GROUNDWATER ENTERPRISES

BP33 Groundwater Investigation Report

November 2020

PREPARED FOR Core Lithium Pty Ltd

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1 Introduction

Core Lithium are scoping an underground mining operation at their BP33 deposit located 30 km south-east of Darwin on exploration leases EL30015 and EL29698. The BP33 deposit is situated approximately 5km south-east of Grants Lithium prospect. The environmental assessment report (NTEPA, 2019) for an open cut lithium mine at the Grants deposit was completed in June, 2019.

Core Lithium commissioned a desktop groundwater study of the BP33 prospect in October 2019 (GE, 2019). The study recommended the installation of a series of nested bore to investigate groundwater conditions around BP33 and to establish a monitoring network for the collection of baseline water level and quality data for the mine approval process. This document forms a field completion report from the site groundwater investigation.

1.1 Project Description

The proposed mining activities at BP33 involve the construction of a box cut to remove the weathered zone from the Burrell Creek Formation. The box cut will be excavated to a depth of approximately 60 m. A 400 m long decline stemming from the base of the box cut will allow access to the spodumene deposit located beneath the previously worked open pit. The deposit will be mined using sub-level retreat mining to an estimated depth of 320 m (Orewin, 2019). The mined ore will be trucked to the Grants processing facility and there will be no requirement for tailings storage at the BP33 site. There will be a waste rock dump at the BP33 site comprised of the oxide waste from the box cut, which will be pushed back into the box cut on completion of mining. Both the box cut and the underground mine will require de-watering. Water sourced from de-watering activities will be pumped to Observation Hill Dam (OHD), which is being recommissioned as a water supply for ore processing at the Grants site.

1.2 Scope

The field completion report has the following scope:

- Report on findings from the investigation program drilling including documenting groundwater observations, field water quality, bore construction and bore completion details.
- Document hydraulic testing of investigation bores including methods, results and analysis.
- Provide monitoring recommendations to enable the collection of a baseline water quality and water level data set.

2 Site Characterisation

The following section is sourced from the BP33 desktop groundwater study (GE, 2019).

2.1 Topography and Drainage

The regional topography surrounding BP33 is largely subdued and flat lying. Locally BP33 is situated in a subtle valley with a south to south-west orientation. Higher elevations (40 mAHD) occur to the north-east around Observation Hill Dam (OHD). The land surface falls away from this area to the south-west with the lowest lying areas (10 maHD) found along drainage lines running into Bynoe Harbour.

BP33 is located in the Finniss River drainage basin and falls within the Bynoe Harbour catchment. There are no permanent water courses in the immediate vicinity of BP33. The area is drained by a number of small unnamed ephemeral water courses which rise in the higher elevations to the north-west of BP33 and drain south-west into the Charlotte River and ultimately Bynoe Harbour. BP33 is located on the western edge of a small drainage line connects OHD to the Charlotte River. Both OHD and the BP33 pit lake contain surface water that typically persists through the dry season. While OHD is fed by a drainage line, BP33 is not connected to any channels and the water present in the pit is likely to represent a groundwater discharge feature. The generalised topography and drainage around BP33 are shown in Figure 2-1.

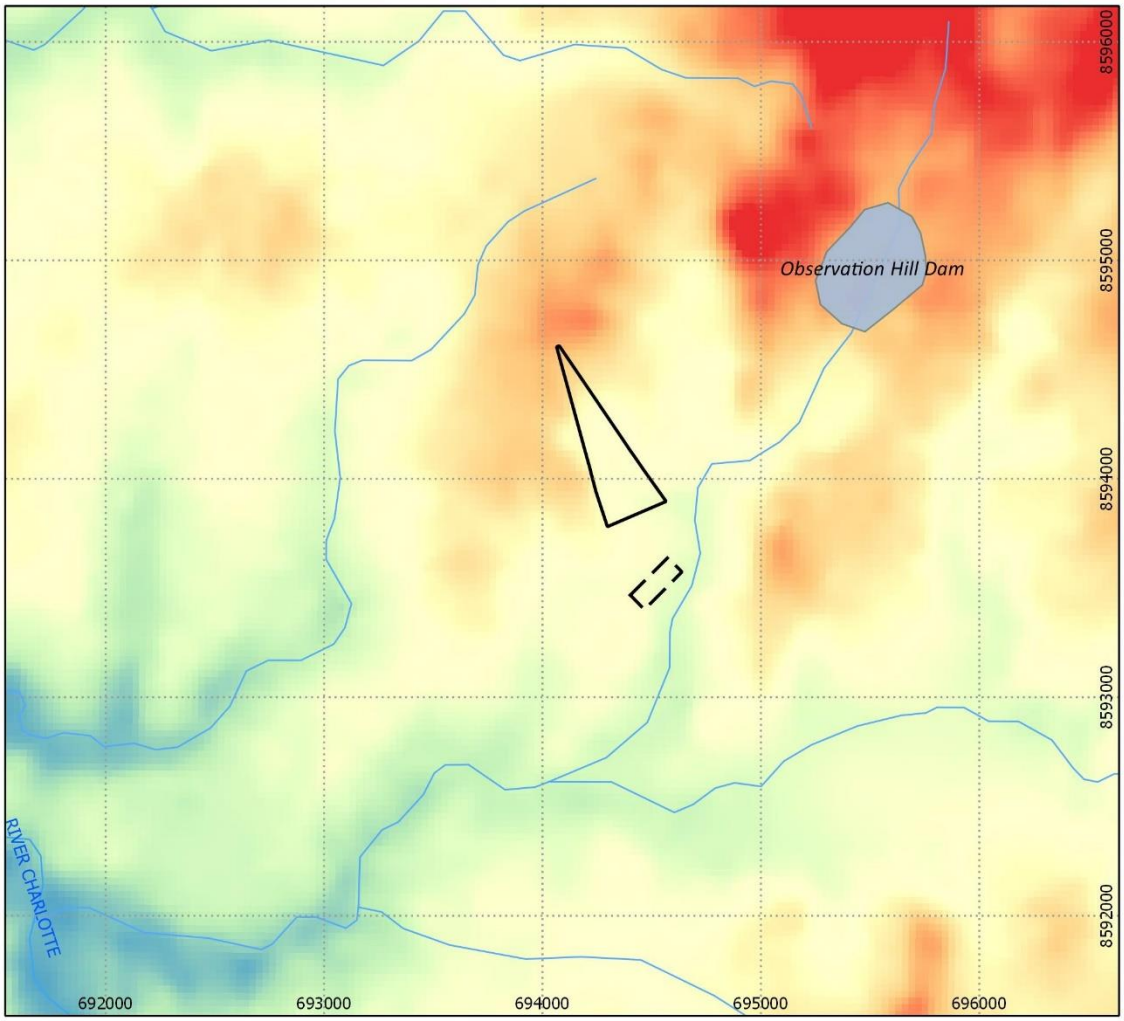


Figure 2-1 BP33 Topography and Drainage

N

Topography (mAHD)
0
20
42

Proposed BP33 mine workings
Approx. extent of box cut
Approx. extent of underground workings
Surface water drainage network (250 K)

0 500 1000 m

GDA 94 Zone 52, 1:30 000 @ A4

2.2 Geology

Regionally, BP33 is located in the north-west of the Pine Creek Geosyncline, a thick sequence of Proterozoic metasediments that overlies Archean basement rocks and underwent extensive folding and uplift around 1800 million years ago. After a long hiatus during which significant weathering and erosion occurred a drape of flat bedded Cretaceous and Cainozoic sedimentary formations were deposited over the Proterozoic rocks.

The lithium prospect at BP33 is hosted in a pegmatite, which is one of a swarm of complex zoned rare element pegmatites forming the 55km long by 10km wide West Arm–Mt Finniss pegmatite belt. The Finniss pegmatites are intruded into the early Proterozoic Burrell Creek Formation which is distributed along the northwest margin of the Pine Creek Geosyncline. The BP33 pegmatite is north-east trending and steeply dipping, it is approximately 75 m long with a width of between 25 – 40 m (Frater, 2005). From exploration drilling the top of the BP33 pegmatite ranges in depth from 30 – 180 m below surface, with an average depth of 90 m.

The Burrell Creek Formation is comprised of shale, siltstone, sandstone and strongly foliated phyllite with lenses of quartz pebble conglomerate. The Burrell Creek Formation is extensively weathered at surface where it often forms a laterite horizon. The underlying shale and phyllite is typically heavily weathered and decomposed into mottled clay. Exploration drilling at BP33 indicates the weathered zone in the Burrell Creek is on average 60 m thick with the upper 30 m typically showing extensive weathering and the bottom 30 m showing moderate to slight weathering.

Where the Burrell Creek Formation is not exposed at surface it subcrops beneath a thin veneer of Tertiary and Quaternary aged sediments. These include alluvial deposits (Qa) along the drainage lines as well as colluvium and laterite formed by in-situ weathering of the Burrell Creek Formation. The colluvium (Cz) comprises ferruginous clayey, sandy and gravelly soils. Both the colluvium and laterite deposits are typically less than 4 m in thickness (Pietsch, 1986).

The alluvial deposits centre around active drainage lines and can extend up to several kilometres in length and up to 200-300 m in width (Frater, 2005). They are typically less than 4 m in thickness but can exceed 6 m in the southern sections of the Booths drainage (Mollemans and Hatcher, 1988) - Booths is the drainage line running south from Observation Hill dam to the immediate east of BP33. Mollemans and Hatcher (1988) describes the following three sedimentary layers in alluvial deposits around BP33/Observation Hill area:

- A-layer: Less than 0.5 m thick and may contain a thin band of pebbles (5–10 mm diameter) at its base. It is essentially un-mineralised and is capped by an organic clay layer.
- B-layer. A minor gravel layer up to 1 m thick, directly overlying the C-layer or separated from it by thin bands of clayey sand.
- C-layer. This earliest layer consists of basal clayey sand or gravel up to 2.5 m thick, containing sub-angular quartz and siltstone clasts up to 200 mm in length.

Mollemans and Hatcher (1988) note that in some areas the alluvial deposits have been completely reworked with black soil, and that the bedrock under the main alluvial channel is typically heavily weathered.

2.3 Hydrogeology

BURRELL CREEK FORMATION

The Burrell Creek Formation forms the principal aquifer across the BP33 site. It is a marginal fractured rock aquifer with typical bore yields of less than 0.5 L/s; largely due to the lack of primary porosity and open fracturing within the formation. Higher yields (2 L/s) can occur where drilling intersects fracture zones or bands of quartz veining. Groundwater is typically intersected at the base of the weathering zone/transition into fresh Burrell Creek Formation. At the Grant's deposit 5 km to the north-east groundwater investigation bores intersected the upper groundwater zone in the Burrell Creek Formation between 50 and 60 m below ground level. Limited information is available at BP33, however, anecdotal observations from mineral drilling suggests holes intersect groundwater between 60 and 80 m depth. The Burrell Creek Formation is largely fine grained and characteristically weathers to clay. Where heavily weathered the Burrell Creek Formation is less permeable as open fractures are less prevalent where the formation is decomposed to clay.

Groundwater flow directions within the Burrell Creek Formation are likely to reflect the topographic gradient with groundwater moving from higher groundwater elevations in the north-east around OHD to lower elevations around Bynoe Harbour south-west of BP33. The pit lake at BP33 appears to operate as a groundwater discharge feature, the loss of water from the lake through evaporation may create a local groundwater gradient in the surrounding aquifer toward the pit lake.

ALLUVIAL AQUIFER

There is limited information on the groundwater characteristics of the alluvial deposits as no bores have been constructed in this unit at BP33. Auger drilling and costeaning undertaken by Greenex Mining along the drainage lines south of OHD in the 1980s provide some insight into groundwater occurrence within the alluvial deposits. Mollemans and Hatcher (1988) report that costeans (a shallow exploration pit/trench) excavated along the Booths alluvial deposit north of BP33 frequently collapsed due to the ingress of water. They suggest that seepage from OHD may provide a permanent source of water to the alluvial channels downstream of the dam. The presence of relatively persistent pools of water along the drainage line south of OHD and shallow groundwater levels (<5 m) in mineral holes adjacent to BP33 support this theory.

The aquifers are likely to operate at a very local scale, being of both limited lateral extent (200 – 300 m) and thickness (up to 6 m). Groundwater flow directions within the alluvial aquifer are likely to be consistent with the surface water gradient and generally flow from north to south past BP33.

2.4 Groundwater Receptors

GROUNDWATER BORES

There are no active groundwater bores within 9 km of the BP33 site. The closest groundwater bore to BP33 is RN023177, located 2.5 km north of the pit (see Figure 2-2). RN023177 was drilled in 1984 and was constructed in the Burrell Creek Formation as a potential water supply bore for Greenex mining operations at Observation Hill. The bore is not currently in use. The next closest groundwater bore RN038217 is located 9 km south of BP33 on the Fog Bay Road. RN038217 was drilled in 2013 to provide a domestic water supply.

ENVIRONMENTAL RECEPTORS

Groundwater Dependant Ecosystems Atlas

Groundwater dependent Ecosystems (GDEs) have been identified using the GDE Atlas, a national dataset of Australian GDEs developed by the Bureau of Meteorology (BOM, 2019) to assist groundwater management and planning. Figure 2-2 maps the terrestrial ecosystem layer in the vicinity of BP33. This layer shows the potential for ecosystems that rely on the subsurface presence of groundwater – including vegetation ecosystems such as forests and riparian vegetation. Four mapped categories are presented: known GDEs based on regional studies and high, medium and low GDE potential based on remote sensing and image analysis.

The GDE Atlas maps an area of medium GDE potential (shown in green in Figure 2-2) along the drainage lines to the immediate east and south of BP33.

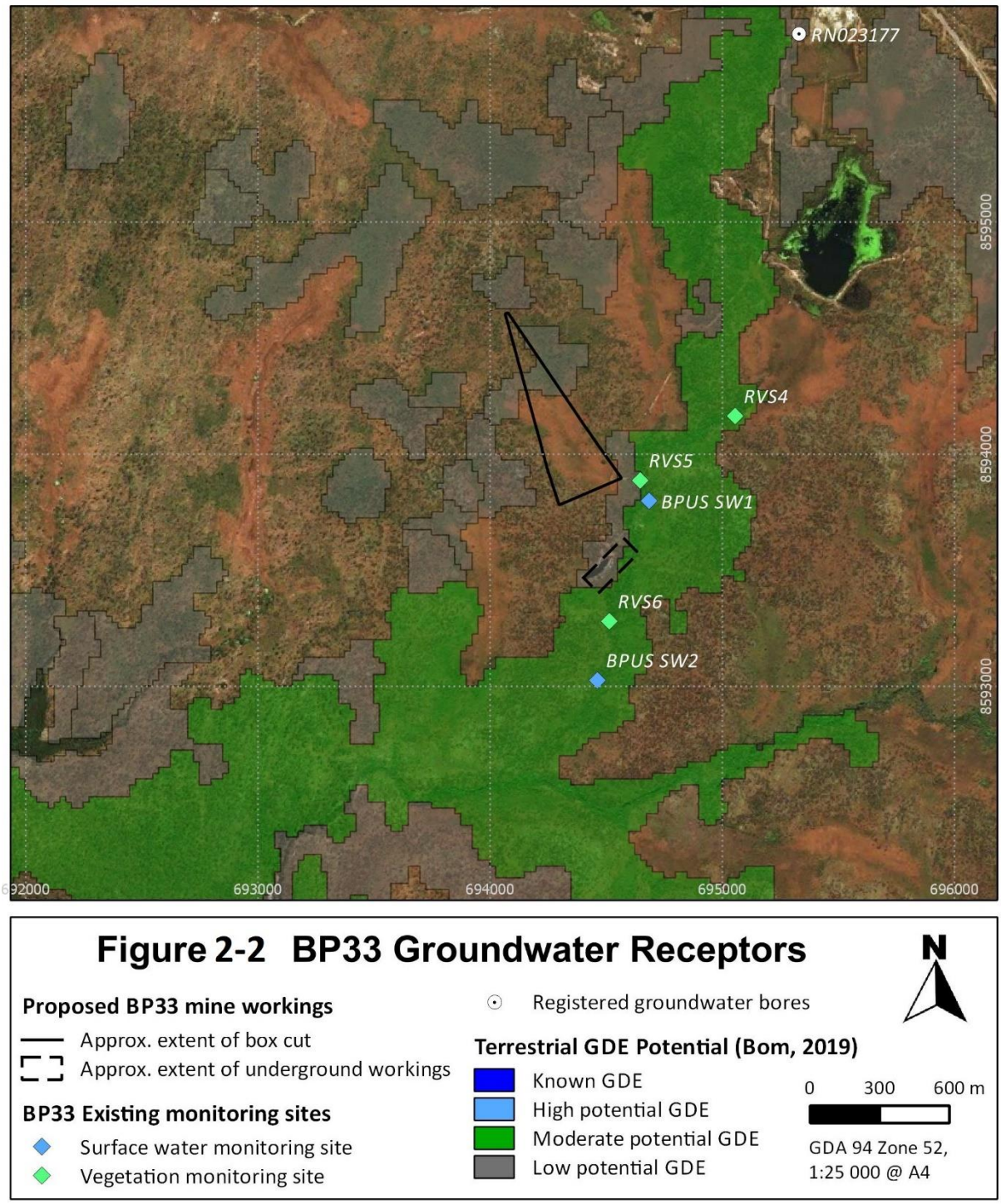
Field Surveys

EcOz Environmental Consultants (EcOz) was engaged by Core Lithium to map riparian vegetation communities and collect baseline information on community structure and condition along the drainage line downstream of OHD. The field survey (EcOz, 2019) mapped 3.6 hectares of GDE vegetation within the riparian zone of the drainage line. Three vegetation monitoring sites were established (see Figure 2-2 for locations) as part of the survey. At the time of surveying in June 2019, pools of water were observed around the northern two monitoring sites, RVS4 and RVS5.

As part of the Environmental Impact Assessment (EIS) for the Grants Lithium mine EcOz established two surface water monitoring sites on the drainage line south of OHD: BPUS SW1 and BPUS SW2 (Figure 2-2). The sites have been monitored at a quarterly frequency since October 2017. Surface water flows at the

monitoring sites generally cease early in the dry season (April/May). Anecdotal information suggests that in wetter years pools of surface water persist throughout the dry season.

Figure 2.2 Groundwater receptors around BP33



3 Methods

3.1 Drilling and Construction

Drilling was undertaken by Bores NT using a truck mounted Bourne drilling rig equipped to drill using rotary air and rotary mud methods. Bores were constructed in accordance with the Minimum Construction Requirements for Water Bores in Australia, 4th Edition (NUDLC, 2020).

Shallow bores (< 10 m deep) were drilled with a 200 mm mill claw and were constructed with 50 mm or 100 mm Class 12 PVC casing and machine slotted screens. The bores were gravel packed with 3 mm washed gravel, sealed with a bentonite plug (minimum expanded thickness of 1 m) and grouted to surface with a cement-bentonite grout.

Intermediate depth bores were constructed with Class 9 PVC surface casing (205 mm) installed and cemented to a depth of 5.7 m. In accordance with licensing conditions the cement was left to cure 24-hours before drilling recommenced with a 200 mm mill claw. Where groundwater yields in excess of 0.5 L/s were intersected in the weathered zone of the Burrell Creek Formation bores were constructed with 100 mm PVC casing and screens, gravel packed with 3 mm washed gravel and sealed with bentonite pellets. The annulus of the bores was backfilled with cuttings to a depth of 5 m and grouted to surface with a cement-bentonite grout. Holes which did not produce free water through the weathering zone had 158 mm steel casing run. The casing was seated at the base of the 200 mm hole and was necessary to prevent hole collapse in the weathered Burrell Creek Formation. Drilling continued through fresh Burrell Creek Formation using a 152 mm hammer bit until free water was intersected. Bores were then constructed with 100 mm Class 12 PVC casing and screens, 3 mm washed gravel and a bentonite plug, which was placed within the 152 mm hole. Bores were backfilled with cuttings and grouted to surface from a depth of 5 m. In the deep bore (BPG4) the 158 mm steel casing was pressure cemented from 47 m to surface with cement bentonite-grout. The cement was allowed 24-hours to cure before drilling continued with a 152 mm hammer bit through fresh Burrell Creek Formation. The hole was drilled to a total depth of 109 m.

Drill cuttings were collected every 3 m (twice for each 6 m drilling rod) and laid out in order of increasing depth for logging by the site hydrogeologist. Bore yields were gauged by measuring flow from the discharge line and where necessary by damning the area around the surface casing and diverting flow through a short section of 200 mm casing. The flow was then measured using 10 L/23 L buckets or in the case of higher yielding site BPG4 by use of a V-notch weir. Airlift rates were recorded at each visible increase in yield. Field parameters - Electrical Conductivity (EC), pH, temperature – were recorded at each yield measurement using a portable water quality meter (see Section 3.3 for further detail).

3.2 Slug Tests and Recovery Test

Slug tests were completed using a solid slug and a Solinst Level Logger pressure transducer/data logger. The Level Logger was lowered on a stainless-steel cable to a depth approximately 5 m below the standing water level. Two solid slugs (40 mm and 80 mm diameter) were constructed from weighted PVC tubing with external endcaps. The two sizes allowed testing of both 50 mm and 100 mm diameter monitoring bores. The slug was gradually lowered on nylon rope until it was positioned immediately above the water level and was then rapidly released to approximate an instantaneous upward displacement of the water level (falling head test). Following a recovery period (up to several hours in low-K bores), the slug was rapidly removed, resulting in a downward displacement of the water level (rising head test). The water level data was downloaded and processed in Microsoft excel. Slug test analysis was completed using Aqtesolv® for Windows (Hydrosolve, 2007).

A recovery test was completed on (BPG4i). A Solinst level logger was installed in the base of the bore immediately following airlifting. As the bore has a very low yield the airlift effectively removed all groundwater from the casing, which approximated the instantaneous displacement required for the slug test. Recovery was recorded using the level logger and the recovery test was analysed as a standard rising head test using the Bouwer-Rice (1976) solution.

3.3 Water Quality

Field parameters (temperature, Electrical Conductivity (EC) and pH) were measured using a TPS Water Quality meter (model WP-81). EC and pH were field calibrated against standard solutions for a precision of ±1 % and ±0.01 units respectively. Temperature measurements have an instrument precision of ±0.4°C.

4 Investigation Drilling

4.1 Program Design

Thirteen investigation bores were recommended to characterise groundwater conditions around BP33. Nested bore sites with shallow and deep bores were located up-gradient and down-gradient of the BP33 deposit to investigate the extent of the alluvial aquifer, the potential for Groundwater Dependent Ecosystems and interactions with the drainage line running to the east of the pit lake. A triple nested site was positioned immediately east of the BP33 pit-lake with a shallow bore in the top of the BCF/Alluvial aquifer, a bore in the weathered BCF and a bore in the deeper, fresh BCF. A summary of the program design and the investigation rationale for each site is provided in Table 4.1.

Table 4.1 Planned drilling locations and site rationale

SITE NAME	SITE TYPE	NO. BORES	TARGET AQUIFER	RATIONALE
BPG1	Single bore	1	BCF	Assess groundwater conditions up gradient of proposed box cut
BPG2	Nested	2	Alluvial Aquifer BCF	Assess groundwater conditions up gradient between proposed box cut and Observation Hill Dam in area of mapped GDE potential
BPG3	Nested	2	Alluvial Aquifer BCF	Assess groundwater conditions and establish a groundwater monitoring point at field verified GDE and vegetation monitoring site RVS5
BPG4	Nested	3	Alluvial Aquifer BCF (weathered) BCF	Establish a nested monitoring site to investigate the degree of vertical connection between Burrell Creek Formation aquifer, the weathered zone in the Burrell Creek Formation and the Alluvial Aquifer in the immediate vicinity of the proposed mine workings
BPG5	Nested	2	Alluvial Aquifer BCF	Assess groundwater conditions and establish monitoring at field verified GDE and surface water monitoring site BPUS SW2
BGP6	Single bore	1	BCF	Assess conditions downgradient of proposed box cut
BPG7	Nested	2	Alluvial Aquifer BCF	Assess groundwater conditions downgradient of proposed mine in area of mapped GDE potential

4.2 Drilling Results

The investigation program at BP33 was undertaken over a two-week period in early September, 2020 and involved the drilling and construction of 13 monitoring bores. A map of bore locations is provided in Figure 4.1 and a summary of drilling results shown in Table 4.2. Further detail on the investigation drilling and bore construction is provided in Appendix A (Composite Drilling Logs). The following general comments can be made from the investigation drilling:

- The alluvial sediments have limited thickness (0 - 4.5 m) and were unsaturated at drilling locations sites BPG3, BPG4, BPG5 located around surface water and vegetation monitoring points near the eastern drainage line. Results suggest that any permanent groundwater features or GDEs are more likely reliant on water sourced from the weathered top of the Burrell Creek Formation. The alluvial aquifer has limited saturated extent and is either not continuous along the length of the drainage line or is restricted to the immediate area around the active drainage channel.

- Bore yields in the BCF ranged from < 0.1 L/s (seepage) to 3 L/s. The BCF displays negligible primary porosity and higher yielding groundwater intersections occur around quartz veins or in discrete fracture zones within the metasediments. These typically occur in top 20 m of fresh BCF. Generally, the weathered zone exhibited low permeability and does not produce free groundwater, the exception being in the north of the site (BPG1, BPG2) and BPG7 where the weathering profile was less extensive and groundwater was intersected in fractured and weathered metasediments.
- Groundwater levels area shallow ranging from 3.4 - 7.9 metres below ground level (mBGL). The depth to groundwater is correlated with surface elevation (i.e., shallower groundwater occurs in lower lying areas and deeper groundwater depths occur in topographically elevated areas).
- Field measurements of water quality taken during bore development indicate groundwater Electrical Conductivity (EC) ranges from 50 - 310 µS/cm and has a lower EC in the northernmost sites (BPG1, BPG2). There is no uniform trend of increasing or decreasing EC with bore depth or aquifer.

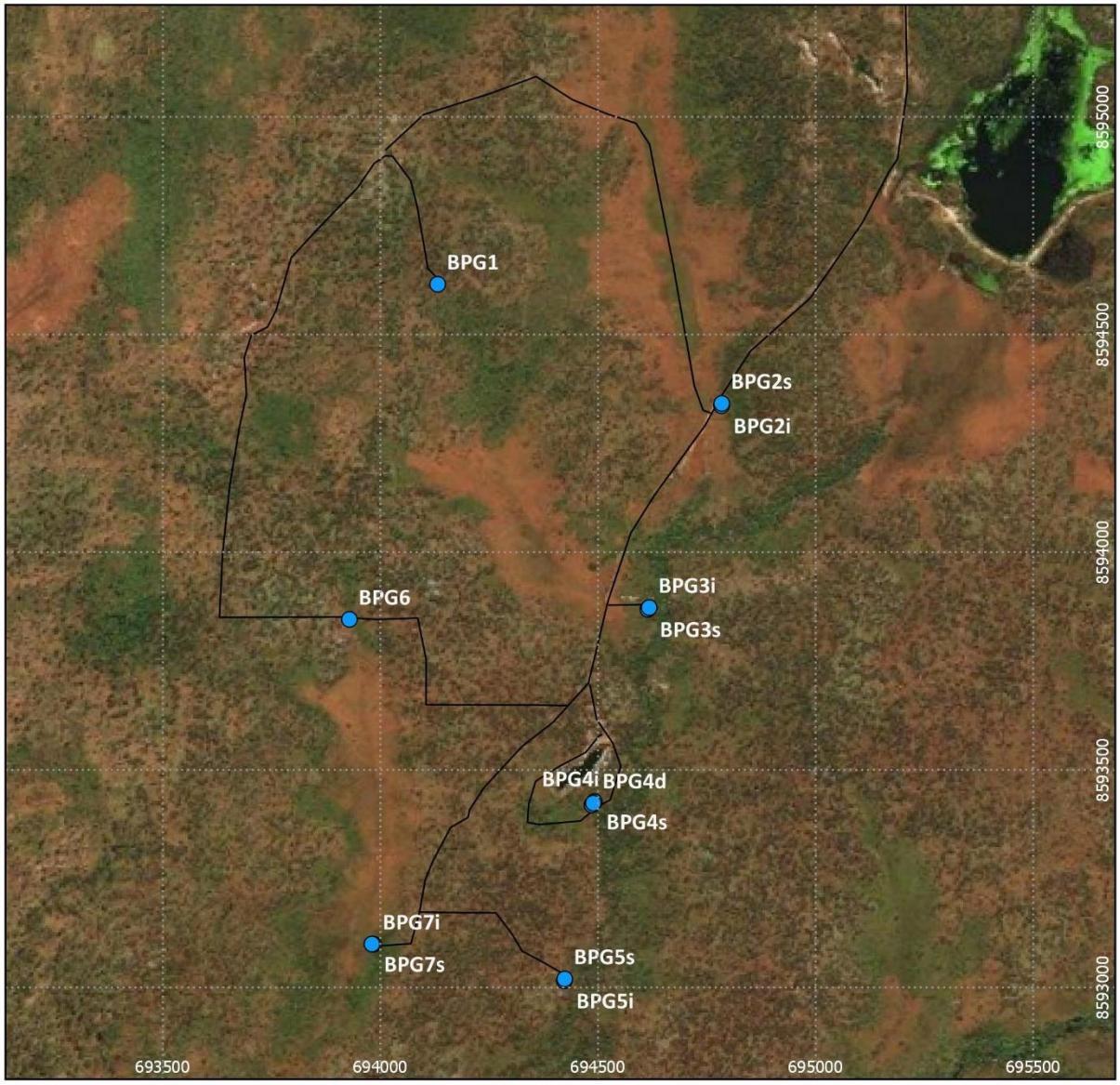


Figure 4-1 BP33 Drilling Locations

BP33 Bores
Access Track

0 200 400 600 800 1000 m

GDA 94 Zone 52,
1:15 000 @ A4

N

Table 4.1 Summary of drilling results from BP33 investigation drilling

SITE ID	AQUIFER TYPE	DRILLED DEPTH (mBLG)*	CONSTRUCTED DEPTH (mBLG)*	AIRLIFT YIELD (L/S) ^	ELEVATION TOP OF CASING (mAHD)	STANDING WATER LEVEL (mBLG)*	ELECTRICAL CONDUCTIVITY (µS/CM)	COMMENT
BPG1	Fractured/weathered BCF with pegmatite	37	36	1.5	31.63	7.87	60	Bore drilled directly into outcropping BCF with no alluvial cover present. Only moderate weathering observed in BCF. Groundwater was intersected around thin pegmatite/quartz band and in the underlying fractured sandstone
BPG2i	Fractured/weathered BCF with quartz veins	29.5	28.3	0.4	19.07	3.51	50	Groundwater was intersected around quartz veins and in fractured weathered schist. As with BPG1 the weathering profile in BCF was less extensive and the formation more competent relative to sites further to the south.
BPG2s	Alluvial Sediments (Silty sand with laterite band)	4	3.5	Seepage	19.01	3.47	170	Bore constructed across a thin alluvial sequence (4.5 m) comprising sand and silty-sand, which had a saturated thickness of 1 m at time of drilling.
BPG3i	Fresh BCF	49	48.75	0.1	14.68	4.22	270	BCF sequence displayed limited fracturing. No groundwater observed in the weathered zone (4.5 – 30 m), minor water cuts occurred within the fresh schists.
BPG3s	Alluvial Sediments	4.5	4.5	Dry	14.52	Dry	N/A	Bore constructed across a thin alluvial sequence (4.5 m) comprising silt, laterite and quartz. The alluvials were unsaturated at time of drilling.
BP4d	Fractured Fresh BCF	109	109	2.6	13.52	3.35	280	Groundwater was intersected in fractured schist and sandstone just below the weathered zone of the BCF. Airlift yields (measured using a V-notch weir) of up to 5.5 L/s were recorded through a discrete fracture zone (50 – 54 m). Yield dropped progressively with increased drilling depth to a final yield of 2.5 L/s from 109 m. As there were no problems with hole integrity the decrease in yield suggests the fracture zone has limited spatial extent.

SITE ID	AQUIFER TYPE	DRILLED DEPTH (mBLG)*	CONSTRUCTED DEPTH (mBLG)*	AIRLIFT YIELD (L/S) ^	ELEVATION TOP OF CASING (mAHD)	STANDING WATER LEVEL (mBLG)*	ELECTRICAL CONDUCTIVITY (µS/CM)	COMMENT
								No additional water bearing zones encountered from 54 – 109 m. Produced groundwater had a strong hydrogen sulphide smell.
BPG4i	Weathered BCF	35.4	35.4	Seepage	13.54	3.82	310	Bore constructed in the heavily weathered schists and sandstones of the BCF. Cuttings were damp but no free water encountered during drilling.
BPG4s	Weathered BFC	8	8	Seepage	13.52	3.68	120	Only 2 m of unsaturated alluvial sediments intersected. Bore constructed in heavily weathered top of the BCF.
BPG5i	Fractured Fresh BCF	57.3	57.3	3	12.51	4.72	180	Seepage (<0.1 L/s) observed in the base of the weathered zone with a significant water strike (3 L/s) recorded around a discrete quartz vein in the top of the fresh BCF at 53 m.
BPG5s	Weathered BCF	8	8	Seepage	12.26	5.17	180	Only 2 m of unsaturated alluvial sediments intersected. Bore constructed in heavily weathered top of the BCF.
BPG6	Fractured Fresh BCF	73	73	1.5	24.26	7.53	210	No groundwater observed in weathered BCF. Groundwater (2.8 L/s during drilling) intersected in fractured siltstone/quartz vein from a depth of 70 – 71 m.
BPG7i	Fractured Fresh BCF	53.2	53.2	0.5	13.62	4.03	230	Groundwater (0.7 L/s) intersected in discrete fracture zone at 16 m in the weathered zone, which was cased off. Deeper groundwater intersection (0.7 L/s) at 47 m occurred around a quartz band within fresh schist.
BPG7s	Weathered BCF	7	7	Seepage	13.41	4.23	100	Drilling intersected around 4 m of alluvial sediments (silt and silty-sand) which were unsaturated at time of drilling. The bore was constructed in the heavily weathered top of the BCF.

* mBGL (metres below ground level
^ Airlift yields are final constructed yield

5 Slug and Recovery Tests

The slug test and recovery results are summarised in Table 5.1. Individual summary of the data and analysis for each of the tests completed are provided in Appendix B. Displacement was calculated from the water level logger data. The data was parsed to ensure that time zero represented the maximum displacement in accordance with the translation method (Butler, 1998). The translated data is presented in the individual bore summaries in Appendix B. Aqtesolv® for Windows (Hydrosolve, 2007), a groundwater industry standard hydraulic analysis package, was used to analyse the data, with the Bouwer-Rice (1976) and Dagan (1978) the primary solutions used to calculate hydraulic conductivity in the bores showing over-damped responses (Newcomer, 2008). These are straight line solutions that assume a quasi-stead-state by neglecting storativity (Hydrosolve, 2007). Type-curves were matched to the head ranges recommended by Butler (1989), particularly when the data did not present as a straight line. The straight-line methods readily allow observation of the double straight-line effect in bores that may be screened across the water table due to filter pack drainage (Bouwer, 1989). A confined Bouwer-Rice (1976) solution was used for the deeper bores constructed in the Burrell Creek. An unconfined Bouwer-Rice (1976) solution was applied in the shallow bores constructed in the top of the weathered Burrell Creek and alluvial sediments. In shallow bores screened across the watertable (BG2S, BG5S, BG7S) a secondary analysis was undertaken using the Dagan (1978) solution, which allows correction of the displacement data to account for the effective porosity of the filter pack.

The test results reveal that the permeability of the Burrell Creek Formation is dependent on secondary porosity (i.e., fracture and joint development). Fresh and weathered Burrell Creek Formation with negligible fracturing displayed a hydraulic conductivity range of 0.003 – 0.08 m/day. Bores that intersected fractured Burrell Creek Formation (fresh or weathered) showed a hydraulic conductivity two orders of magnitude higher with a range from 0.27 – 2.6 m/day. The alluvial sediments (silty sand) tested with a hydraulic conductivity in the order of 0.4 m/day.

Table 5.1 Summary of slug test and recovery test results

SITE ID	EASTING GDA94 Z52	NORTHING GDA94 Z52	AQUIFER TYPE	BORE DEPTH (mBGL)	TEST TYPE	HYDRAULIC CONDUCTIVITY (m/day) *BOUWER-RICE*		*DAGAN*		COMMENTS
						Falling	Rising	Falling	Rising	
BPG1	694131	8594616	Fractured/weathered BCF with pegmatite	35.8	Slug	1.7	1.95	-	-	Aquifer zone in fracture around pegmatite intrusion and underlying sandstone. Thickness based on water bearing zone. Best characterised as K of fracture zone, BCF less weathered in north of BP33 site and is more representative of fresh, fractured BCF
BPG2i	694784	8594336	Fractured/weathered BCF with quartz veins	28.3	Slug	0.56	0.58	-	-	Small yields within BCF associated with water intersections around discrete quartz veins, bore in north of site where the BCF is more competent/slightly less weathered than to the south of BP33
BPG2s	694784	8594342	Alluvial Sediments (Silty sand with laterite band)	3.5	Slug	0.4	-	0.43	-	Water level was at the base of the screens at the time of testing so no rising head test could be undertaken. The Dagan (1978) method has been used to approximate K in bores which are unconfined and screened across the watertable
BPG3i	694617	8593873	Fresh BCF	49	Slug	0.027	0.038	-	-	Bore screens fresh BCF with minor water intersections around slightly more weathered bands and micro fractures
BPG3s	694614	8593869	-	4.5	-	-	-	-	-	Bore screened across alluvial sequence. Sediments were unsaturated at time of construction so no slug test could be completed.

SITE ID	EASTING GDA94 Z52	NORTHING GDA94 Z52	AQUIFER TYPE	BORE DEPTH (mBGL)	TEST TYPE	HYDRAULIC CONDUCTIVITY (m/day) *BOUWER-RICE* Falling	*BOUWER-RICE* Rising	*DAGAN* Falling	*DAGAN* Rising	COMMENTS
BP4d	694492	8593426	Fractured Fresh BCF	109	Slug	-	-	-	-	Displacement data could not be analysed due to inertial effects largely due to large casing diameter and relatively high transmissivity. Recommended that a conventional pumping test be undertaken to determine the K of the fracture zone
BPG4i	694486	8593420	Weathered BCF	35.4	Slug	0.005	0.008	-	-	Constructed in heavily weathered BCF (schist, quartz and sandstone) toward the base of the weathering profile
					Recovery	-	0.003	-	-	
BPG4s	694492	8593427	Weathered BFC	8	Slug	0.024	0.021	-	-	Constructed in heavily weathered schist and siltstone (BCF) at the top of the formation, screens fully submerged.
BPG5i	694422	8593016	Fractured Fresh BCF	57.3	Slug	1.26	1.34	-	-	Groundwater intersected around quartz veins and fractures in fresh BCF schist
BPG5s	694423	8593020	Weathered BCF	8	Slug	0.048	0.035	0.042	0.043	Constructed in heavily weathered schist (BCF)
BPG6	693929	8593846	Fractured Fresh BCF	73	Slug	2.58	2.24	-	-	Groundwater intersected in heavily fractured siltstone, aquifer response relates to the fracture zone rather than bulk BCF material
BPG7i	693984	8593099	Fractured Fresh BCF	53.2	Slug	0.43	0.27	-	-	Groundwater intersected around quartz veining at the transition from weathered to fresh schist (BCF)
BPG7s	693980	8593100	Weathered BCF	7	Slug	0.077	0.073	0.068	0.075	Bore constructed in extremely weathered schist with quartz veining at the top of the BCF

6 Conclusions and Recommendations

The findings from the investigation drilling and hydraulic testing program can be summarised as follows:

- The geology of the BP33 site is dominated by metasediments of the Burrell Creek Formation comprising schists, phyllite, siltstone and sandstone. Groundwater is hosted in discrete zones that are associated with quartz veins or fractured metasediments. The fracture zones have limited thickness, typically less than 1 m, and generally occur below the weathering zone.
- The alluvial sediments have limited spatial extent and thickness (< 4.5 m). At time of drilling the alluvial sediments were unsaturated at the drilling sites between the BP33 pit/proposed mine workings and the active drainage line to the east. Results suggest that any groundwater dependent ecosystems along the drainage line are more likely to source water from the weathered top of the Burrell Creek Formation than the alluvial sediments.
- Hydraulic testing reveals the permeability of the Burrell Creek Formation is dependent on secondary porosity (i.e., fracturing). Fresh and weathered Burrell Creek Formation with negligible fracturing has a low hydraulic conductivity (0.003 – 0.08 m/day). Fractured Burrell Creek Formation (fresh or weathered) has a hydraulic conductivity two orders of magnitude higher (0.27 – 2.6 m/day). The alluvial sediments (silty sand) have a hydraulic conductivity in the order of 0.4 m/day.
- Groundwater quality can be classified as fresh with an Electrical Conductivity (EC) range of 50 - 310 µS/cm. The EC is lower in the northernmost sites (BPG1, BPG2). There is no uniform trend of increasing or decreasing EC with bore depth or aquifer.

The report makes the following recommendations:

- Water level loggers should be installed in all monitoring bores and the BP33 pit-lake to allow for the collection of a baseline groundwater level data set prior to any mine activity commencing.
- Water quality sampling should be undertaken with an initial monthly frequency for the first six months post drilling. After an appropriate baseline data set has been collected the monitoring frequency should be reviewed and site specific trigger levels developed. This process should be guided by outputs from the numerical groundwater model.
- A pumping test program is recommended to assess whether the aquifer has potential to augment project water supplies at Observation Hill Dam and to confirm the extent of the fractured aquifer around the monitoring bores. This should comprise of a longer pumping test (minimum 24-hours) on deep bore (BPG4) to better characterise the hydraulic conductivity of the fractured BCF and connections between this system and the shallow groundwater system. Shorter pumping tests (8-hours) are also recommended on higher yielding bores BPG1, BPG5, BPG6.

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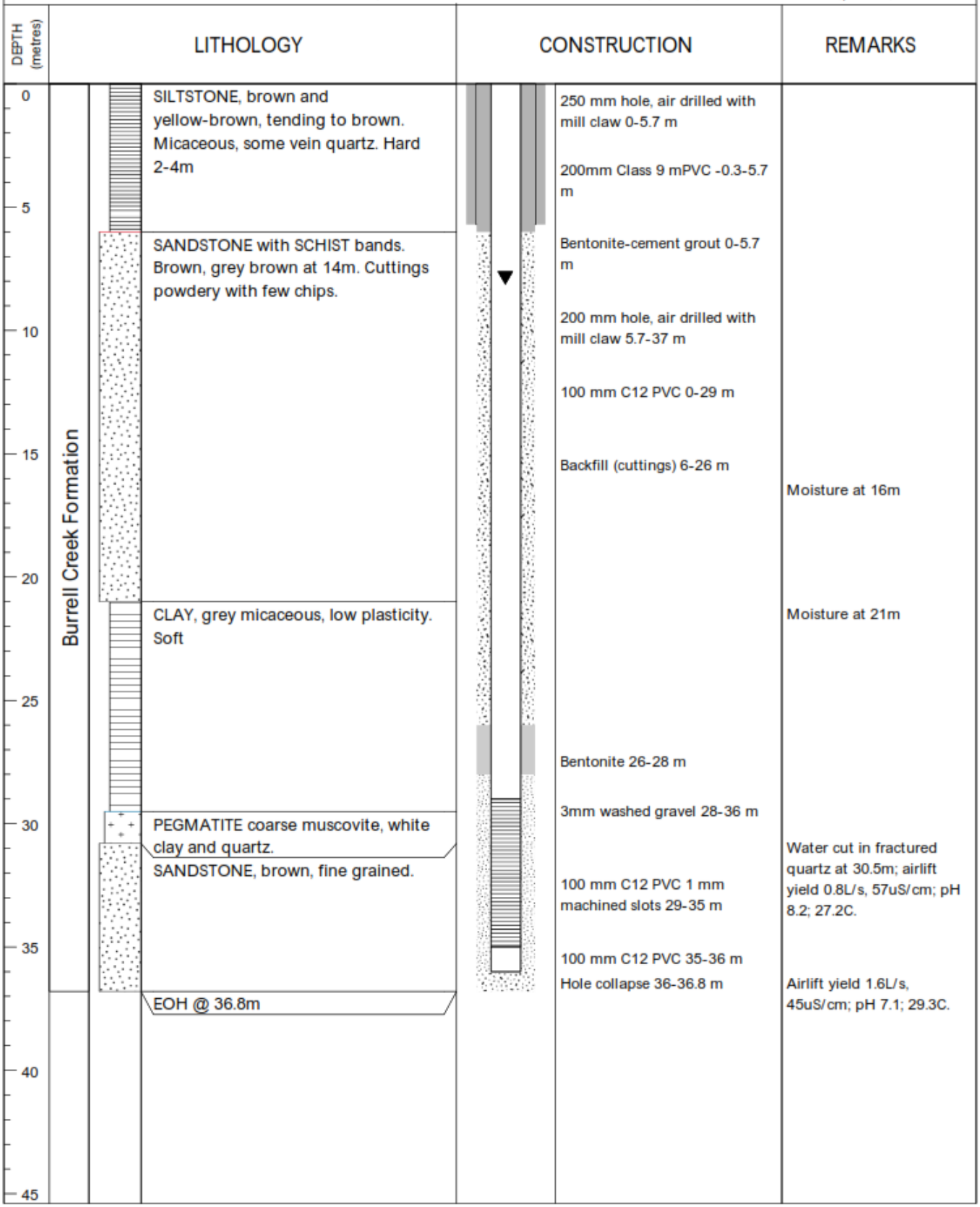
Appendix A Composite Bore Logs

GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG1

CLIENT: Core Lithium
NORTHING: 8594616 GDA 94 Zone 53
EASTING: 694131.5 GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 14 Sep 2020
CASING HEIGHT (mm): 0.7
TOTAL DEPTH (mBGL): 37
CONSTRUCTED DEPTH (mBGL): 36
STANDING WATER LEVEL (mBGL): 7.87
BORE ID: RN041833
ELEVATION (mAHD): 31.015
AIRLIFT YIELD (L/s): 1.5
SALINITY (µS/cm): 59



GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG2i

CLIENT: Core Lithium
NORTHING: 8594338
GDA 94 Zone 53
EASTING: 694788
GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 01 Sep 2020
CASING HEIGHT (mm): 0.8
TOTAL DEPTH (mBGL): 29.5
CONSTRUCTED DEPTH (mBGL): 28.3
STANDING WATER LEVEL (mBGL): 3.51
BORE ID: RN041791
ELEVATION (mAHD):
AIRLIFT YIELD (L/s): 0.4
SALINITY (µS/cm): 54

DEPTH (metres)	LITHOLOGY	CONSTRUCTION	REMARKS
0	Quaternary: SAND, ochre, fine-grained, trace moisture	250 mm hole, air drilled with mill claw 0-5.7 m	
		200mm Class 9 mPVC -0.3-5.7 m	
		Bentonite-cement grout 0-5.7 m	
5	SILTY SAND, light brown, fine, some strong cementation, trace ferricrete cuttings		Free water on commencement of drilling through bottom of surface casing
	SCHIST, red-brown to brown, micaceous	200 mm hole, air drilled with mill claw 5.7-29.5 m	
10	Burrell Creek Formation	100 mm C12 PVC 0-22.3 m	
		Backfill (cuttings) 6-21.7 m	
15	QUARTZ, vein with white clay		Water strike in quartz vein
	SCHIST, dark grey/brown, iron staining on fracture faces		Airlift yield 0.3 L/s; EC 68 uS/cm; pH 7.1
20	QUARTZ, vein	Bentonite 19.8-21.7 m	Increase in yield around weathered band/quartz vein
	SCHIST, brown to grey, moderately weathered	3mm washed gravel 21.7-28.3 m	
25		100 mm C12 PVC 1 mm machined slots 22.3-28.3 m	Airlift yield 0.7 L/s; EC 67 uS/cm; pH 7.0
	SCHIST, brown, heavily weathered, cuttings like laminated brown siltstone, minor interbedded sandstone		
30	EOH @ 29.5m	Hole collapse 28.3-29.5 m	Airlift yield 1.1 L/s; EC 58 uS/cm; pH 7.3

GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG2s

CLIENT: Core Lithium
NORTHING: 8594338
GDA 94 Zone 53
EASTING: 694788
GDA 94 Zone 53

LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 01 Sep 2020

CASING HEIGHT (mm): 0.8
TOTAL DEPTH (mBGL): 4
CONSTRUCTED DEPTH (mBGL): 3.5
STANDING WATER LEVEL (mBGL): 3.47

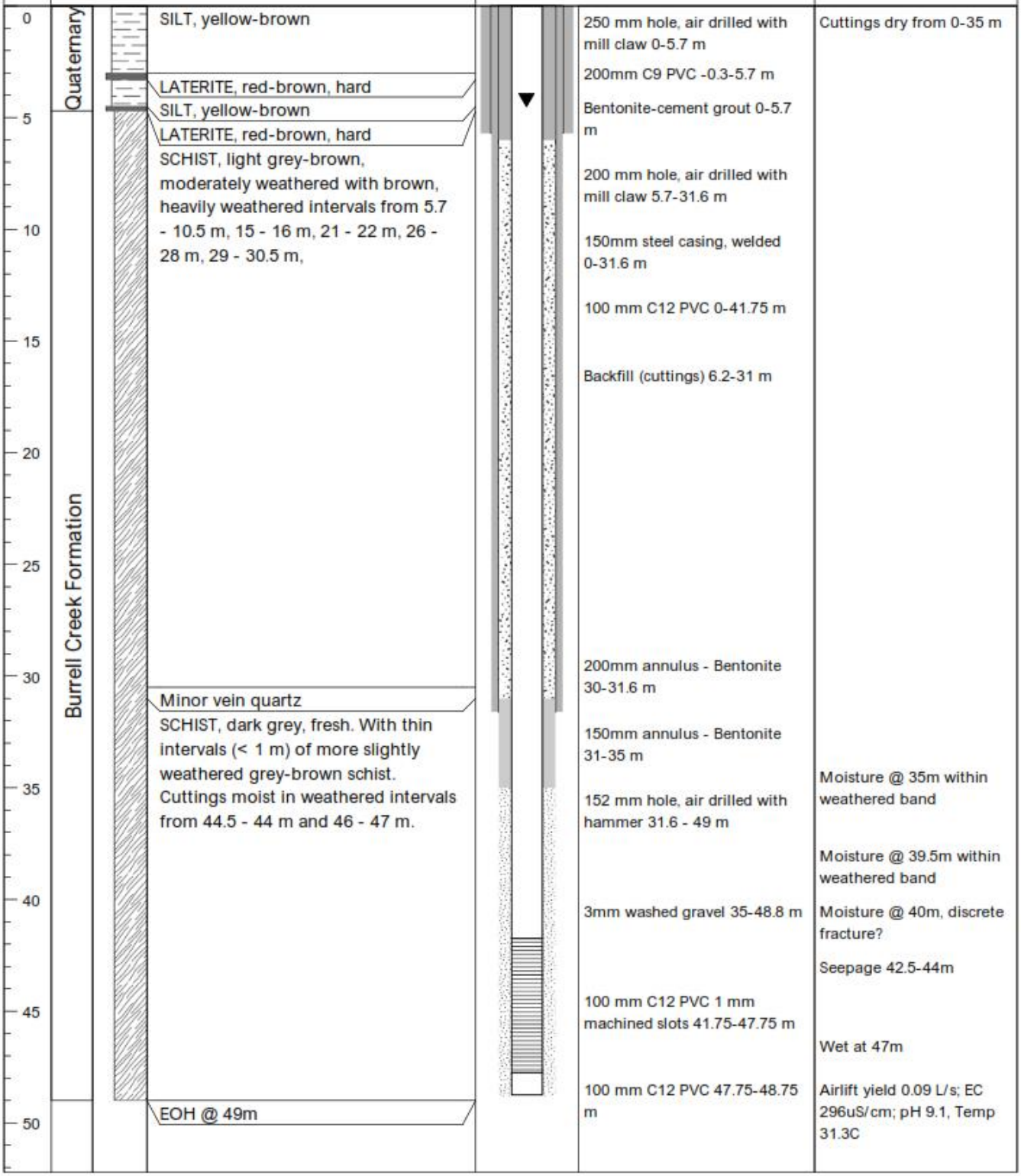
BORE ID: RN041792
ELEVATION (mAHD):
AIRLIFT YIELD (L/s): Seepage
SALINITY (µS/cm): 166

DEPTH (metres)	LITHOLOGY	CONSTRUCTION	REMARKS
0	Quaternary: SILTY SAND, ochre with thin grey bands of fine sand	200 mm hole, air drilled with mill claw 0-4.0 m	
1		100 mm C12 PVC 0-2.5 m	
2		Bentonite-cement grout 0-2.1 m	Moisture from 1-2 m
3		Bentonite 2.1-2.3 m 3mm washed gravel 2.5-3.5 m 100 mm C12 PVC 1 mm machined slots 2.5-3.5 m	
4	BCF: SCHIST, grey-brown, moderately weathered, with some vein quartz. EOH @ 4m	Backfill with cuttings 3.5-4.0 m	
5			
6			
7			
8			
9			
10			

GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG3i

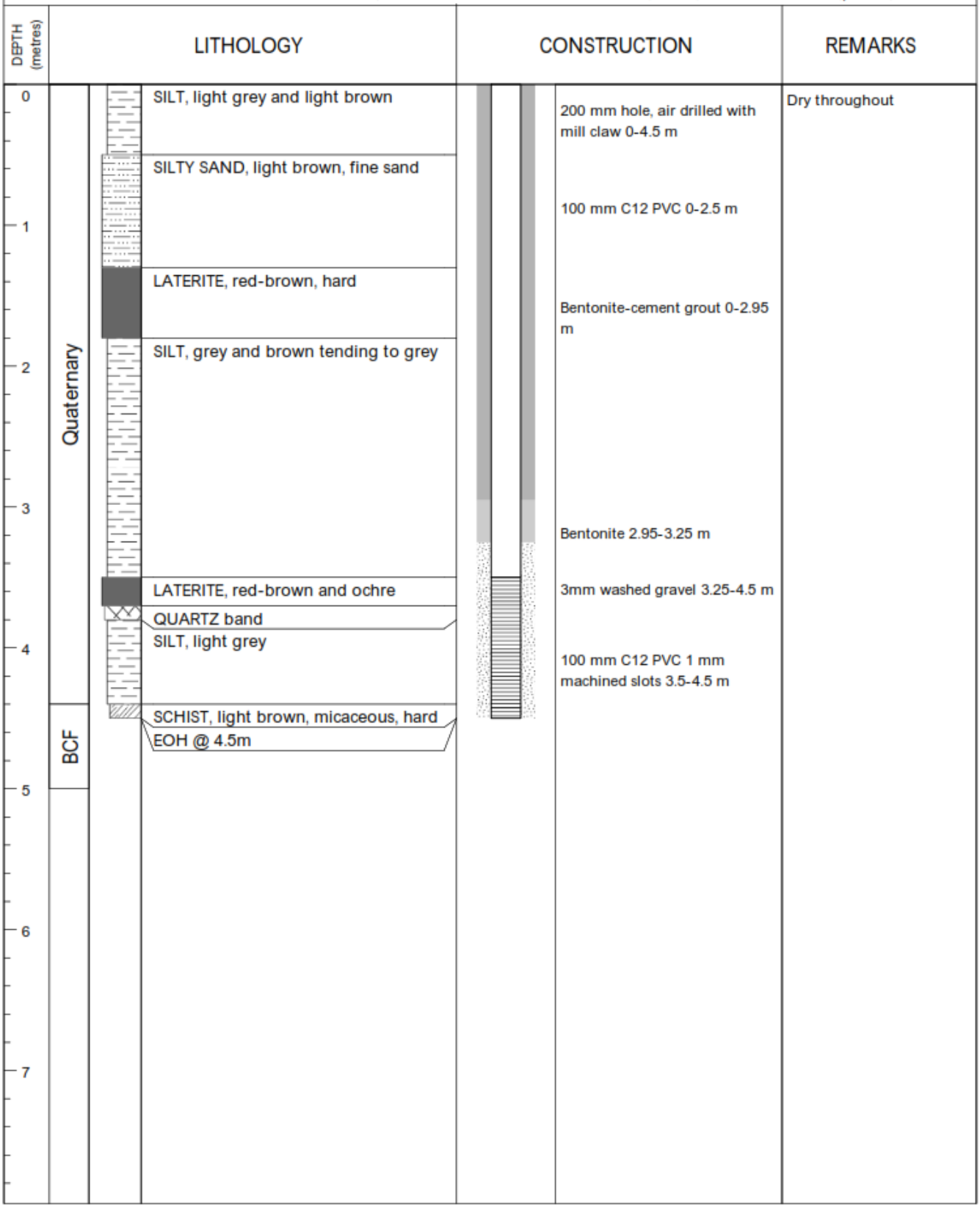
CLIENT: Core Lithium
NORTHING: 8593875 GDA 94 Zone 53
EASTING: 694619 GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 02 Sep 2020
CASING HEIGHT (mm): 0.8
TOTAL DEPTH (mBGL): 49
CONSTRUCTED DEPTH (mBGL): 48.75
STANDING WATER LEVEL (mBGL): 4.22
BORE ID: RN041793
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): 0.1
SALINITY (µS/cm): 268



GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG3s

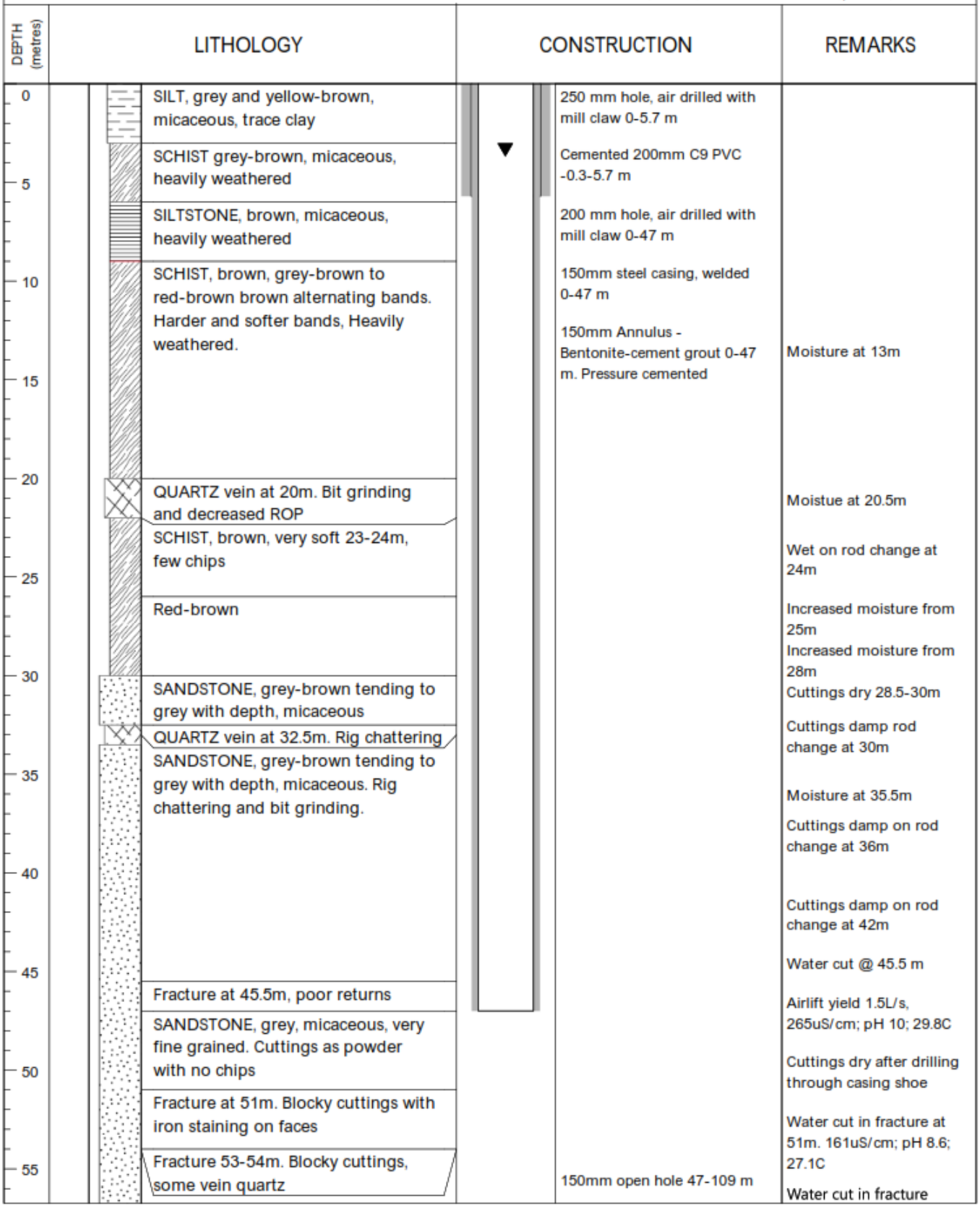
CLIENT: Core Lithium
NORTHING: 8593868
GDA 94 Zone 53
EASTING: 694611
GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 03 Sep 2020
CASING HEIGHT (mm): 0.5
TOTAL DEPTH (mBGL): 4.5
CONSTRUCTED DEPTH (mBGL): 4.5
STANDING WATER LEVEL (mBGL): DRY
BORE ID: RN041794
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): Dry
SALINITY (µS/cm): NA



GROUNDWATER ENTERPRISES

BOREHOLE LOG:BPG4d

CLIENT: Core Lithium	LOCATION: BP33 Lithium Prospect	CASING HEIGHT (mm): 0.3	BORE ID: RN041830
NORTHING: 8593425 GDA 94 Zone 53	DRILLER: BoresNT	TOTAL DEPTH (mBGL): 109	ELEVATION (mAHD): TBC
EASTING: 694497 GDA 94 Zone 53	LOGGED BY: R Morris	CONSTRUCTED DEPTH (mBGL): 109	AIRLIFT YIELD (L/s): 2.6
	DATE COMPLETED: 12 Sep 2020	STANDING WATER LEVEL (mBGL): 3.35	SALINITY (µS/cm): 280



GROUNDWATER ENTERPRISES

BOREHOLE LOG:BPG4d

CLIENT: Core Lithium
NORTHING: 8593425
GDA 94 Zone 53
EASTING: 694497
GDA 94 Zone 53

LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 12 Sep 2020

CASING HEIGHT (mm): 0.3
TOTAL DEPTH (mBGL): 109
CONSTRUCTED DEPTH (mBGL): 109
STANDING WATER LEVEL (mBGL): 3.35

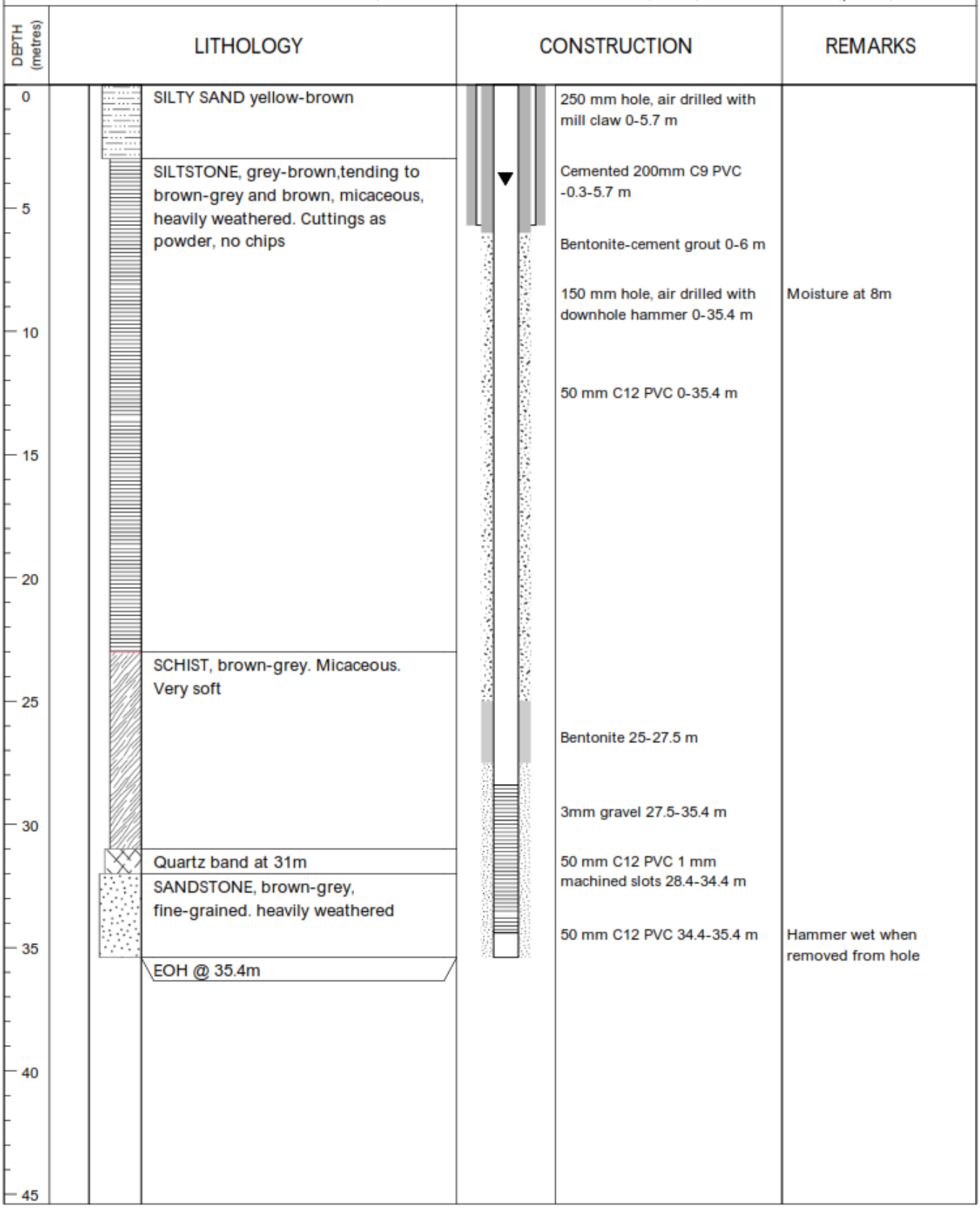
BORE ID: RN041830
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): 2.6
SALINITY (µS/cm): 280

DEPTH (metres)	LITHOLOGY	CONSTRUCTION	REMARKS
60	SANDSTONE dark grey, fine to medium. STRONG H2S ODOUR		53-54m. 5.5L/s; 295uS/cm; pH 8.95; 27.6C. Strong H2S odour
			Airlift yield 4.4L/s; 255uS/cm; pH 8.7; 28.1C
65	SCHIST, dark grey, heavily micaceous. No chips in cuttings		
	SANDSTONE dark grey, some brown silt, mostly 2-3mm cuttings, with some up to 3cm		Airlift yield 5L/s; 252uS/cm; pH 9.1; 28.6C
70	SANDSTONE, dark grey, fine-grained. Some vein quartz	150mm open hole 47-109 m	
	as above, some larger cuttings		Airlift yield 4.4L/s
75			
80	Fracture 77.8- 78.5m, large cuttings, angular		Airlift yield 5L/s; 336uS/cm; pH 8.0; 30.8C
85	Fracture 83.5-84m. Angular cuttings and some vein quartz		Airlift yield 5L/s; 322uS/cm; pH 7.9; 31.2C
	SANDSTONE, dark grey, fine grained. Cuttings mostly 203mm. Decreased ROP at 84m		
90			Airlift yield 5.5L/s; 312uS/cm; pH 8.3; 28.1C
95	Fracture(?) at 94.5m		
	Fracture at 95.2m. Trace vein quartz		Airlift yield 3.5L/s; 354/cm; pH 8.3; 26.9C
100		150mm open hole 47-109 m	
	Fracture(?) at 101.5m		Airlift yield 2.5L/s; 280/cm; pH 7.9; 27.2C
105	Fracture(?) at 105.25m. Hammer torquing		
	EOH @ 109m		Airlift yield 2.5L/s
110			

GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG4i

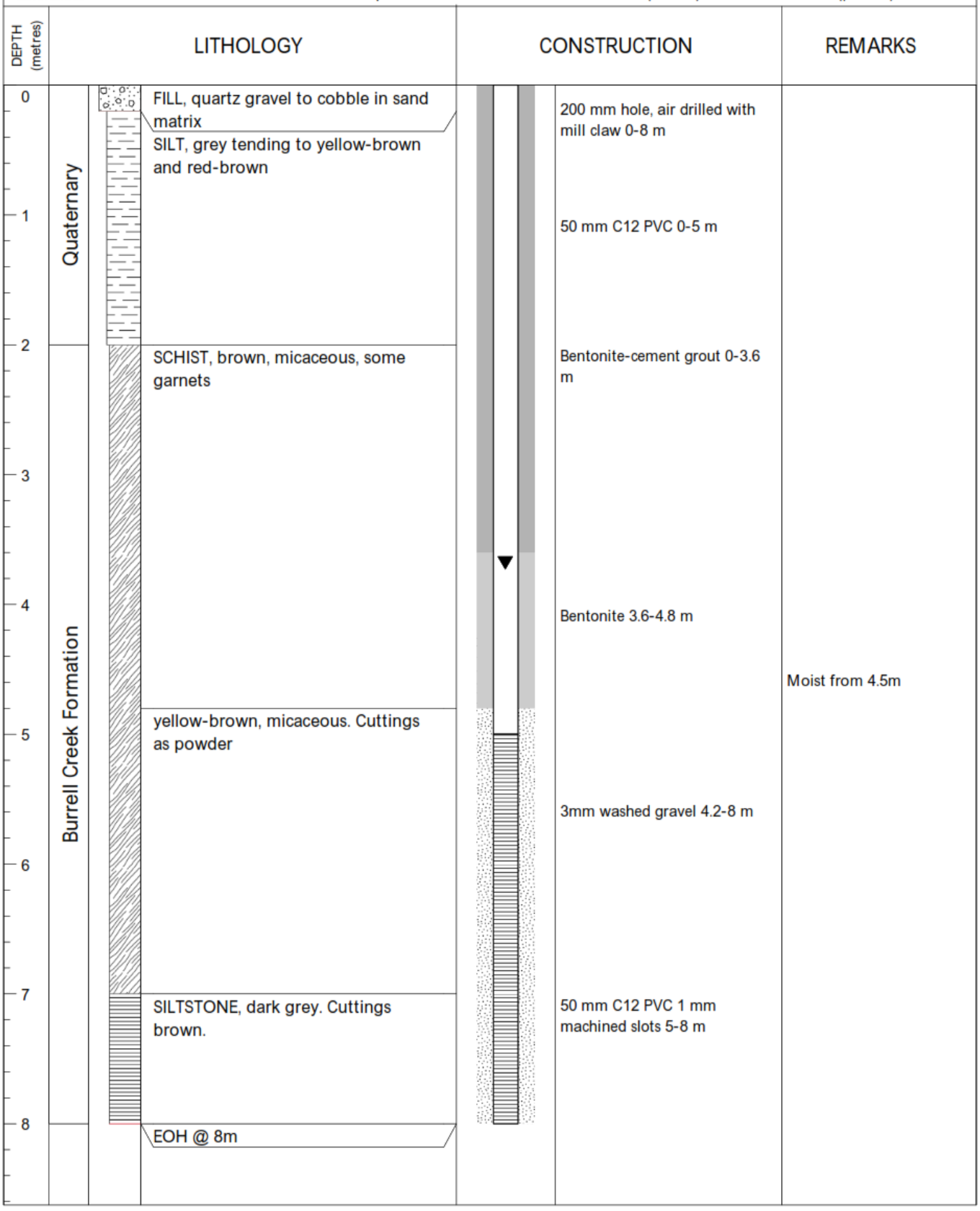
CLIENT: Core Lithium	LOCATION: BP33 Lithium Prospect	CASING HEIGHT (mm): 0.7	BORE ID: RN041831
NORTHING: 8593422 GDA 94 Zone 53	DRILLER: BoresNT	TOTAL DEPTH (mBGL): 35.4	ELEVATION (mAHD): TBC
EASTING: 694486 GDA 94 Zone 53	LOGGED BY: R Morris	CONSTRUCTED DEPTH (mBGL): 35.4	AIRLIFT YIELD (L/s): Seepage
	DATE COMPLETED: 13 Sep 2020	STANDING WATER LEVEL (mBGL): 3.82	SALINITY (µS/cm): 307



GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG4s

CLIENT: Core Lithium
NORTHING: 8593425
GDA 94 Zone 53
EASTING: 694497
GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 11 Sep 2020
CASING HEIGHT (mm): 0.4
TOTAL DEPTH (mBGL): 8
CONSTRUCTED DEPTH (mBGL): 8
STANDING WATER LEVEL (mBGL): 3.68
BORE ID: RN041832
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): Seepage
SALINITY (µS/cm): 122



GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG5i

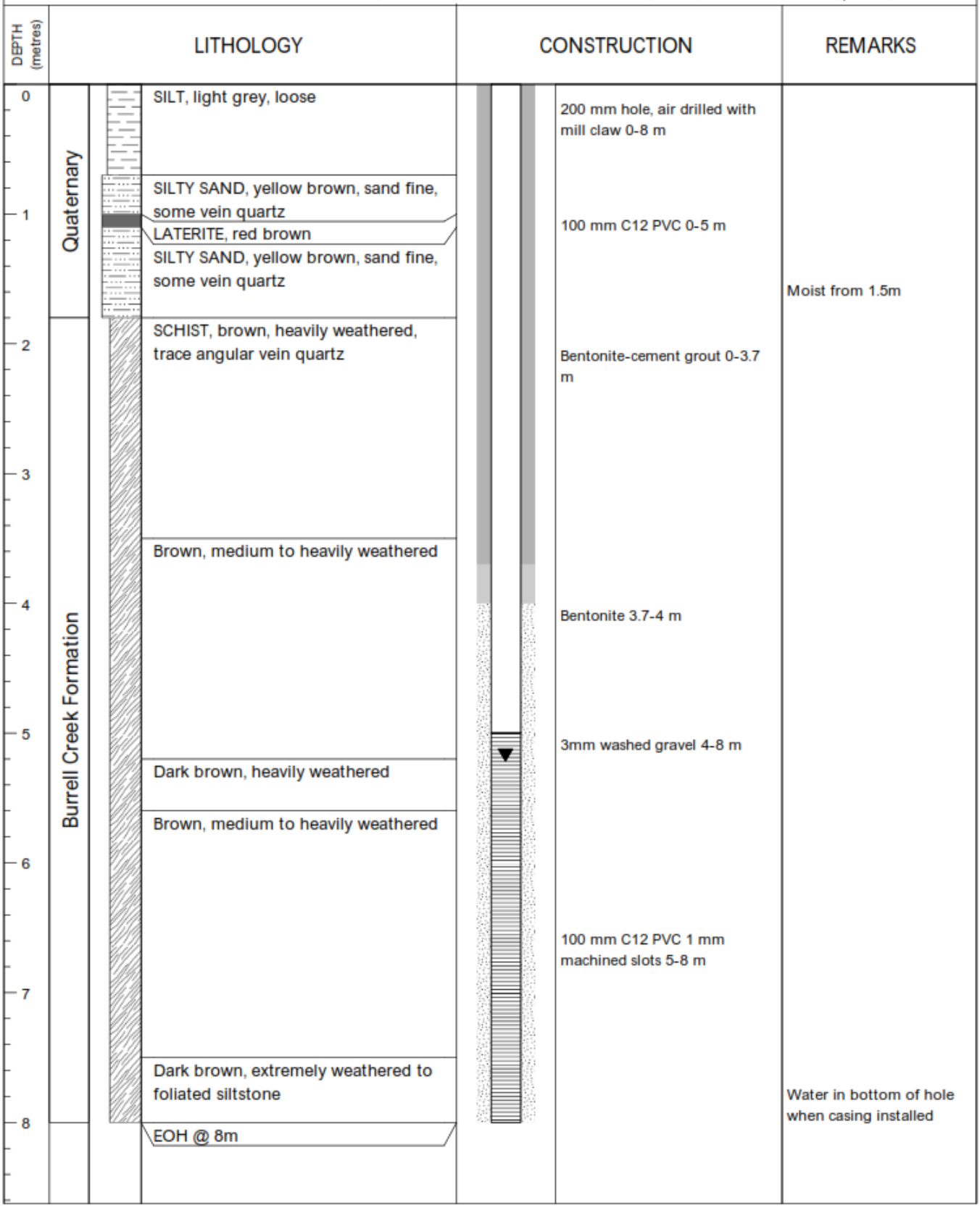
CLIENT: Core Lithium
NORTHING: 8593014 GDA 94 Zone 53
EASTING: 699430 GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 04 Sep 2020
CASING HEIGHT (mm): 0.8
TOTAL DEPTH (mBGL): 57.3
CONSTRUCTED DEPTH (mBGL): 57.3
STANDING WATER LEVEL (mBGL): 4.72
BORE ID: RN041796
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): 3
SALINITY (µS/cm): 175

DEPTH (metres)	LITHOLOGY	CONSTRUCTION	REMARKS
0	Q / Burrell Creek Formation: SILTY SAND, yellow brown to light grey, with laterite bands	250 mm hole, air drilled with mill claw 0-5.7 m	Moist from 1.5m
5	SCHIST, brown, heavily weathered	Cemented 200mm C9 PVC -0.3-5.7 m	
	SCHIST, grey and brown, foliated, some gravel sized chips	Bent/cement grout 150 mm annulus 0-3.5 m and 200 mm annulus 0-6.5 m	Wet upon restart after waiting overnight for cement to cure
10	SCHIST, brown, heavily weathered	200 mm hole, air drilled with mill claw 5.7-61 m	Cuutings damp 5.7 - 30 m
	SCHIST, olive/light brown, moderately weathered. Increased ROP at 16m.	150mm steel casing, welded 0-47.3 m	
15	Small hard band, vein quartz. Cuttings balling		
	SCHIST, light brown, heavily weathered	100 mm C12 PVC 0-49.3 m	
20		Backfill (cuttings) 0-49 m	
25	SCHIST, brown, extremely weathered.		
	SCHIST, light brown, heavily weathered		
30			Increased moisture 30 - 34 m
35	SCHIST, grey-brown, some silt, lightly-moderately weathered		Wet from 36m. Injecting water to clean hole
40	QUARTZ, vein		
	SCHIST, dark grey with some brown, fresh to moderately weathered		Airlift yield 0.13L/s; EC 98uS/cm; pH 8.0; 29.6C
45		152 mm hole, air drilled with hammer 47.3 - 57.3 m	Airlift yield 0.13L/s; EC 17uS/cm; pH 8.0; 30.7C
	SCHIST, dark grey, fresh. Quartz veins at 53 m.	Bentonite 48-49 m	Dry 48-50.5 m
50		3mm washed gravel 49-57.3 m	Moist from 50.5m
		100 mm C12 PVC 1 mm machined slots 49.3-55.3 m	Wet, associated with quartz vein.
55			Airlift yield 2.9L/s; 183uS/cm; pH 7.9; 29.7C
		100 mm C12 PVC 56.3-57.3 m	Airlift yield 2.9L/s; 175uS/cm; pH 7.8; 29.4C
60	End of hole @ 57.3 m		

GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG5s

CLIENT: Core Lithium
NORTHING: 8593014 GDA 94 Zone 53
EASTING: 699430 GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 03 Sep 2020
CASING HEIGHT (mm): 0.5
TOTAL DEPTH (mBGL): 8
CONSTRUCTED DEPTH (mBGL): 8
STANDING WATER LEVEL (mBGL): 5.17
BORE ID: RN041795
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): Seepage
SALINITY (µS/cm): 182



GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG6

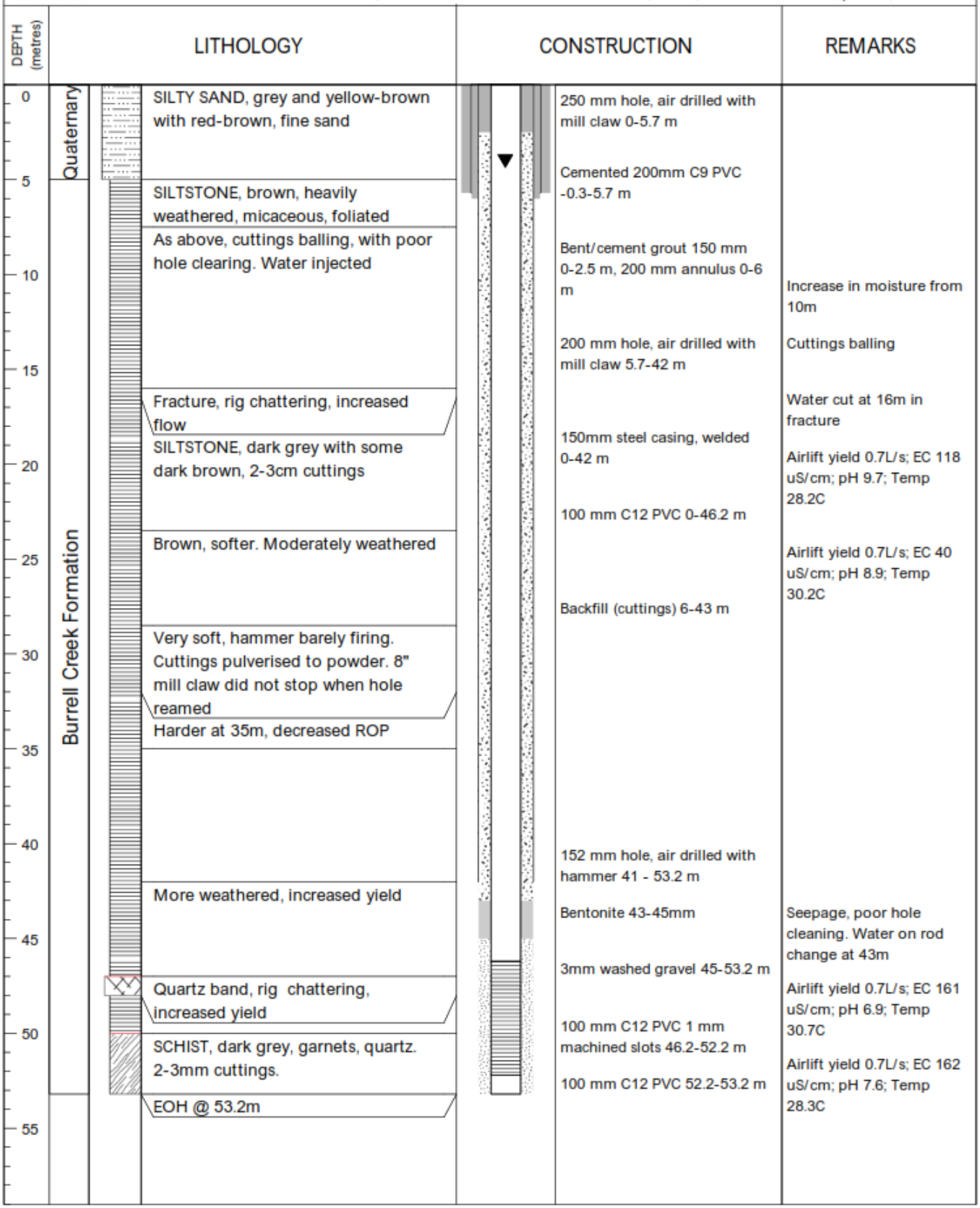
CLIENT: Core Lithium
NORTHING: 8593848
GDA 94 Zone 53
EASTING: 693928
GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 09 Sep 2020
CASING HEIGHT (mm): 0.7
TOTAL DEPTH (mBGL): 73
CONSTRUCTED DEPTH (mBGL): 73
STANDING WATER LEVEL (mBGL): 7.53
BORE ID: RN041799
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): 1.5
SALINITY (µS/cm): 210

DEPTH (metres)	LITHOLOGY	CONSTRUCTION	REMARKS
0	Q — Burrell Creek Formation: SILTY SAND, yellow-brown, some vein quartz	250 mm hole, air drilled with mill claw 0-5.7 m	
5	SANDSTONE, brown, fine-grained, micaceous, heavily weathered	Cemented 200mm C9 PVC -0.3-5.7 m	
10	SANDSTONE, grey with yellow-brown bands.	Bent/cement grout 150 mm and 200 mm annulus 0-7 m 200 mm hole, air drilled with mill claw 5.7-61 m	Some moisture from 9m
15			
20	QUARTZ vein SANDSTONE, grey, micaceous. Cuttings as powder with no chips	150mm steel casing, welded 0-61 m	Increased moisture from 18m
25	SANDSTONE, grey-brown tending to grey with depth, although with intermittent grey-brown bands and harder and softer bands	100 mm C12 PVC 0-66 m	Wet on rod change at 25m
30			No water on rod change at 31m
35		Backfill (cuttings) 6.2-62.3 m	
40			Moisture at 41m
45			
50	PEGMATITE, quartz, white clay and coarse grained muscovite		Moist cuttings on road change at 49m
55	SILTSTONE, grey and brown. Cuttings balling, injecting water.		Injecting water from 55m
60		152 mm hole, air drilled with hammer 61 - 73 m	
65	SILTSTONE, grey	Bentonite 62.3-65m	No dust, increased moisture at 63.5m
70	SILTSTONE, dark grey with grey-green quartz. Fractured @ 70.5 m and 71 m	3mm washed gravel 65-73 m 100 mm C12 PVC 1 mm machined slots 66-72 m	Wet on rod change 67m Water cut fracture 70.5m Water cut in fracture 71m
75	EOH @73m	100 mm C12 PVC 72-73 m	Airlift yield 2.8L/s; EC 202uS/cm; pH8.1; 28.8C

GROUNDWATER ENTERPRISES

BOREHOLE LOG: BPG7i

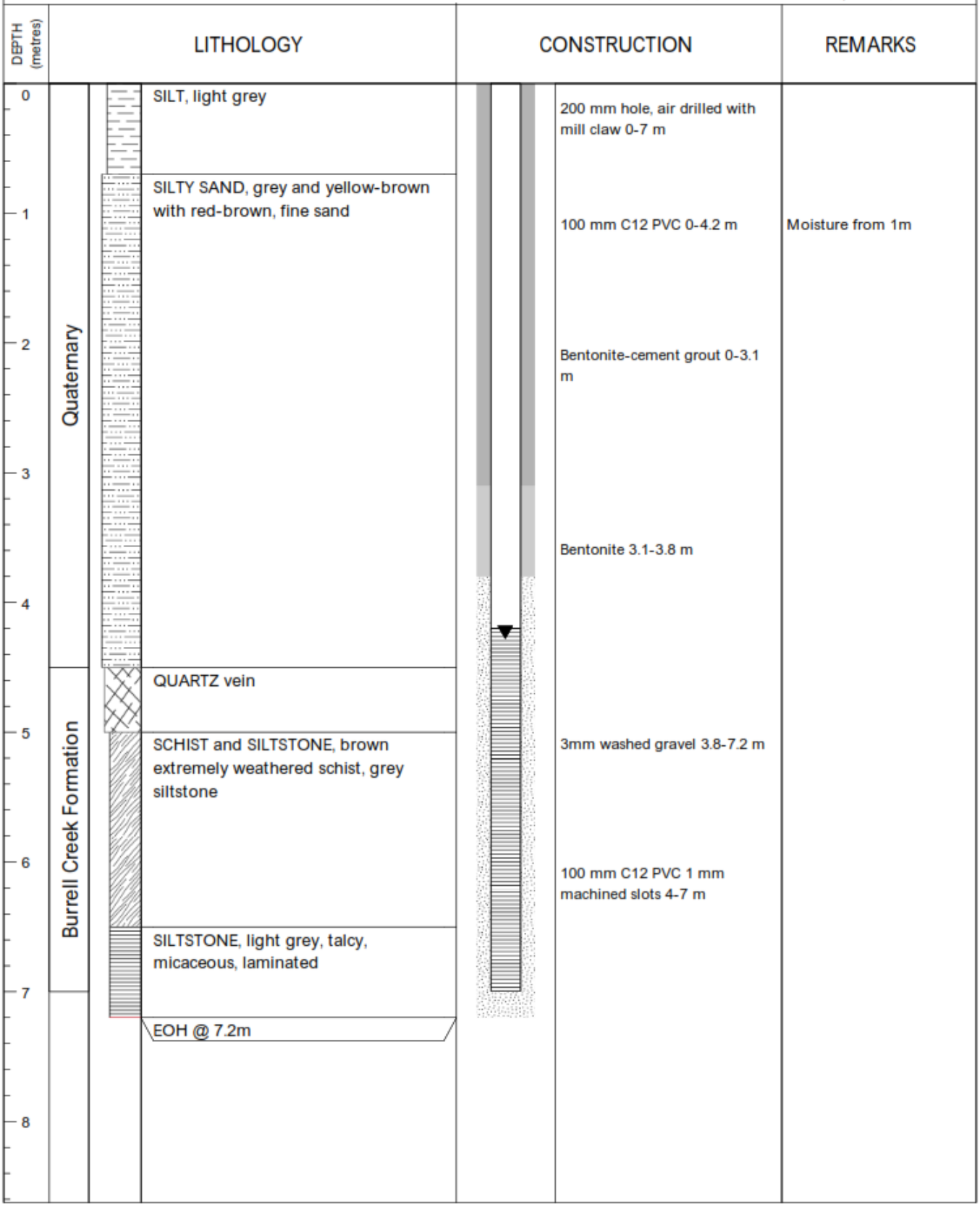
CLIENT: Core Lithium
NORTHING: 8593098 GDA 94 Zone 53
EASTING: 693991 GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 07 Sep 2020
CASING HEIGHT (mm): 0.8
TOTAL DEPTH (mBGL): 53.2
CONSTRUCTED DEPTH (mBGL): 53.2
STANDING WATER LEVEL (mBGL): 4.03
BORE ID: RN041798
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): 0.5
SALINITY (µS/cm): 231



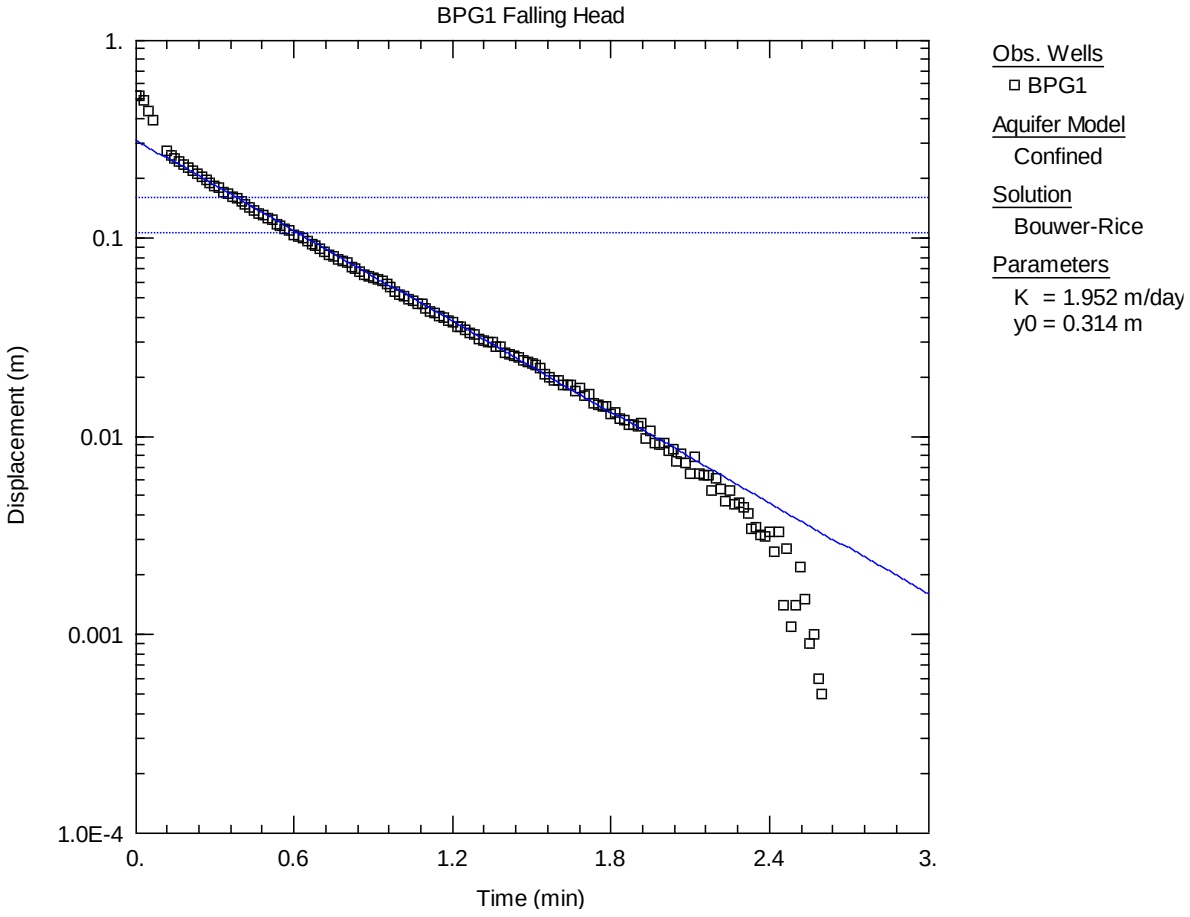
GROUNDWATER ENTERPRISES

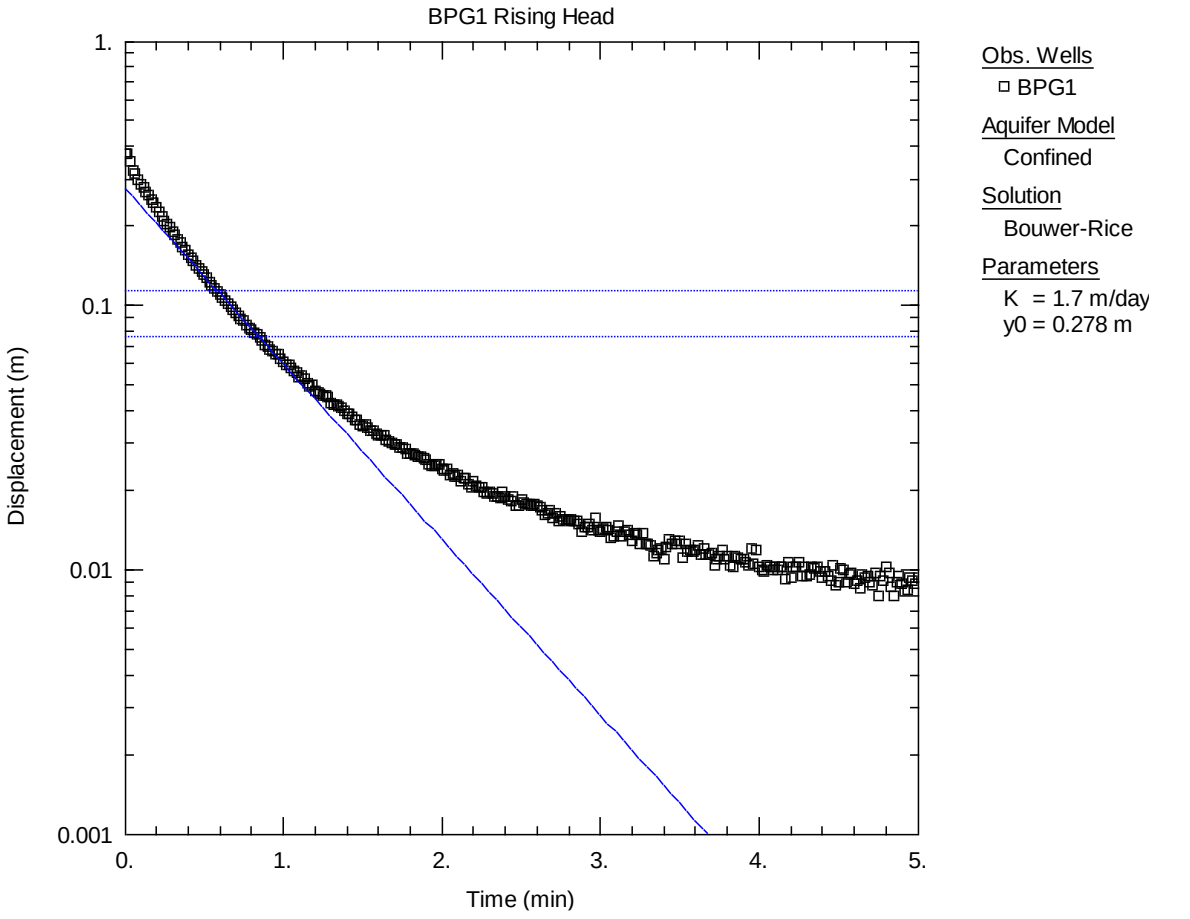
BOREHOLE LOG: BPG7s

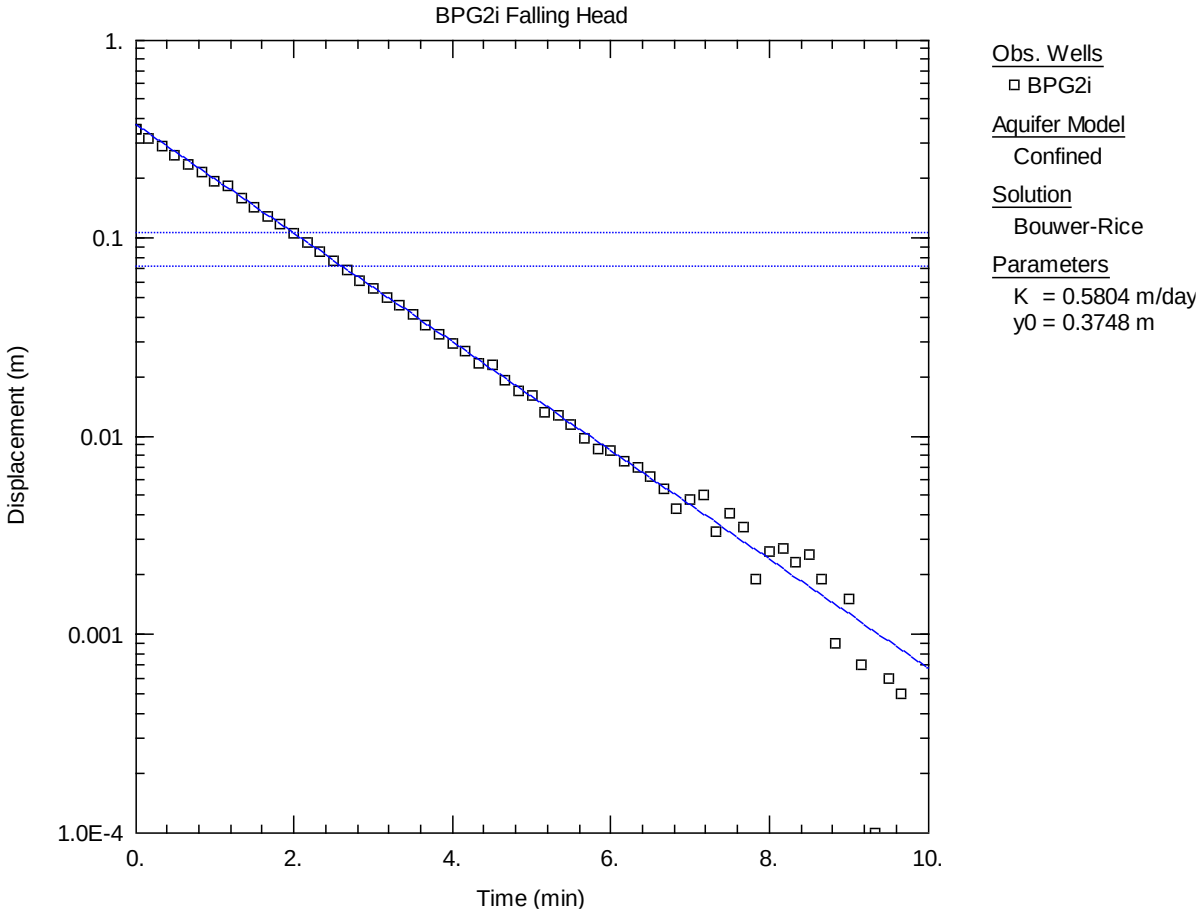
CLIENT: Core Lithium
NORTHING: 8593098 GDA 94 Zone 53
EASTING: 693991 GDA 94 Zone 53
LOCATION: BP33 Lithium Prospect
DRILLER: BoresNT
LOGGED BY: R Morris
DATE COMPLETED: 05 Sep 2020
CASING HEIGHT (mm): 0.5
TOTAL DEPTH (mBGL): 7
CONSTRUCTED DEPTH (mBGL): 7
STANDING WATER LEVEL (mBGL): 4.23
BORE ID: RN041797
ELEVATION (mAHD): TBC
AIRLIFT YIELD (L/s): Seepage
SALINITY (µS/cm): 96

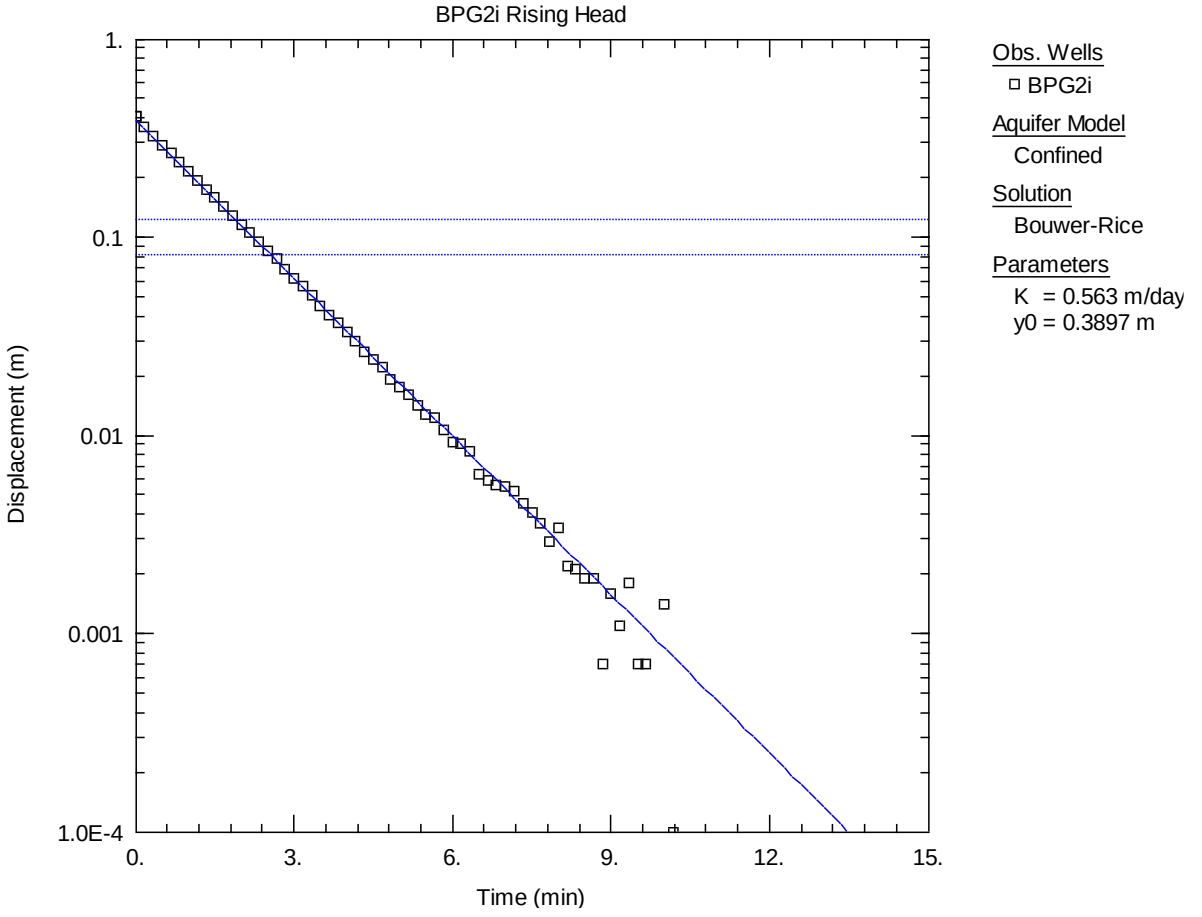


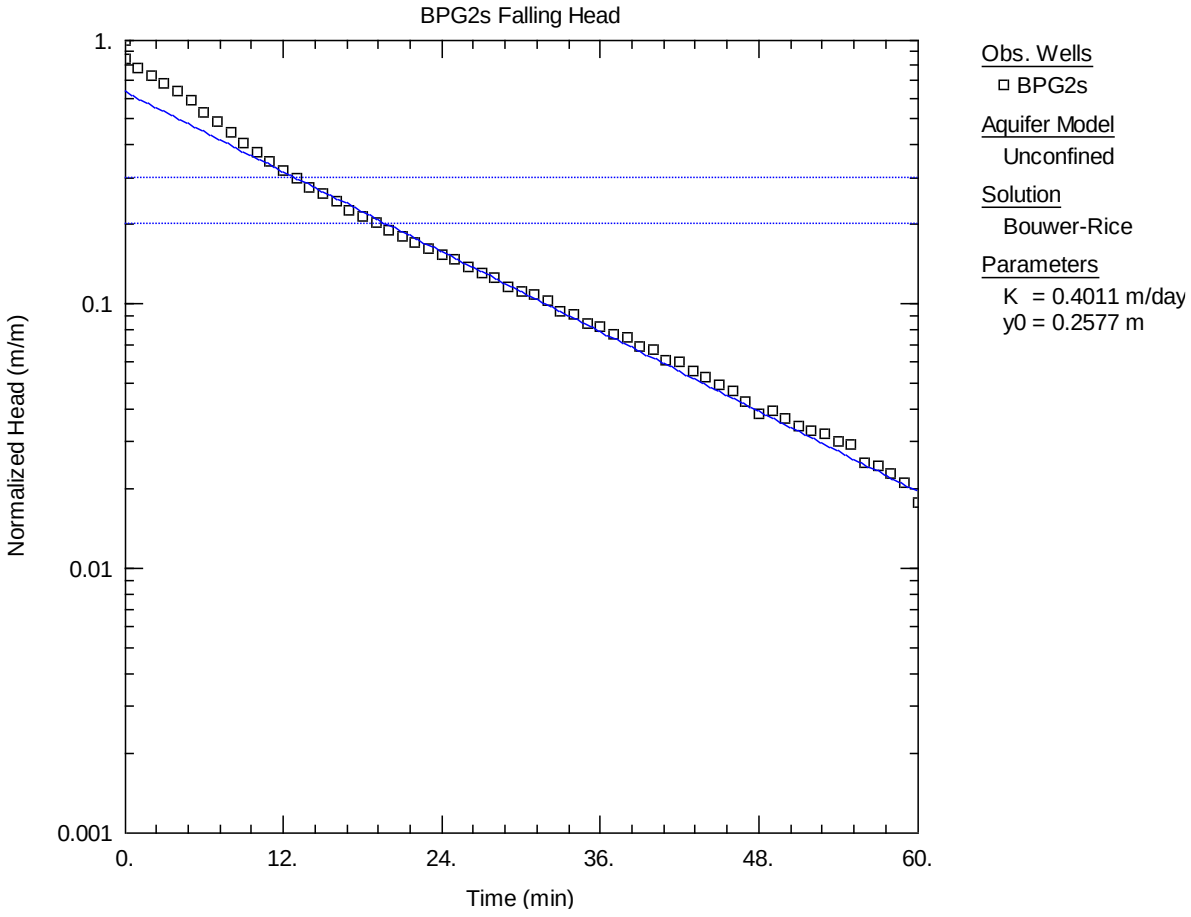
Appendix B Aquifer Testing Analysis

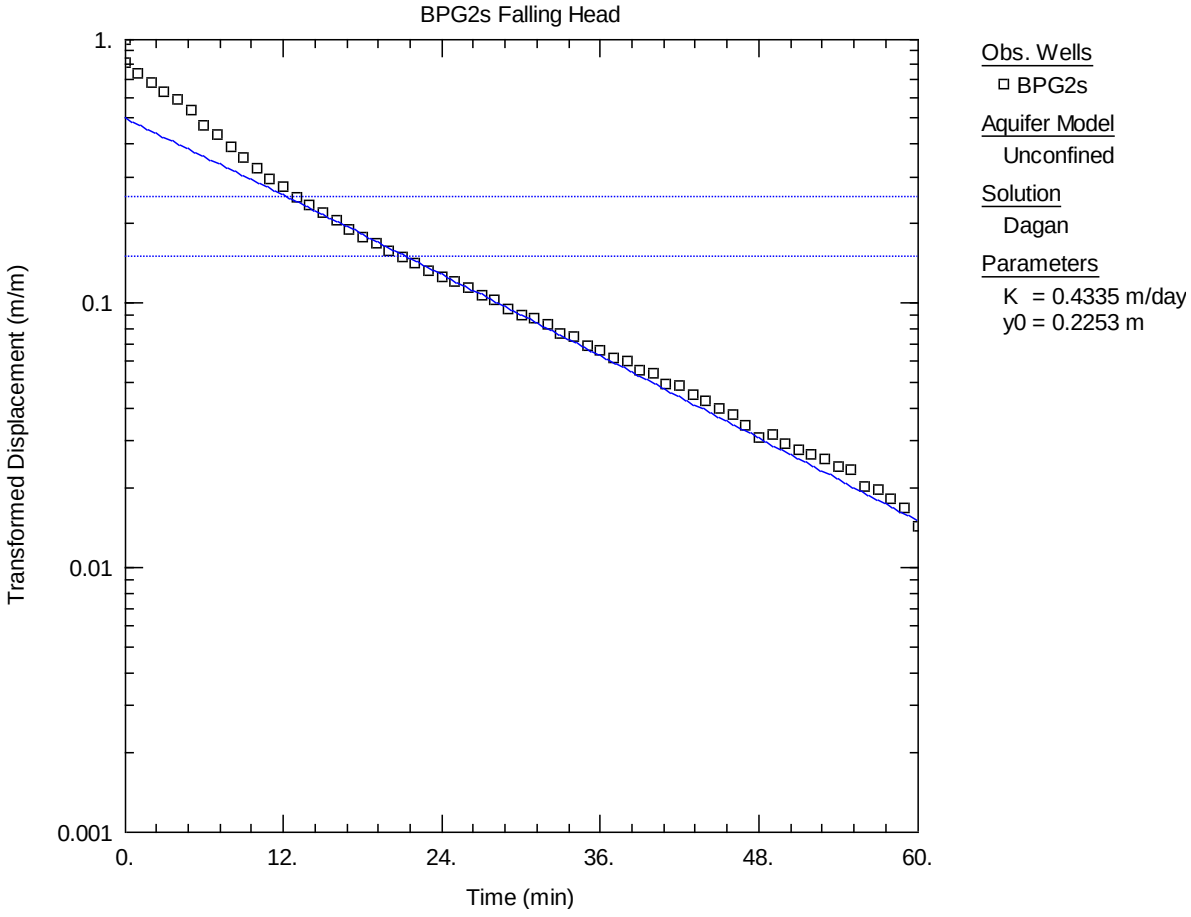


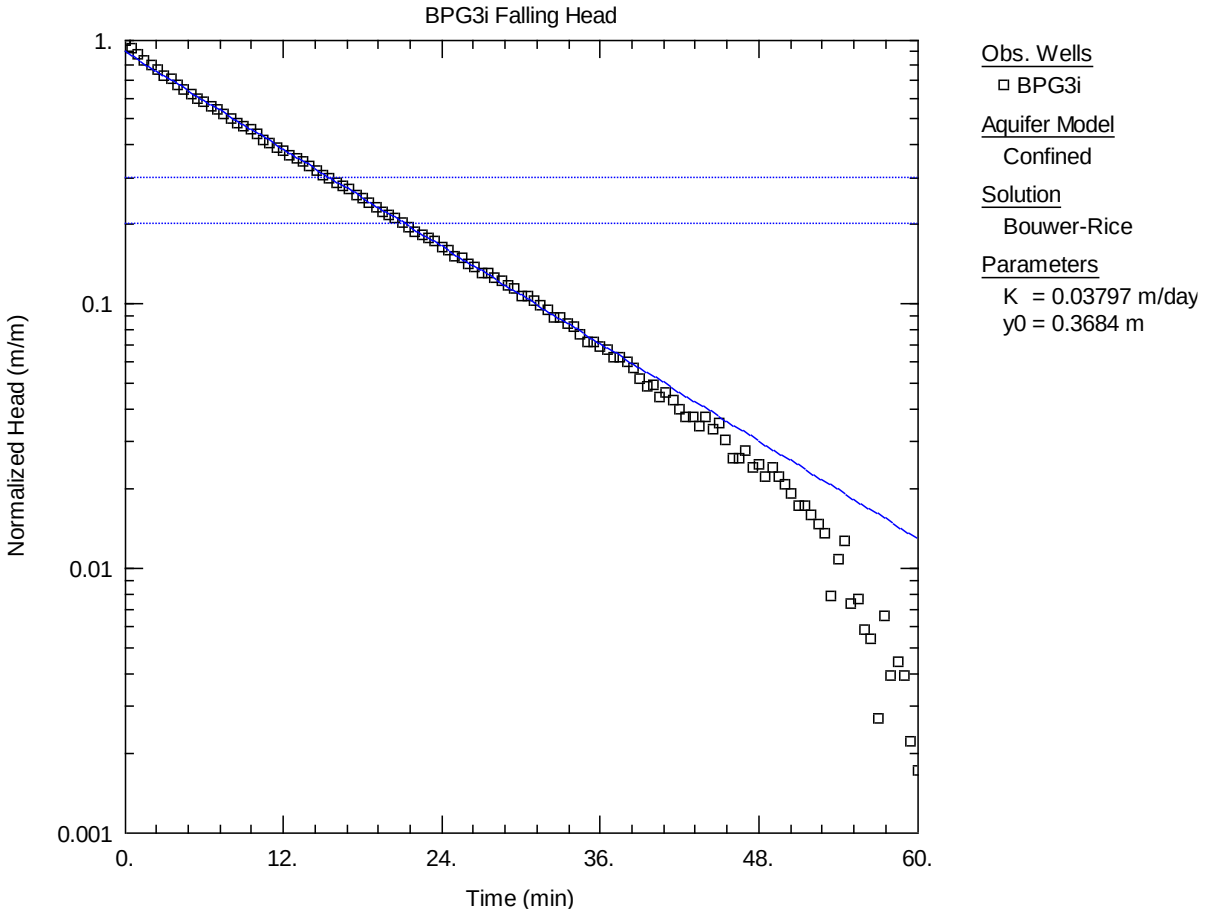


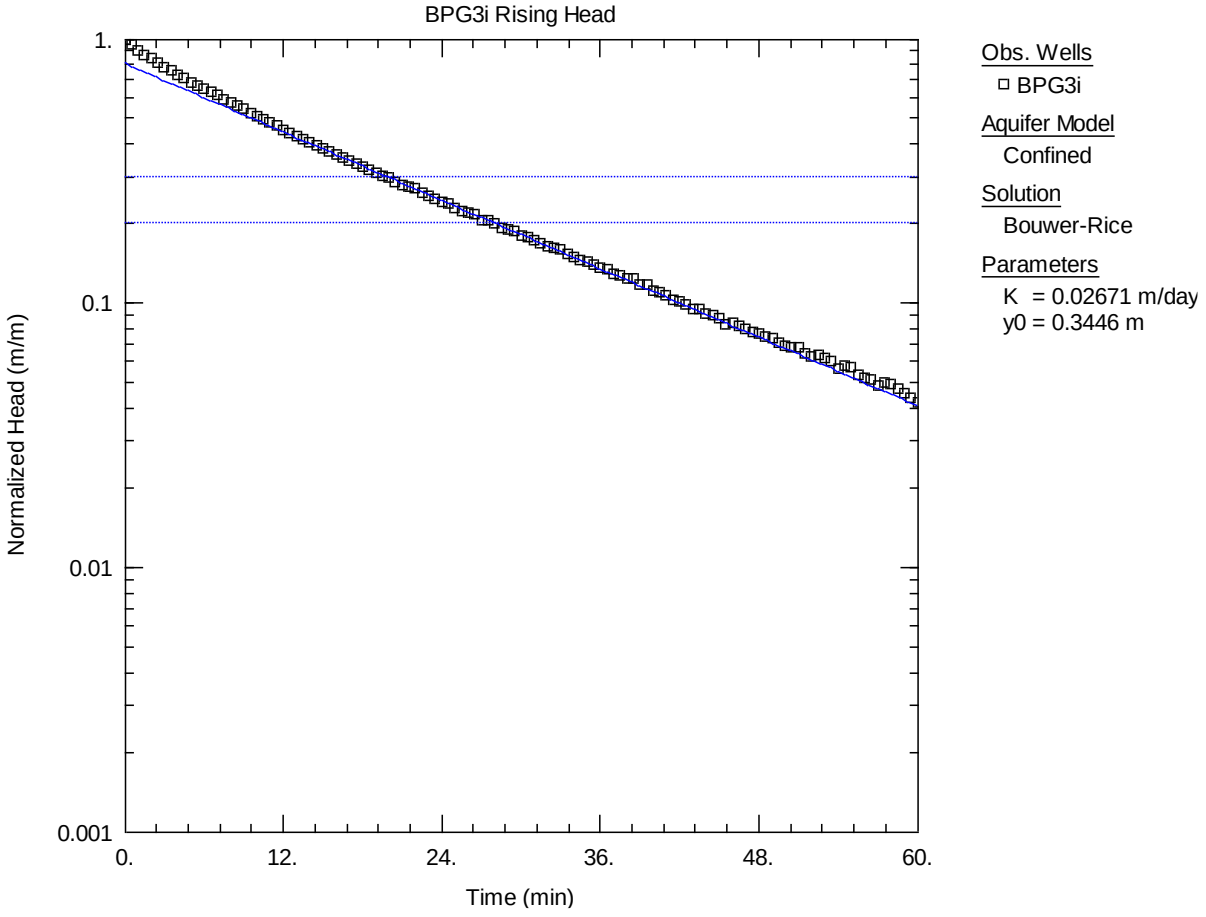

BPG2i Falling Head
Displacement (m)
1.
0.1
0.01
0.001
1.0E-4
0.
2.
4.
6.
8.
10.
Time (min)
Obs. Wells
BPG2i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 0.5804 m/day
y0 = 0.3748 m

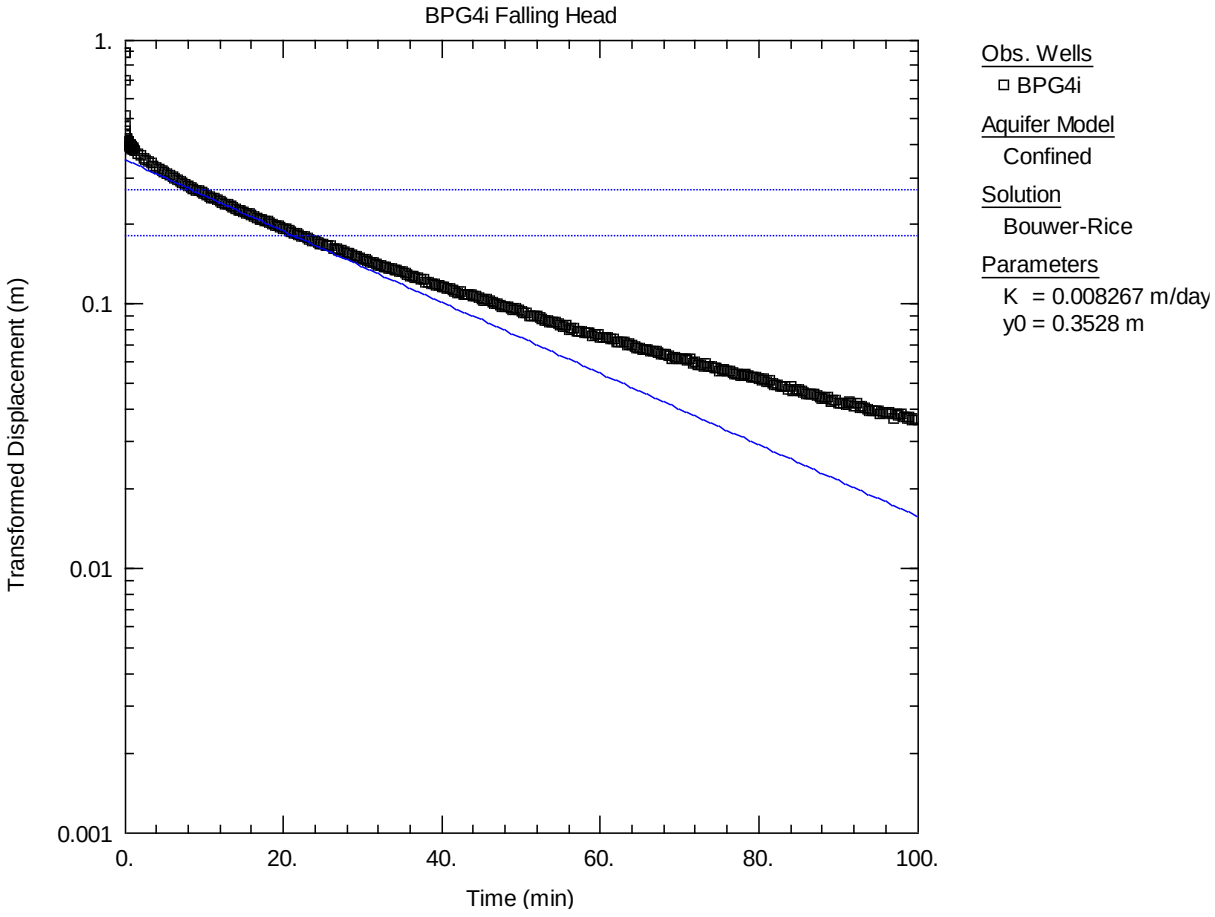

BPG2i Rising Head
Displacement (m)
1.
0.1
0.01
0.001
1.0E-4
0.
3.
6.
9.
12.
15.
Time (min)
Obs. Wells
BPG2i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 0.563 m/day
y0 = 0.3897 m

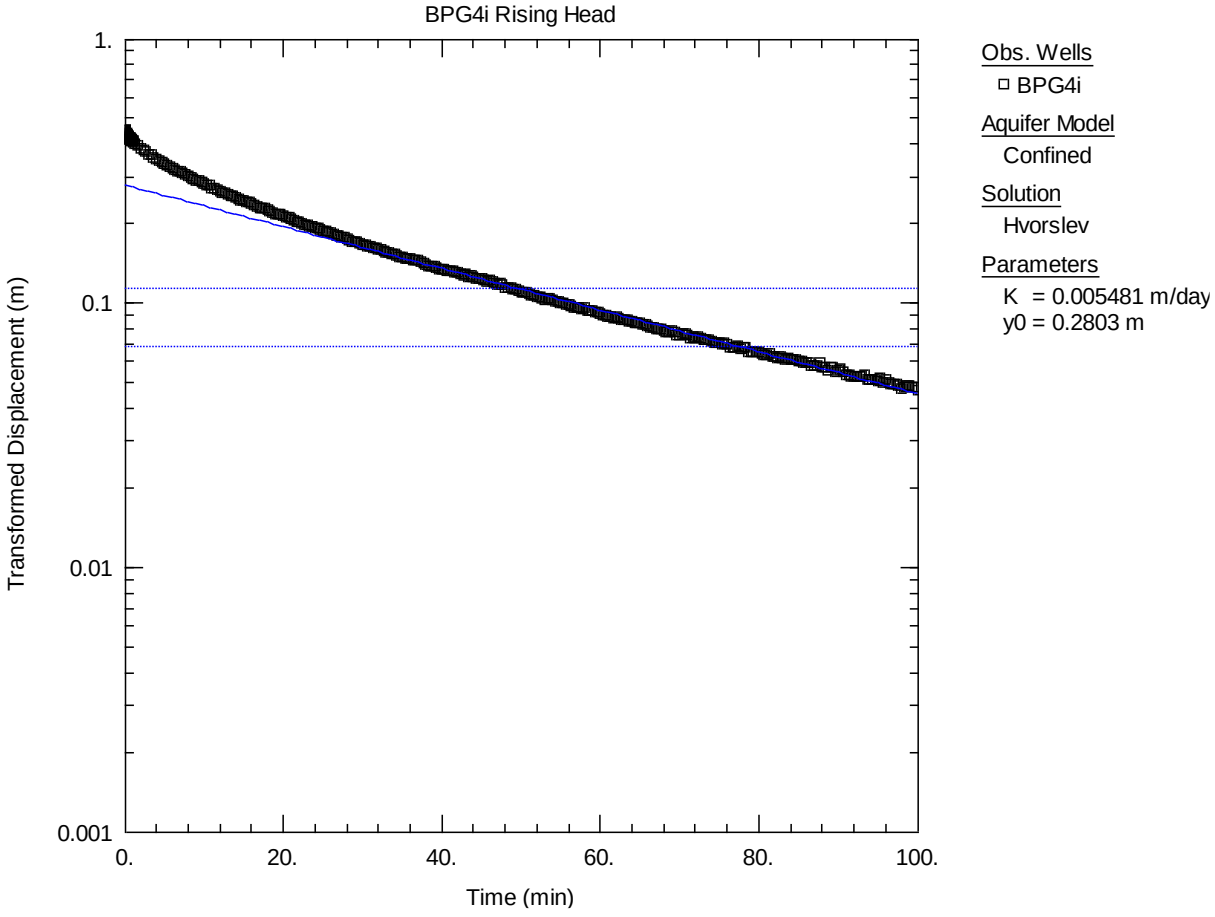

BPG2s Falling Head
Normalized Head (m/m)
1.
0.1
0.01
0.001
0.
12.
24.
36.
48.
60.
Time (min)
Obs. Wells
BPG2s
Aquifer Model
Unconfined
Solution
Bouwer-Rice
Parameters
K = 0.4011 m/day
y0 = 0.2577 m

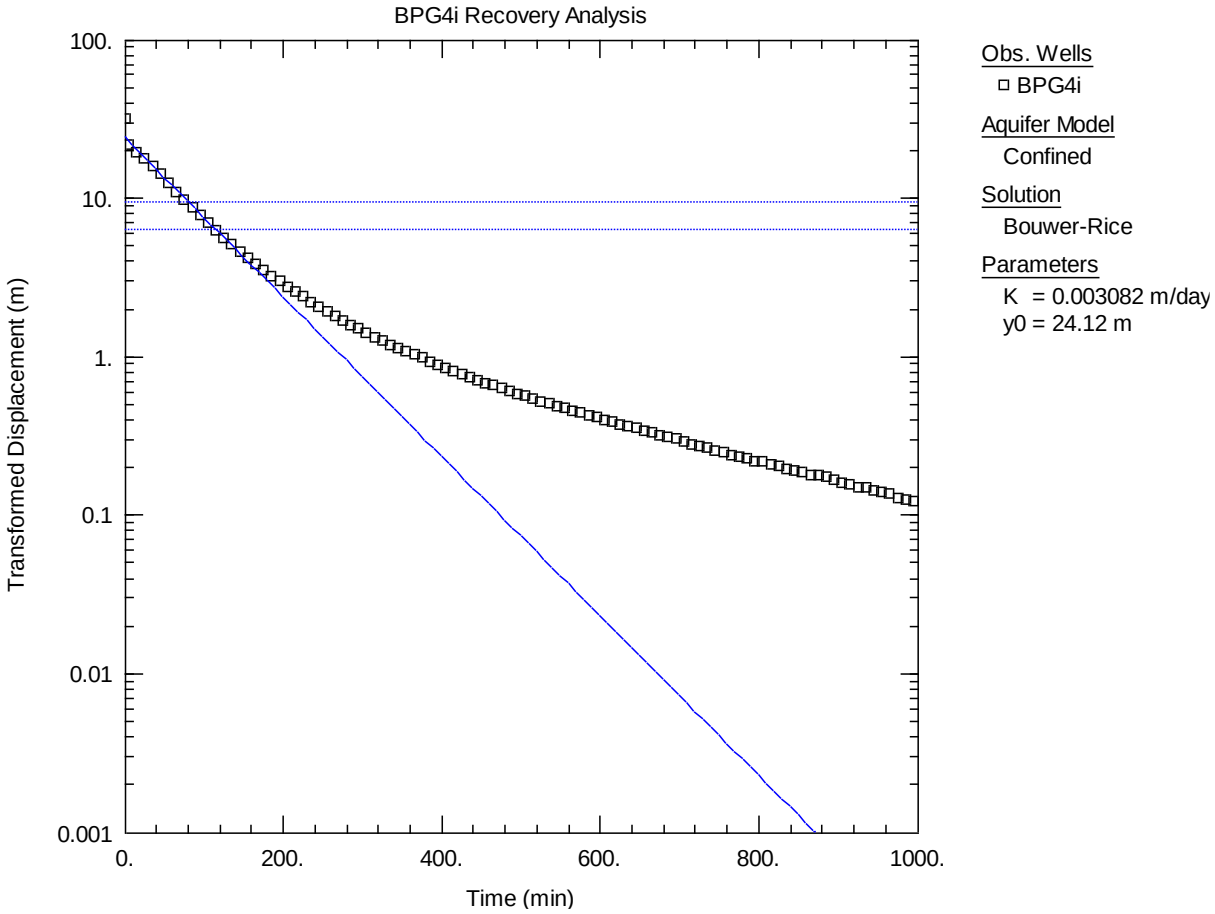

BPG2s Falling Head
Transformed Displacement (m/m)
1.
0.1
0.01
0.001
0.
12.
24.
36.
48.
60.
Time (min)
Obs. Wells
BPG2s
Aquifer Model
Unconfined
Solution
Dagan
Parameters
K = 0.4335 m/day
y0 = 0.2253 m

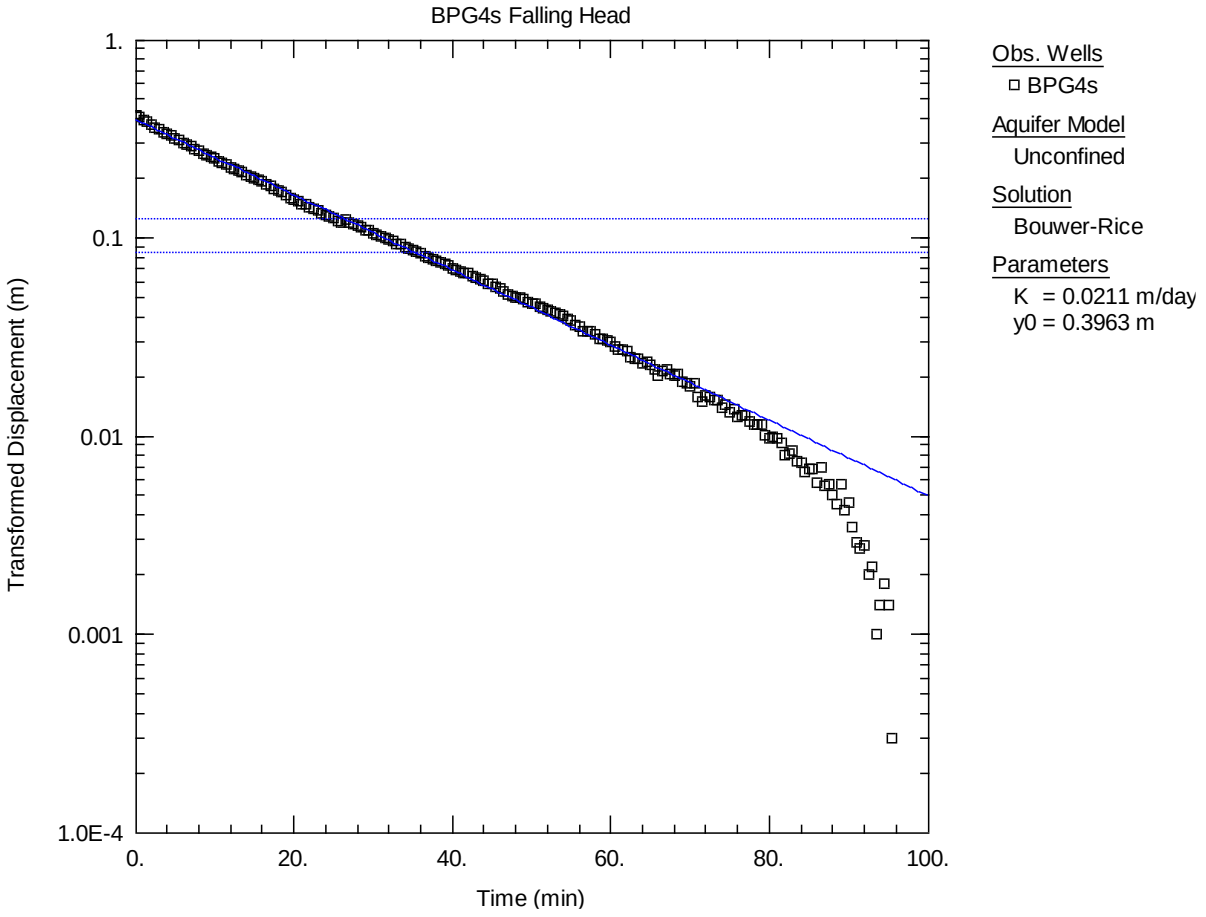

BPG3i Falling Head
Normalized Head (m/m)
1.
0.1
0.01
0.001
0.
12.
24.
36.
48.
60.
Time (min)
Obs. Wells
BPG3i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 0.03797 m/day
y0 = 0.3684 m

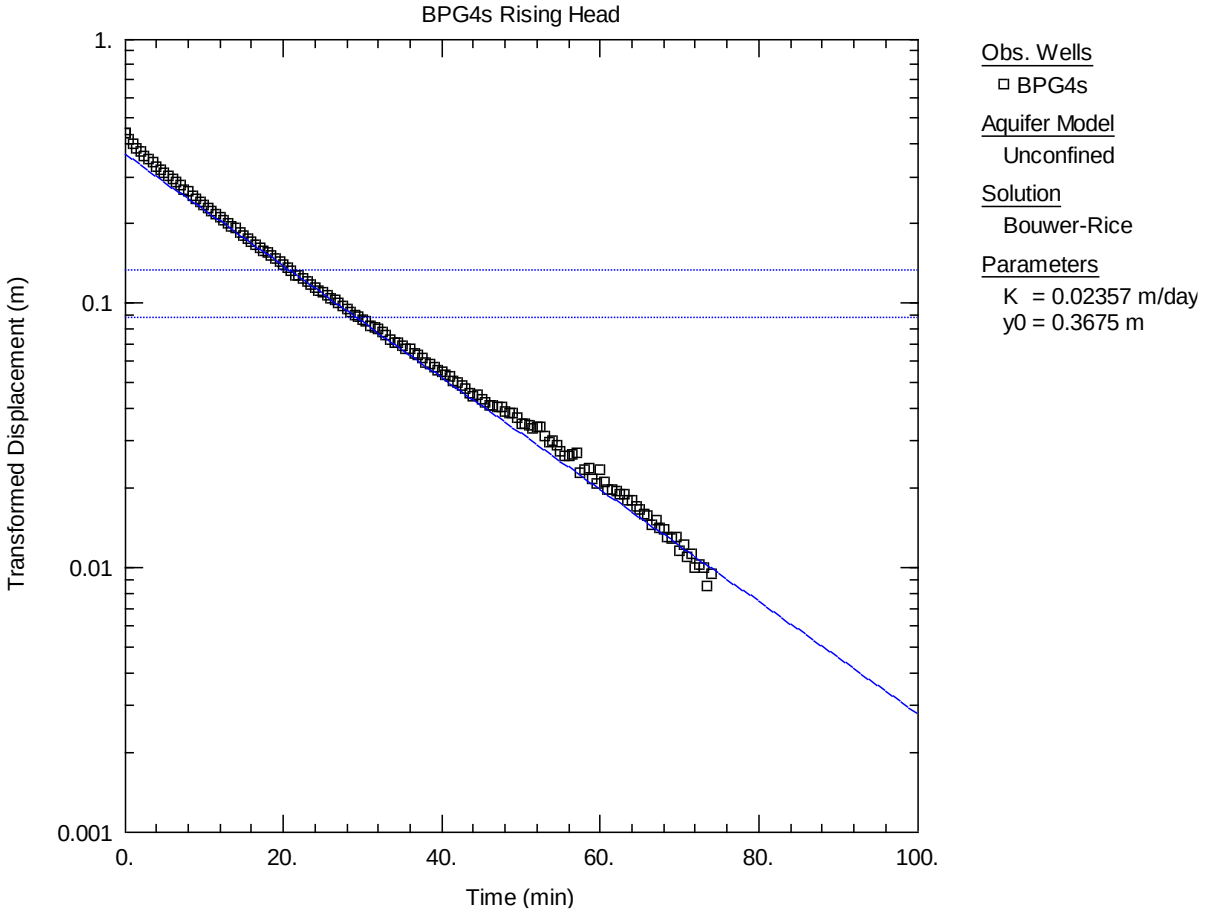

BPG3i Rising Head
Normalized Head (m/m)
1.
0.1
0.01
0.001
0.
12.
24.
36.
48.
60.
Time (min)
Obs. Wells
BPG3i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 0.02671 m/day
y0 = 0.3446 m

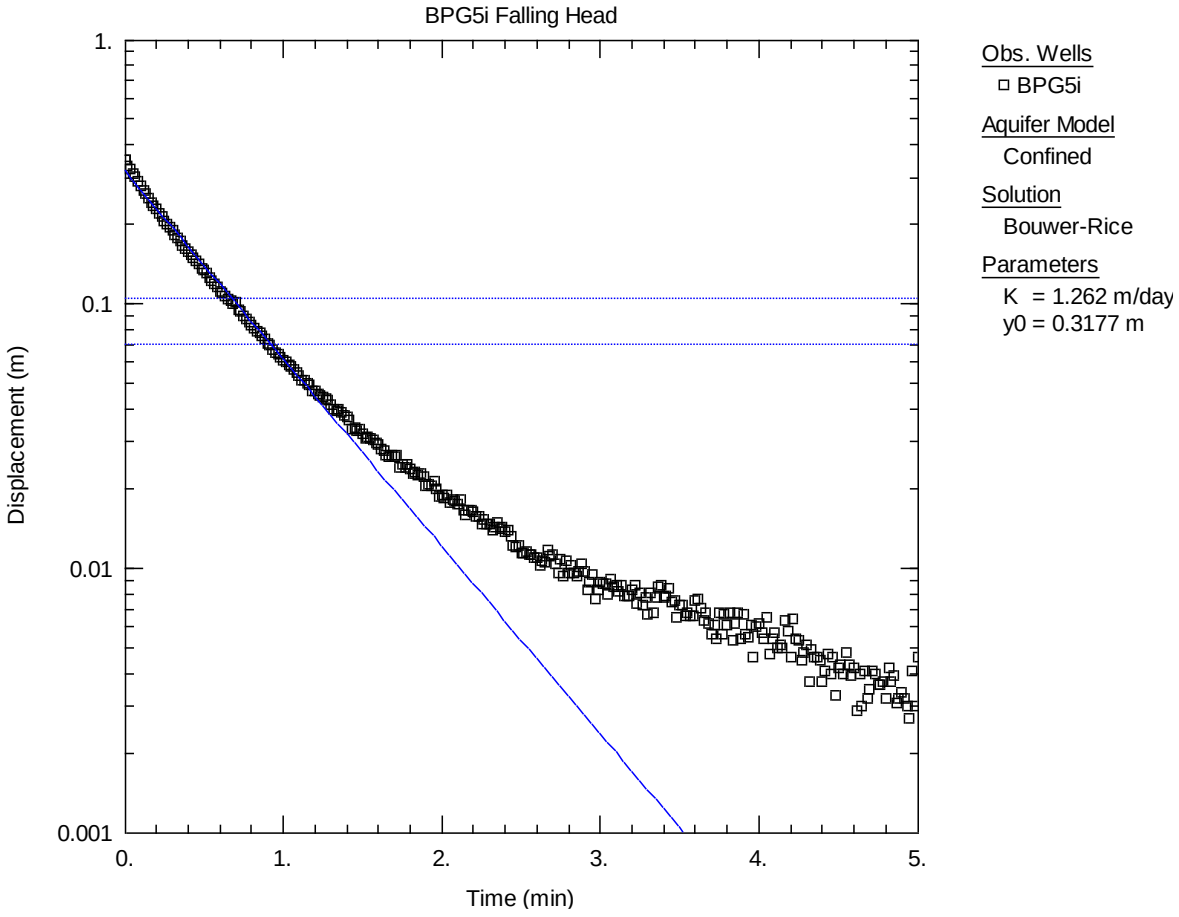

BPG4i Falling Head
Transformed Displacement (m)
1.
0.1
0.01
0.001
0.
20.
40.
60.
80.
100.
Time (min)
Obs. Wells
BPG4i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 0.008267 m/day
y0 = 0.3528 m

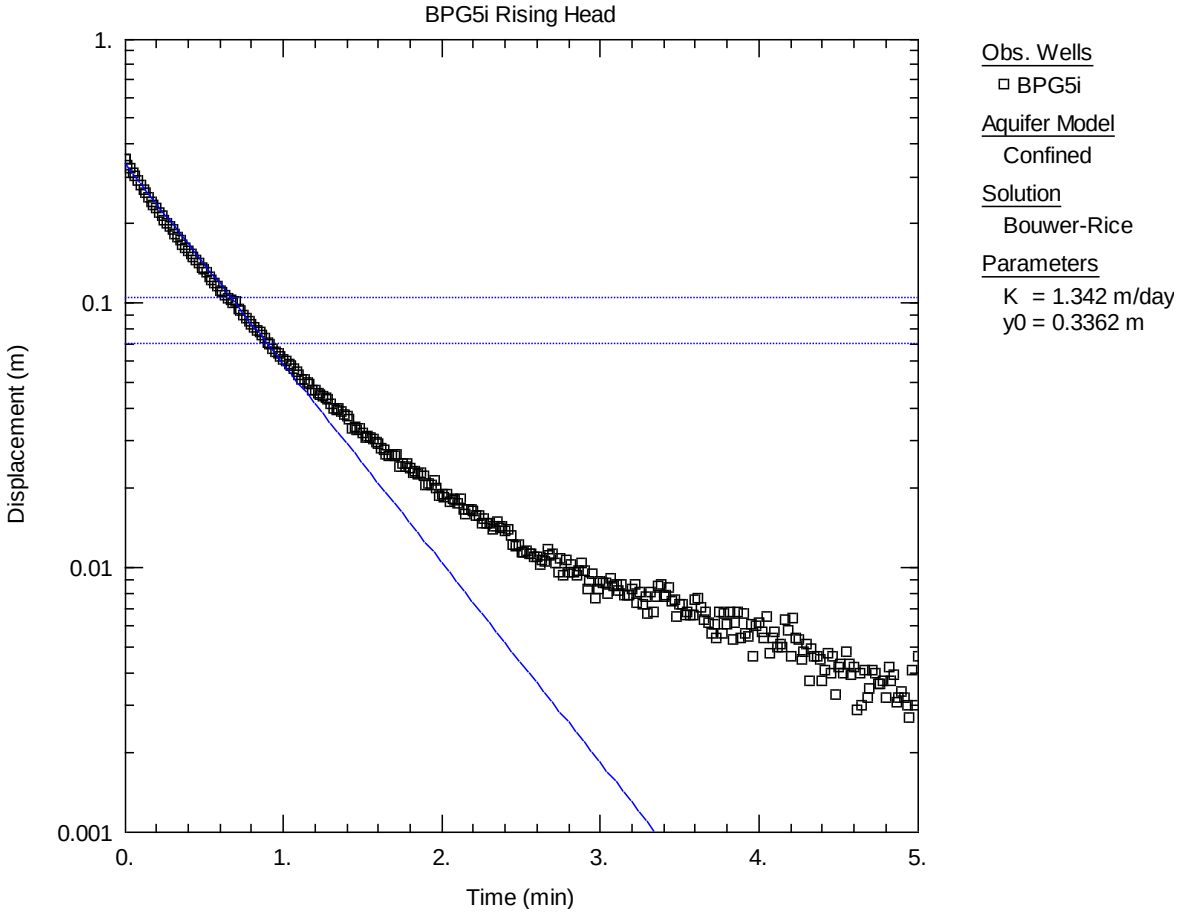

BPG4i Rising Head
Transformed Displacement (m)
1.
0.1
0.01
0.001
0.
20.
40.
60.
80.
100.
Time (min)
Obs. Wells
BPG4i
Aquifer Model
Confined
Solution
Hvorslev
Parameters
K = 0.005481 m/day
y0 = 0.2803 m

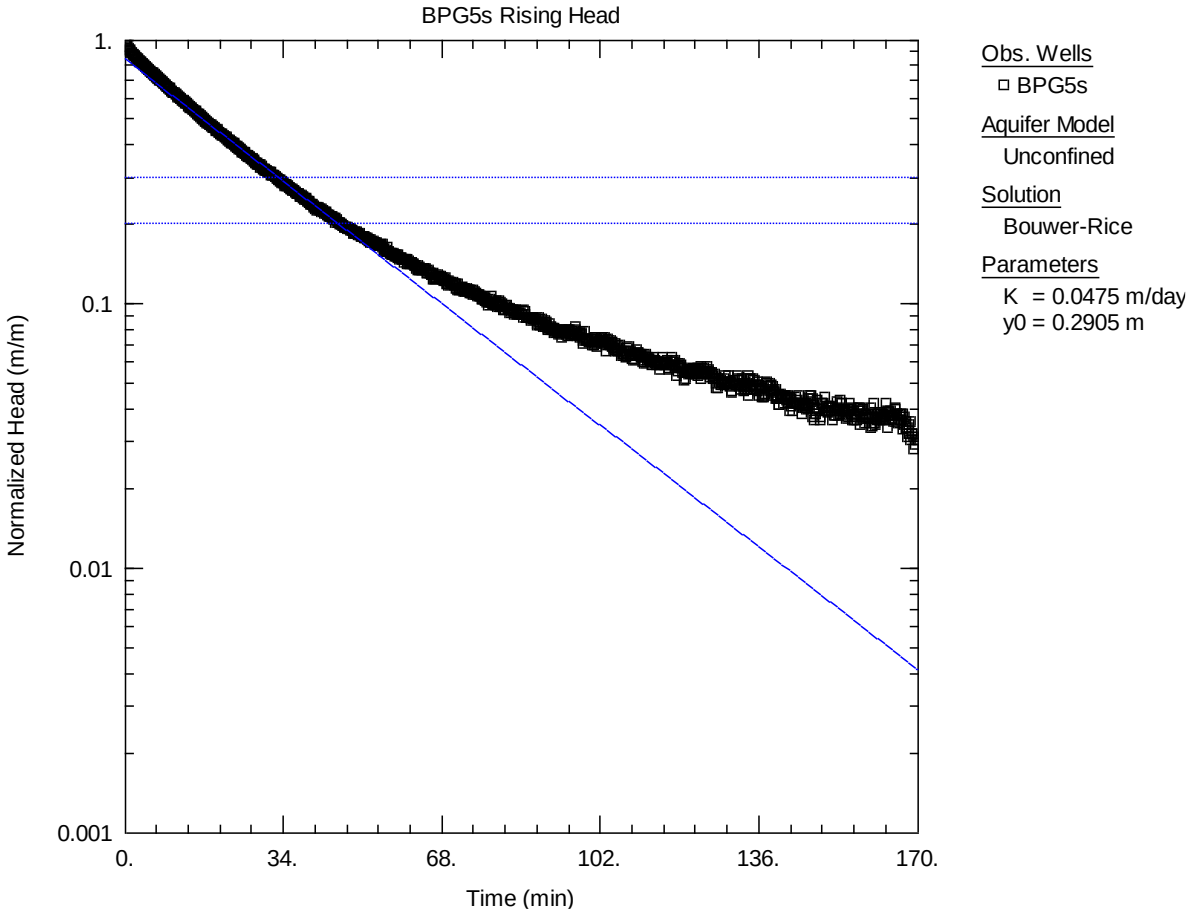

BPG4i Recovery Analysis
100.
10.
1.
0.1
0.01
0.001
Transformed Displacement (m)
0.
200.
400.
600.
800.
1000.
Time (min)
Obs. Wells
BPG4i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 0.003082 m/day
y0 = 24.12 m

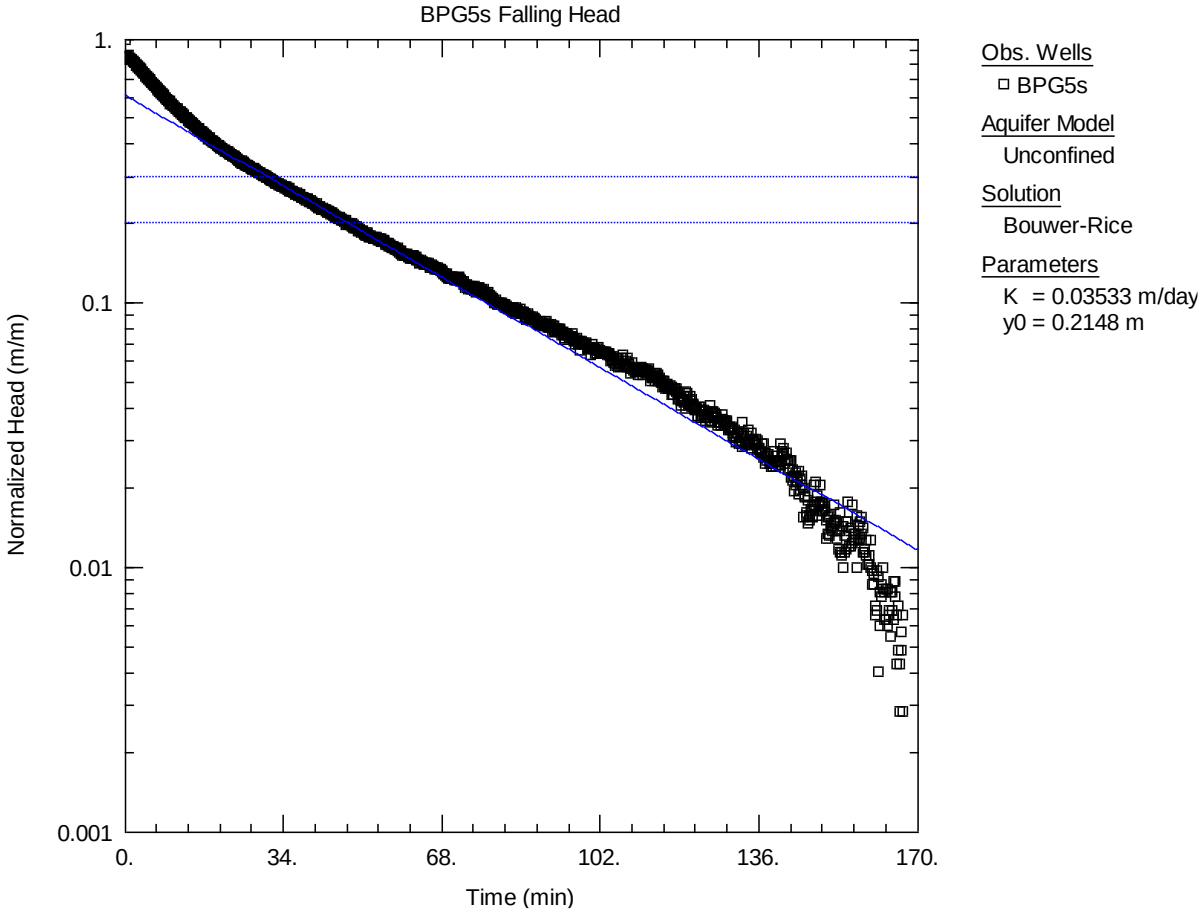

BPG4s Falling Head
Transformed Displacement (m)
1.
0.1
0.01
0.001
1.0E-4
0.
20.
40.
60.
80.
100.
Time (min)
Obs. Wells
BPG4s
Aquifer Model
Unconfined
Solution
Bouwer-Rice
Parameters
K = 0.0211 m/day
y0 = 0.3963 m

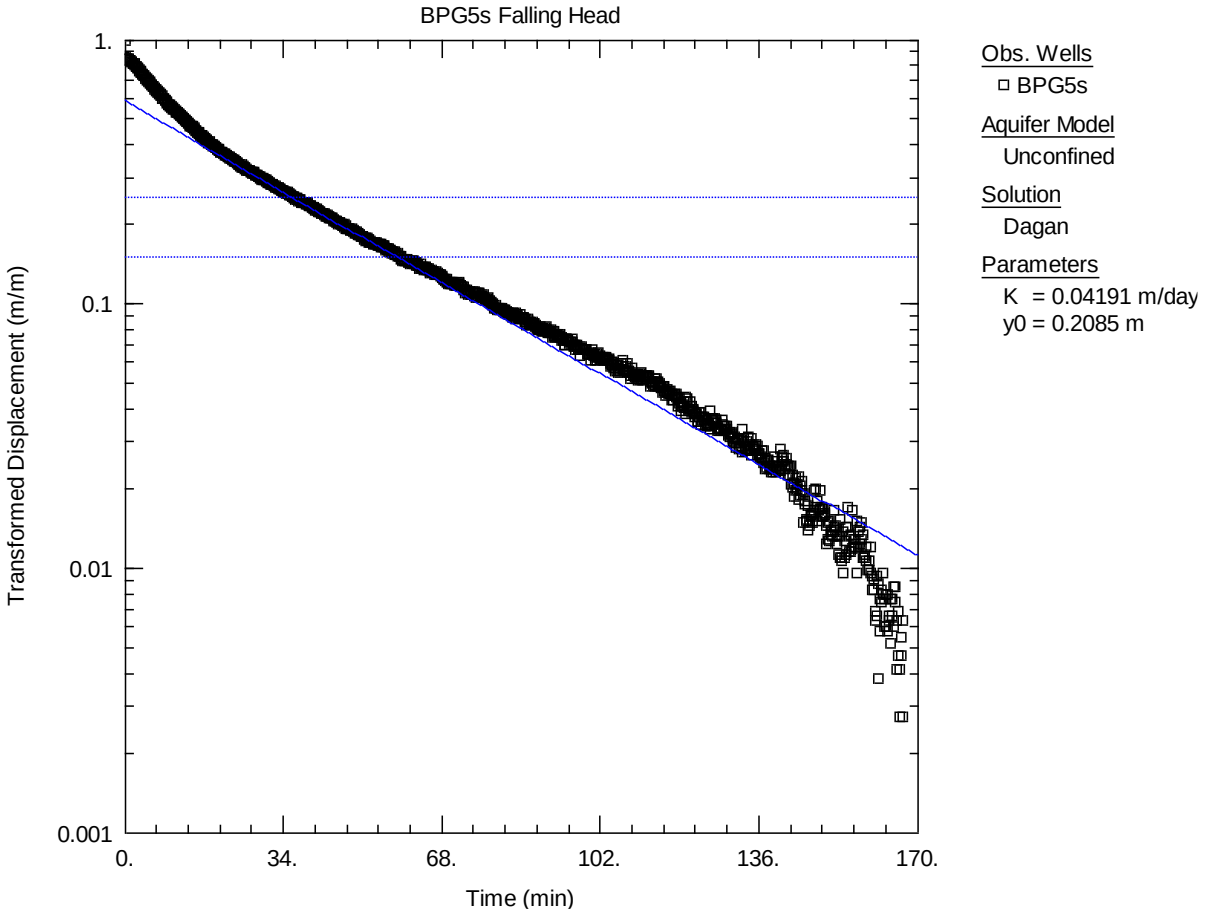

BPG4s Rising Head
Transformed Displacement (m)
1.
0.1
0.01
0.001
0.
20.
40.
60.
80.
100.
Time (min)
Obs. Wells
BPG4s
Aquifer Model
Unconfined
Solution
Bouwer-Rice
Parameters
K = 0.02357 m/day
y0 = 0.3675 m

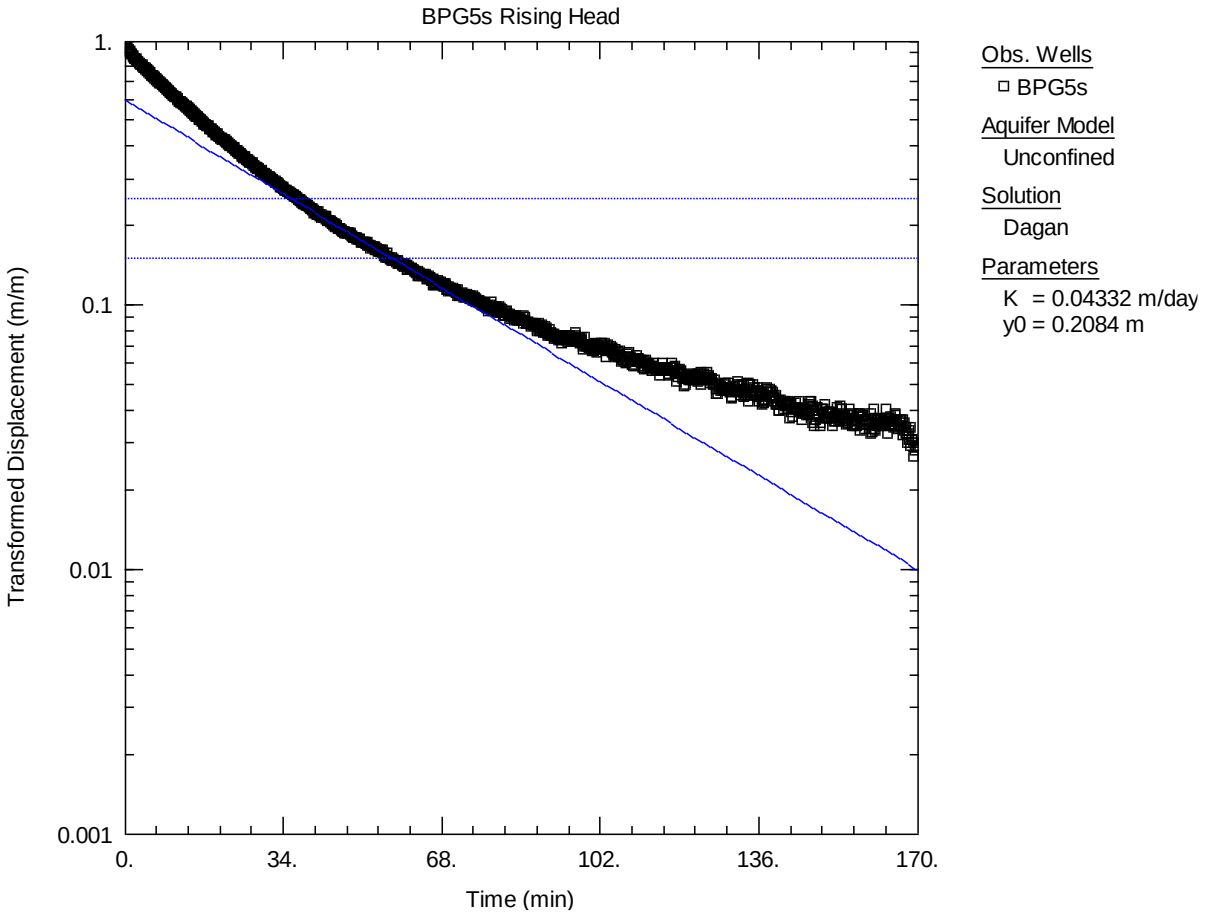

BPG5i Falling Head
Displacement (m)
1.
0.1
0.01
0.001
0.
1.
2.
3.
4.
5.
Time (min)
Obs. Wells
BPG5i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 1.262 m/day
y0 = 0.3177 m

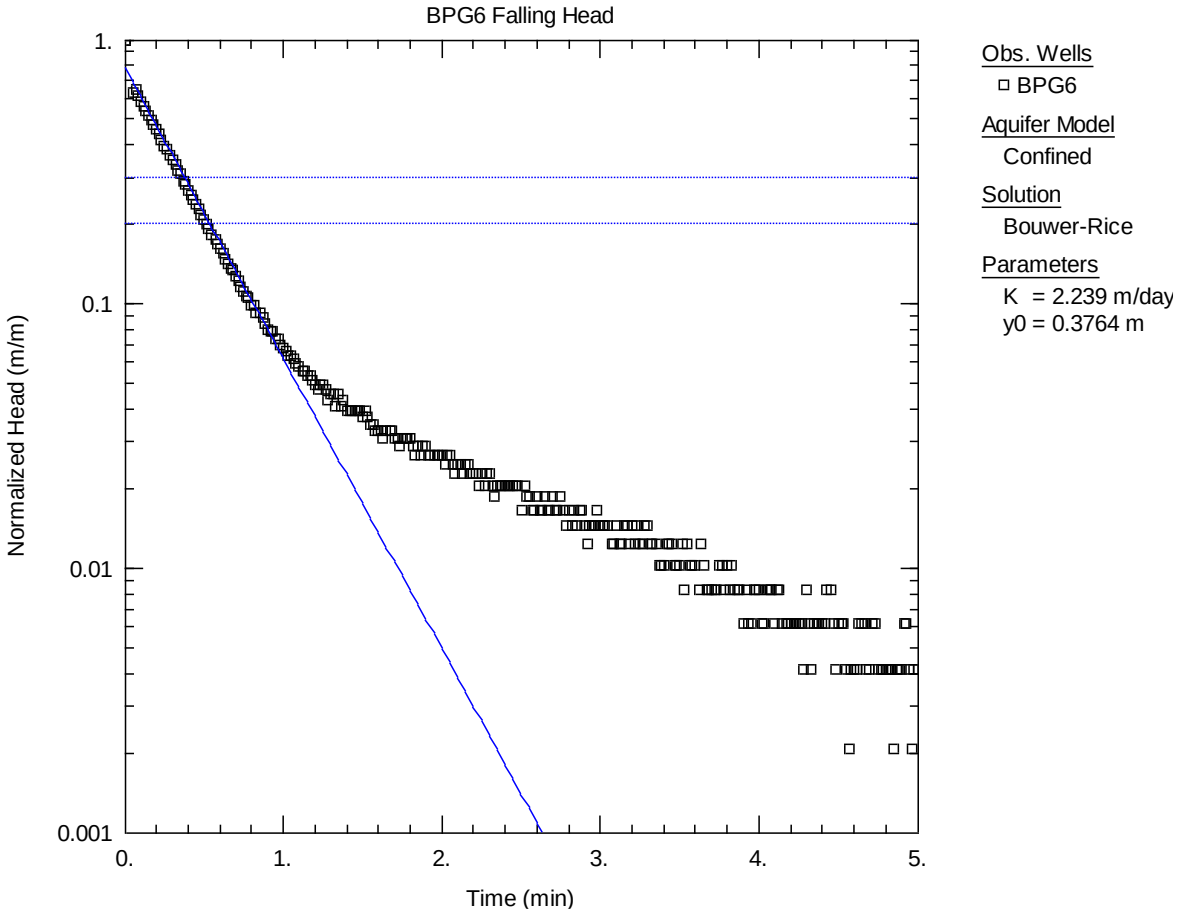

BPG5i Rising Head
Displacement (m)
1.
0.1
0.01
0.001
0.
1.
2.
3.
4.
5.
Time (min)
Obs. Wells
BPG5i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 1.342 m/day
y0 = 0.3362 m

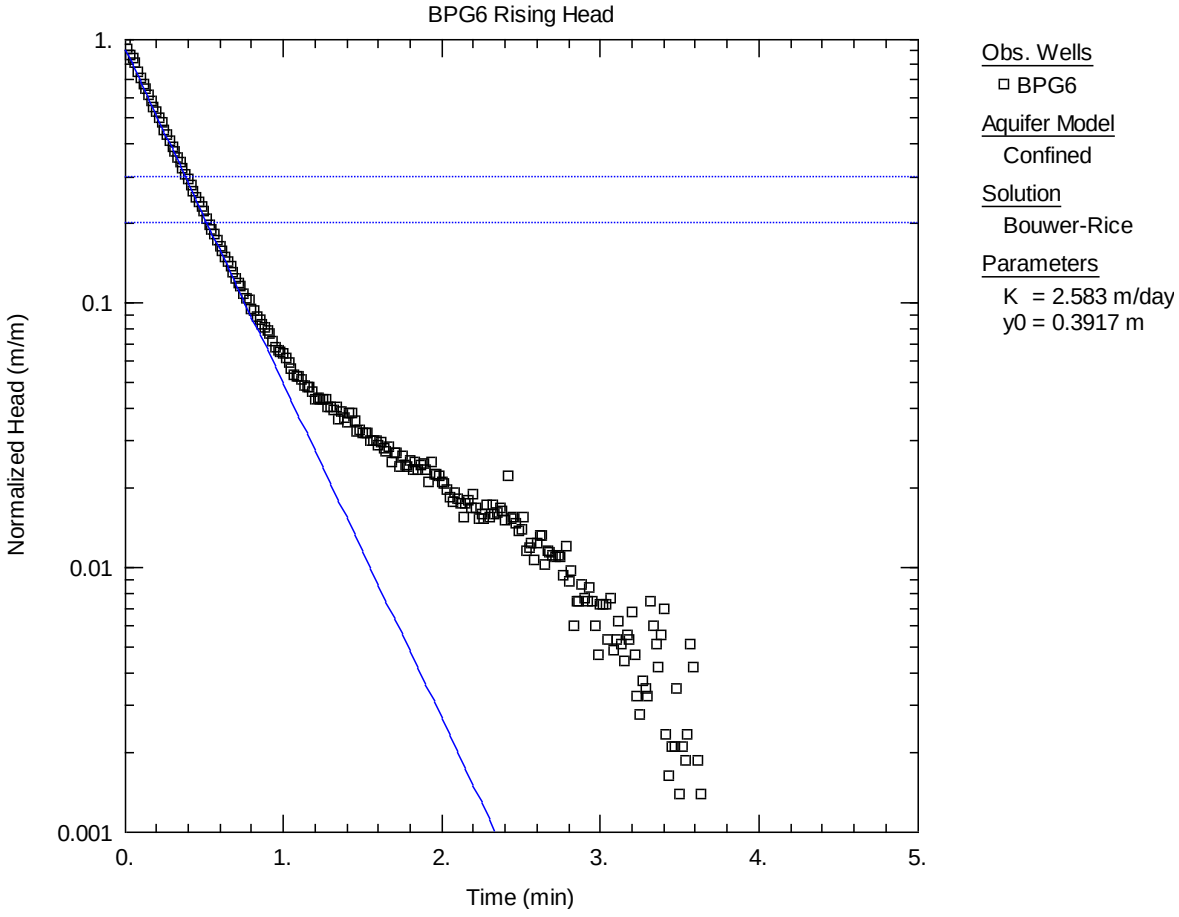

BPG5s Rising Head
Normalized Head (m/m)
1.
0.1
0.01
0.001
0.
34.
68.
102.
136.
170.
Time (min)
Obs. Wells
BPG5s
Aquifer Model
Unconfined
Solution
Bouwer-Rice
Parameters
K = 0.0475 m/day
y0 = 0.2905 m

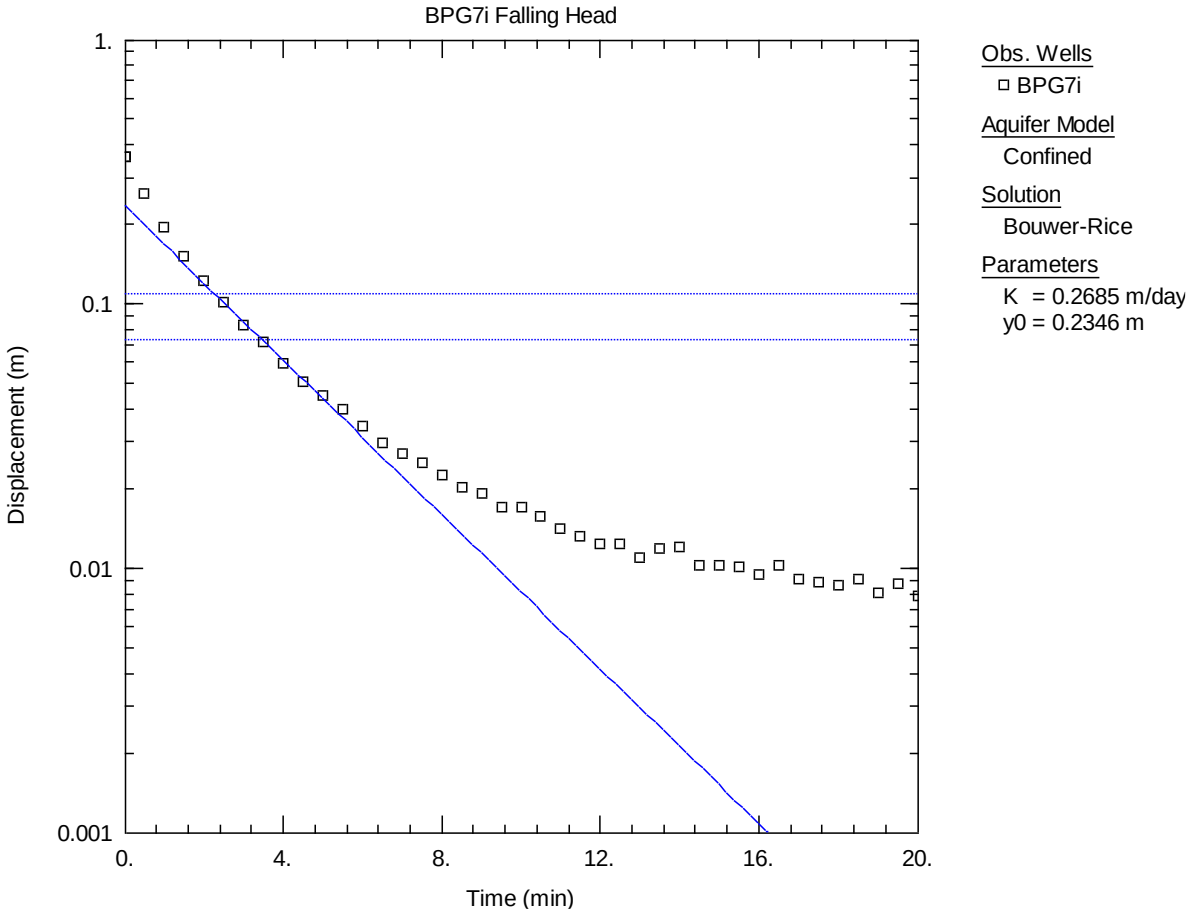

BPG5s Falling Head
Normalized Head (m/m)
1.
0.1
0.01
0.001
0.
34.
68.
102.
136.
170.
Time (min)
Obs. Wells
BPG5s
Aquifer Model
Unconfined
Solution
Bouwer-Rice
Parameters
K = 0.03533 m/day
y0 = 0.2148 m

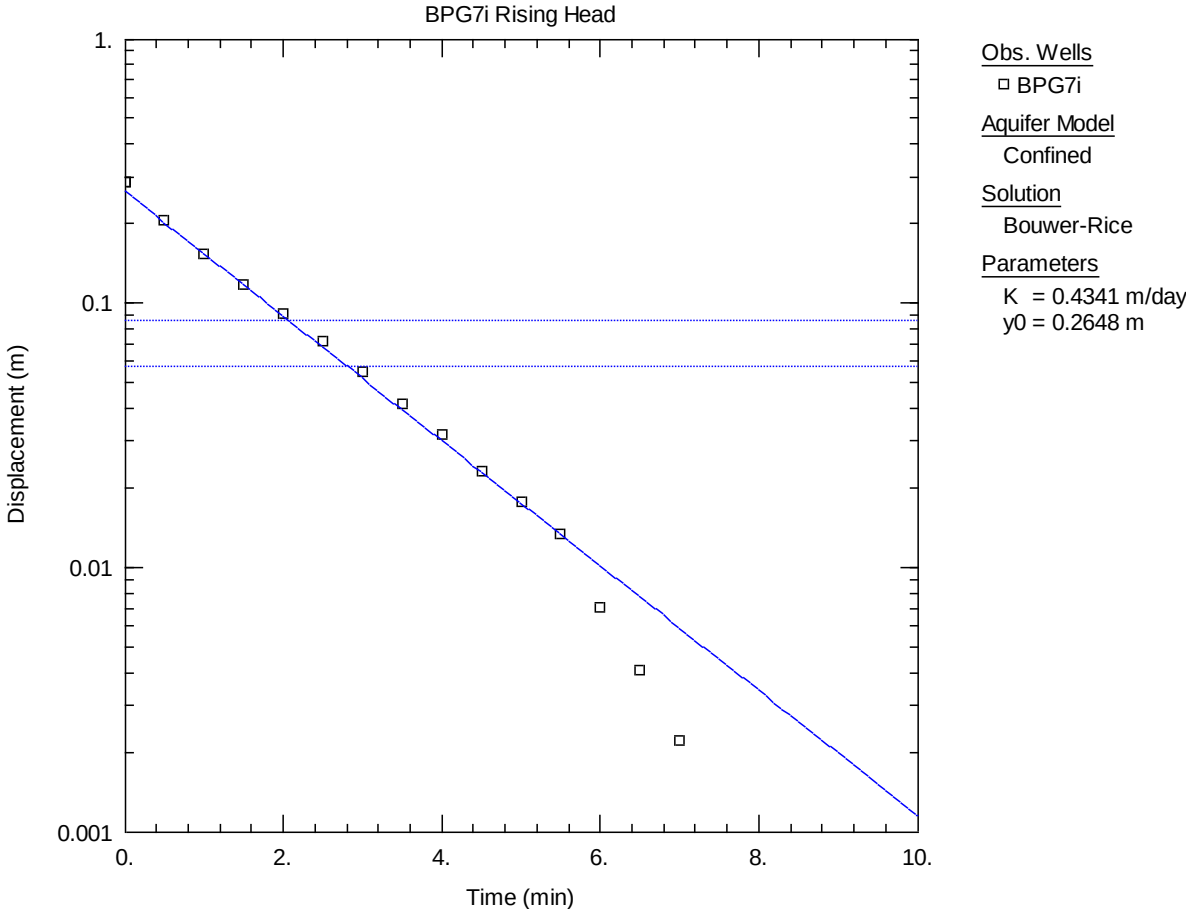

BPG5s Falling Head
Transformed Displacement (m/m)
1.
0.1
0.01
0.001
0.
34.
68.
102.
136.
170.
Time (min)
Obs. Wells
BPG5s
Aquifer Model
Unconfined
Solution
Dagan
Parameters
K = 0.04191 m/day
y0 = 0.2085 m

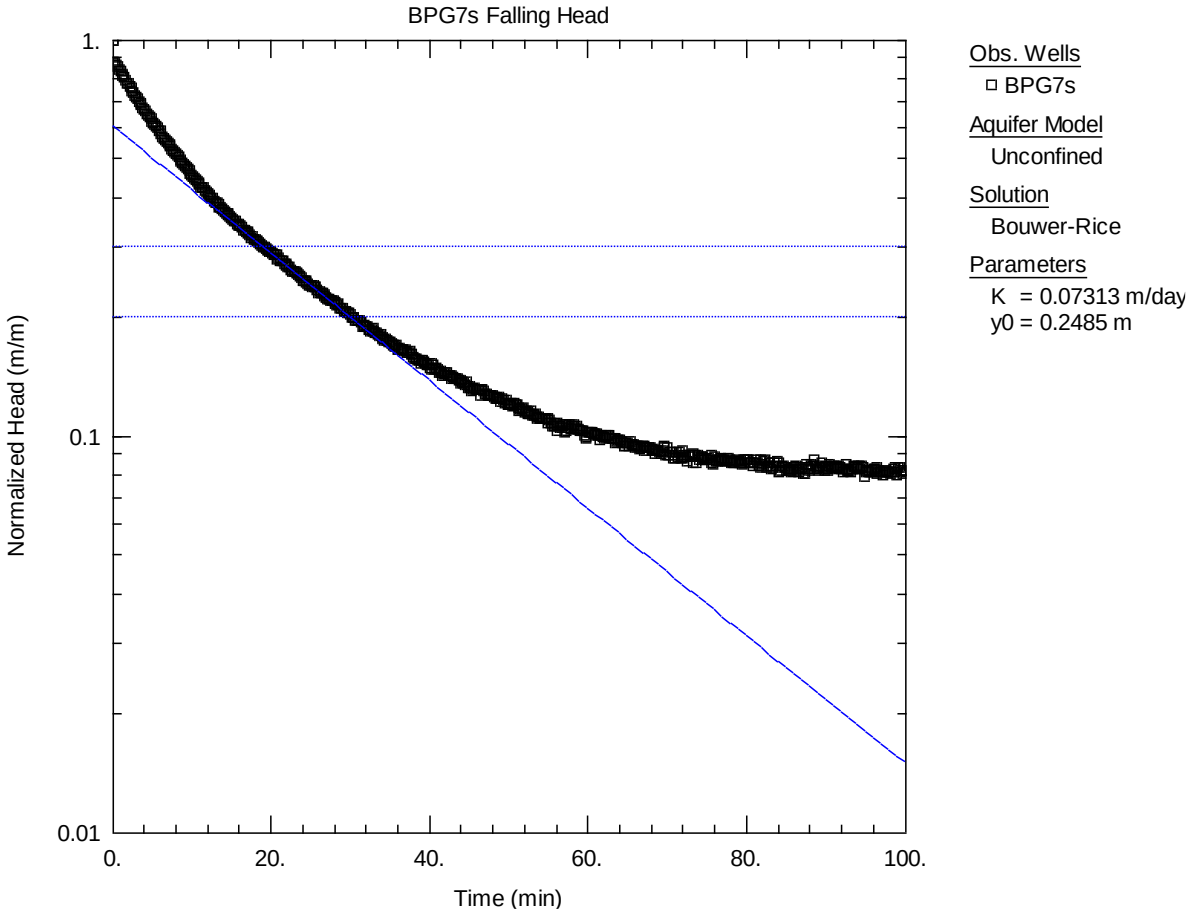

BPG5s Rising Head
Transformed Displacement (m/m)
1.
0.1
0.01
0.001
0.
34.
68.
102.
136.
170.
Time (min)
Obs. Wells
BPG5s
Aquifer Model
Unconfined
Solution
Dagan
Parameters
K = 0.04332 m/day
y0 = 0.2084 m

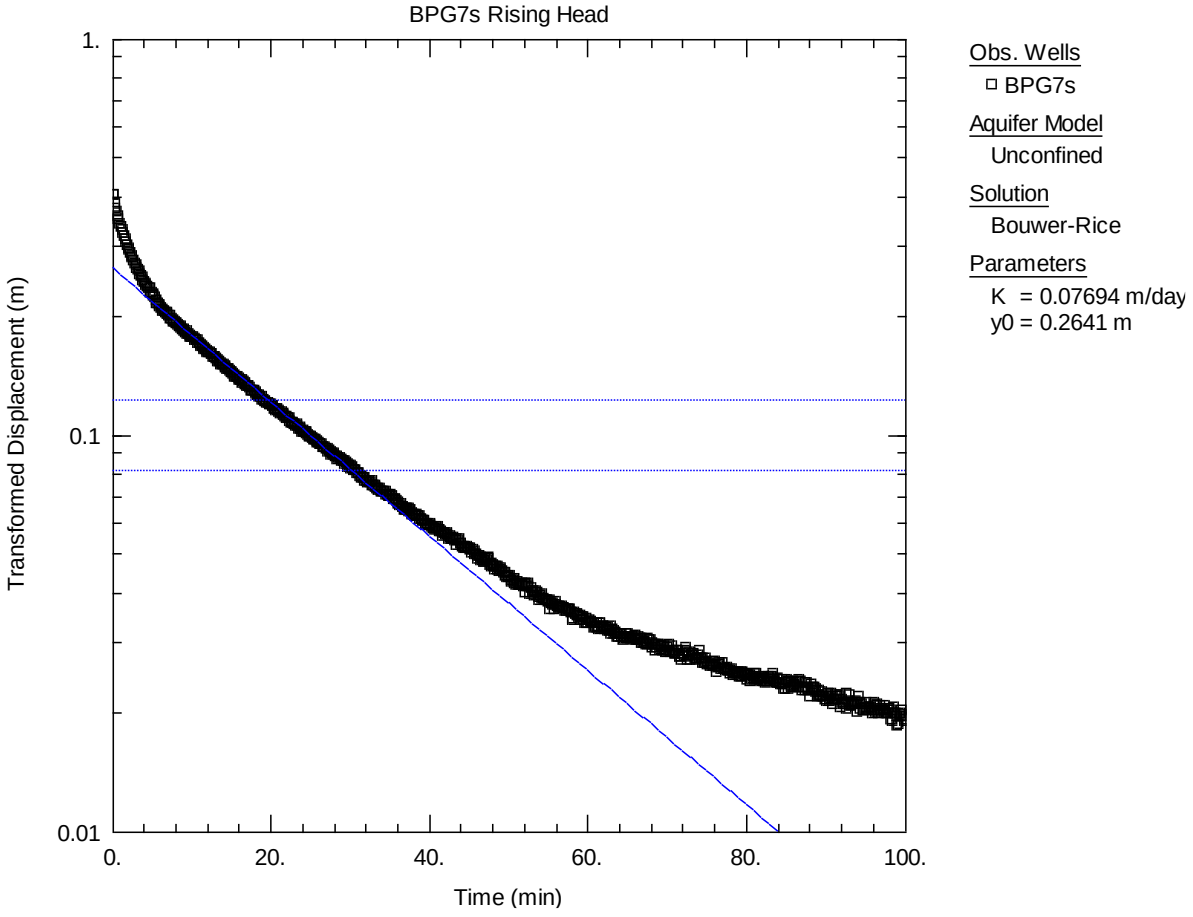

BPG6 Falling Head
Normalized Head (m/m)
1.
0.1
0.01
0.001
0.
1.
2.
3.
4.
5.
Time (min)
Obs. Wells
BPG6
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 2.239 m/day
y0 = 0.3764 m

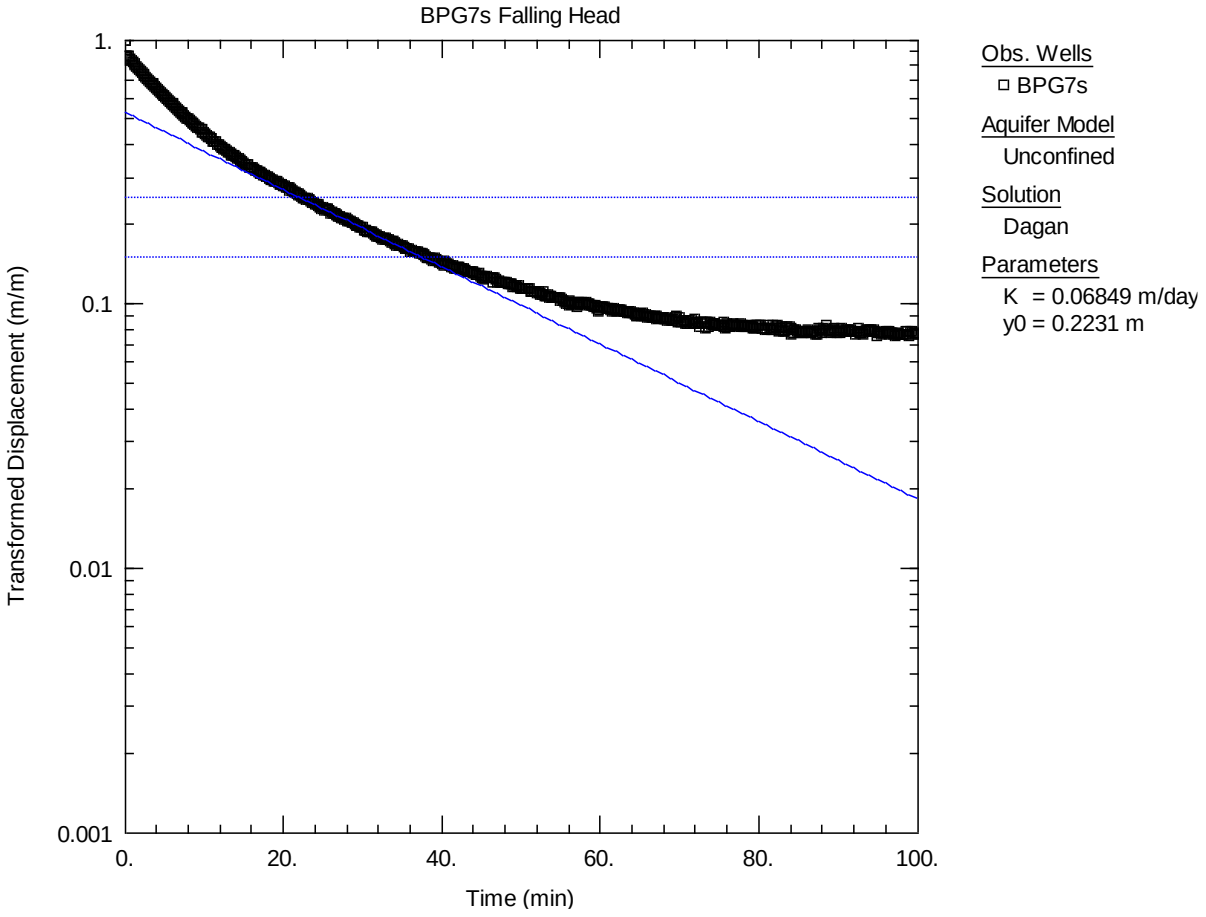

BPG6 Rising Head
Normalized Head (m/m)
1.
0.1
0.01
0.001
0.
1.
2.
3.
4.
5.
Time (min)
Obs. Wells
BPG6
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 2.583 m/day
y0 = 0.3917 m

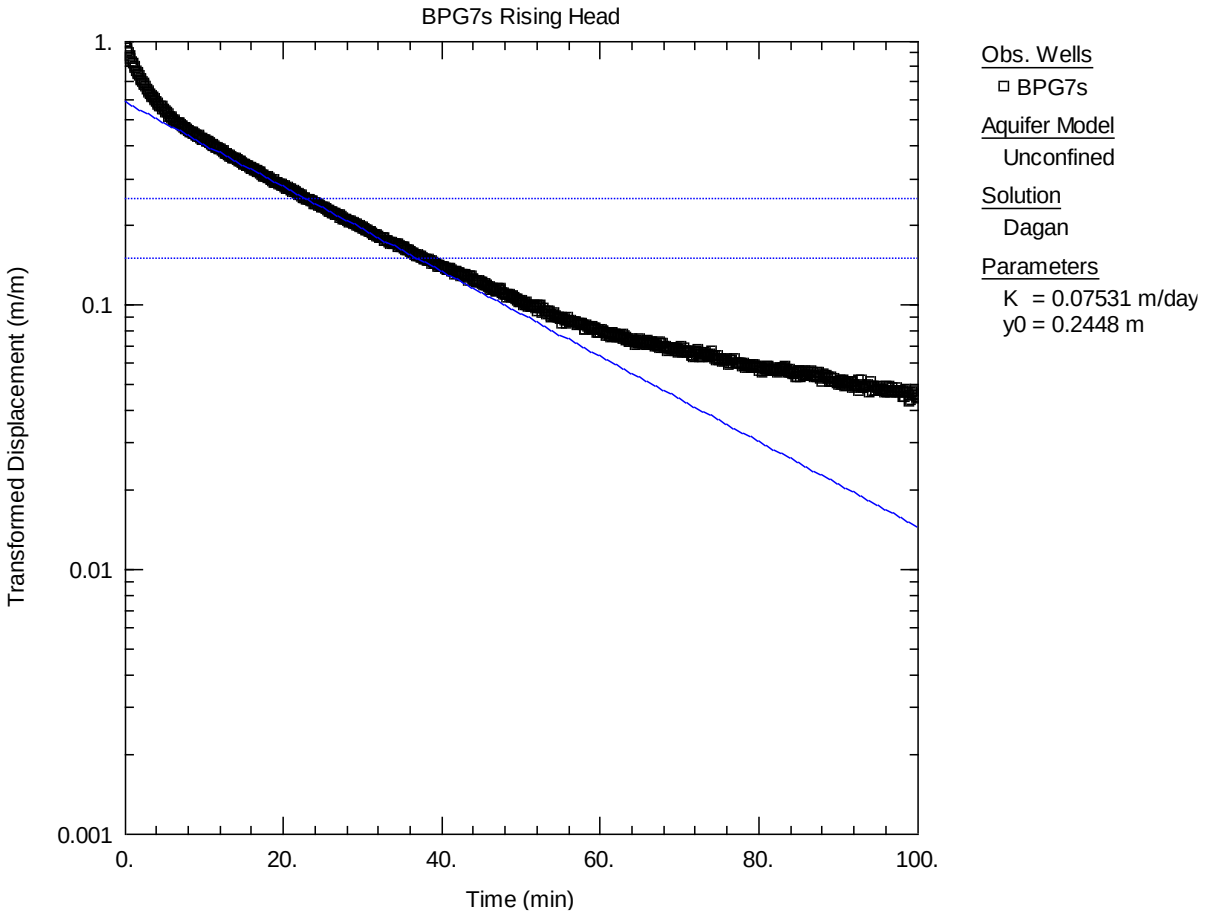

BPG7i Falling Head
Displacement (m)
1.
0.1
0.01
0.001
0.
4.
8.
12.
16.
20.
Time (min)
Obs. Wells
BPG7i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 0.2685 m/day
y0 = 0.2346 m


BPG7i Rising Head
Displacement (m)
1.
0.1
0.01
0.001
0.
2.
4.
6.
8.
10.
Time (min)
Obs. Wells
BPG7i
Aquifer Model
Confined
Solution
Bouwer-Rice
Parameters
K = 0.4341 m/day
y0 = 0.2648 m


BPG7s Falling Head
Normalized Head (m/m)
1.
0.1
0.01
0.
20.
40.
60.
80.
100.
Time (min)
Obs. Wells
BPG7s
Aquifer Model
Unconfined
Solution
Bouwer-Rice
Parameters
K = 0.07313 m/day
y0 = 0.2485 m


BPG7s Rising Head
Transformed Displacement (m)
1.
0.1
0.01
0.
20.
40.
60.
80.
100.
Time (min)
Obs. Wells
BPG7s
Aquifer Model
Unconfined
Solution
Bouwer-Rice
Parameters
K = 0.07694 m/day
y0 = 0.2641 m


BPG7s Falling Head
Transformed Displacement (m/m)
1.
0.1
0.01
0.001
0.
20.
40.
60.
80.
100.
Time (min)
Obs. Wells
BPG7s
Aquifer Model
Unconfined
Solution
Dagan
Parameters
K = 0.06849 m/day
y0 = 0.2231 m


BPG7s Rising Head
Transformed Displacement (m/m)
1.
0.1
0.01
0.001
0.
20.
40.
60.
80.
100.
Time (min)
Obs. Wells
BPG7s
Aquifer Model
Unconfined
Solution
Dagan
Parameters
K = 0.07531 m/day
y0 = 0.2448 m