18/07/2013

AQUIFER DATA

Saturated Thickness: 297.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1310)

Initial Displacement: 2.009 m

Static Water Column Height: 297.8 m

Total Well Penetration Depth: 297.8 m

Screen Length: 297.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

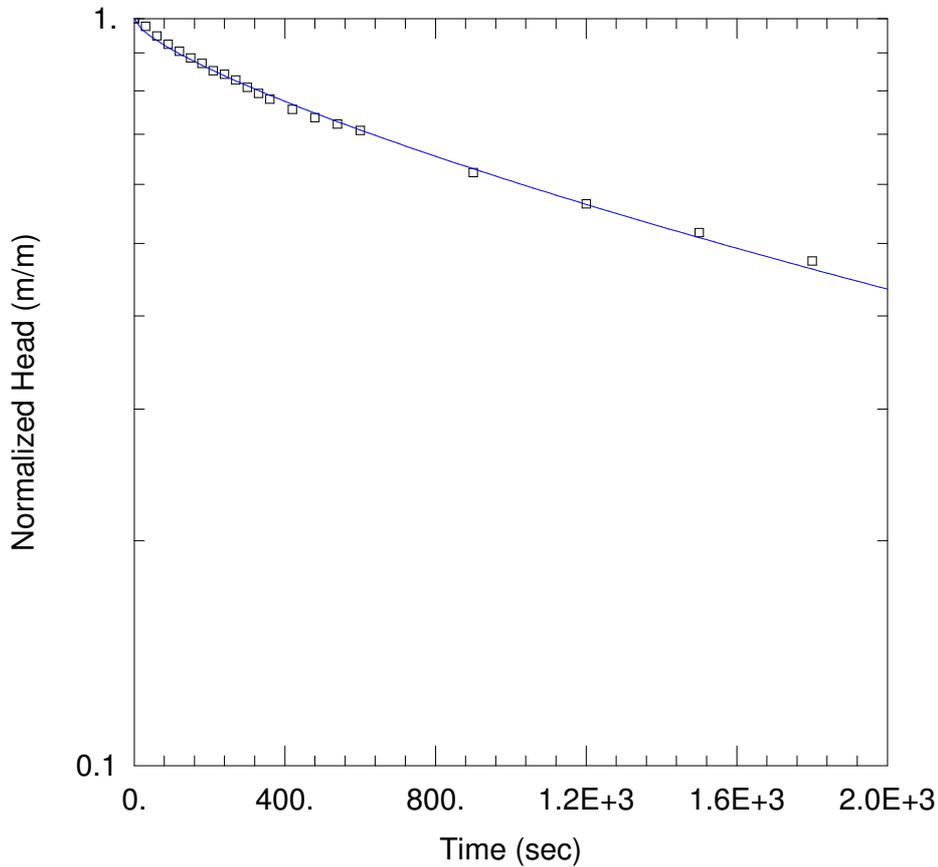
SOLUTION

Aquifer Model: Confined

Solution Method: Bower-Rice

K = 1.337E-8 m/sec

y0 = 1.903 m



TEST 1

Data Set: D:\...\1310-test1.aqt

Date: 09/02/13

Time: 16:50:17

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1310

Test Date: 18/07/2013

AQUIFER DATA

Saturated Thickness: 297.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1310)

Initial Displacement: 2.009 m

Static Water Column Height: 297.8 m

Total Well Penetration Depth: 297.8 m

Screen Length: 297.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

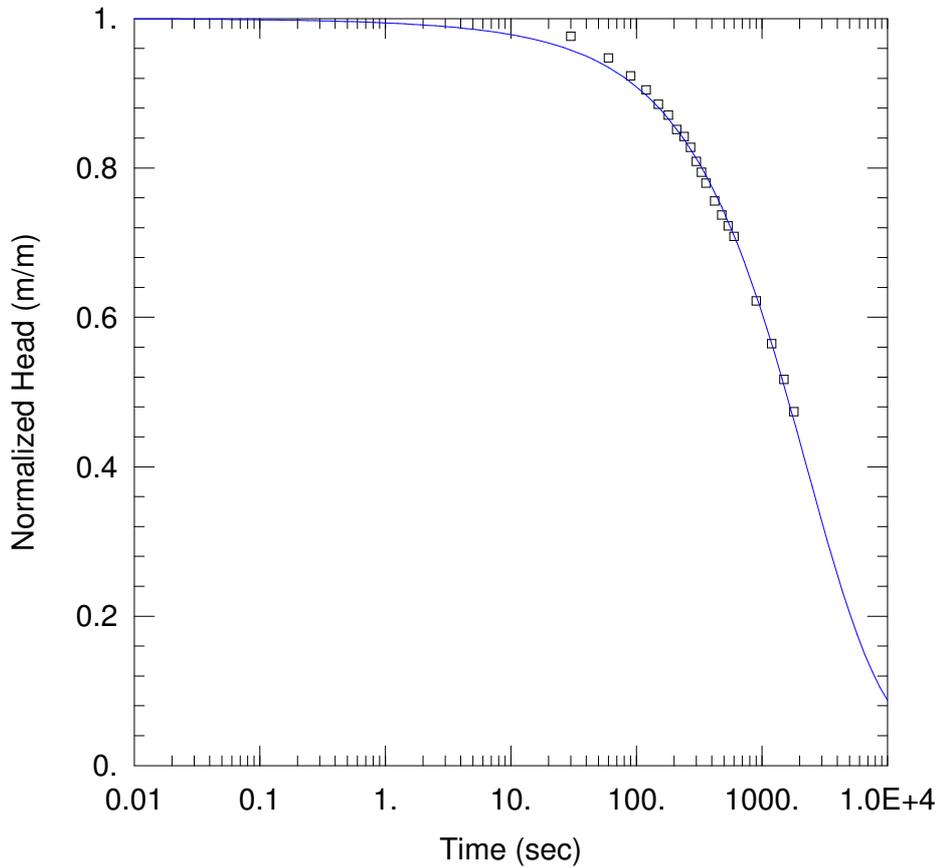
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Bredehoeft-Papadopoulos

T = 1.258E-6 m²/sec

S = 0.01032



TEST 1

Data Set: D:\...\1310-test1.aqt

Date: 09/02/13

Time: 16:50:59

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1310

Test Date: 18/07/2013

AQUIFER DATA

Saturated Thickness: 297.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1310)

Initial Displacement: 2.009 m

Static Water Column Height: 297.8 m

Total Well Penetration Depth: 297.8 m

Screen Length: 297.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

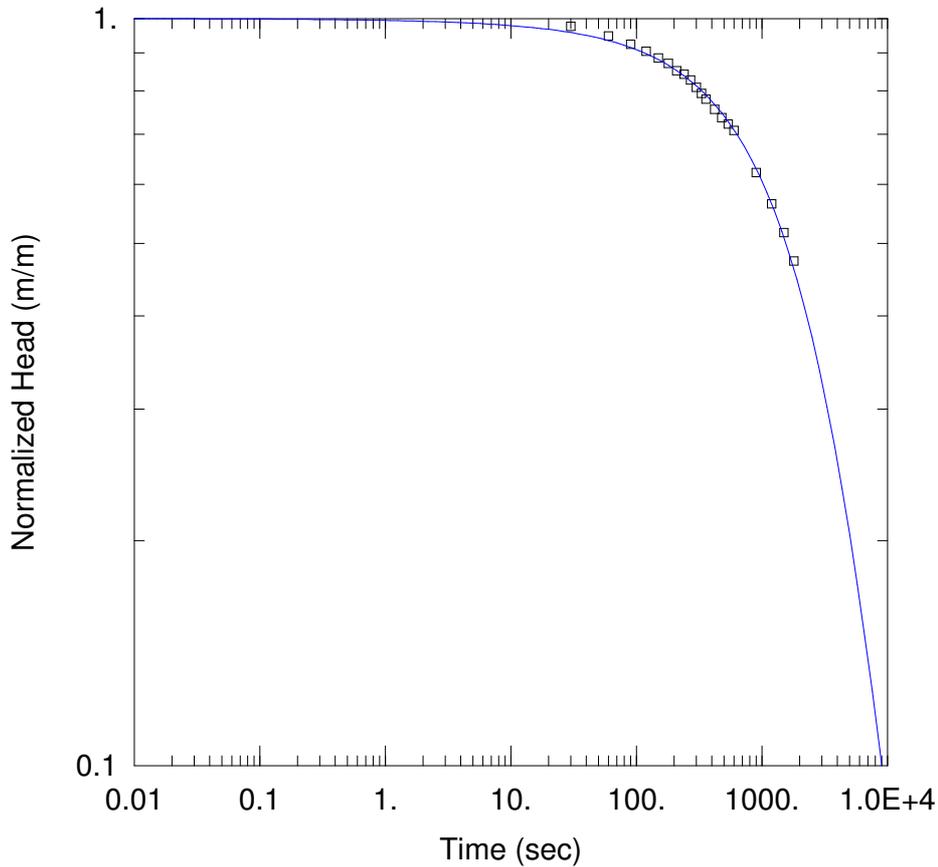
Solution Method: Dougherty-Babu

T = 1.259E-6 m²/sec

S = 0.01031

Kz/Kr = 1.

Sw = 0.



TEST 1

Data Set: D:\...\1310-test1.aqt

Date: 09/02/13

Time: 16:51:19

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1310

Test Date: 18/07/2013

AQUIFER DATA

Saturated Thickness: 297.8 m

WELL DATA (1310)

Initial Displacement: 2.009 m

Static Water Column Height: 297.8 m

Total Well Penetration Depth: 297.8 m

Screen Length: 297.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

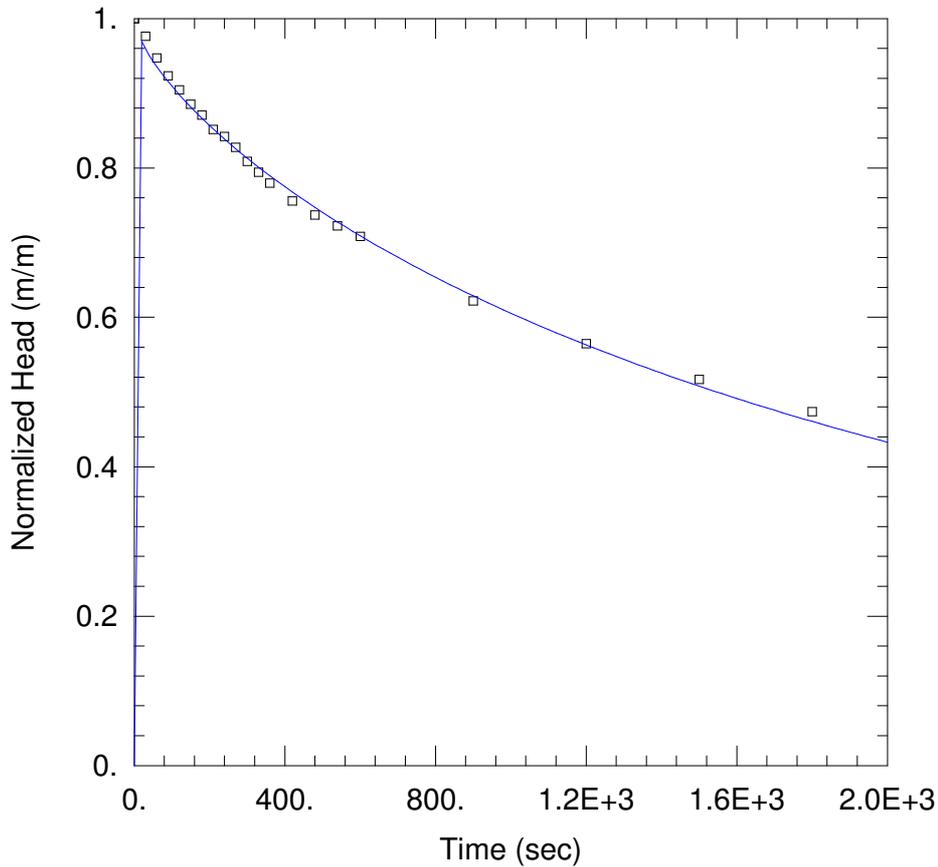
Aquifer Model: Confined

Solution Method: KGS Model

Kr = 4.226E-9 m/sec

Ss = 3.466E-5 m⁻¹

Kz/Kr = 1.



TEST 1

Data Set: D:\...\1310-test1.aqt

Date: 09/02/13

Time: 16:52:09

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1310

Test Date: 18/07/2013

AQUIFER DATA

Saturated Thickness: 297.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1310)

Initial Displacement: 2.009 m

Static Water Column Height: 297.8 m

Total Well Penetration Depth: 297.8 m

Screen Length: 297.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

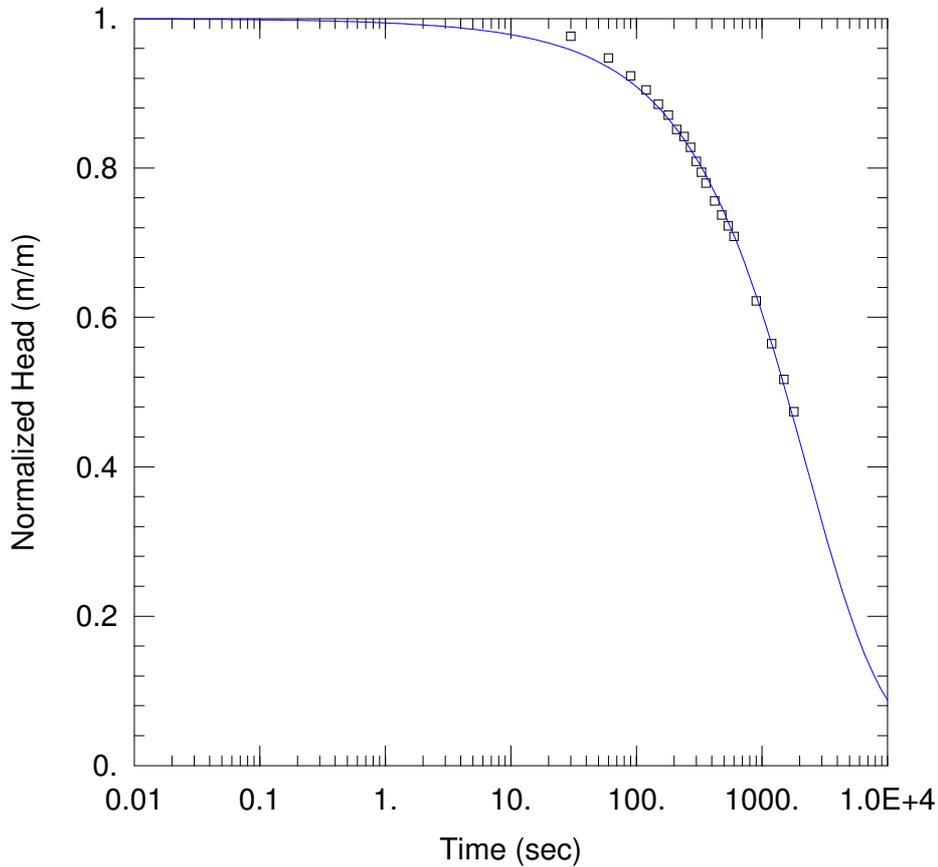
Solution Method: Butler-Zhan

Kr = 4.316E-9 m/sec

Ss = 3.232E-5 m⁻¹

Kz/Kr = 1.

Le = 1000. m



TEST 1

Data Set: D:\...\1310-test1.aqt

Date: 09/02/13

Time: 16:52:36

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1310

Test Date: 18/07/2013

AQUIFER DATA

Saturated Thickness: 297.8 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1310)

Initial Displacement: 2.009 m

Static Water Column Height: 297.8 m

Total Well Penetration Depth: 297.8 m

Screen Length: 297.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

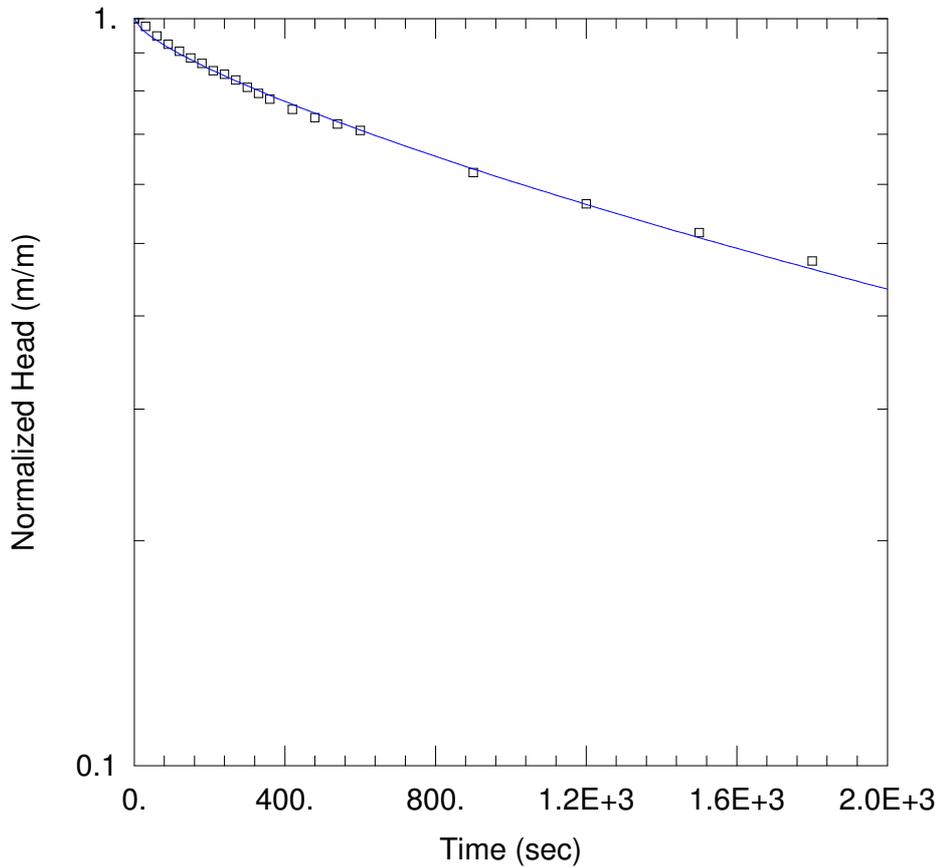
Solution Method: Barker-Black

T = 1.261E-6 m²/sec

S = 0.01025

K' = 1.0E-20 m/sec

Ss' = 4.112E-14 m⁻¹



TEST 1

Data Set: D:\...\1310-test1.aqt

Date: 09/02/13

Time: 16:54:22

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1310

Test Date: 18/07/2013

AQUIFER DATA

Saturated Thickness: 297.8 m

WELL DATA (1310)

Initial Displacement: 2.009 m

Static Water Column Height: 297.8 m

Total Well Penetration Depth: 297.8 m

Screen Length: 297.8 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

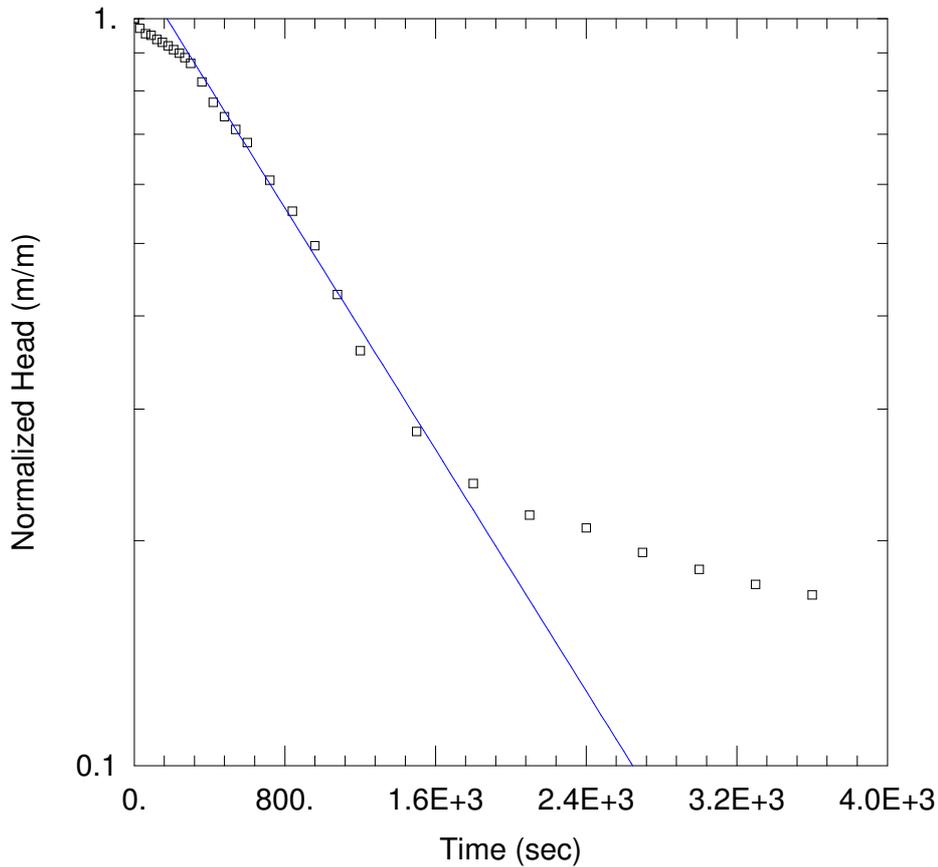
Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 4.225E-9 m/sec

Ss = 3.413E-5 m⁻¹

Kz/Kr = 1.503E-5



TEST 1

Data Set: D:\...\1312-test1.aqt

Date: 09/02/13

Time: 17:06:49

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1312

Test Date: 26/07/2013

AQUIFER DATA

Saturated Thickness: 209.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1312)

Initial Displacement: 6.792 m

Static Water Column Height: 209.3 m

Total Well Penetration Depth: 209.3 m

Screen Length: 209.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

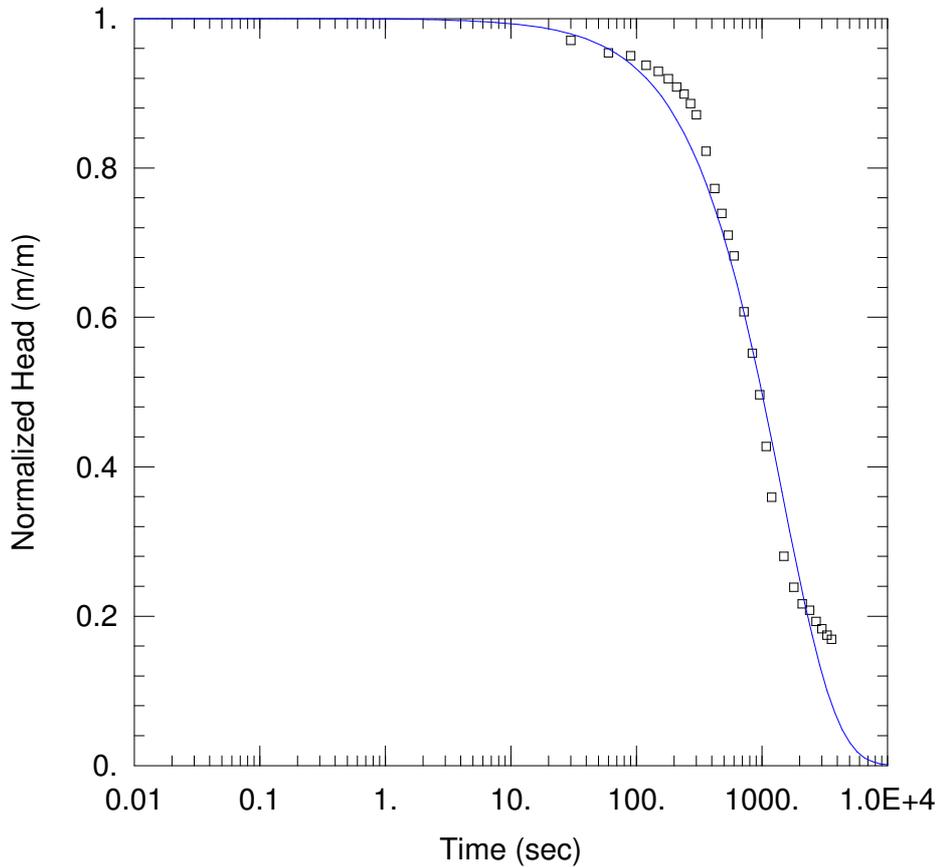
SOLUTION

Aquifer Model: Confined

Solution Method: Bower-Rice

K = 3.805E-8 m/sec

y0 = 7.978 m



TEST 1

Data Set: D:\...\1312-test1.aqt

Date: 09/02/13

Time: 17:08:37

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1312

Test Date: 26/07/2013

AQUIFER DATA

Saturated Thickness: 209.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1312)

Initial Displacement: 6.792 m

Static Water Column Height: 209.3 m

Total Well Penetration Depth: 209.3 m

Screen Length: 209.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

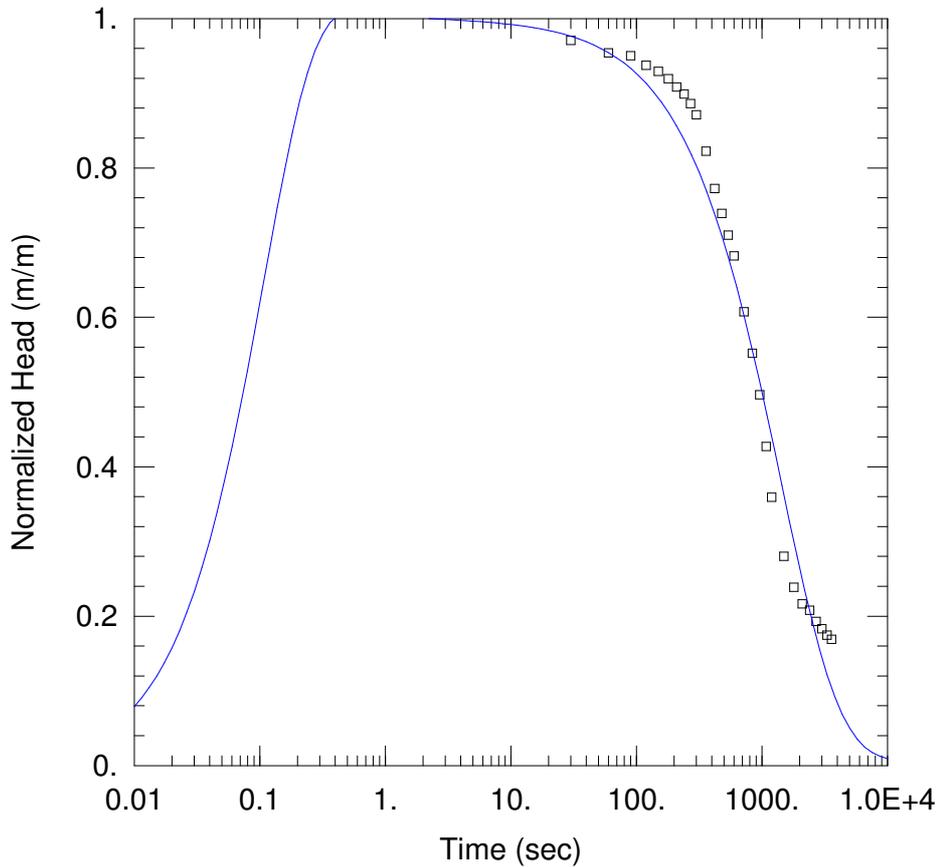
SOLUTION

Aquifer Model: Confined

Solution Method: Butler

K = 2.024E-8 m/sec

Le = 1000. m



TEST 1

Data Set: D:\...\1312-test1.aqt

Date: 09/02/13

Time: 17:09:02

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1312

Test Date: 26/07/2013

AQUIFER DATA

Saturated Thickness: 209.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1312)

Initial Displacement: 6.792 m

Static Water Column Height: 209.3 m

Total Well Penetration Depth: 209.3 m

Screen Length: 209.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

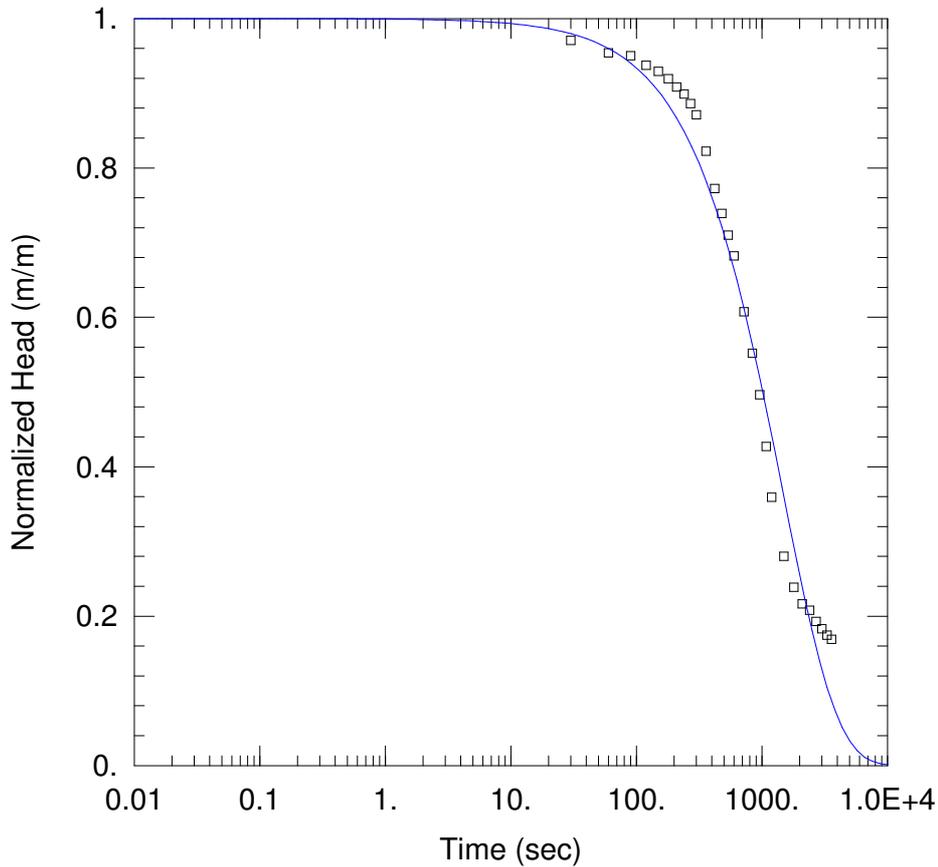
Solution Method: Butler-Zhan

Kr = 5.393E-8 m/sec

Ss = 1.489E-14 m⁻¹

Kz/Kr = 1.

Le = 1000. m



TEST 1

Data Set: D:\...\1312-test1.aqt

Date: 09/02/13

Time: 17:11:17

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1312

Test Date: 26/07/2013

AQUIFER DATA

Saturated Thickness: 209.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1312)

Initial Displacement: 6.792 m

Static Water Column Height: 209.3 m

Total Well Penetration Depth: 209.3 m

Screen Length: 209.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

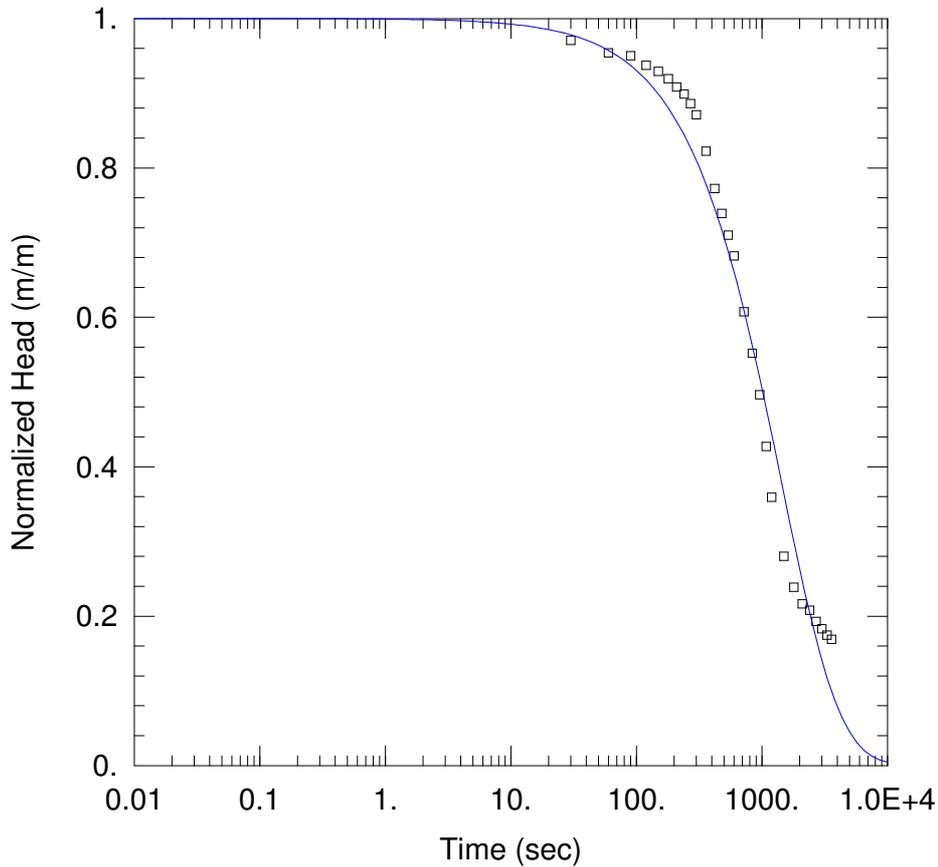
Solution Method: McElwee-Zenner

K = 1.987E-8 m/sec

β = -100. m

A = 0.

v(0) = 0. m/sec



TEST 1

Data Set: D:\...\1312-test1.aqt

Date: 09/02/13

Time: 17:12:12

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1312

Test Date: 26/07/2013

AQUIFER DATA

Saturated Thickness: 209.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1312)

Initial Displacement: 6.792 m

Static Water Column Height: 209.3 m

Total Well Penetration Depth: 209.3 m

Screen Length: 209.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

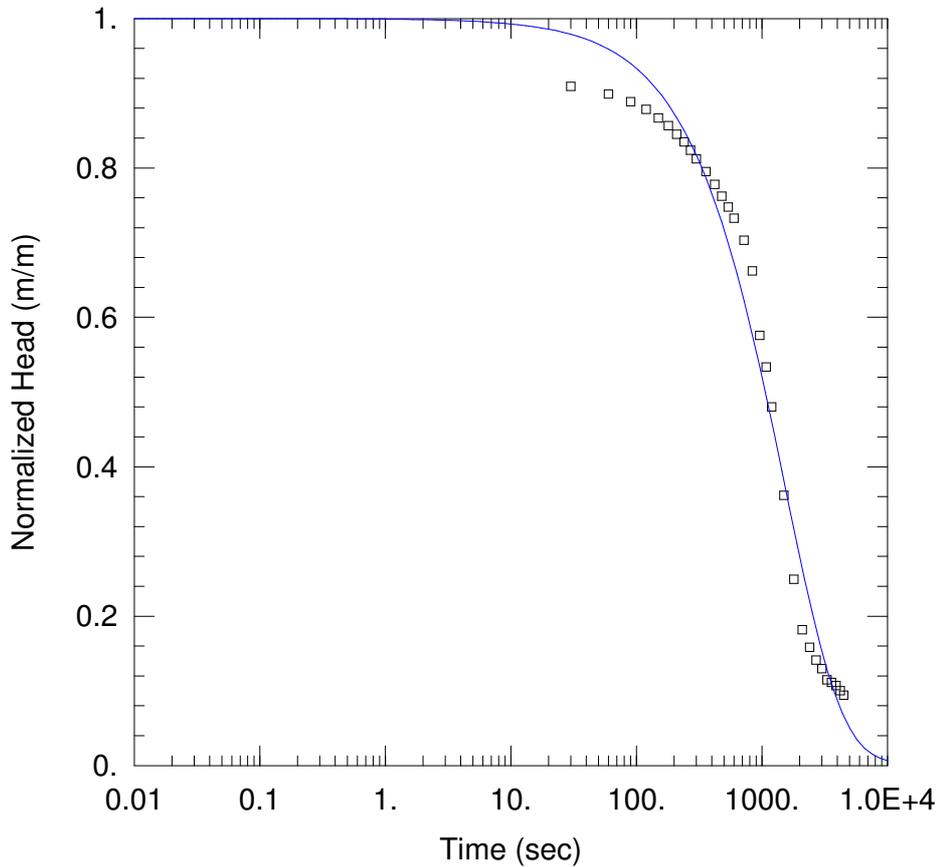
Solution Method: Barker-Black

T = 1.041E-5 m²/sec

S = 6.121E-20

K' = 6.739E-19 m/sec

Ss' = 2.427E-12 m⁻¹



TEST 2

Data Set: D:\...\1312-test2.aqt

Date: 09/02/13

Time: 17:20:14

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1312

Test Date: 26/07/2013

AQUIFER DATA

Saturated Thickness: 209.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1312)

Initial Displacement: 8.281 m

Static Water Column Height: 209.3 m

Total Well Penetration Depth: 209.3 m

Screen Length: 209.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Confined

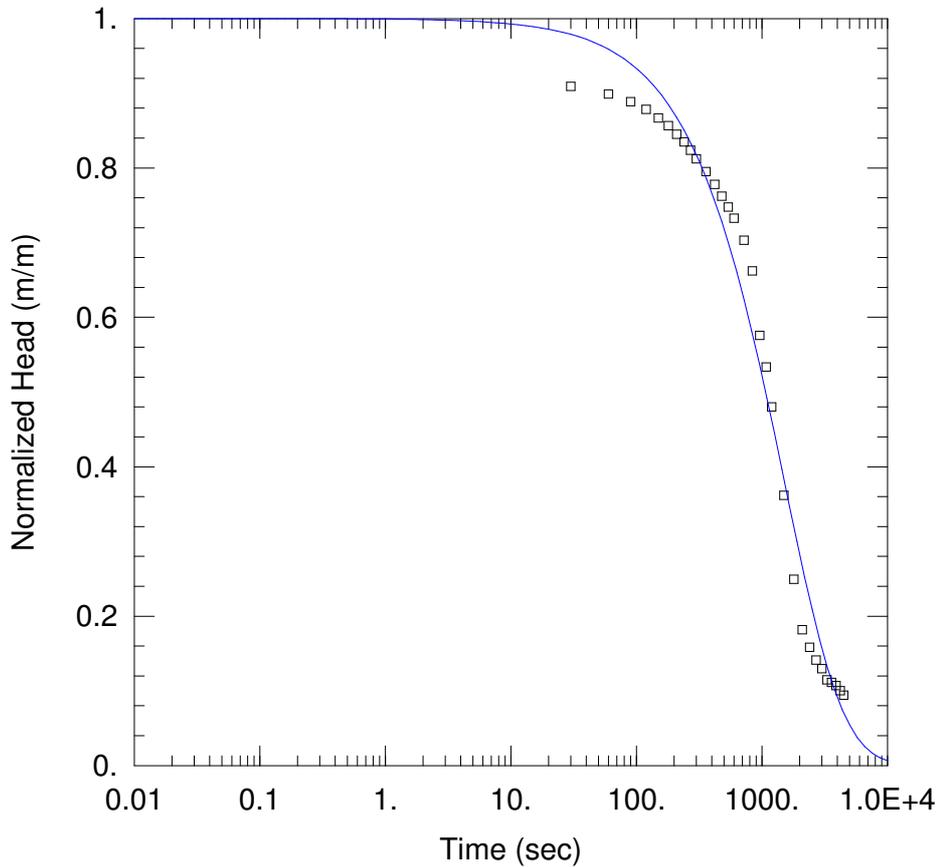
Solution Method: Butler-Zhan

Kr = 8.658E-8 m/sec

Ss = 4.778E-23 m⁻¹

Kz/Kr = 1.

Le = 0.1 m



TEST 2

Data Set: D:\...\1312-test2.aqt

Date: 09/02/13

Time: 17:21:08

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1312

Test Date: 26/07/2013

AQUIFER DATA

Saturated Thickness: 209.3 m

Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (1312)

Initial Displacement: 8.281 m

Static Water Column Height: 209.3 m

Total Well Penetration Depth: 209.3 m

Screen Length: 209.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Fractured

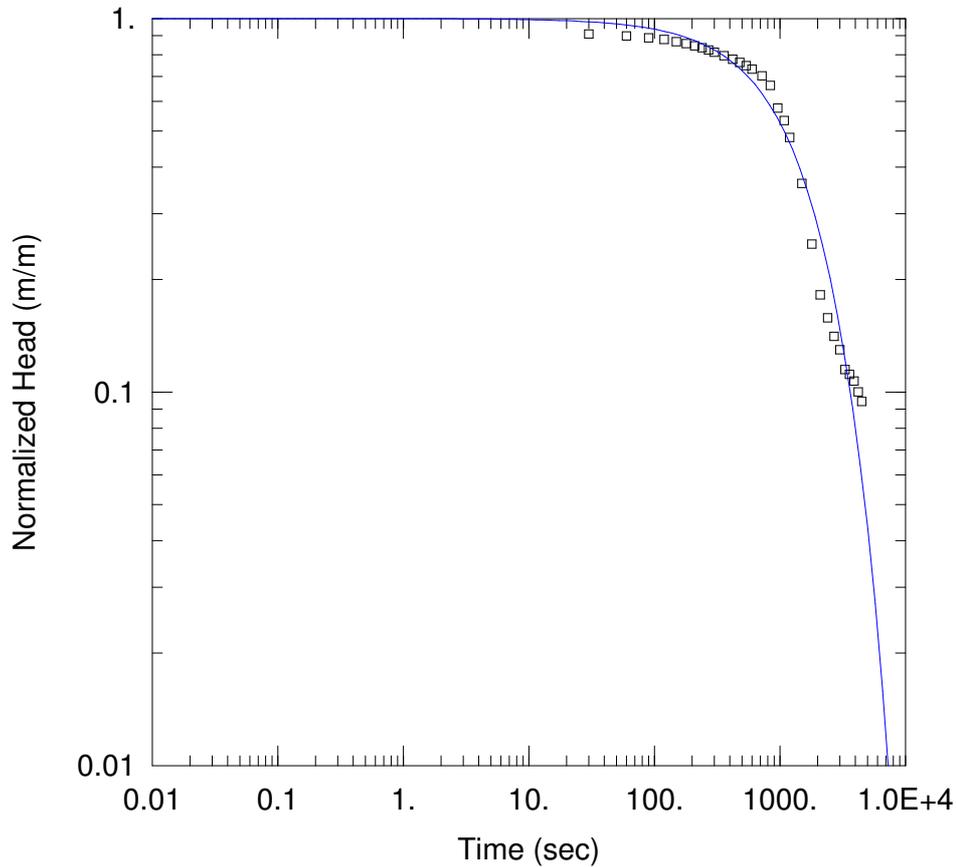
Solution Method: Barker-Black

T = 1.597E-5 m²/sec

S = 1.0E-20

K' = 1.0E-20 m/sec

Ss' = 1.0E-20 m⁻¹



TEST 2

Data Set: D:\...\1312-test2.aqt

Date: 09/02/13

Time: 17:21:49

PROJECT INFORMATION

Company: Grange Resources Tasmania

Client: Grange Resources Tasmania

Project: 1890_G

Location: Long Plains

Test Well: 1312

Test Date: 26/07/2013

AQUIFER DATA

Saturated Thickness: 209.3 m

WELL DATA (1312)

Initial Displacement: 8.281 m

Static Water Column Height: 209.3 m

Total Well Penetration Depth: 209.3 m

Screen Length: 209.3 m

Casing Radius: 0.04798 m

Well Radius: 0.04798 m

SOLUTION

Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 5.94E-8 m/sec

Ss = 4.716E-18 m⁻¹

Kz/Kr = 9.461E-9



Appendix E

Vibrating Wire Piezometers Readings

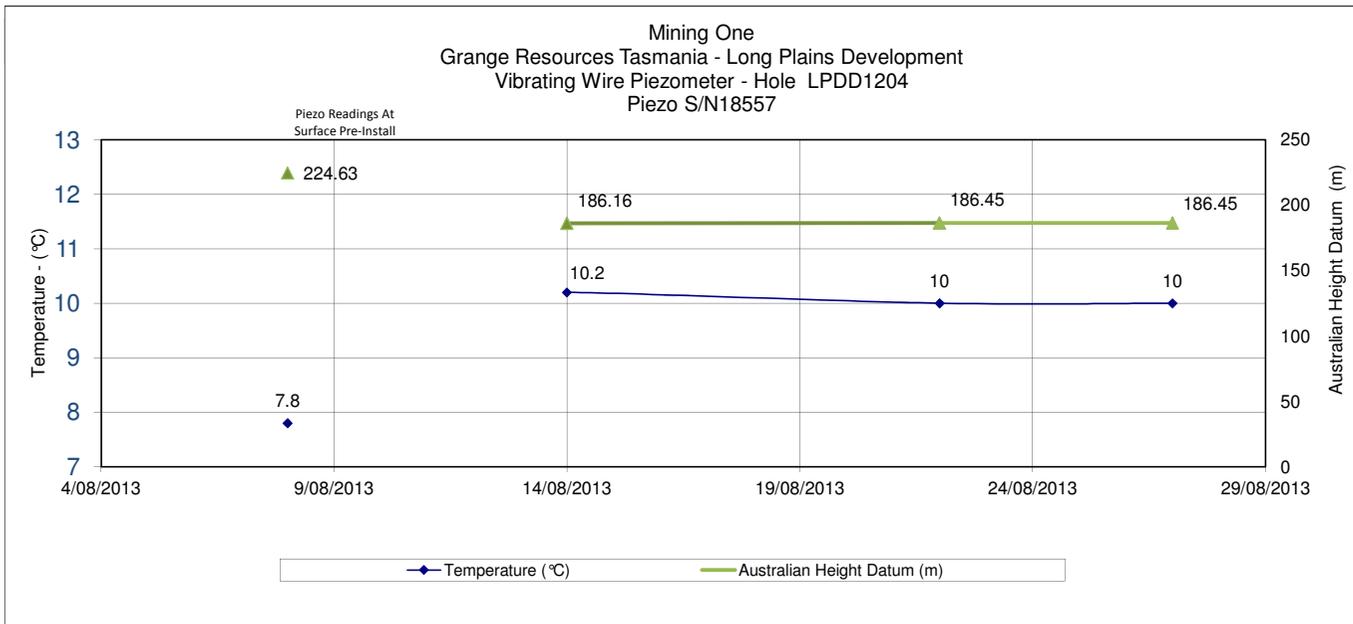


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1204
Transducer serial N°	18557
Piezo Install Date	8/08/2013
Ground level (mAHD)	259.373
Install depth (±mBGL)	76
Install depth (TVD mBGL)	65.82
Install depth (TVD mAHD)	193.56

Length of Cable (m)	80m
Pressure Rating (Kpa)	700
Cable Excess (m)	4m cable out of hole
Water Level (±mBGL)	4.19
Water Level (TVD mBGL)	3.63

Parameters	At Surface (Dry)	At Surface (Wet)	Install Level (rods in)	Install Level(Pre Rod Pull)	Install Level(Post Rod Pull)	Post Grout			
	8/08/2013	8/08/2013	8/08/2013	9/08/2013	9/08/2013	13/08/2013	14/08/2013	22/08/2013	27/08/2013
F ₁ (Hz)	3012.9	3009.2	2508.9	2532.3	2511.7	2474.50	2517.00	2521	2521
F ₁ (Hz ² e ⁻³)	9077.57	9055.28	6294.58	6412.54	6308.64	6123.15	6335.29	6355.44	6355.44
T ₁ (°C)	16.8	7.8	10	10.2	8.2	10.10	10.2	10	10
Pressure (m H ₂ O)		0.0	45.1	43.2	44.8	47.9	44.4	44.1	44.1
Water level (mAHD)		259.4	214.3	216.2	214.5	211.5	215.0	215.3	215.3
True Pressure (m H ₂ O)		0.0	39.0	37.4	38.8	41.5	38.5	38.2	38.2
True Water level (mAHD)		224.63	185.59	187.25	185.79	183.16	186.16	186.45	186.45



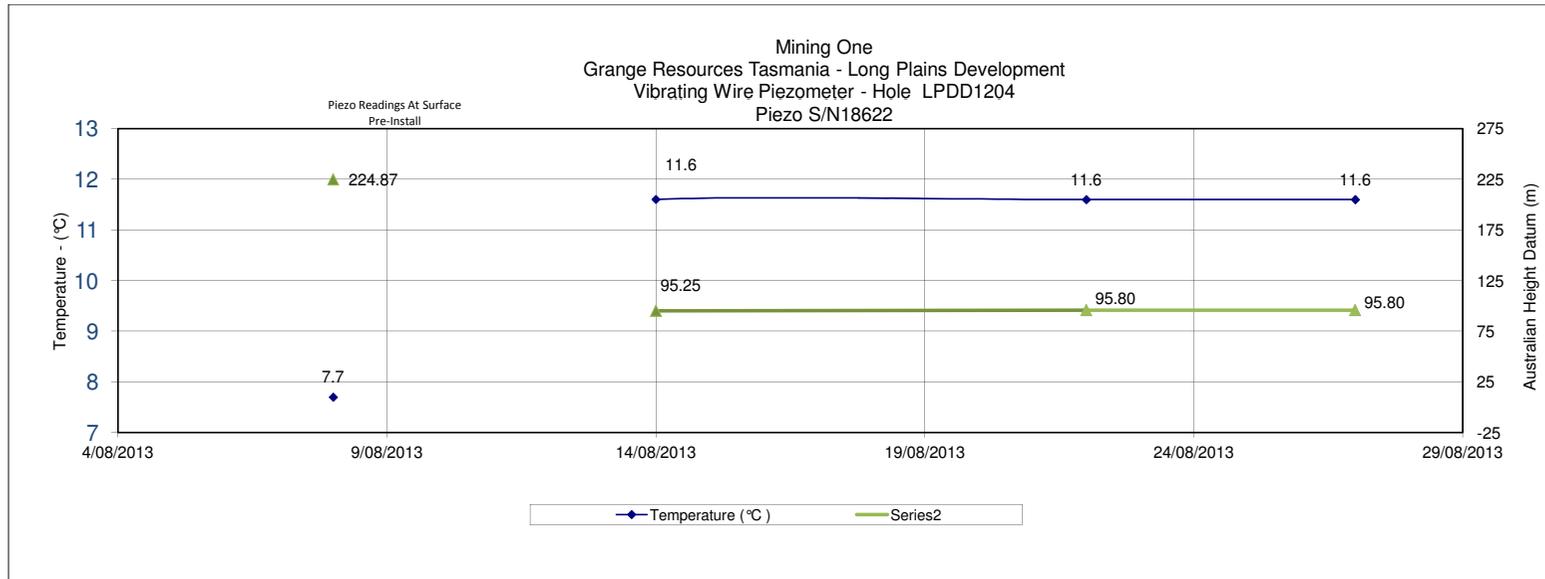


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1204
Transducer serial N°	18622
Piezo Install Date	8/08/2013
Ground level (mAHD)	259.373
Install depth (±mBGL)	176
Install depth (TVD mBGL)	152.42
Install depth (TVD mAHD)	106.95

Length of Cable (m)	180
Pressure Rating (Kpa)	2000
Cable Excess (m)	4
Water Level (±mBGL)	4.19
Water Level (TVD mBGL)	3.63

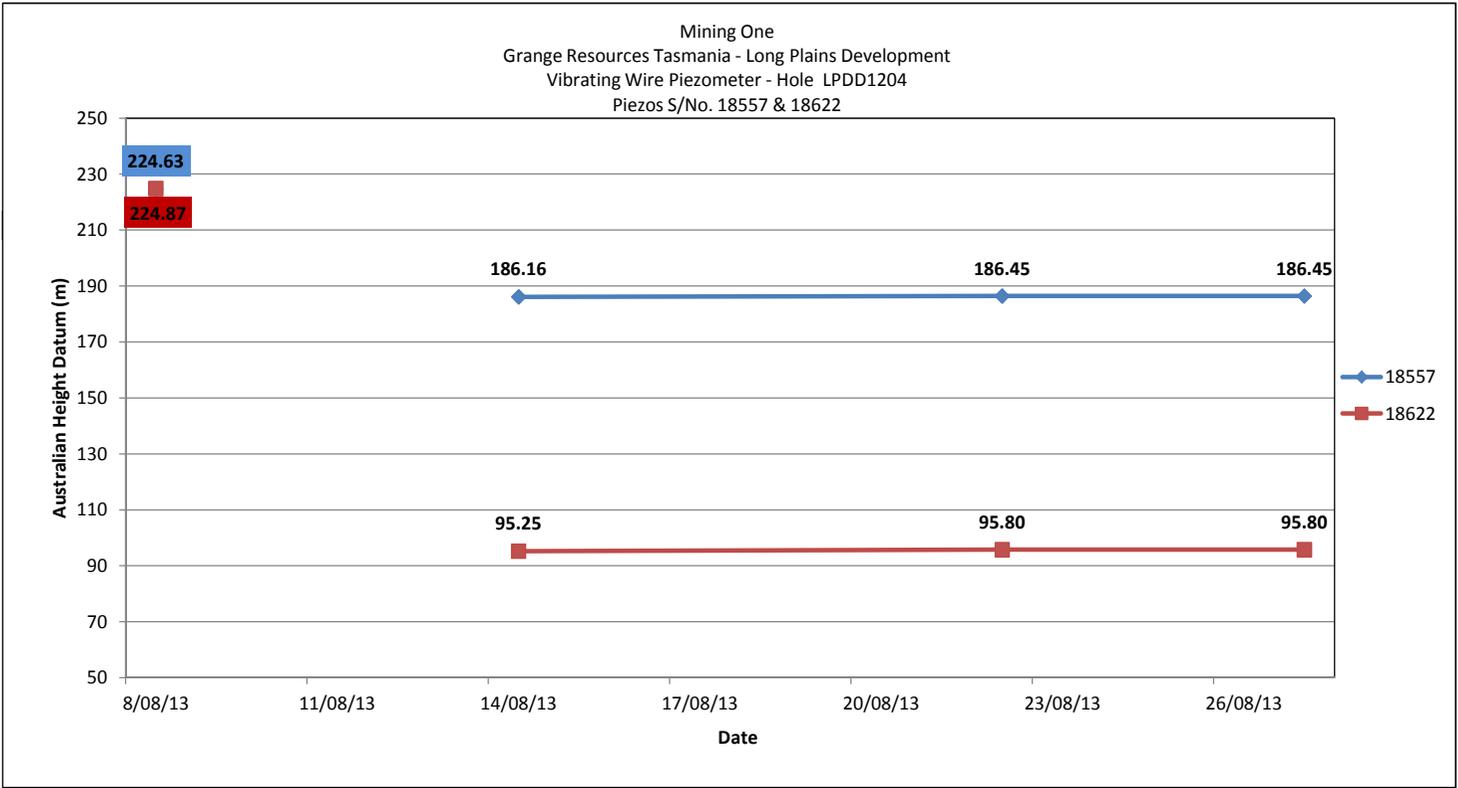
Parameters	At Surface (Dry)	At Surface (Wet)	Install Level (rods in)	Install Level(Pre Rod Pull)	Install Level(Post Rod Pull)	Post Grout			
	8/08/2013	8/08/2013	8/08/2013	9/08/2013	9/08/2013	13/08/2013	14/08/2013	22/08/2013	27/08/2013
F ₁ (Hz e ⁻³)	3006.9	3003.9	2547.2	2553.9	2548.4	2538.70	2549.8	2551.9	2551.9
F1 (Hz)	9041.44761	9023.41521	6488.22784	6522.40521	6494.34256	6444.99769	6501.48004	6512.19361	6512.19361
T ₁ (°C)	18.9	7.7	11.5	11.5	10.6	11.10	11.6	11.6	11.6
Pressure (m H ₂ O)	NA	-0.3	150.2	148.1	149.8	152.7	149.4	148.7	148.7
Water level (mAHD)	NA	259.7	109.2	111.2	109.6	106.7	110.0	110.6	110.6
True_Pressure (m H ₂ O)		-0.25	130.05	128.29	129.70	132.25	129.37	128.82	128.82
True_Water level (mAHD)		224.87	94.58	96.33	94.92	92.37	95.25	95.80	95.80





Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1204	
Transducer serial N°	18557	18622
Piezo Install Date	8/08/2013	8/08/2013
Ground level (mAHD)	259.373	259.373
Install depth (±mBGL)	76	176
Install depth (TVD mBGL)	65.82	152.42
Install depth (TVD mAHD)	193.56	106.95



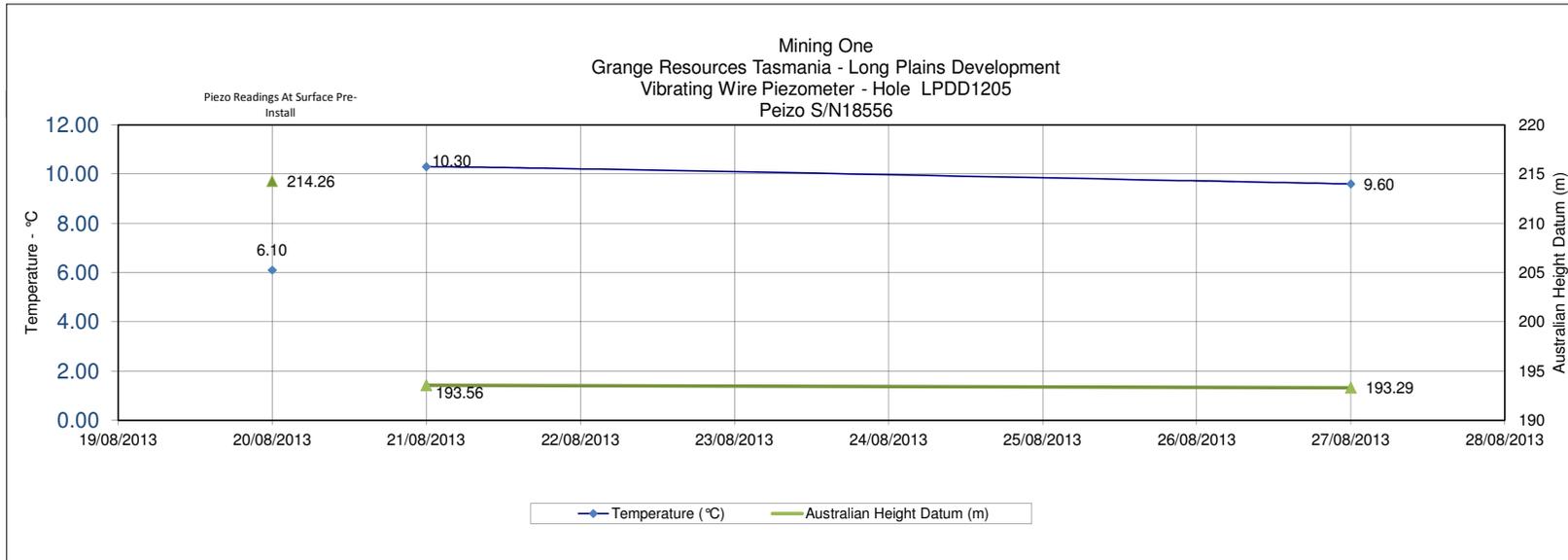


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1205
Transducer serial N°	18556
Piezo Install Date	20/08/2013
Ground level (mAHD)	240.681
Install depth (±mBGL)	57
Install depth (TVD mBGL)	50.74
Install depth (TVD mAHD)	189.94

Length of Cable (m)	60
Pressure Rating (Kpa)	700
Cable Excess (m)	3
Water Level (±mBGL)	15.82
Water Level (TVD mBGL)	14.08

Parameters	At Surface (Dry)	At Surface (Wet)	Install Level(Post Rod Pull)	(Pre-Grout)	Post Grout	
	20/08/2013	20/08/2013	20/08/2013	21/08/2013	21/08/2013	27/08/2013
F ₁ (Hz e ⁻³)	2985.00	2980.70	2754.10	2729.20	2746.70	2743.50
F ₁ (Hz)	8910.23	8884.57	7585.07	7448.53	7544.36	7526.79
T ₁ (°C)	7.10	6.10	9.90	9.90	10.30	9.60
Pressure (m H ₂ O)	NA	0.00	22.55	24.91	23.25	23.56
Water level (mAHD)		240.68	218.14	215.77	217.43	217.12
True_Pressure (m H ₂ O)		0.00	20.07	22.18	20.70	20.97
True_Water level (mAHD)		214.26	194.19	192.08	193.56	193.29



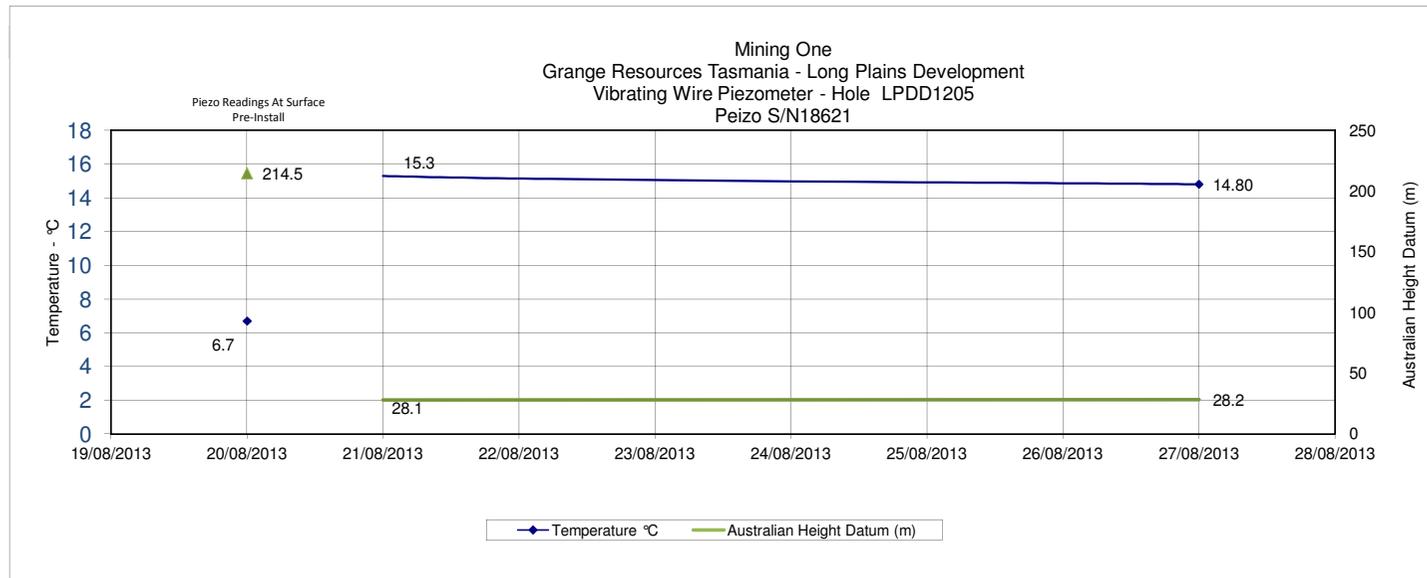


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1205
Transducer serial N°	18621
Piezo Install Date	20/08/2013
Ground level (mAHD)	240.681
Install depth (±mBGL)	167
Install depth (TVD mBGL)	148.67
Install depth (TVD mAHD)	92.02

Length of Cable (m)	170
Pressure Rating (Kpa)	2000
Cable Excess (m)	3
Water Level (±mBGL)	15.82
Water Level (TVD mBGL)	14.08

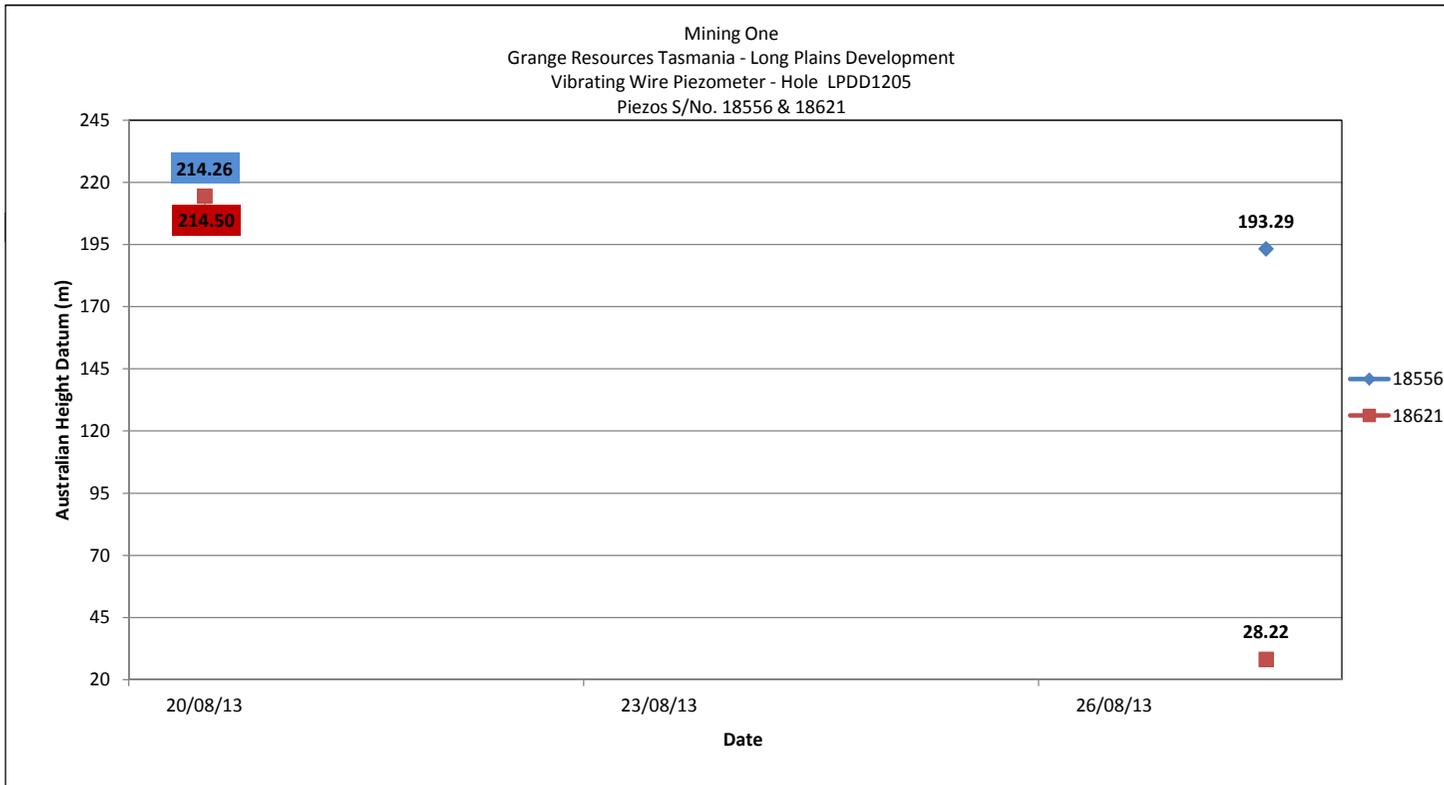
Parameters	At Surface (Dry)	At Surface (Wet)	Install Level(Post Rod Pull)	(Pre-Grout)	Post Grout	
	20/08/2013	20/08/2013	20/08/2013	21/08/2013	21/08/2013	27/08/2013
F ₁ (Hz e ⁻³)	2988.8	2984.9	2633	2625.8	2631.5	2634.30
F ₁ (Hz)	8932.93	8909.63	6932.69	6894.83	6924.79	6939.54
T ₁ (°C)	12.3	6.7	11.9	16.4	15.3	14.80
Pressure (m H ₂ O)	NA	-0.3	208.9	209.3	209.1	209.0
Water level (mAHD)		241.0	31.8	31.4	31.6	31.7
True_Pressure (m H ₂ O)		-0.2	186.0	186.3	186.1	186.0
True_Water level (mAHD)		214.5	28.3	27.9	28.1	28.2





Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1205	
Transducer serial N°	18556	18621
Piezo Install Date	20/08/2013	20/08/2013
Ground level (mAHD)	240.681	240.681
Install depth (±mBGL)	57	167
Install depth (TVD mBGL)	50.74	148.67
Install depth (TVD mAHD)	189.94	92.02



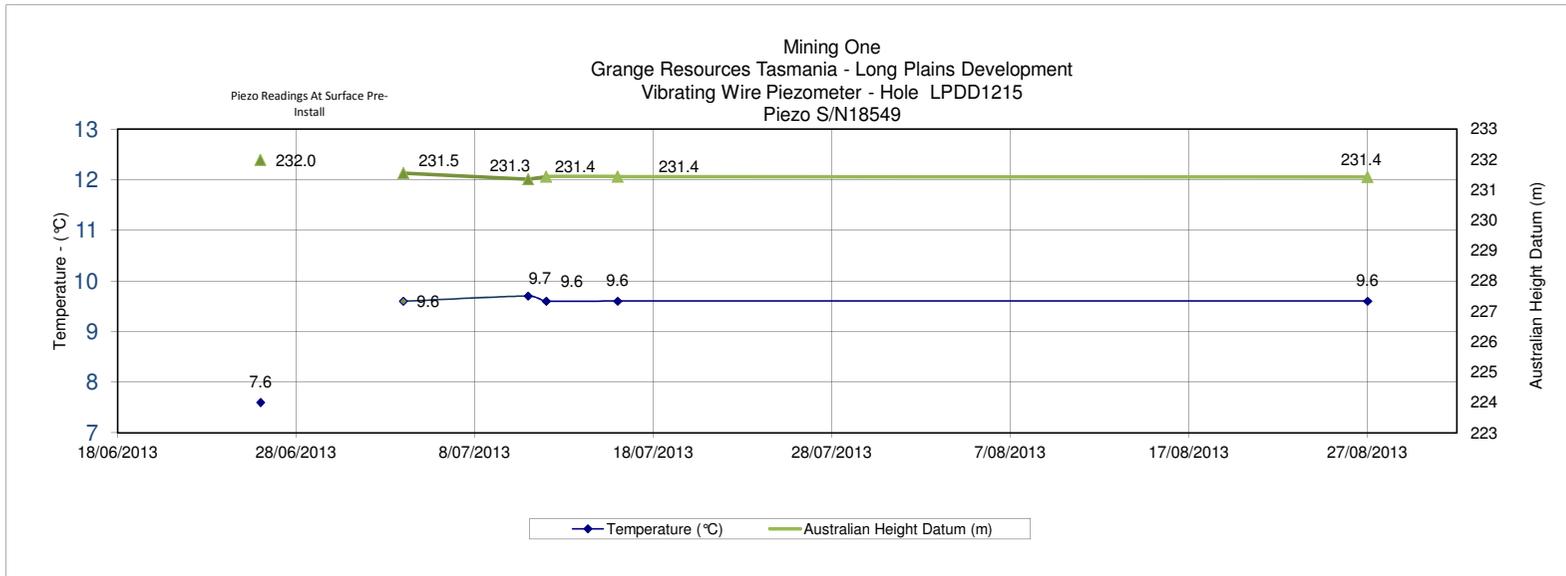


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1215
Transducer serial N°	18549
Piezo Install Date	26/06/2013
Ground level (mAHD)	271.778
Install depth (±mBGL)	32
Install depth (TVD mBGL)	27.31
Install depth (TVD mAHD)	244.46

Length of Cable (m)	50
Pressure Rating (Kpa)	700
Cable Excess (m)	18
Water Level (±mBGL)	4.19
Water Level (TVD mBGL)	3.58

Parameters	At Surface (Dry)	At Surface (Wet)	Install Level(Post Rod Pull)	Install Level(Pre Grouting)	Post Grout					
	26/06/2013	26/06/2013	26/06/2013	27/06/2013	28/06/2013	4/07/2013	11/07/2013	12/07/2013	16/07/2013	27/08/2013
F ₁ (Hz)	2985.9	2985.9	2931.5	2897.3	2905.8	2981.1	2978.8	2979.8	2979.8	2979.6
F ₁ (Hz ² e ⁻³)	8915.6	8915.6	8593.7	8394.3	8443.7	8887.0	8873.2	8879.2	8879.2	8878.0
T ₁ (°C)	7.6	7.6	11.6	11.5	9.5	9.6	9.7	9.6	9.6	9.6
Pressure (m H ₂ O)		0.0	5.7	9.2	8.4	0.5	0.7	0.6	0.6	0.7
Water level (mAHD)		271.8	266.1	262.5	263.4	271.3	271.0	271.1	271.1	271.1
True_Pressure (m H ₂ O)		0.0	4.9	7.9	7.1	0.4	0.6	0.5	0.5	0.6
True_Water level (mAHD)		232.0	227.1	224.1	224.8	231.5	231.3	231.4	231.4	231.4



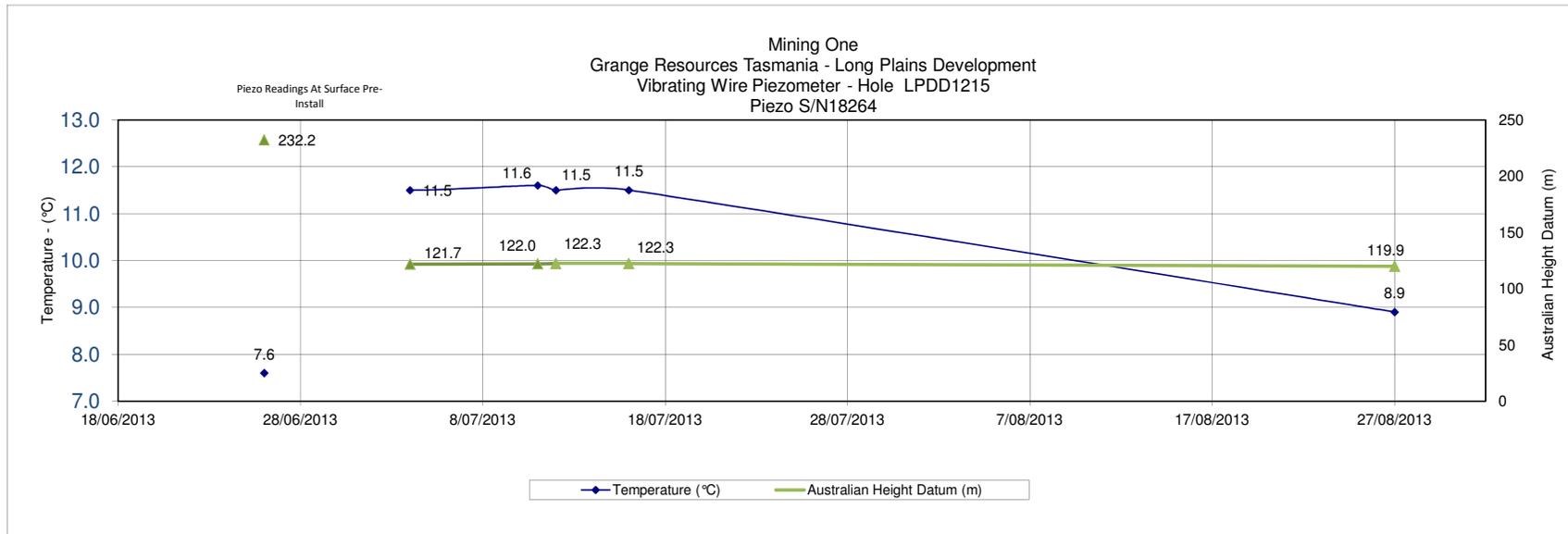


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1215
Transducer serial N°	18624
Piezo Install Date	26/06/2013
Ground level (mAHD)	271.778
Install depth (±mBGL)	172
Install depth (TVD mBGL)	146.81
Install depth (TVD mAHD)	124.97

Length of Cable (m)	195
Pressure Rating (Kpa)	2000
Cable Excess (m)	18
Water Level (±mBGL)	4.19
Water Level (TVD mBGL)	3.58

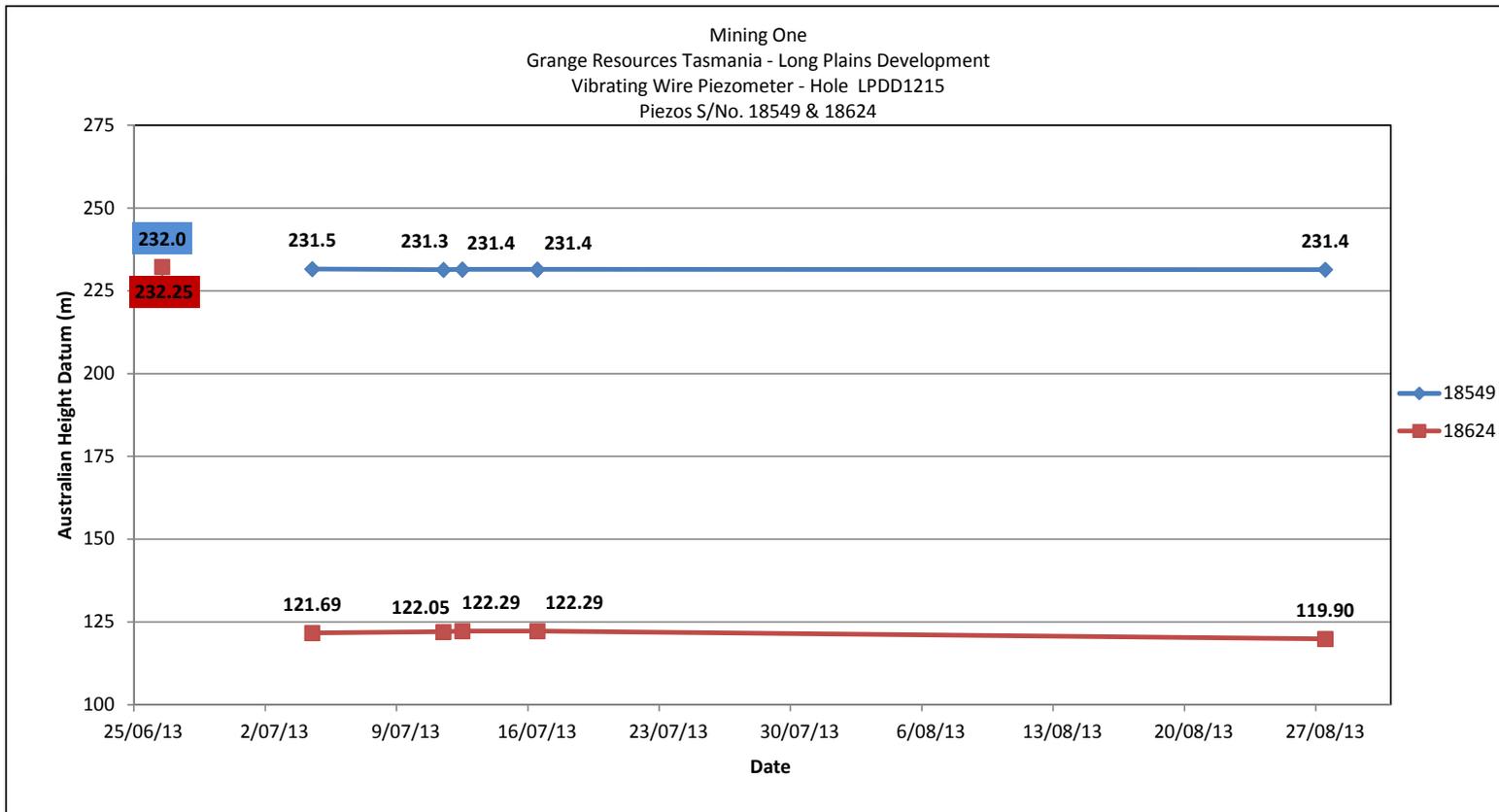
Parameters	At Surface (Dry)	At Surface (Wet)	Install Level(Pre Grouting)		Grout (not finished)	Post Grout				
	26/06/2013	26/06/2013	26/06/2013	27/06/2013	28/06/2013	4/07/2013	11/07/2013	12/07/2013	16/07/2013	27/08/2013
F ₁ (Hz)	2982.1	2982.1	2583.4	2571.8	2575.3	2585.5	2586.9	2587.8	2587.8	2578.2
F1 (Hz ² e ⁻³)	8892.9	8892.9	6674.0	6614.2	6632.2	6684.8	6692.1	6696.7	6696.7	6647.1
T ₁ (°C)	7.6	7.6	11.6	11.5	11.6	11.5	11.6	11.5	11.5	8.9
Pressure (m H ₂ O)		-0.3	129.8	133.3	132.3	129.2	128.8	128.5	128.5	131.3
Water level (mAHD)		272.1	141.9	138.4	139.5	142.6	143.0	143.3	143.3	140.5
True_Pressure (m H ₂ O)		-0.3	110.8	113.8	112.9	110.3	109.9	109.7	109.7	112.1
True_Water level (mAHD)		232.2	121.1	118.2	119.1	121.7	122.0	122.3	122.3	119.9





Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1215	
Transducer serial N°	18549	18624
Piezo Install Date	26/06/2013	26/06/2013
Ground level (mAHD)	271.778	271.778
Install depth (±mBGL)	32	172
Install depth (TVD mBGL)	27.31	146.81
Install depth (TVD mAHD)	244.46	124.97



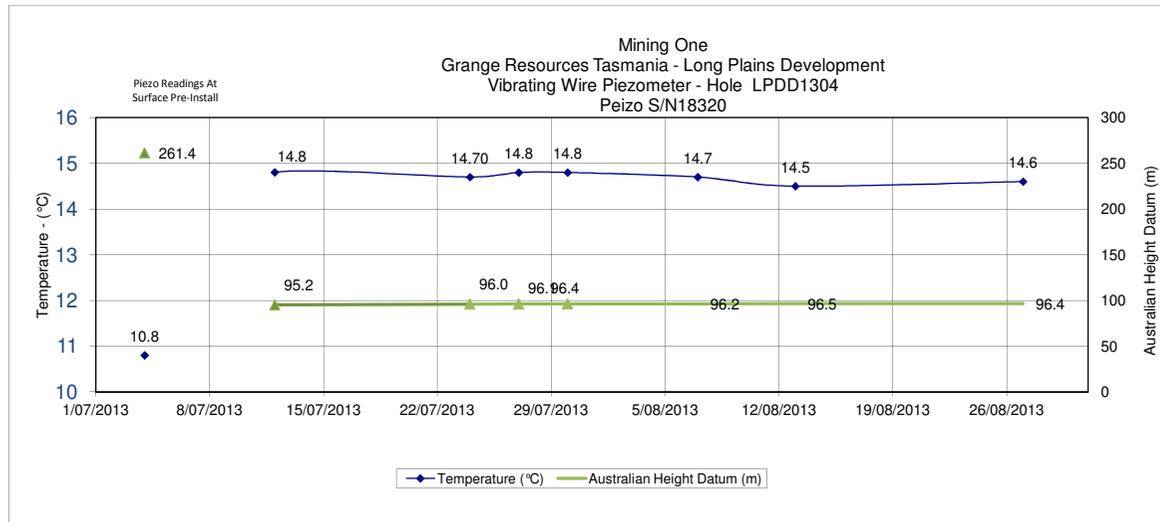


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1304
Transducer serial N°	18320
Piezo Install Date	4/07/2013
Ground level (mAHD)	261.39
Install depth (±mBGL)	184
Install depth (TVD mBGL)	184
Install depth (TVD mAHD)	77.39

Length of Cable (m)	190
Pressure Rating (Kpa)	2000
Cable Excess (m)	6
Water Level (±mBGL)	7.80
Water Level (TVD mBGL)	7.80

Parameters	At Surface (Dry) 4/07/2013	At Surface (Wet) 4/07/2013	At Install Level 4/07/2013	Pregrout 5/07/2013	Failed to Grout 5/03/2013	11/07/2013	12/07/2013	24/07/2013	27/07/2013	30/07/2013	7/08/2013	13/08/2013	27/08/2013
F ₁ (Hz e ⁻³)	2994.1	2994.1	2425.4	2452.9	2448.8	2483.6	2484.4	2487.30	2487.7	2488.5	2488	2489	2488.7
F1 (Hz)	8964.6	8964.6	5882.6	6016.7	5996.6	6168.3	6172.2	6186.7	6188.7	6192.6	6190.1	6195.1	6193.6
T ₁ (°C)	10.8	10.8	11.8	12	13.4	14	14.8	14.70	14.8	14.8	14.7	14.5	14.6
Pressure (m H ₂ O)	N/A	0.0	183.4	175.5	176.7	166.5	166.2	165.4	165.3	165.0	165.2	164.9	165.0
Water level (mAHD)	N/A	261.4	77.9	85.9	84.7	94.9	95.2	96.0	96.1	96.4	96.2	96.5	96.4



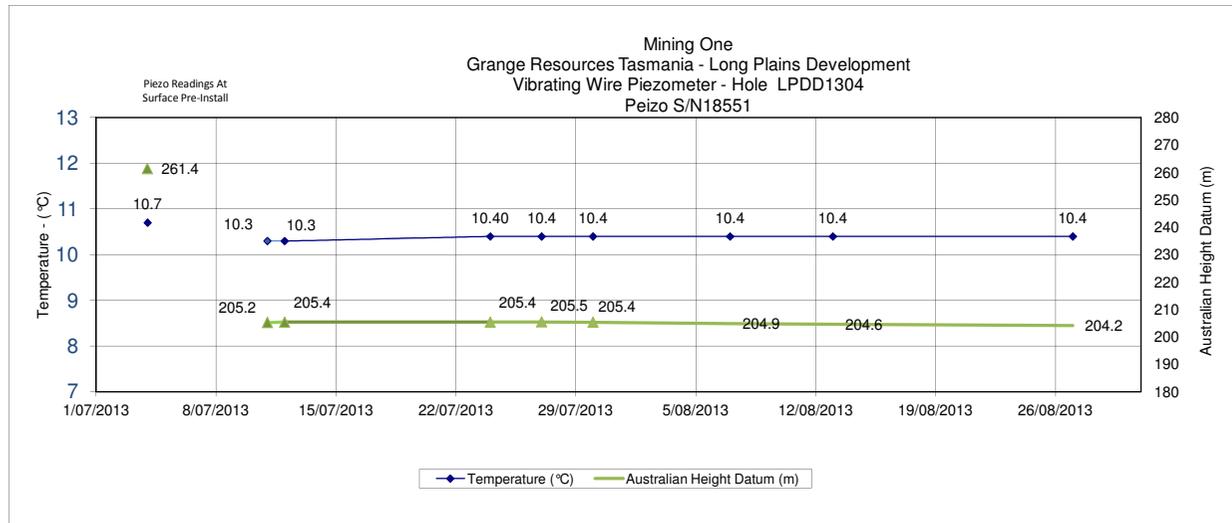


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1304
Transducer serial N°	18551
Piezo Install Date	4/07/2013
Ground level (mAHD)	261.39
Install depth (±mBGL)	67
Install depth (TVD mBGL)	67
Install depth (TVD mAHD)	194.39

Length of Cable (m)	75
Pressure Rating (Kpa)	700
Cable Excess (m)	8
Water Level (±mBGL)	7.80
Water Level (TVD mBGL)	7.80

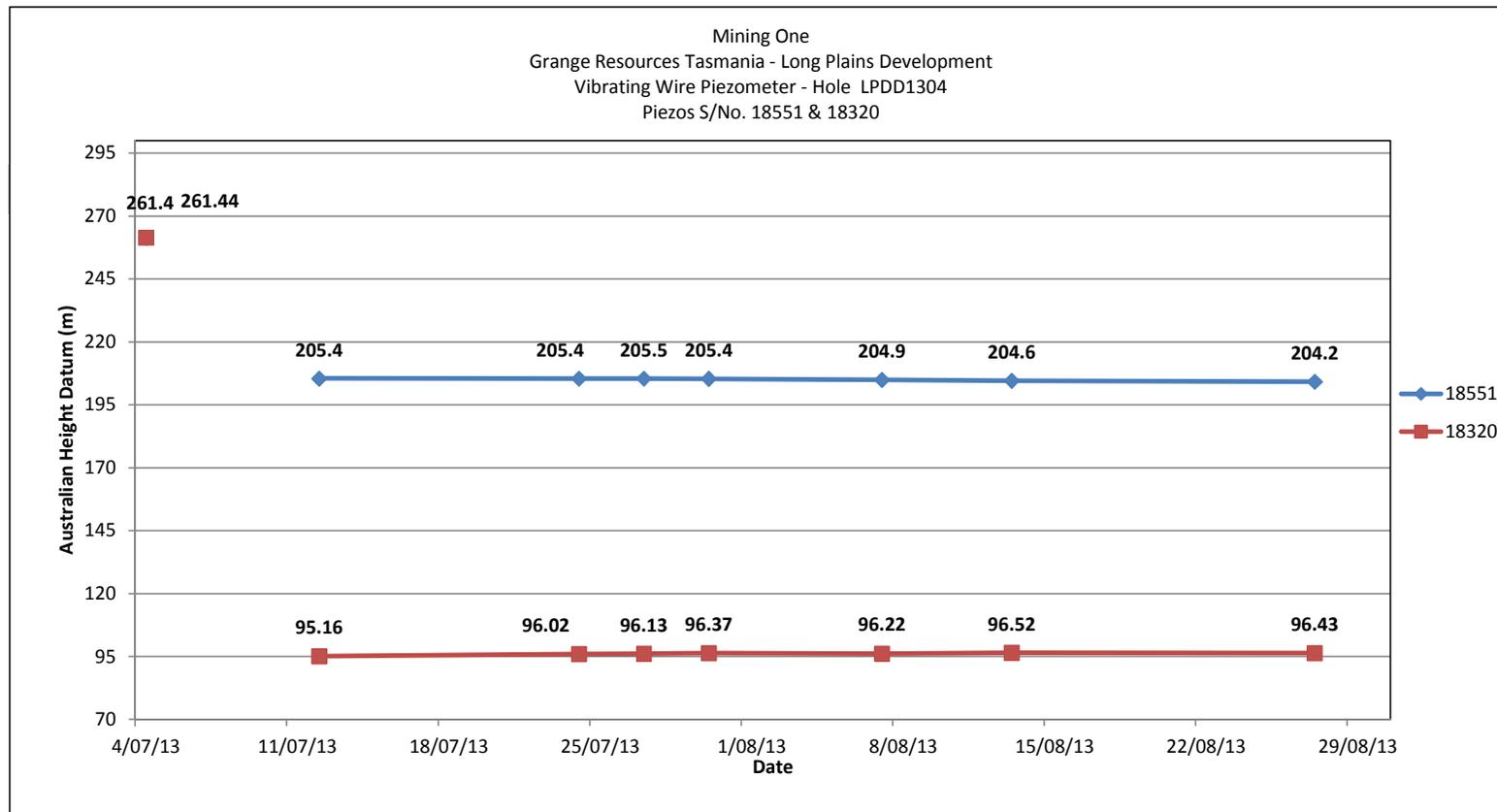
Parameters	At Surface (Dry)	At Surface (Wet)	At Install Level after PVC	PreGrout	Hose Blowout End of Day								
	4/07/2013	4/07/2013	4/07/2013	5/07/2013	5/07/2013	11/07/2013	12/07/2013	24/07/2013	27/07/2013	30/07/2013	7/08/2013	13/08/2013	27/08/2013
F ₁ (Hz e ⁻³)	3004.4	3004.4	2293.2	2389.8	2381.1	2404.2	2406.8	2406.70	2407.2	2406	2400.5	2396.7	2392
F ₁ (Hz)	9026.4	9026.4	5258.8	5711.1	5669.6	5780.2	5792.7	5792.2	5794.6	5788.8	5762.4	5744.2	5721.7
T ₁ (°C)	10.7	10.7	10.4	10.4	10.3	10.3	10.3	10.40	10.4	10.4	10.4	10.4	10.4
Pressure (m H ₂ O)	N/A	0.0	65.2	57.4	58.1	56.2	55.9	56.0	55.9	56.0	56.5	56.8	57.2
Water level (mAHD)	N/A	261.4	196.2	204.0	203.3	205.2	205.4	205.4	205.5	205.4	204.9	204.6	204.2





Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1304	
Transducer serial N°	18551	18320
Piezo Install Date	4/07/2013	4/07/2013
Ground level (mAHD)	261.39	261.39
Install depth (±mBGL)	67	184
Install depth (TVD mBGL)	67	184
Install depth (TVD mAHD)	194.39	77.39



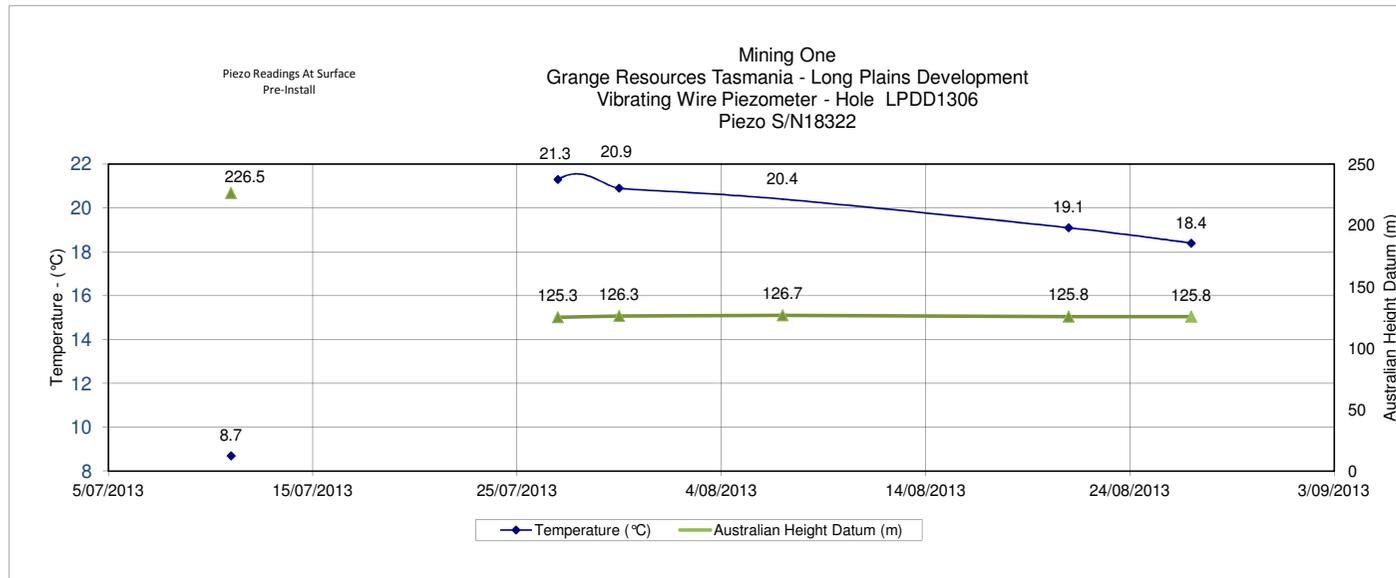


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1306
Transducer serial N°	18322
Piezo Install Date	11/07/2013
Ground level (mAHD)	276.328
Install depth (±mBGL)	203
Install depth (TVD mBGL)	166.31
Install depth (TVD mAHD)	110.02

Length of Cable (m)	200
Pressure Rating (Kpa)	2000
Cable Excess (m)	3m extension added
Water Level (±mBGL)	20.85
Water Level (TVD mBGL)	17.08

Parameters	At Surface (Dry)	At Surface (Wet)	At Install Level after PVC					
	11/07/2013	11/07/2013	12/07/2013	27/07/2013	30/07/2013	7/08/2013	21/08/2013	27/08/2013
F ₁ (Hz)	3028.8	3026.4	2654.3	2654.9	2658.5	2660.3	2656.7	2656.5
F ₁ (Hz ² e-3)	9173.6	9159.1	7045.3	7048.5	7067.6	7077.2	7058.1	7057.0
T ₁ (°C)	10.5	8.7	10.7	21.3	20.9	20.4	19.1	18.4
Pressure (m H ₂ O)		-0.1	123.3	123.3	122.2	121.6	122.7	122.8
Water level (mAHD)		276.5	153.0	153.0	154.1	154.7	153.6	153.5
True_Pressure (m H ₂ O)		-0.1	101.0	101.0	100.1	99.7	100.6	100.6
True_Water level (mAHD)		226.5	125.4	125.3	126.3	126.7	125.8	125.8



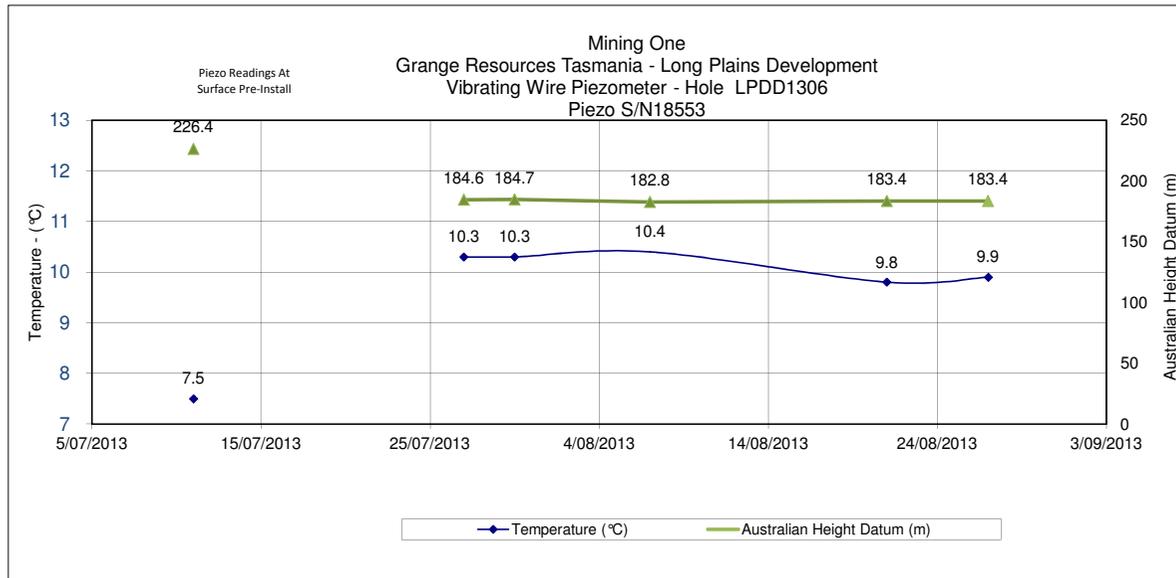


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1306
Transducer serial N°	18553
Piezo Install Date	11/07/2013
Ground level (mAHD)	276.328
Install depth (±mBGL)	89.7
Install depth (TVD mBGL)	73.49
Install depth (TVD mAHD)	202.84

Length of Cable (m)	90
Pressure Rating (Kpa)	700
Cable Excess (m)	0.3
Water Level (±mBGL)	34.82
Water Level (TVD mBGL)	28.53

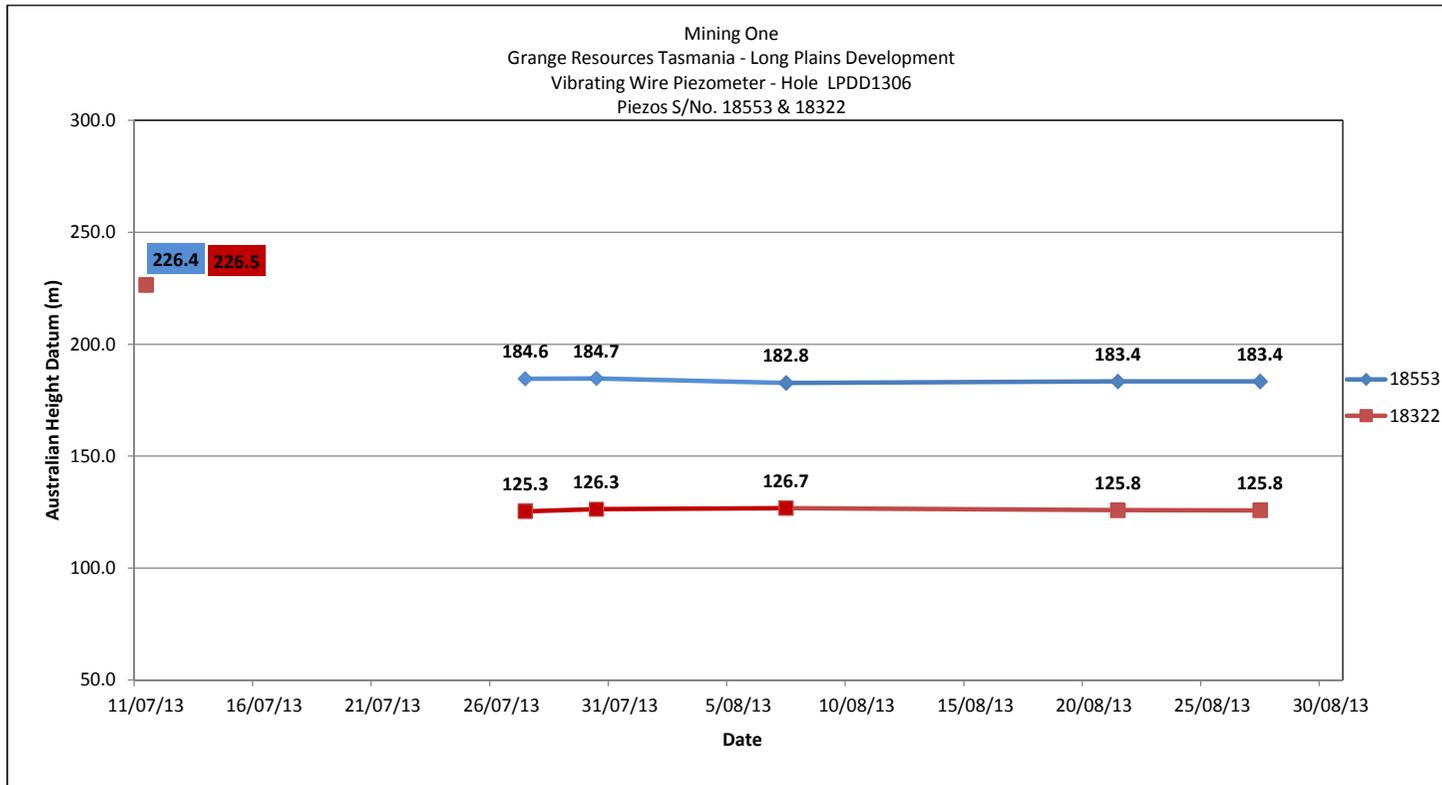
Parameters	At Surface (Dry)	At Surface (Wet)	At Install Level after PVC					
	11/07/2013	11/07/2013	12/07/2013	27/07/2013	30/07/2013	7/08/2013	21/08/2013	27/08/2013
F ₁ (Hz)	2965.9	2957.2	2571.7	2426.1	2427.9	2400.5	2409.80	2409.1
F ₁ (Hz ² e-3)	8796.6	8745.0	6613.6	5886.0	5894.7	5762.4	5807.1	5803.8
T ₁ (°C)	14.5	7.5	10.3	10.3	10.3	10.4	9.8	9.9
Pressure (mH ₂ O)		0.0	38.0	51.0	50.9	53.2	52.4	52.5
Water level (mAHD)		276.4	238.3	225.3	225.4	223.1	223.9	223.8
True_Pressure (mH ₂ O)		0.0	31.2	41.8	41.7	43.6	43.0	43.0
True_Water level (mAHD)		226.4	195.2	184.6	184.7	182.8	183.4	183.4





Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1306	
Transducer serial N°	18553	18322
Piezo Install Date	11/07/2013	11/07/2013
Ground level (mAHD)	276.328	276.328
Install depth (±mBGL)	89.7	203
Install depth (TVD mBGL)	73.49	166.31
Install depth (TVD mAHD)	202.84	110.02





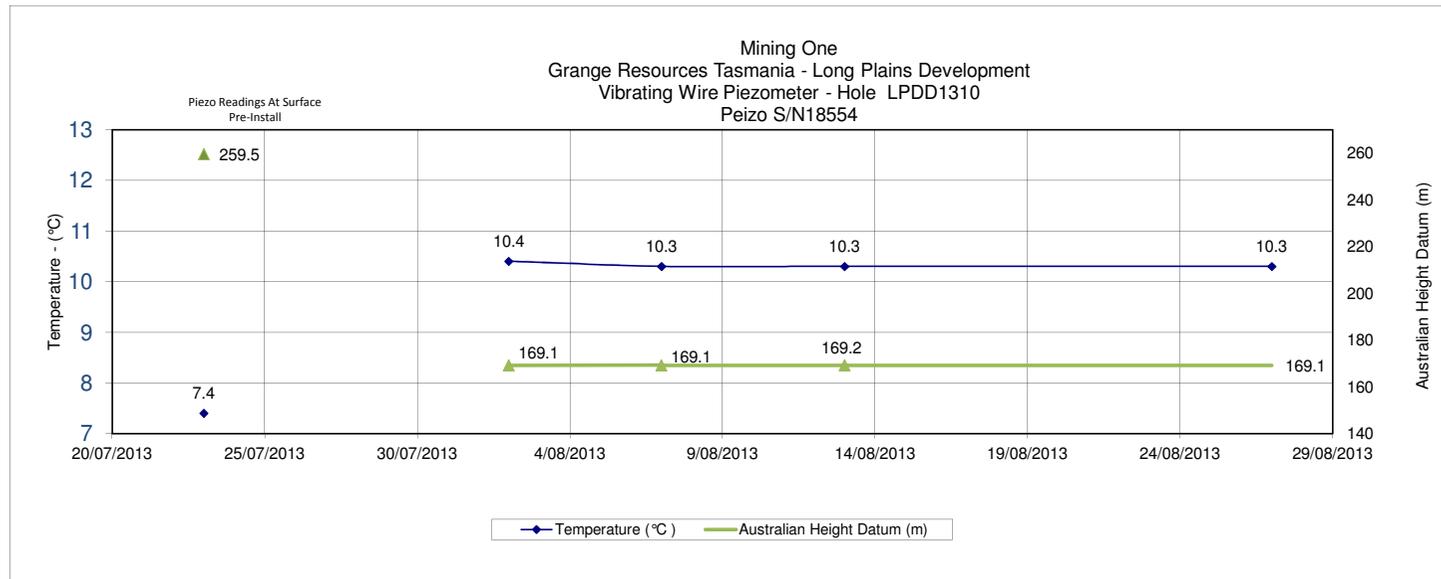
Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1310
Transducer serial N°	18554
Piezo Install Date	23/07/2013
Ground level (mAHD)	270
Install depth (±mBGL)	63
Install depth (TVD mBGL)	60.56
Install depth (TVD mAHD)	209.44

Length of Cable (m)	70
Pressure Rating (Kpa)	700
Cable Excess (m)	7
Water Level (±mBGL)	20.85
Water Level (TVD mBGL)	20.04

PVC Fail. 18323 lost in hole. Van Ruth Plug installed at 75m. 18554 saved and re-installed.

Parameters	At Surface (Dry)	At Surface (Wet)	At Install Level	At Install Level (2hr Post)						
	23/07/2013	23/07/2013	23/07/2013	23/07/2013	27/07/2013	30/07/2013	2/08/2013	7/08/2013	13/08/2013	27/08/2013
F ₁ (Hz)	2769.6	2767.8	2347.7	2350.9	2355.5	2358.80	2361	2362.7	2363.4	2360
F ₁ (Hz ² e ⁻³)	7670.7	7660.7	5511.7	5526.7	5548.4	5563.9	5574.3	5582.4	5585.7	5569.6
T ₁ (°C)	6.7	7.4	9.4	10.3	10.4	10.40	10.4	10.3	10.3	10.3
Pressure (m H ₂ O)		0.0	94.3	37.9	94.2	94.1	94.1	94.0	94.0	94.1
Water level (mAHD)		270.0	175.7	232.1	175.8	175.9	175.9	176.0	176.0	175.9
True_Pressure (m H ₂ O)		0.0	90.6	36.4	90.5	90.5	90.4	90.4	90.4	90.4
True_Water level (mAHD)		259.5	168.9	223.1	169.0	169.1	169.1	169.1	169.2	169.1



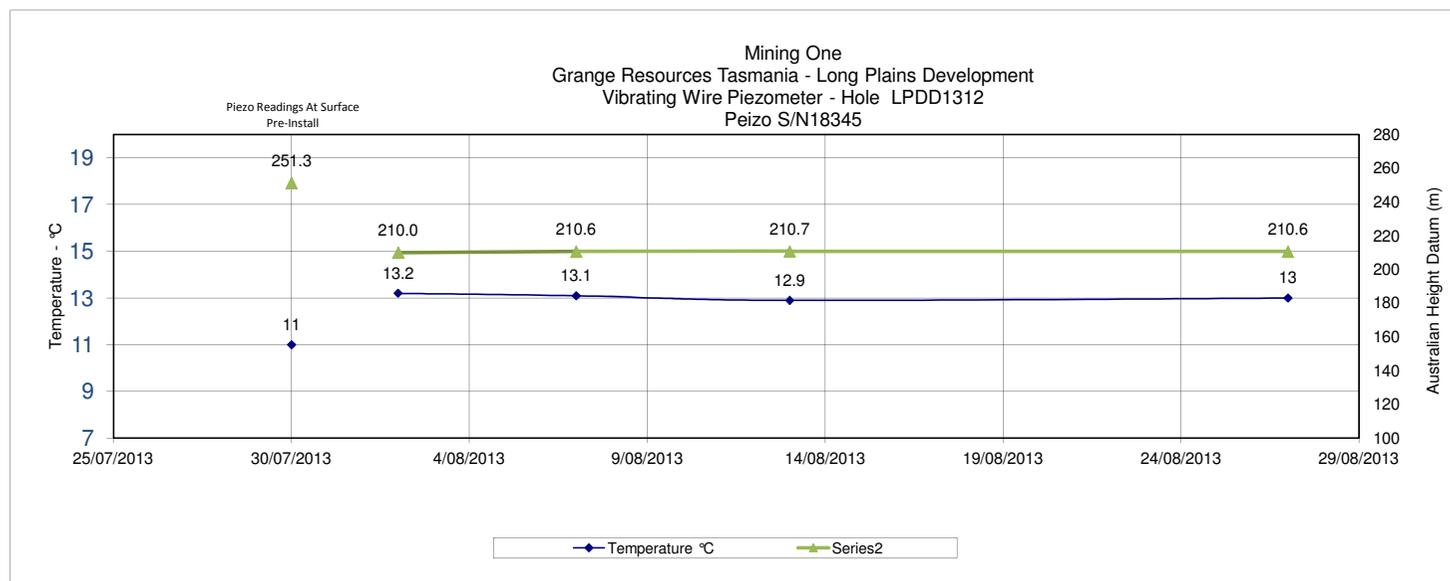


Mining One
Grange Resources Tasmania - Long Plains Development
Vibrating Wire Piezometers Sheet

VWP ID	LPDD1312
Transducer serial N°	18345
Piezo Install Date	29/07/2013
Ground level (mAHD)	262.527
Install depth (±mBGL)	203
Install depth (TVD mBGL)	191.24
Install depth (TVD mAHD)	71.29

Length of Cable (m)	210
Pressure Rating (Kpa)	2000
Cable Excess (m)	7
Water Level (±mBGL)	25.09
Water Level (TVD mBGL)	23.64

Parameters	At Surface (Dry)	At Surface (Wet)	At Install Level	At Install Level (After Rod Pull)	PreGrout	Post Grout				
	30/07/2013	30/07/2013	30/07/2013	30/07/2013	1/08/2013	1/08/2013	2/08/2013	7/08/2013	13/08/2013	27/08/2013
F ₁ (Hz)	2968.5	2967.5	2443.5	2451.8	2453.4	2377.70	2473	2481.3	2482.5	2481.2
F ₁ (Hz ² e ⁻³)	8812.0	8806.1	5970.7	6011.3	6019.2	5653.5	6115.7	6156.8	6162.8	6156.4
T _i (°C)	9.5	11	12.2	12.5	13.2	13.20	13.2	13.1	12.9	13
Pressure (m H ₂ O)		-0.1	45.4	44.7	44.6	50.5	43.1	42.4	42.3	42.4
Water level (mAHD)		262.6	217.1	217.8	217.9	212.0	219.4	220.1	220.2	220.1
True Pressure (m H ₂ O)		-0.1	43.4	42.8	42.7	48.3	41.2	40.6	40.5	40.6
True Water level (mAHD)		251.3	207.8	208.4	208.5	202.9	210.0	210.6	210.7	210.6





Appendix F

Vibrating Wire Piezometers Calibration Sheets

20/06/2013



VIBRATING WIRE PIEZOMETER CALIBRATION

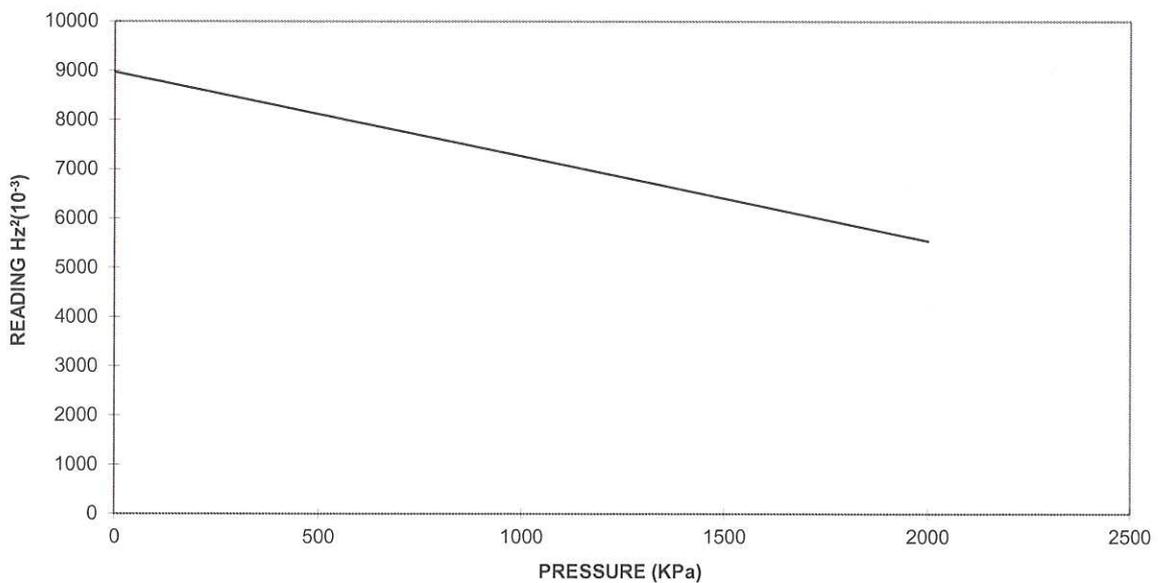
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18320**

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 8960 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.58400 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : 0.11030 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$



VIBRATING WIRE PIEZOMETER CALIBRATION

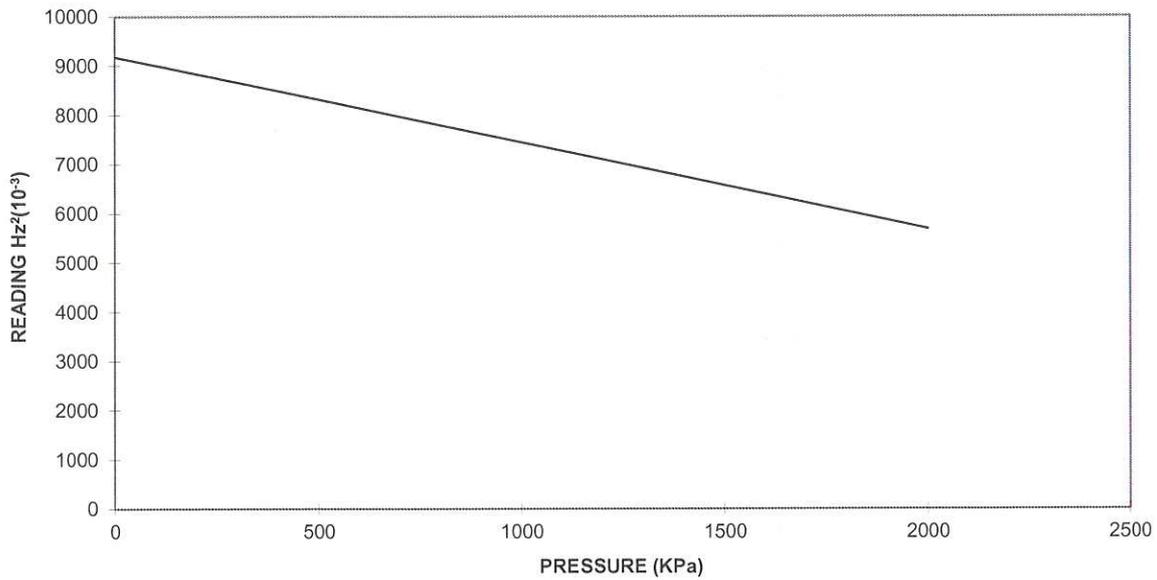
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18322**

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 9164 $\text{Hz}^2(10^{-3})$

PRESSURE COEFFICIENT : 0.57270 $\text{KPa}/\text{Hz}^2(10^{-3})$ ----- (C_P)

AMBIENT TEMPERATURE : 15 $^{\circ}\text{C}$

THERMAL COEFFICIENT : 0.19060 $\text{KPa}/^{\circ}\text{C}$ ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to $+65^{\circ}\text{C}$

ZERO READING: (F_0) & (T_0) TO BE ESTABLISHED DURING INSTALLATION

$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$
--

20/06/2013



VIBRATING WIRE PIEZOMETER CALIBRATION

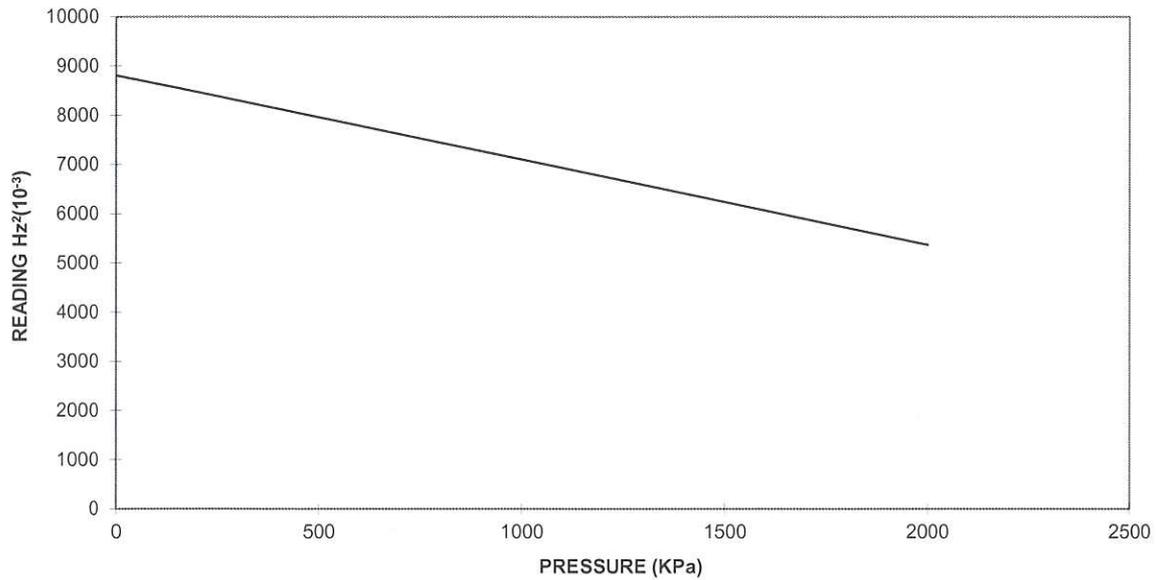
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18345**

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 8809 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.58090 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : 0.15720 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

VIBRATING WIRE PIEZOMETER CALIBRATION

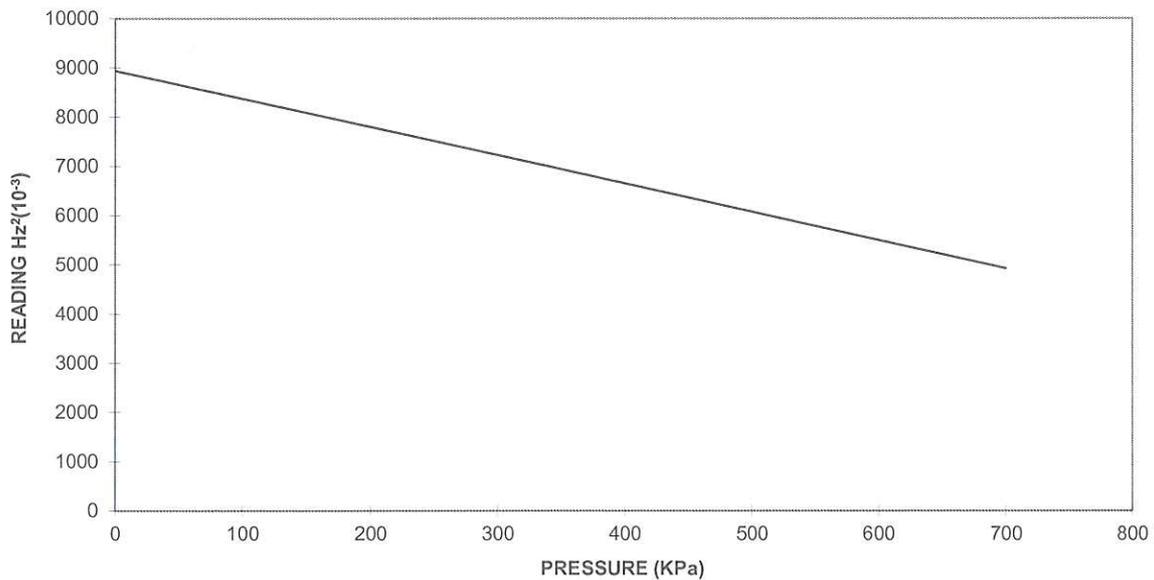
CLIENT : GRANGE RESOURCES

 JOB No **GSA-15543**

 SERIAL No. : **18549**

RATING : 700 KPa

PIEZOMETER CALIBRATION GRAPH


 FACTORY ZERO READING : 8919 Hz²(10⁻³)

 PRESSURE COEFFICIENT : 0.17410 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

 THERMAL COEFFICIENT : 0.00956 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1050 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

 ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

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VIBRATING WIRE PIEZOMETER CALIBRATION

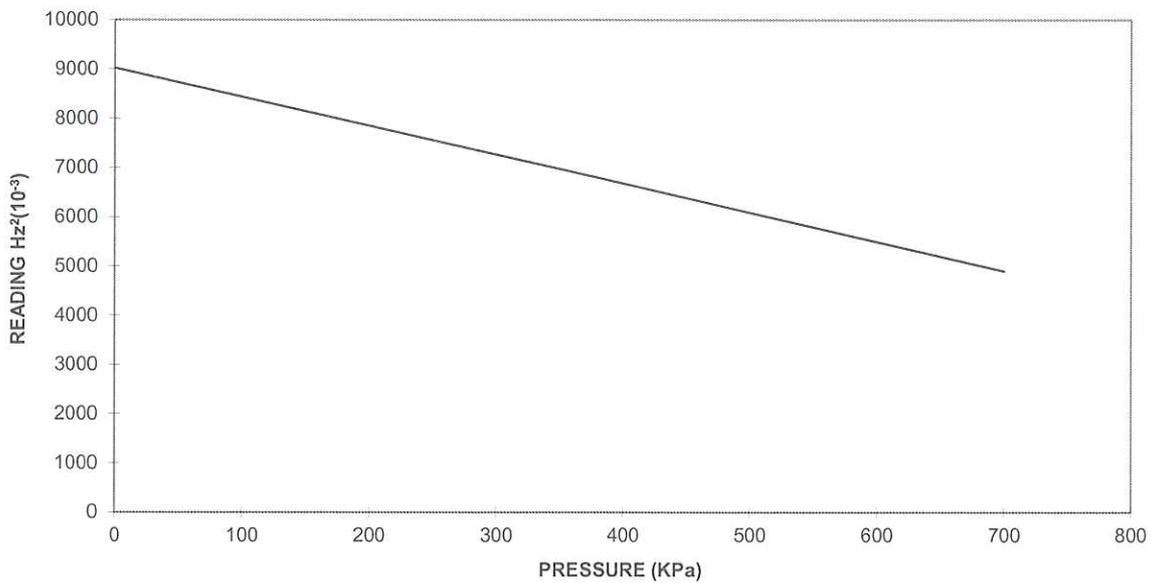
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18551**

RATING : 700 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 9009 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.16970 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : -0.01456 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1050 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

20/06/2013



VIBRATING WIRE PIEZOMETER CALIBRATION

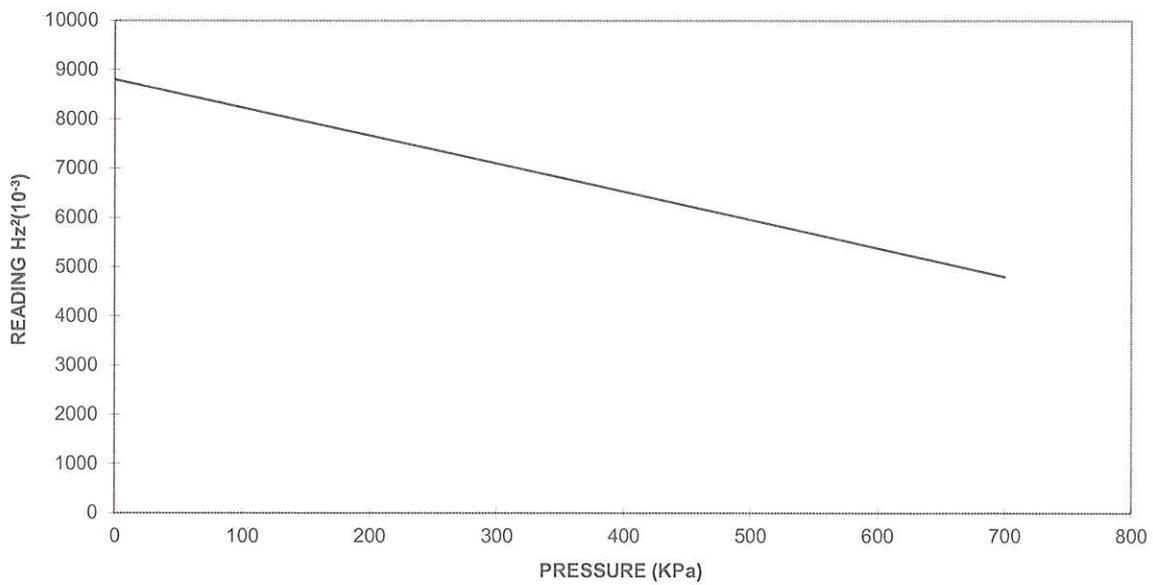
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18553**

RATING : 700 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 8781 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.17520 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : 0.04045 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1050 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

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VIBRATING WIRE PIEZOMETER CALIBRATION

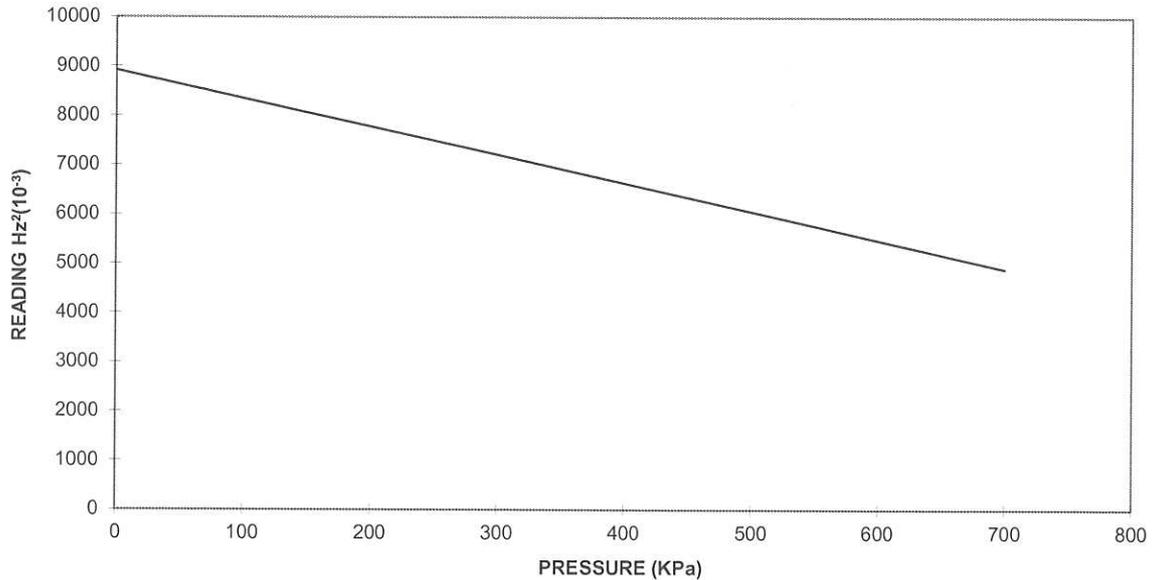
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18554**

RATING : 700 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 8902 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.17410 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : -0.01957 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1050 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

20/06/2013



VIBRATING WIRE PIEZOMETER CALIBRATION

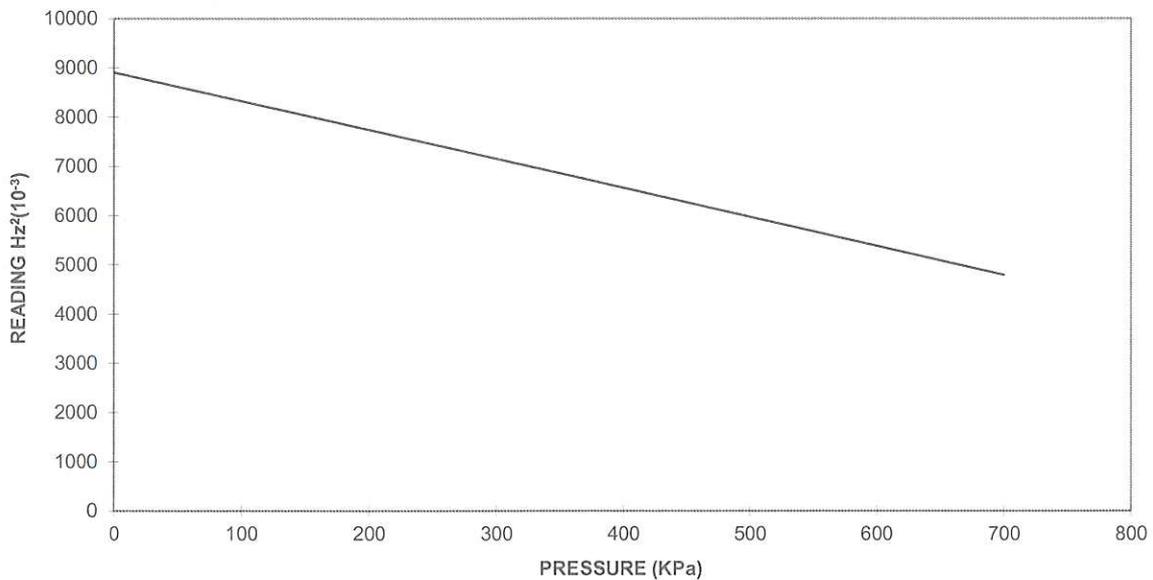
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18556**

RATING : 700 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 8896 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.17020 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : 0.00169 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1050 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

20/06/2013



VIBRATING WIRE PIEZOMETER CALIBRATION

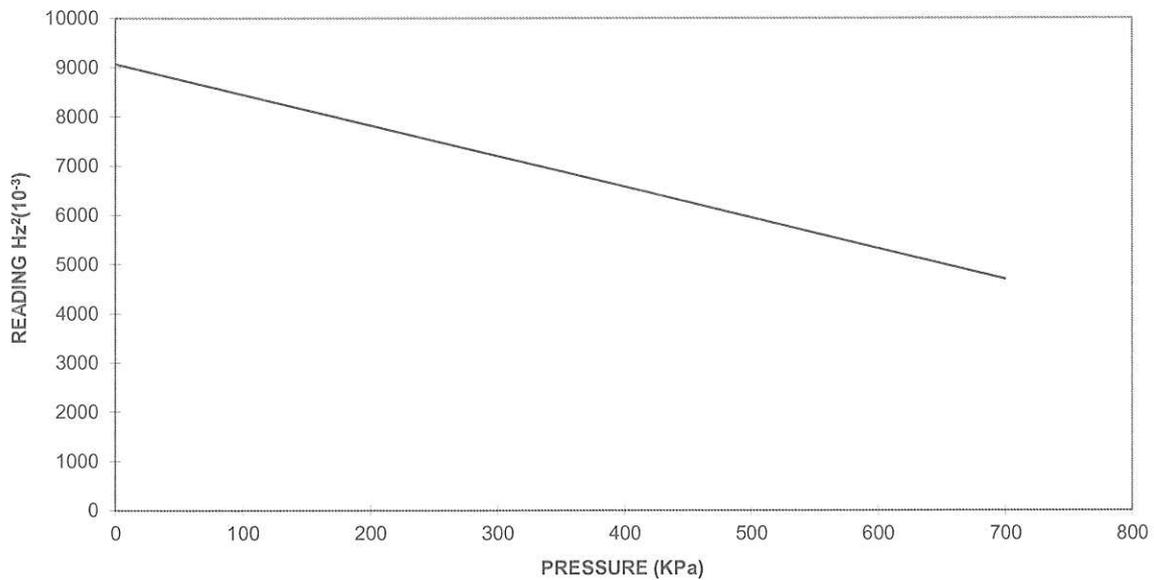
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18557**

RATING : 700 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 9043 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.16020 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : 0.01100 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 1050 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

20/06/2013



VIBRATING WIRE PIEZOMETER CALIBRATION

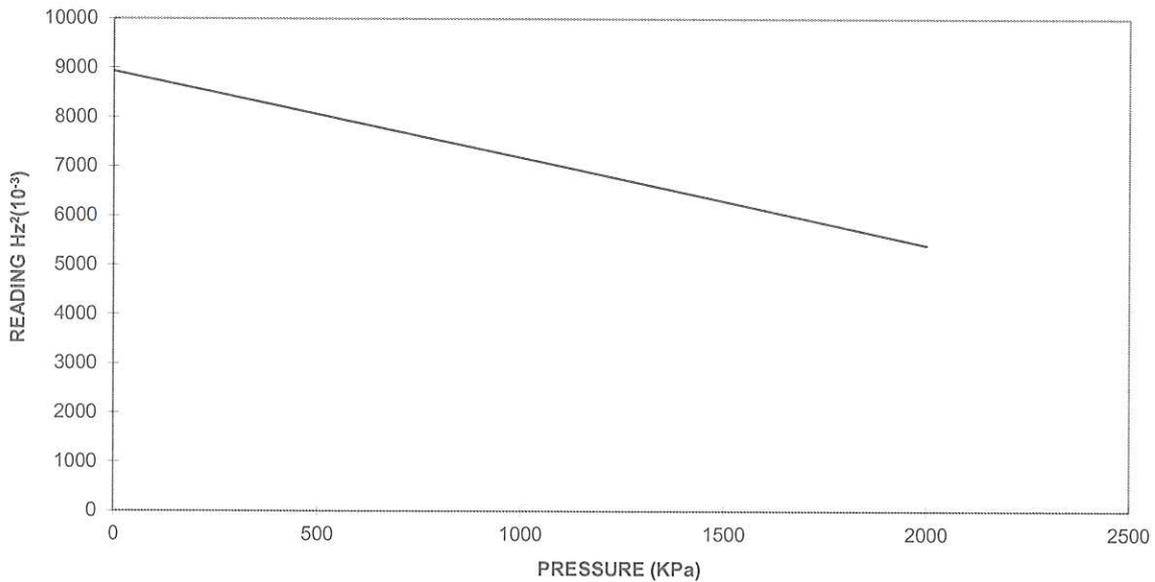
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18621**

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 8921 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.56730 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : 0.32670 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

20/06/2013



VIBRATING WIRE PIEZOMETER CALIBRATION

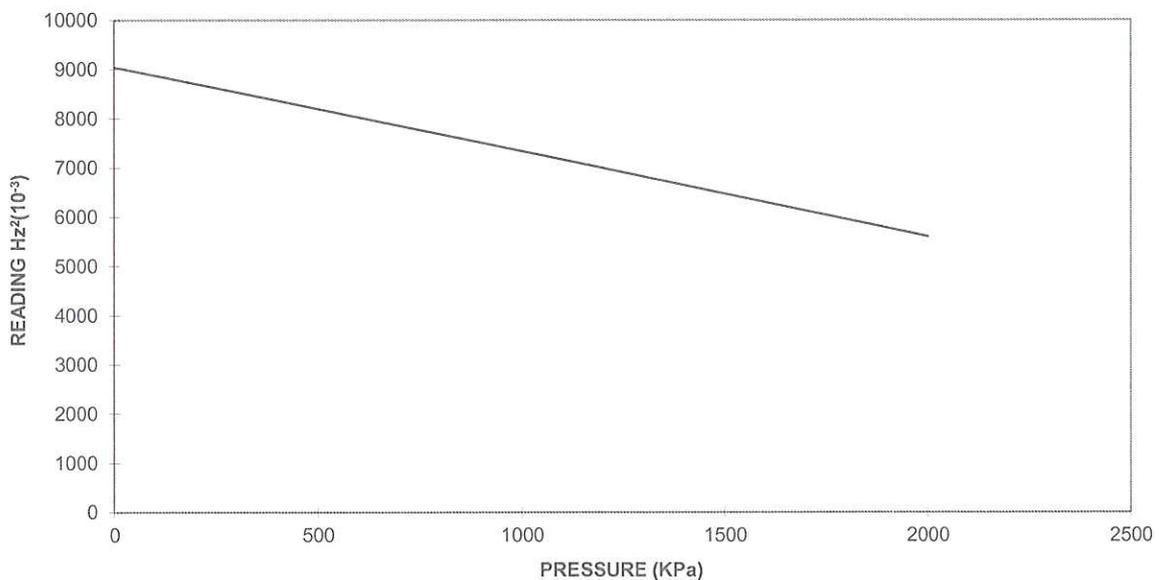
CLIENT : GRANGE RESOURCES

JOB No **GSA-15543**

SERIAL No. : **18622**

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH



FACTORY ZERO READING : 9023 Hz²(10⁻³)

PRESSURE COEFFICIENT : 0.58160 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

THERMAL COEFFICIENT : 0.38500 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$

VIBRATING WIRE PIEZOMETER CALIBRATION

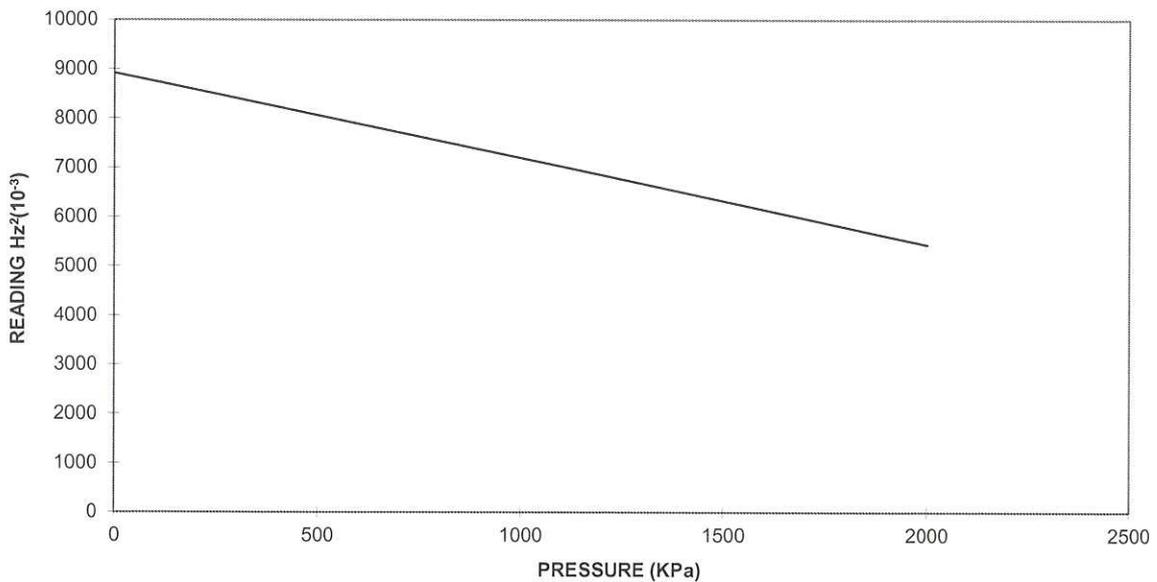
 CLIENT : **GRANGE RESOURCES**

 JOB No **GSA-15543**

 SERIAL No. : **18624**

RATING : 2000 KPa

PIEZOMETER CALIBRATION GRAPH


 FACTORY ZERO READING : 8904 Hz²(10⁻³)

 PRESSURE COEFFICIENT : 0.57470 KPa/Hz²(10⁻³) ----- (C_P)

AMBIENT TEMPERATURE : 15 °C

 THERMAL COEFFICIENT : 0.41890 KPa/°C ----- (C_T)

SEE INSTRUCTION MANUAL FOR STANDARD THERMISTOR/TEMPERATURE DATA

MAXIMUM PRESSURE : 3000 KPa

BAROMETRIC PRESSURE : 1026.2 mBar

OPERATING TEMPERATURE RANGE : -30°C to +65°C

 ZERO READING: (F₀) & (T₀) TO BE ESTABLISHED DURING INSTALLATION

$$\text{PORE PRESSURE} = (F_0 - F_1)C_P + (T_1 - T_0)C_T$$



Appendix G

Site Photos



CLIENT	Grange Resources	LPDD1204 MONUMENT PHOTOGRAPH				
 mining one Consultants	Mining One Pty Ltd	JOB#	1890_G	SCALE	N.T.S.	FIG. G-1
		FILE	Fig. G-1	DATE	19/09/2013	



CLIENT		Grange Resources		LPDD1205 MONUMENT PHOTOGRAPH	
 mining one Consultants	Mining One Pty Ltd	JOB#	1890_G	SCALE	N.T.S.
		FILE	Fig. G-2	DATE	19/09/2013
					FIG. G-2



CLIENT		Grange Resources		LPDD1215 MONUMENT PHOTOGRAPH	
		Mining One Pty Ltd		JOB#	1890_G
				SCALE	N.T.S.
				FILE	Fig. G-3
				DATE	19/09/2013
					FIG. G-3



CLIENT		Grange Resources		LPDD1304 MONUMENT PHOTOGRAPH	
 mining one Consultants	Mining One Pty Ltd	JOB#	1890_G	SCALE	N.T.S.
		FILE	Fig. G-4	DATE	19/09/2013
					FIG. G-4



CLIENT		Grange Resources		LPDD1306 MONUMENT PHOTOGRAPH	
 Mining One Pty Ltd	JOB#	1890_G	SCALE	N.T.S.	
	FILE	Fig. G-5	DATE	19/09/2013	
				FIG. G-5	



CLIENT	Grange Resources	LPDD1310 MONUMENT PHOTOGRAPH		
 Mining One Pty Ltd	JOB#	1890_G	SCALE	N.T.S.
	FILE	Fig. G-6	DATE	19/09/2013
				FIG. G-6



CLIENT		Grange Resources		LPDD1312 MONUMENT PHOTOGRAPH	
	Mining One Pty Ltd	JOB#	1890_G	SCALE	N.T.S.
		FILE	Fig. G-7	DATE	19/09/2013
					FIG. G-7

DOCUMENT INFORMATION

Status	Final
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Print Date	23 rd September 2013
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Reviewed By	Peter Gribbin
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File Name	3711v2.doc
Job No	1890_G
Distribution	PDF emailed to client

DOCUMENT CHANGE CONTROL

Version	Description of changes/amendments	Author (s)	Date
1	Draft Report	Alexis Valenza	04/09/13
2	Final Report	Alexis Valenza	23/09/13

DOCUMENT REVIEW AND SIGN OFF

Version	Reviewer	Position	Signature	Date
2	Peter Gribbin	Principal Hydrogeologist		23/09/13