



Record 1980/20

LITHOLOGICAL LOGS OF STRATIGRAPHIC HOLES  
AND WATER-BORES DRILLED TO 1976 IN THE WISO BASIN,  
NORTHERN TERRITORY

by

P.J. Kennewell

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## ABSTRACT

Lithological logs of all stratigraphic drill holes and water-bores drilled into the Wiso Basin sequence up to 1976 are listed. Units described include Lower Palaeozoic carbonates, clastics, and basalts; ?Upper Palaeozoic sandstones; and Cretaceous and Cainozoic sediments.



## INTRODUCTION

This Record presents lithological logs of all stratigraphic drillholes and water-bores which penetrated sediments of the Wiso Basin and which were drilled up to 1976. The logs, whose depths have been converted to metres, were collated from many published and unpublished sources, including Milligan & others (1966) and Randal & Brown (1967), and are reproduced here for ready access. This record supplements graphic logs presented as figures in Kennewell & Huleatt (in press). New information from BMR stratigraphic drilling in 1974 and 1975 is included.

The 1974 BMR drilling program comprised a series of stratigraphic holes, each drilled to about 100 m, along a track graded across the strike of sediments of the Lander Trough. This is the southernmost and deepest part of the Wiso Basin, and contains Ordovician and ?late Palaeozoic sediments which are not present in the northern and central parts of the basin. These sediments are poorly exposed, and the drilling program was aimed at obtaining representative sections, fresh specimens, and evidence of age from this sequence at regular intervals across the trough.

The 1975 BMR drilling program comprised one hole in the central Wiso Basin aimed at providing a complete section of the Middle Cambrian sequence and at substantiating the theory, supported by some depth to aeromagnetic basement data (Adastra Hunting Geophysics, 1967), that the Palaeozoic sequence is less than 300 metres thick in the central and northern parts of the basin. A BMR Mayhew 1000 drilling rig was used for the 1974 and 1975 drilling programs.

Lithological logs

The lithologic logs are listed by 1:250 000 Sheet areas (Fig. 1) from west to east and north to south.

During the 1974 program stratigraphic holes BMR Lander River 1 to 7 and BMR Bonney Well 1 to 3 were drilled. The rocks penetrated included the Point Wakefield beds, Hanson River beds, Lake Surprise Sandstone, and Tertiary sediments. Core and cutting descriptions are by P.J. Kennewell.

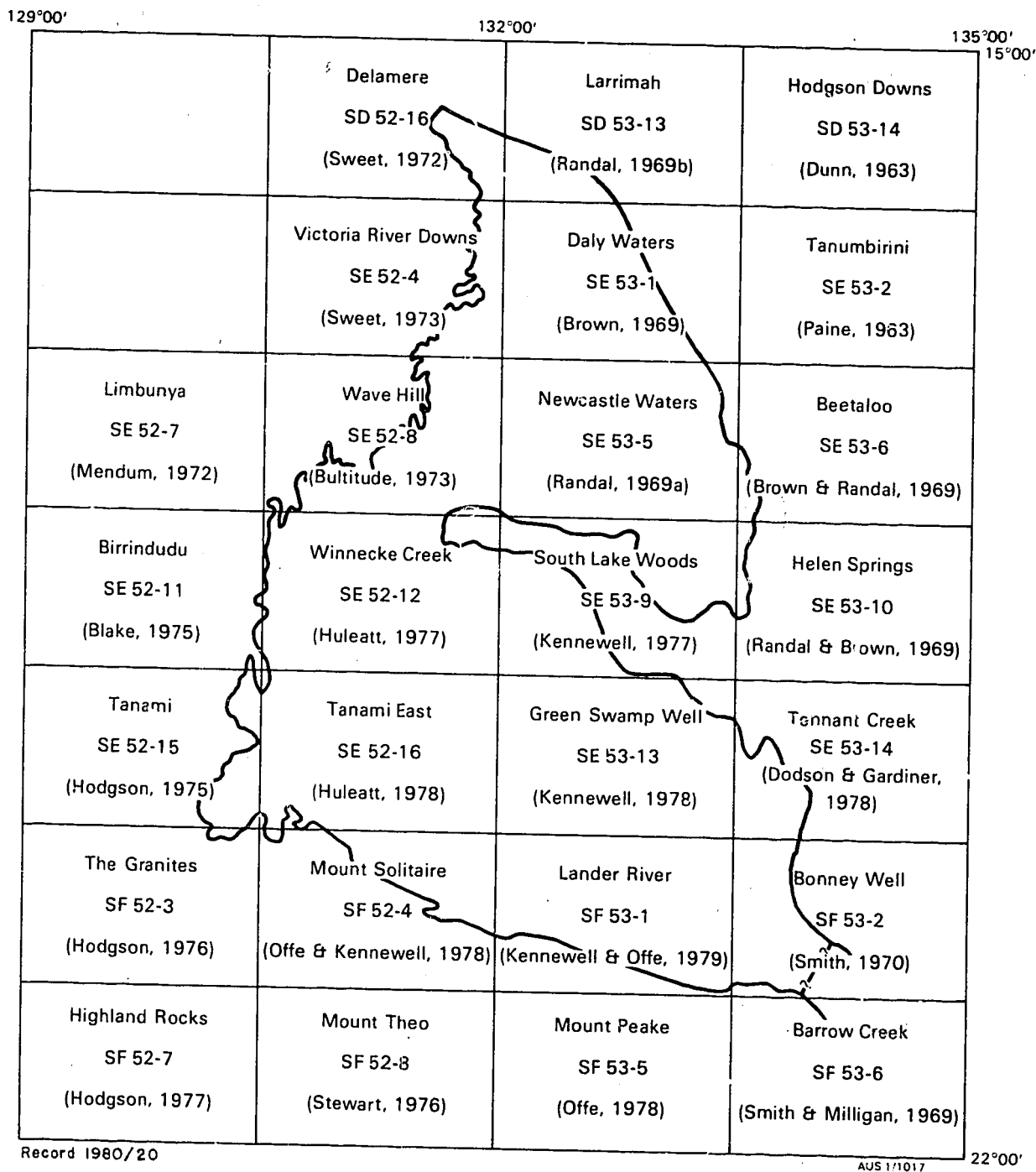
During the 1975 program, one stratigraphic hole, BMR Green Swamp Well 6, was drilled to a depth of 337 m. This penetrated Point Wakefield beds, Lothari Hill Sandstone, Hooker Creek Formation, and Montejinni Limestone. Although basement was not reached, an upper and lower dolomite unit separated by a mudstone unit was penetrated in the Montejinni Limestone. Similar units have been recognised elsewhere in the basin (Randal & Brown, 1967; Kennewell & Huleatt, in press), and if these penetrated by drilling correlate with these

units, it is likely that BMR Green Swamp Well 6 almost reached the base of the Montejinni Limestone. Core and cutting descriptions are by M.B. Huleatt.

Core and cuttings samples from both the 1974 and 1975 drilling programs are stored at the BMR Core and Cuttings Laboratory, Fyshwick, ACT. The locations of all holes included in this Record are shown in Kennewell & Huleatt (in press, plate 1).

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— Wiso Basin outline

Fig. 1 Index to 1:250 000 Sheet areas, and references to Explanatory Notes

CORE AND CUTTING DESCRIPTIONS FROM STRATIGRAPHIC HOLES AND WATER-BORES,  
WISO BASIN

Delamere 1:250 000 Sheet area

WILLEROO BEEF ROAD DWH 1 BORE

0 - 1.52 m	60%	<u>Lateritic nodules</u> , equidimensional and well-rounded; the nodules contain well-rounded quartz sand grains about 0.5 mm in diameter.
	40%	<u>Siltstone</u> , white and yellow-brown in colour, quartz sand grains about 0.5 mm in diameter, non-calcareous.
1.52 - 2.74 m		As above, <u>siltstone</u> fragments up to 20 mm in diameter with oxidized surface layer.
2.74 - 10.67 m	95%	<u>Sandy siltstone</u> , white and buff coloured, of which 20% is poorly sorted sand, quartz grains well-rounded.
	5%	<u>Chert</u> fragments, well rounded, quartz grains up to 3 mm diameter also rounded.
10.67 - 11.28 m	80%	<u>Siltstone</u> with quartz sand grains, white to yellow in colour.
	20%	Silicified <u>sandstone</u> with angular to subrounded quartz grains.
11.28 - 13.72 m	80%	<u>Siltstone</u> white and yellow with well rounded quartz sand grains.
	20%	Ferruginous material, angular fragments up to 4 mm in diameter.
13.72 - 32.00 m	80%	<u>Siltstone</u> as above with nodules of sandstone up to 8 mm in diameter.
	15-20%	<u>Quartz crystals</u> , probably from the basalt. Rare fragments of ferruginous material as nodules.

32.00 - 38.71 m	Weathered <u>basalt</u> with green cupriferous staining. Rare fragments of quartz.
38.71 - 43.89 m	Weathered <u>basalt</u> , some cupriferous stainings.
43.89 - 89.00 m	Unweathered <u>basalt</u> .
89.00 - 126.49 m	Unweathered <u>basalt</u> , with rare fragments of quartz.
126.44 - 128.02 m	Unweathered <u>basalt</u> , amygdaloidal, geodes of quartz with native copper and iron pyrites.
128.02 - 136.55 m	As above.

WILLEROO BEEF ROAD DWH 2 BORE

0 - 3.05 m		Nodules of <u>lateritic material</u> enclosing well-rounded sand grains.
3.05 - 9.75 m	70%	<u>Sandy siltstone</u> , brown in colour with white siltstone flecks.
	20%	<u>Lateritic nodules</u>
	10%	White <u>sandy siltstone</u>
9.75 - 13.72 m	100%	Purple and white micaceous <u>siltstone</u> with rare quartz sand grains.
13.72 - 27.13 m.	70%	Micaceous <u>sandy siltstone</u> , non-calcareous.
	30%	Dark red <u>siltstone</u> , no sand grains apparent, calcareous.
		Fragments of white siltstone present.
27.13 - 31.09 m	50%	Dark red <u>siltstone</u> with black or near black flecks, occasional angular quartz sand grains.
	40%	Light brown <u>limestone</u> ; crystalline in patches.
	10%	<u>Chert</u> ; pale blue, red and grey.

31.09 - 38.71 m	70%	<u>Basalt</u> ; weathered, brown to grey colour.
	25%	Calcareous <u>siltstone</u> ; red.
	5%	<u>Chert</u> .
		The rock fragments were supported in a dark red clay.
38.71 - 47.85 m	95%	<u>Basalt</u> ; weathered.
	5%	Non-calcareous red <u>siltstone</u> .
47.85 - 81.69 m		Fresh <u>basalt</u> contaminated from up-hole with chert, Cretaceous siltstone and lateritic nodules.
81.69 - 130.45 m	100%	<u>Basalt</u> ; fresh, blue-grey colour with some green fragments.
130.45 - 133.20 m	100%	<u>Basalt</u> ; fresh, red, blue-grey, green fragments.
130.20 - 158.50 m	100%	<u>Basalt</u> , as above.
158.50 - 183.49 m	100%	<u>Basalt</u> , as above.

WILLEROO BEEF ROAD DWH 3 BORE

0 - 2.44 m	60%	<u>Ironstone</u> (ferruginized fine sediment)
	20%	<u>Siltstone</u> and <u>claystone</u> ; white to buff.
	20%	<u>Quartz sand</u> ; medium to coarse.
2.44 - 15.24 m	10%	<u>Ironstone</u> (ferruginized fine sediment)
	80%	<u>Siltstone</u> and <u>claystone</u> ; white to buff.
	10%	<u>Quartz sand</u> ; medium to very coarse.
15.24 - 31.09 m	50%	<u>Claystone</u> and <u>siltstone</u> ; white to buff.
	30%	<u>Mudstone</u> ; red, calcareous, high clay content.
	20%	<u>Chert</u> ; light brown to grey, fine texture.
	trace	<u>Ironstone</u> pisolites.

31.09 - 36.58 m	95%	<u>Mudstone</u> ; red (as above) also buff to light grey silty and calcareous
	5%	<u>Chert</u>
	traces	<u>White claystone</u>
36.58 - 39.62 m	100%	<u>Basalt</u> ; partially altered; aphanitic to ophitic texture, some amygdales with chalcedonic silica filling.
39.62 - 42.67 m	100%	<u>Basalt</u> ;
	traces	<u>Chert</u> (one piece, grey-brown).
42.67 - 61.57 m	100%	<u>Basalt</u> ; grey, with few vesicles or amygdales.
61.57 - 75.29 m	100%	<u>Basalt</u> , as above.
75.29 - 76.31 m	100%	<u>Basalt</u> ; fine to aphanitic, with vesicles.
76.31 - 81.38 m	100%	<u>Basalt</u> ; mainly grey ophitic and massive.
81.38 - 112.17 m	100%	<u>Basalt</u> ; grey, ophitic, massive
	traces	<u>Quartz crystals</u> .
112.17 - 115.82 m	100%	<u>Basalt</u> ; as above
115.82 - 149.96 m	100%	<u>Basalt</u> ; as above, also some brownish, aphanitic, with amygdales.
149.96 - 154.53 m	100%	<u>Basalt</u> ; fine textured, brownish with vesicles.
154.53 - 178.31 m	100%	<u>Basalt</u> ; with some amygdales.

WILLEROO BEEF ROAD DWH 4 BORE

0 - 4.27 m	80%	<u>Ironstone</u> ; pisolites and angular fragments, ferruginized fine sediment.
	20%	<u>Claystone</u> ; white, some iron staining.

4.27 - 8.23 m	50%	<u>Claystone</u> and <u>sandy claystone</u> ; white to buff.
	30%	<u>Sandstone</u> ; white, fine-grained friable.
	20%	<u>Ironstone</u> (ferruginized fine sediment)
8.23 - 11.28 m	100%	<u>Sandy claystone</u> and <u>clayey sandstone</u> ; white fine to coarse quartz grains.
11.28-16.76 m	30%	<u>Claystone</u> and <u>sandy claystone</u> ; white
	70%	<u>Claystone</u> and <u>sandy claystone</u> ; strongly ferruginized.
16.76 - 18.29 m	100%	<u>Sandstone</u> ; medium to very fine grained, quartz grains in clayey matrix, white to buff.
18.29 - 28.76 m	30%	<u>Sandstone</u> ; fine to coarse quartz grains in clayey matrix (mainly fine grained).
	65%	<u>Basalt</u> ; buff, strongly weathered, with traces of copper staining.
	5%	<u>Ironstone</u> .
28.96 - 44.81 m	100%	<u>Basalt</u> ; weathered brown massive, and brown vesicular.
44.81 - 46.63 m	95%	<u>Sandstone</u> ; brown, medium to fine grained, quartz and basalt grains, moderately to strongly silica-cemented.
	5%	<u>Basalt</u> ; weathered
46.63 - 49.99 m	95%	<u>Basalt</u> ; weathered and copper-stained, also brown aphanitic and vesicular
	5%	<u>Sandstone</u> ; as above.
49.99 - 92.96 m	100%	<u>Basalt</u> ; dark grey, massive, with ophitic texture.
92.96 - 100.28 m	95%	<u>Basalt</u> ; dark grey and dark brown.
	5%	<u>Quartz sand</u> ; medium to fine grained.



100.28 - 113.39 m	100%	<u>Basalt</u> ; dark grey, massive, ophitic texture.
113.39 - 116.43 m	98%	<u>Basalt</u> ; grey and brown fine textured, some vesicles.
	2%	<u>Sandstone</u> ; brown, well sorted, porous.
116.43 - 125.27 m	25%	<u>Basalt</u> ; dark grey, ophitic.
	5%	<u>Sandstone</u> ; brown, medium to fine grained with quartz grains, occasional basalt grains.

WILLEROO BEEF ROAD DWH 5 BORE

0 - 3.05 m	100%	<u>Ironstone</u> and ferruginized fine sediments (ferruginized claystone and clayey fine-grained sandstone).
3.05 - 7.62 m	80%	<u>Claystone</u> ; white and buff, some silty and sandy.
	20%	<u>Ferruginized claystone</u> .
	traces	<u>Quartz sandstone</u> ; fine grained, with silica cement.
7.62 - 12.19 m	90%	<u>Sandy claystone, clayey sandstone</u> , fine grained
		<u>Sandstone</u> ; buff and white
	5%	Coarse and very coarse <u>quartz sand grains</u> ; rounded and angular.
	5%	<u>Ferruginized claystone</u> .
12.19 - 16.76 m	80%	<u>Clayey siltstone</u> ; dark brownish-red, soft.
		<u>Chert</u> ; grey to buff, fine textured.
	5%	<u>Claystone</u> and <u>sandy claystone</u> ; white and buff.
16.76 - 21.34 m	75%	<u>Clayey siltstone</u> ; dark brownish-red.
	25%	<u>Claystone, silty and sandy claystone</u> ; white and buff.

21.34 - 27.34 m	70%	<u>Clayey siltstone</u> ; dark brownish red
	20%	<u>Claystone silty and sandy claystone</u> ; white and buff
	5%	<u>Basalt</u> ; coarse textured, grey
	5%	<u>Crystalline quartz</u> aggregates (?) silicified limestone.
27.43 - 39.01 m	90%	<u>Basalt</u> ; largely altered to clay minerals and serpentine, with white vein calcite
	traces	<u>Clayey siltstone</u> ; dark brownish red (as above) <u>Chert</u> .
39.01 - 41.15 m	100%	<u>Basalt</u> ; grey and brown, coarse textured, partly altered, some copper carbonate stain.
41.15 - 52.43 m	100%	<u>Basalt</u> ; grey, well-crystallized, with some small plagioclase phenocrysts.
52.43 - 86.26 m	100%	<u>Basalt</u> ; as above.
86.26 - 99.67 m	100%	<u>Basalt</u> ; greenish-brown, well crystallized with fresh plagioclases and altered ferro-magnesian minerals (brown and greenish alteration products) a few amygdales of a white mineral with acicular habit are present.

Larrimah 1:250 000 Sheet area

BMR LARRIMAH 2

0 - 3.05 m	90%	<u>Sand</u> ; brownish red, fine grained, silty
	5%	<u>Ironstone pellets</u> , 1 mm to 4 mm diameter
	3%	<u>Sand</u> ; coarse and very coarse quartz grains
	2%	<u>Clayey siltstone</u> ; buff, partly ferruginised.
3.05 - 6.10 m	90%	<u>Sand</u> ; very coarse to very fine grained, quartzose
	6%	<u>Sandstone</u> ; with buff clay or silt binding material
	4%	<u>Ironstone pellets</u> ; as above.

6.10 - 9.14 m	50%	<u>Sand</u> ; as above
	5%	<u>Sandstone</u> ; as above
	45%	<u>Clayey siltstone</u> ; buff, some strongly cemented by limonite.
9.14 - 10.97 m	80%	<u>Clayey siltstone</u> ; buff
	10%	<u>Chert</u> ; buff to dark brown
	10%	<u>Limestone</u> ; orange-yellow to dark grey-brown calcilutite and fine crystalline limestone, with a few very small vugs.
	traces	<u>coarse sand</u> .

CORE 1                      Interval: 10.97-12.34 m Cut: 1.37 m Recovered: 0.99 m

The core consists of limestone, with large irregular patches of clayey sand apparently occurring as a cavity filling in the limestone. The limestone is a yellow-brown to dark grey-brown calcilutite with some wavy bands of silty limestone. Shell fragments, including Biconulites sp. are common between 45 cm and 30 cm from the bottom of the core. The limestone contains some calcite veins and vugs lined by calcite crystals.

12.34 - 15.24 m	80%	<u>Limestone</u> ; pale yellow-orange to dark grey-brown, microcrystalline to fine crystalline
	10%	<u>Sandy mudstone</u> ; buff
	10%	<u>Sand</u> ; quartzose; some very coarse grains
	traces	<u>Limonite pellets</u> .
15.24 - 18.29 m	80%	<u>Limestone</u> ; as above
	10%	<u>Mudstone</u> and <u>sandy mudstone</u> ; buff to reddish
	8%	<u>Sand</u> ; as above
	2%	<u>Limonite pellets</u> .

HOLE 2A

18.29 - 21.64 m	50%	<u>Mudstone</u> ; buff, some brown and white, calcareous
	50%	<u>Limestone</u> ; light brown to yellow calcilutite.

CORE 2

Interval: 21.64-23.16 m Cut: 1.52 m Recovered: 1.52 m

The core consists of calcilutite and calcareous mudstone. The top 4 cm of the core is a grey-brown calcilutite. Below this down to 55 cm from the top, it consists of buff, white, and limonitic mudstone, calcareous in parts. Below, this, down to the bottom of the core, it consists of white to yellow clayey calcilutite with bands and irregular patches of white to buff mudstone.

23.16 - 24.38 m		As above, with traces of calcite crystals
24.38 - 27.43 m	97%	<u>Mudstone</u> ; buff and chocolate-brown calcareous
	3%	<u>Chert</u> ; light grey, uniform fine texture
	traces	<u>Quartz sand</u> grains, <u>limestone</u> , <u>ferruginised</u> <u>mudstone</u> .
30.48 - 33.53 m	40%	<u>Mudstone</u> ; as above
	30%	<u>Quartz grains</u> ; rounded, medium grain size
	20%	<u>Limestone</u> ; pale calcilutite and very fine crystalline limestone
	10%	<u>Chert</u> ; pale, grey, uniform fine texture.
33.53 - 36.58 m	50%	<u>Mudstone</u> ; buff, and dark brownish grey\$ calcareous
	40%	<u>Limestone</u> ; pale, fine crystalline
	10%	<u>Quartz grains</u> ; as above.
36.58 - 39.92 m	45%	<u>Mudstone</u> ; as above
	45%	<u>Limestone</u> ; brown to light yellow-brown, possibly in part dolomitic
	10%	<u>Quartz grains</u> ; as above

CORE 3

Interval: 39.92-42.69 m Cut: 2.77 m Recovered: 2.69 m

The core consists of limestone and dolomitic limestone, with large patches of a massive grey calcareous mudstone. The latter has irregular, sometimes near-vertical, boundaries with the limestone and dolomitic limestone and appears to be a cavity filling. Down to about 76 cm from the top of the core the limestone is a bedded yellow to grey-brown calcilutite with some vugs and

patches of calcite spar. Below this it is a laminated yellow to buff dolomitic limestone, in places partially leached and porous. The limestone in the top 76 cm of the core has a dip of about 40°, presumably due to collapse. Below that, laminations are near-horizontal.

42.69 - 45.72 m	70%	<u>Limestone</u> ; white, pale yellow and brown, fine crystalline, dolomitic
	20%	<u>Mudstone</u> ; tuff calcareous
	10%	<u>Quartz grains</u> ; as above
45.72 - 48.77 m	70%	<u>Limestone</u> ; white to yellow fine crystalline dolomitic
	20%	<u>Mudstone</u> ; buff to reddish
	10%	<u>Quartz grains</u> ; as above
48.77 - 52.12 m	65%	<u>Limestone</u> ; as above
	10%	<u>Mudstone</u> ; as above
	10%	<u>Basalt</u> ; silicified and in part ferruginized
	5%	<u>Chert</u> ; grey to yellow, fine textured
	10%	<u>Quartz grains</u> ; as above

CORE 4

Interval: 53.34-53.72 m Cut: 0.38 m Recovered: 0.38 m

The core consists of brownish partly-weathered basalt with calcite veins. Some small patches of greenish copper carbonate stain are present.

DRY RIVER STOCK ROUTE 6

0 - 18.59 m	<u>Clay, ironstone, shale</u>
18.59 - 31.70 m	<u>Ironstone and basalt</u>
31.70 - 158.80 m	<u>Basalt</u>

Victoria River Downs 1:250 000 Sheet area

MCCRAES BORE

0 - 3.05 m	Red <u>soil</u>
3.05 - 12.19 m	<u>Limestone</u> in <u>clay</u>
12.19 - 28.96 m	<u>Limestone</u>
28.96 - 42.68	<u>Basalt</u>

PIKERS RETREAT BORE

0 - 1.22 m	Black <u>soil</u>
1.22 - 21.64 m	<u>Limestone</u> and layers of <u>clay</u>
21.64 - 25.60 m	Puggy <u>clay</u>
25.60 - 37.80 m	Fine-grained <u>basalt</u>

Daly Waters 1:250 000 Sheet Area

HIDDEN VALLEY BORE

0 - 3.04 m	Brown <u>clay</u>
3.04 - 12.19 m	Red <u>laterite material</u> , slightly calcareous
12.19 - 18.29 m	Yellow brown clay rich <u>shale</u>
18.29 - 42.67 m	Yellow brown ferruginized <u>sandstone</u>
46.67 - 47.24 m	Light red, slightly calcareous <u>sandstone</u>
47.24 - 71.02 m	Yellow slightly impure <u>limestone</u>
71.02 - 86.87 m	Light-brown <u>limestone</u>

86.87 - 90.83 m	Pale grey <u>limestone</u>
90.83 - 96.01 m	Light brown silty <u>limestone</u>
96.01 - 105.16 m	Dark, reddish brown leached <u>limestone</u>
105.16 - 112.78 m	Dark grey <u>basalt</u>

MURRANJI STOCK ROUTE 11 BORE

0 - 6.10 m	<u>Soil</u>
6.10 - 25.19 m	<u>Clay</u> and <u>sandstone</u>
25.91 - 39.62 m	Yellow <u>sandstone</u>
39.62 - 92.66 m	Red <u>clay</u> , yellow sandy <u>clay</u>
92.66 - 104.24 m	Yellow <u>limestone</u>
104.24 - 106.68 m	Red <u>clay</u>
106.68 - 164.59 m	Yellow <u>limestone</u>
164.59 - 176.78 m	<u>Volcanic rock</u>
176.78 - 185.32 m	Hard <u>limestone</u> ; caves, honeycomb and hard <u>limestone</u>

MURRANJI STOCK ROUTE 12 BORE

0 - 0.61 m	Sandy <u>soil</u>
0.61 - 7.62 m	Sandy <u>clay</u>
7.62 - 18.29 m	Red <u>sandstone</u>
18.29 - 114.30 m	Red and yellow clay <u>siltstone</u> and sandy <u>clay</u>

114.30 - 164.59 m	Yellow <u>limestone</u>
164.59 - 178.31 m	Red <u>clay</u>
178.31 - 188.98 m	<u>Limestone</u> , <u>gravel</u> and water country

DRY RIVER STOCK ROUTE 8 BORE

0 - 0.91 m	90%	<u>Limonitic ironstone</u> ; mostly as rounded pisolites about 5 mm diameter
	10%	<u>Silty claystone</u> ; white and buff
0.91 - 5.49 m	100%	<u>Clayey siltstone</u> , <u>silty claystone</u> ; white and buff, some pinkish
5.49 - 15.24 m	90%	<u>Clayey siltstone</u> , <u>silty claystone</u> ; as above
	10%	<u>Basalt</u> ; grey, well crystallized
	traces	Large calcite crystal
15.24 - 70.10 m		No cuttings, lost circulation
70.10 - 85.34 m	100%	<u>Basalt</u> ; grey and brown well-crystallized, occasional small feldspar phenocrysts
85.34 - 94.49 m	60%	<u>Basalt</u> ; brownish, coarse textured with fairly abundant small feldspar phenocrysts, and altered ferromagnesian minerals
	40%	<u>Sandstone</u> ; brown, well sorted medium to fine grained with abundant quartz; some probable basalt fragments
94.49 - 109.72 m	100%	<u>Basalt</u> ; grey and brown, well crystallized, some feldspar phenocrysts, brown and greenish alteration of ferromagnesian common
109.72 - 143.87 m	100%	<u>Basalt</u> ; grey and brown, well crystallized
143.87 - 145.09 m	100%	<u>Basalt</u> ; brown, greenish, and grey; mostly altered



145.09 - 147.52 m	100%	<u>Basalt</u> ; fine textured with some feldspar phenocrysts and amygdales; extensively altered, with abundant chlorite aggregates; some clear quartz amygdales.
147.52 - 153.01 m	75%	<u>Chert</u> ; white, orange, pink, buff, clear, sometimes with uniform fine texture, sometimes with irregular laminations and bands
	10%	<u>Limestone</u> ; white, grey, brown, crystalline; sometimes contains quartz sand grains, and grades into calcareous sandstone; contains abundant cryptocrystalline silica
	15%	<u>Basalt</u> ; grey, aphanitic texture, some small feldspar laths, some quartz amygdales.
153.01 - 221.89 m	100%	<u>Basalt</u> ; brown, well-crystallized with altered ferromagnesian minerals
221.89 - 229.21 m	100%	<u>Basalt</u> ; grey-brown, well-crystallized, with chlorite films along joint surfaces
229.21 - 262.13 m	100%	<u>Basalt</u> ; greenish-brown, well-crystallized; ferromagnesian minerals altered to greenish (?) chlorite
	traces	<u>Ironstone</u> pisolites, buff silty <u>claystone</u> (?contamination)
262.13 - 276.76 m	100%	<u>Basalt</u> ; grey-brown, well-crystallized
<u>WIDGEE BORE</u>		
0 - 3.05 m	50%	Red clayey <u>soil</u>
	25%	<u>Ironstone</u> (ferruginized fine sediments), angular and rounded pieces.
	20%	<u>Claystone</u> ; white to buff
	5%	<u>Quartz sand</u> grains; medium grain size, rounded.

3.05 - 9.14 m	50%	Red clayey <u>soil</u>
	25%	<u>Ironstone</u>
	15%	<u>Quartz sand</u> grains; medium to very fine grain size.
	traces	White <u>limestone</u>
9.14 - 18.90 m	85%	<u>Limestone</u> ; white to light brown dolomitic (Cuttings mainly limestone, fine powder mainly dolomite)
	5%	<u>Clay or silt</u> ; white to buff
	10%	<u>Quartz sand grains</u> ; medium to very fine grain size.
18.90 - 39.32 m	100%	<u>Limestone</u> ; white to light brown calcilutite, contains some dolomite, and buff clay impurity.
39.32 - 40.84 m	100%	<u>Limestone</u> and <u>dolomite</u> ; cuttings brown micro-crystalline (?partly dolomitic) limestone, fine powder mainly dolomite.
40.84 - 47.34 m	25%	<u>Limestone</u> ; grey to brown calcilutite
	75%	<u>Clay</u> (and/or fine silt); buff, calcareous.
47.34 - 50.44 m	100%	<u>Limestone</u> ; grey to brown calcilutite, with some clear crystalline patches, sometimes well-laminated.

BMR DALY WATERS1, 1B

HOLE 1

0 - 3.05 m	70%	<u>Soil</u> , yellow-brown
	20%	<u>Ironstone pisolites</u>
	10%	<u>Claystone</u> ; very pale grey, pale purplish, or pinkish with thin hematite veins; some mica flakes.
3.05 - 4.59 m	10%	<u>Soil</u> , yellow brown and <u>ironstone pisolites</u>
	90%	<u>Claystone</u> ; as above

CORE 1 Interval: 4.57-7.47 m Cut: 2.90 m Recovered: 1.83 m

The core consists mainly of white to pale grey claystone with thin hematite staining along joints. A steep-dipping vein about 1½" thick of limonite and limonite-stained clay was intersected between about 5.33 m and 5.79 m.

7.49 - 9.14 m	100%	<u>Claystone</u> ; as above
	traces	<u>Limonitic ironstone</u>
9.14 - 12.19 m	100%	<u>Claystone</u> and <u>Clay</u> ; white, pale grey, some fragments contain ½ mm white pellets.
15.24 - 18.29 m	100%	<u>Clay</u> and <u>Claystone</u> ; light grey, purplish and buff; generally soft; some limonite veining.
18.29 - 21.39 m	100%	<u>Clay</u> and <u>Claystone</u> ; as above
21.34 - 24.38 m	100%	<u>Clay</u> and <u>Claystone</u> ; as above
24.38 - 27.43 m	100%	<u>Clay</u> and <u>Claystone</u> ; as above

CORE 2 Interval: 27.43-28.96 m Cut: 1.53 m Recovered: 1.25 m

Down to 0.68 m from the top of the core, it consists of soft light grey claystone with thin hematite veins. At 0.68 m from top the claystone passes gradationally into a silty and sandy clay with green (probably glauconite) pellets. The colour changes to pinkish and buff at 0.91 m below the top of the core. Between 1.19 m and 1.25 m from the top of the core it consists of buff glauconitic very fine grained sandstone.

28.96 - 30.48 m	90%	<u>Sand</u> and <u>Friable sandstone</u> ; buff fine to very fine, well sorted, quartzose, with glauconite
	10%	<u>Clay</u> and <u>Claystone</u> ; white to light grey.
30.48 - 33.53 m	80%	<u>Sand</u> and <u>Friable sandstone</u> ; buff, white, purple, very fine to fine, well sorted, quartzose with glauconite pellets.
	20%	<u>Claystone</u> ; white to light grey.

33.53 - 36.58 m	90%	<u>Sand and Friable sandstone</u> ; buff to white, very fine to fine, well sorted, quartzose and micaceous, with glauconite.
	7%	<u>Claystone</u> ; white to grey
	3%	<u>Claystone</u> ; silty and sandy
36.58 - 39.62 m	95%	<u>Sand</u> (minor friable <u>Sandstone</u> ); white, very fine grained, quartzose and micaceous with a few glauconite pellets.
	5%	<u>Claystone</u> ; white to grey
39.62 - 42.67 m	100%	<u>Sand and Friable sandstone</u> ; white and buff, very fine to fine, quartzose and micaceous, with glauconite.

HOLE 1B

42.67 - 45.72 m	80%	<u>Clay</u> ; white and buff, silty
	20%	<u>Sandstone</u> and <u>Sand</u> ; greenish and buff medium grained, with glauconite pellets and quartz grains in a clay matrix; glauconite pellets have rounded and septate shapes.
45.72 - 48.77 m	40%	<u>Clay</u> ; as above
	20%	<u>Siltstone</u> ; light grey to buff, clayey, and micaceous
	40%	<u>Sandstone</u> ; as above
48.77 - 51.82 m	90%	<u>Sandstone</u> : buff to greenish grey, medium to very coarse grained, with glauconite pellets and quartz in a clayey matrix; glauconites are rounded, septate or mammilated; quartz grains subangular to rounded; some sandstone strongly silicified.
	10%	<u>Clay</u> ; silty, grey to buff
	traces	<u>Claystone</u> ; white to pink

51.82 - 54.86 m	90%	<u>Sand</u> ; medium to fine grained, with quartz glauconite pellets, muscovite, biotite; some clay matrix.
	10%	<u>Clay</u> ; white and buff silty
54.86 - 57.91 m	60%	<u>Sand</u> and <u>Sandstone</u> ; medium to fine grained, with quartz, glauconite, and micas; some buff clay matrix.
	40%	<u>Clay</u> ; white to grey and buff, silty
57.91 - 60.96 m	90%	<u>Sandstone</u> and <u>Sand</u> ; as above
	10%	<u>Clay</u> ; as above
60.96 - 64.01 m	60%	<u>Clay</u> ; light grey to buff silty.
	40%	<u>Sand</u> and <u>Sandstone</u> ; as above; some occurs as thin laminae in clay.
64.01 - 66.91 m	60%	<u>Sand</u> and <u>Sandstone</u> ; as above.
	40%	<u>Clay</u> ; as above

CORE 3 Interval: 64.01-66.91 m Cut: 2.90 m Recovered: 2.28 m

The core consists of greenish-buff fine and very fine grained friable glauconitic and micaceous quartz sandstone containing thin layers and irregular patches of sticky grey clay. Some burrows are present.

67.06 - 70.10 m	70%	<u>Sand</u> and <u>Sandstone</u> ; as above; also some coarse and very coarse quartz grains, and glauconite pellets up to $\frac{1}{2}$ mm.
	30%	<u>Clay</u> ; as above
70.10 - 73.15 m	50%	<u>Sand</u> and <u>Sandstone</u> ; very fine and fine-grained with quartz, glauconite, and micas; some clay matrix; some very coarse quartz and chert sand grains.
	50%	<u>Clay</u> ; light grey to buff, some red, silty, with some fine sand grains.

73.15 - 76.20 m	90%	<u>Clay</u> ; buff, light grey, pinkish, with some mica silt and fine quartz sand grains.
	10%	<u>Sandstone</u> and <u>Sand</u> ; white, fine grained, and friable; also fine and very fine-grained with clay matrix; some very coarse quartz grains; glauconite not abundant.

76.20 - 78.64 m	90%	<u>Clay</u> , as above
		<u>sand</u> and <u>sandstone</u> ; medium to very fine, glauconitic, with clayey matrix.

CORE 4 Interval: 78.64-81.08 m Cut: 2.44 m Recovered: 1.52 m

The top 0.91 m of the core consists of yellowish-buff very fine-grained micaceous sandstone, with interbeds of greyish to buff laminated claystone. Below this it consists of pink to purplish, medium to very fine-grained sandstone with thin laminae and irregular patches of pink clay. Glauconite occurs in both the buff and purplish sandstone. Burrows are common in the sediments and have caused some mixing of clay and sand.

81.08 - 82.30 m	90%	<u>Clay</u> ; pink, brown, pale pink, purplish
	10%	<u>Sandstone</u> ; as above
82.30 - 85.34 m	80%	<u>Clay</u> and <u>Claystone</u> ; pink, purplish and yellow-buff, silty; also some <u>clayey siltstone</u>
	20%	<u>Sand</u> and <u>Sandstone</u> ; pink and greenish-buff, fine to medium grained, with quartz, glauconite, muscovite, and some clay matrix; pink sandstone contains red (clay?) pellets; buff sandstone contains some coarse grained quartz and glauconite.
85.34 - 85.65 m	90%	<u>Sand</u> ; fine to very coarse; with quartz, glauconite, ferruginous pellets, muscovite, tourmaline, chert grains; quartz grains have a discontinuous coating of hematite and are occasionally cemented together with iron oxide; glauconites are mainly rounded and septate, but include some replacements of mica.
	10%	<u>Clay</u> ; buff and pinkish; also <u>Clayey sandstone</u> .

Wave Hill 1:250 000 Sheet area

WAVE HILL 37 (WE) BORE

0 - 0.61 m	Surface <u>soil</u>
0.61 - 14.63 m	<u>Limestone</u>
14.63 - 15.54 m	<u>Quartzite</u>
15.54 - 33.83 m	Hard <u>limestone</u>
33.83 - 36.27 m	Sandy <u>clay</u>
36.27 - 37.49 m	Puggy <u>clay</u>
37.49 - 39.93 m	Hard <u>shale</u>
39.93 - 60.66 m	Hard <u>limestone</u>
60.66 - 62.18 m	Puggy <u>clay</u>
62.18 - 66.14 m	<u>Quartzite</u> and washed <u>sand</u>

Newcastle Waters 1:250 000 Sheet area

BRADMAN BORE

0 - 3.05 m	Black <u>Soil</u>
3.05 - 21.95 m	<u>Limestone clay</u>
21.95 - 35.05 m	<u>Limestone</u> boulders
35.05 - 41.76 m	Yellow <u>limestone</u> , clay and boulders
41.76 - 44.50 m	<u>Limestone</u>
44.50 - 52.43 m	Water bearing country with very hard bars

Note: Compact mudstone frequently termed limestone by drillers

BENAUD BORE

0 - 0.61 m	Black <u>soil</u>
0.61 - 3.66 m	Red sandy <u>clay</u>
3.66 - 11.58 m	Yellow <u>clay</u>
11.58 - 21.64 m	Red <u>clay</u>
21.64 - 23.16 m	White sand <u>clay</u>
23.16 - 26.52 m	Yellow <u>clay</u>
26.52 - 32.31 m	Yellow <u>clay</u> and <u>boulders</u>
32.31 - 41.76 m	Very hard <u>limestone</u> , <u>quartz</u> and <u>ribbon stone</u>
41.76 - 42.37 m	<u>Water</u> , small supply
42.37 - 47.55 m	Very hard <u>quartz</u> and <u>ribbenstone</u>
47.55 - 49.68 m	Water bearing country
49.68 - 50.29 m	<u>Limestone</u>
50.29 - 51.21 m	Water bearing
51.21 - 53.34 m	<u>Limestone</u>

BURGE BORE

0 - 1.83 m	Black <u>soil</u>
1.83 - 2.74 m	Red <u>clay</u> and <u>sand</u>
2.74 - 11.28 m	Yellow <u>clay</u> and <u>sand</u>



11.28 - 18.29 m	Red <u>clay</u> and <u>sand</u> (small supply of water)
18.29 - 31.70 m	Yellow <u>clay</u> and <u>sand</u>
31.70 - 36.88 m	Red <u>clay</u> and <u>gravel</u> water-bearing country
36.88 - 40.23 m	Red <u>clay</u>
40.23 - 47.55 m	Yellow <u>clay</u>
47.55 - 71.32 m	Blue <u>Limestone</u> or <u>basalt</u>

Winnecke Creek 1:250 000 Sheet area

BMR WINNECKE CREEK 1.

0 - 3.05 m	<u>Sand</u> ; reddish, some more or less compacted.
3.05 - 6.10 m	<u>Claystone</u> ; 50%, shaly, micaceous; 80%, brown, moderately micaceous; 20%, buff, with red brown mottling, unctuous, rare mica. Silt particles rare to common; grading to and interlaminated with <u>silty claystone</u> and <u>siltstone</u> . <u>Siltstone</u> ; 40%, dark red brown, strongly ferruginised, micaceous, shaly. <u>Quartz sandstone</u> ; 10%; fine grained, argillaceous, silicified, lithic fragments and mica common.
6.10 - 9.14 m	<u>Siltstone</u> ; 70%, dark red brown, strongly ferruginised, micaceous, shaley, as above. <u>Claystone</u> ; 29%, shaly, micaceous, brown. <u>Quartz sandstone</u> ; 1%, as above, with haematite or manganese staining.
9.14 - 12.19 m	<u>Siltstone</u> ; 50%; 99% dark red brown; 1%, grey, highly ferruginised, as above. <u>Claystone</u> ; 50%; 99%, purple, shaly, micaceous; 1%, buff, slightly micaceous.

- 12.19 - 15.24 m      Claystone; 80%, red, shaly, micaceous.  
                         Siltstone; 20%, very argillaceous, some silicified, hard, micaceous, 80%, red brown; 20%, pink and white; 1%, dolomitic.  
                         Dolomite; 1%, silty, argillaceous, pink.
- 15.24 - 18.29 m      Silt and clay; 40%, red.  
                         Siltstone; 50%, argillaceous, ferruginised, micaceous; 80%, red brown; 20%, purple and white mottled.  
                         Sandstone; 1%, fine grained, argillaceous. lithic, micaceous, buff.
- 18.29 - 21.34 m      Siltstone; 100%; argillaceous; 45%, red brown, ferruginised; 45%, dolomitic, purple, hard; 10% argillaceous, lithic, soft, mottled, purple and white.
- 21.34 - 24.38 m      Siltstone; 50%; 80%, red brown, ferruginised, as above; 20%, dolomitic, light grey to green grey, hard, chloritic.  
                         Sandstone; 30%; 100%, fine grained, grey, lithic, argillaceous.  
                         Dolomite; 10%, aphanitic, calcareous, grading to dolomitic limestone, light grey, micaceous, partly silicified.  
                         Chert; 1%, cryptocrystalline, light grey.
- 24.38 - 27.43 m      Siltstone; 100%; 60%, red brown, hard, ferruginous; 38%, brown, soft, slightly ferruginised; 1%, argillaceous, lithic, micaceous, green to green grey; 1%, argillaceous, lithic, grey, dolomitic.
- 27.43 - 30.48 m      Siltstone; 100%, strongly ferruginised.
- 30.48 - 33.53 m      Siltstone; 99%; 80%, as above; 20%, purple, argillaceous, shaly, micaceous.  
                         Dolomitic siltstone-silty dolomite; 1%, microcrystalline matrix hard, pink, purple, grey.

- 33.53 - 36.58 m      Siltstone; 100%, red brown, strongly ferruginised.
- 36.58 - 39.62 m      Siltstone; 100%, red brown, strongly ferruginised, as above.
- 39.62 - 42.67 m      Siltstone; 50%, dolomitic, argillaceous, red brown, micaceous.  
                         Dolomite; 50%, sparry? recrystallised, light grey, micaceous, vughy, many solution pits.
- 42.67 - 45.72 m      Siltstone; 100%, dolomitic, argillaceous, red brown, micaceous.
- 45.72 - 48.77 m      Dolomite; 60%, aphanitic, mottled pink and light grey, hard, slightly micaceous, solution pits, manganese staining and dendrites.  
                         Siltstone; 40% dolomitic, argillaceous, hard, red brown and purple, micaceous.
- 48.77 - 49.68 m      Dolomite; 100%, aphanitic, light grey to grey, some muscovite flakes, manganese dendrites.
- 49.68 - 57.82 m      No returns, lost circulation.
- CORE 1 Interval: 51.28-52.88 m    Cut: 1.06 m    Recovered: 1.06 m
- 51.82 - 52.88 m      Dolomite; 100%, aphanitic, calcareous, grey, dense, hard, micaceous (muscovite). Discrete quartz grains of silt size, in patches, quartz silt lenses (vughs concentrated on lenses), soft, green grey, argillaceous, quartz-siltstone coating on bedding faces. Evidence of strong solution at bedding faces. Regular and irregular shapes of brown, finely crystalline, dolomite rimming milky coarsely crystalline dolomite (fossils?).

BMR WINNECKE CREEK 2

- 0 - 3.05 m      Sand 90% and gravel alluvium; Gravel composed of silty dolomite, dolomitic siltstone, chert, hard claystone, pisolitic, ironstone pebbles.
- 3.05 - 6.10 m      Gravel; 90%, as above.  
                    Sand; 10%
- 6.10 - 9.14 m      Silt, sand and gravel; as above.
- 9.14 - 12.19 m      Silt, sand and gravel; as above.
- 12.19 - 15.24 m      Claystone; 89%, slightly dolomitic, shaly, micaceous, brown.  
                    Quartz sandstone-siltstone; 1%, very fine grained sandstone grading to siltstone, dolomitic, lithic, light green clay pellets, weathered ?glauconite, mafics (incl. haematite) and garnet?  
                    Silt, sand and gravel; 10%, as above.
- 15.24 - 18.29 m      Siltstone; 70%, dolomitic, argillaceous, pink purple, red brown, buff, green, green-grey, soft, micaceous (muscovite biotite, chlorite); 5%, shaly (very micaceous).  
                    Claystone; 30%, silty, shaly, chocolate brown, micaceous.
- 18.29 - 21.34 m      Claystone; 70%, dolomitic, shaly, brown, pink, purple, rarely green-grey, micaceous (biotite).  
                    Quartz siltstone; 30%, dolomitic, garnet, micaceous haematite, chlorite?, biotite, muscovite.
- 21.34 - 24.38 m      Claystone; 99%, shaly, micaceous; 80% pink to green-grey, fossiliferous, (lingulid brachiopods, trilobite? fragments); 20%, dark purple.  
                    Dolomite; 1%, aphanitic, argillaceous, hard, purple, slightly micaceous.

- 24.38 - 27.43 m     Claystone; 95%, dolomitic, shaly, green-grey, micaceous (muscovite and biotite), fossiliferous?  
Quartz siltstone; 5%, dolomitic, hard, green-grey to red.
- 27.43 - 30.48 m     Quartz siltstone; 95%, dolomitic, argillaceous, as above, green grey.  
Claystone; 5%, dolomitic, olive green, grey and pink.
- 30.48 - 33.53 m     Siltstone; 50%, dolomitic, quartzose, micaceous, (muscovite, biotite), chloritic, green-grey.  
Claystone; 50%, dolomitic, shaly, muscovite, biotite, green-grey.
- 33.53 - 36.58 m     Claystone; 80%, dolomitic, shaly, muscovite, biotite, 19%, red brown; 1%, purple.  
Siltstone; 20%, dolomitic, micaceous, soft, brown and grey.
- 36.58 - 39.62 m     Siltstone; 100%, very fine grained, grading to silty claystone, argillaceous, ferruginised, micaceous, mafics, ironstained quartz.
- 39.62 - 42.67 m     Claystone; 80%, dolomitic, shaly, micaceous, slightly ferruginised; 80%, brown; 20%, pink.  
Siltstone; 20%, very fine grained, as above, brown, slightly ferruginised.
- 42.67 - 45.72 m     Siltstone; 100%, very fine grained, quartzose, argillaceous, ferruginised, brown.
- 45.72 - 48.77 m     Siltstone; 100%, as above.
- 48.77 - 51.82 m     Siltstone; 100%, as above.
- 51.82 - 54.86 m     Siltstone; 100%, as above.
- 54.86 - 57.91 m     Siltstone; 70%, as above, some grey, mottled.  
Claystone; 30%, shaly, micaceous, brown, silt particles.

- 57.91 - 60.96 m     Claystone-siltstone; 80%, dolomitic, micaceous (muscovite and biotite), black heavy minerals, haematite; 60%, red brown; 20%, pink; 20%, light grey.  
Dolomite; 15%; 80%, aphanitic, white; 20%, saccharoidal.  
Sandstone; 4%, fine grained, pink, with pale green clay pellets, glauconite?  
Chert; 1%, cryptocrystalline, light grey. (Water seepage).
- 60.96 - 64.01 m     Claystone; 70%, dolomitic, shaly, soft to hard, micaceous, buff to pink.  
Siltstone; 30%, dolomitic, micaceous, pink and buff.  
Dolomite; 1% aphanitic, red brown. (Water seepage).
- 64.01 - 69.19 m     (No returns but chips were obtained from air hammer).  
Dolomite; buff, saccharoidal.  
Chert; buff to grey.  
Dolomite; buff, coarsely crystalline.
- CORE 1 Interval: 69.19-72.39 m     Cut: 3.20 m     Recovered: 3.20 m
- 69.19 - 72.39 m     Dolomite; 100%, medium crystalline to saccharoidal, grey to buff, very vughy, algal? structures.

BMR WINNECKE CREEK 3

- 0 - 3.05 m     Sand, soil, ironstone; red, pisolitic, some chips yellow, sandy clay.
- 3.05 - 6.10 m     Clay; 95%, pink, sandy, some yellow, sandy, 5%, pisolitic ironstone.
- 6.10 - 9.14 m     Sandstone; 100%, 50%, buff and white; underlain by red (50%), soft.
- 9.14 - 12.19 m     Sandstone; 100%, red, fine grained, some shale layers; few chips of white and yellow siltstone, soft.
- 12.19 - 15.24 m     Sandstone; 100%, as above, some micaceous.

- 15.24 - 18.29 m      Sandstone; 100%, as above, harder.
- 18.29 - 21.34 m      Siltstone; 65%, red, sandy, micaceous, soft.  
                         Sandstone; 35%, grey, white, fine grained, silty, some chert chips.
- 21.34 - 24.38 m      Claystone; 70%, pink.  
                         Sandstone; 30%, 50%, hard, grey, silty; 50%, red brown, soft. Some grey, green chert chips.
- 24.38 - 27.43 m      Sandstone; 85%, red, silty, fine grained; cream and white, fine grained, silty, hard.  
                         Siltstone; 15%, red, hard.
- 27.43 - 30.48 m      Sandstone; 70%, red, white, as above.  
                         Siltstone; 30%, red, white, soft.
- 30.48 - 33.53 m      Sandstone; 90%, white, buff, fine grained, silty.  
                         Siltstone; 10%, soft.
- 33.53 - 36.58 m      Sandstone; 90%, 80%, khaki, fine-grained, clayey; 20%, red, fine-grained.  
                         Clay; 10%, khaki.
- 36.58 - 39.62 m      Claystone; 100%, yellow, soft, sandy.
- 39.62 - 42.67 m      Claystone; 100%, as above, but not sandy.
- 42.67 - 45.72 m      Claystone; 100%, as above.
- 45.72 - 49.38 m      Claystone; 100%, as above.

BMR WINNECKE CREEK 4

- 0 - 3.05 m            Gravel; red pisolites, 10%, quartz pebbles.
- 3.05 - 6.10 m        Clay; yellow, sandy (poorly sorted and grains, from fine grained, to fine conglomerate size). Some chert chips.

6.10 - 9.14 m	<u>Clay</u> ; 100%; 50%, yellow, as above; 50%; red, sandy.
9.14 - 12.19 m	<u>Clay</u> ; 100%, as above.
12.19 - 15.24 m	<u>Sand</u> ; 100%, red, poorly sorted, fine coarse grained, argillaceous, partly compacted.
15.24 - 18.29 m	<u>Sand</u> ; 100%, yellow, buff, poorly sorted, argillaceous, with chips of chert and rounded pebbles of basalt (one with copper? mineralisation).
18.29 - 21.34 m	<u>Sand</u> ; 100%, as above, with basalt pebbles (1/4" dia.).
21.34 - 24.38 m	<u>Sand</u> ; 100%; 70%, yellow and buff; 30%, argillaceous.
24.38 - 27.43 m	<u>Sand</u> ; 100%; 60%, red yellow; 40%, buff, all argillaceous.
27.43 - 30.48 m	<u>Claystone</u> ; 100%; 90%, red, sandy; 10% yellow, sandy, all firm.
30.48 - 33.53 m	<u>Siltstone</u> ; 100%, red, slightly sandy, rarely micaceous.
33.53 - 36.58 m	<u>Siltstone</u> ; 100%, as above, but not micaceous.
36.58 - 39.62 m	<u>Siltstone</u> ; 100%, as above, with trace of white <u>siltstone</u> .
39.62 - 42.67 m	<u>Siltstone</u> ; 100%, red, rarely sandy.
42.67 - 45.72 m	<u>Siltstone</u> ; 90%, red. <u>Dolomite</u> ; 10%, white, hard, finely crystalline, thin bands, at 45.11 m.
45.72 - 48.77 m	<u>Siltstone</u> ; 60%, purple, slightly calcareous. <u>Dolomite</u> ; 40%, white, buff, dense, very hard. Lithologies alternate in thin bands.
48.77 - 57.82 m	<u>Dolomite</u> ; 100%, white, buff, hard, finely crystalline, some pelletal, all slightly calcareous.



51.82 - 53.34 m      Dolomite; 90%, white, buff, finely crystalline, hard, slightly calcareous.

CORE 1 Interval: 53.34-53.95 m    Cut: 0.61 m    Recovered: 0.38 m

53.34 - 53.72 m      Dolomite; cream and pale brown, hard, calcareous, pelletal, some intraclasts, partly recrystallised, joint planes lined with limonite, vuggy - mainly about 1 mm diameter, but some larger, and many vugs of pin-hole size.

Tanami 1:250 000 Sheet area

BMR TANAMI 60

0 - 3 m                Reddish-brown sand

3 - 5 m                White limestone

5 - 20.1 m            Weathered granite

CORE 1 Interval: 20.1-20.4 m    Cut: 0.3 m    Recovered: 0.3 m

20.1 - 20.4 m      pale pink porphyritic medium to fine-grained granite, thin section - phenocrysts about 5 mm across of microcline and sodic plagioclase in groundmass of quartz, microcline, brown biotite and accessory apatite, epidote, sphene and zircon.

BMR TANAMI 61

0 - 4 m                Reddish-brown sand

4 - 6 m                Pale brown sand

6 - 15 m              Chocolate brown mudstone

15 - 16 m             Chert

16 - 39.6             Disaggregated granite

CORE 1 Interval: 39.6-39.7 m Cut: 0.1 m Recovered: 0.1 m

39.6 - 39.9 m      Weathered granite

BMR TANAMI 62

0 - 5 m      Reddish brown sand and lateritic ironstone

5 - 36.6 m      Pale reddish brown mudstone and sandstone

36.6 - 36.7 m      breccia of angular brown fragments in hard pinkish matrix, 5/3 x background radioactive anomaly, thin section - rounded to angular grains up to 4 mm across of quartz, opaque minerals, and minor tourmaline, zircon, quartzite and microcline in abundant matrix of palygorskite (confirmed by X.R.D. determination).

BMR TANAMI 63

0 - 5 m      Reddish-brown sand and lateritic ironstone

5 - 26 m      Pale brown mudstone

26 - 62.5 m      Brown, weathered greisenised granite

CORE 1 Interval: 62.5-62.8 m Cut: 0.3 m Recovered: 0.3 m

62.5 - 62.8 m      Pink medium to fine-grained greisenized granite, thin section - mosaic of quartz, muscovite, seritic aggregates (after feldspar), and accessory biotite, iron oxide, apatite, and tourmaline.

BMR TANAMI 64

0 - 3 m      Reddish brown sand

3 - 24 m      Pale buff limestone

24 - 53.3 m      Maroon weathered gabbro

CORE 1 Interval: 53.3-53.9 m Cut: 0.6 m Recovered: 0.6 m

53.3 - 53.9 m      Medium grained hornblende gabbro, thin section - plagioclase largely altered to sericite and clay, brown hornblende partly replaced by pale green amphibole, and accessory brown biotite, apatite, opaque minerals and interstitial quartz; may be basic dyke.

BMR TANAMI 65

0 - 2 m              Reddish brown sand

2 - 21 m             Maroon limestone

21 - 67.1 m          Pale buff clayey mudstone

CORE 1 Interval: 67.1-67.4 m Cut: 0.3 m Recovered: 0.3 m

67.1 - 67.4 m      White to iron-stained friable sandy dolomite.

BMR TANAMI 66

0 - 3 m              Reddish-brown sand

3 - 11 m             Pale grey clay

11 - 12 m            Maroon mudstone

12 - 30.8 m          Pale grey clayey mudstone

CORE 1 Interval: 30.8-31.3 m Cut: 0.3 m Recovered: 0.3 m

30.8 - 31.1 m      White to brown mottled friable clayey sandstone (X.R.D. determination)

BMR TANAMI 67

0 - 4.6 m            Reddish-brown sand

CORE 1 Interval: 4.6-4.7 m Cut: 0.1 m Recovered: 0.1 m

4.6 - 4.7 m            White cellular very fine-grained dolomite with some quartz  
(confirmed by M.R.D. determination).

Tanami East 1:250 000 Sheet area

BMR TANAMI EAST 1

0 - 3.05 m            Gravel; pisolitic laterite pebbles.

3.05 - 6.10 m            Sandstone; 100%, quartzose, argillaceous, ferruginised, red,  
friable.

6.10 - 9.14 m            Sandstone; 100%, as above.

9.14 - 12.19 m            Sandstone; 100%, as above.

12.19 - 15.24 m            Sandstone; 100%, very argillaceous, as above, with white  
streaks; 90%, red; 10%, white.

15.24 - 18.29 m            Claystone; 90%, finely laminated, partly micaceous  
(muscovite); 60%, brown; 40%, lilac and pale green mottled.  
Sandstone; 10%, soft, grading to sand, as above. (Seepage  
water)

18.29 - 21.34 m            Sand; 50%, red, formed from -  
Sandstone; 50%, as interval 3.04-12.19 m.

21.34 - 24.39 m            Sandstone; 100%, as above.

24.39 - 27.43 m            Sand; 90%, as above.  
Sandstone; 10%, as above. (Seepage water).

- 27.43 - 30.48 m      Sand; 50%, as above.  
                      Claystone; 40%, shaly, micaceous (muscovite)  
                      Siltstone; 10%, argillaceous, micaceous (muscovite), pale brown.
- 30.48 - 33.53 m      Siltstone; 45%, argillaceous, slightly dolomitic, some hard and ferruginised, red brown and grey mottled.  
                      Claystone; 45%, shaly, soft, slightly dolomitic.  
                      Sandstone; 10%, as above, very soft.
- 33.53 - 36.58 m      Siltstone; 80%, shaly, micaceous, red-brown dolomitic.  
                      Sandstone; 10%, very fine grained; 10%, hard, red-brown, ferruginised; 90% soft, green grey and pink.  
                      Siltstone; 9%, very calcareous, argillaceous, grey.  
                      Limestone; 1%, white, argillaceous, aphanitic, hard.
- 36.58 - 39.62 m      Claystone; 50%, shaly, brown, micaceous, dolomitic.  
                      Siltstone; 50%, ferruginised, red brown, micaceous.
- 39.62 - 42.67 m      Siltstone; 90%, as above, hard, red brown, ferruginised.  
                      Claystone; 10%, hard, dolomitic, pink.
- 42.67 - 45.72 m      Siltstone; 60%, hard, red brown, dolomitic, ferruginised; 60%, red; 40%, pink.  
                      Silt; 40%, from siltstone.
- 48.77 - 51.82 m      Siltstone; 60%, argillaceous, slightly ferruginised, micaceous; 95%, red brown; 5%, pink, grey.  
                      Claystone; 30%, shaly, slightly micaceous, brown and grey mottled.  
                      Silt; 10%, red, from siltstone.
- 51.82 - 54.86 m      Siltstone; 90%; 90%, red brown; 10%, pink, dolomitic, micaceous (muscovite and biotite), shaly.  
                      Claystone; 10%, shaly, slightly micaceous, brown and grey mottled.

- 54.86 - 57.91 m     Siltstone; 80%, dolomitic; 90%, red brown to pink; 10%, grey; micaceous (muscovite and biotite), shaly.  
Claystone; 20%; 5%, silty; 90%, red brown; 10% grey, shaly, micaceous (muscovite and biotite) interbedded with siltstone.
- 57.91 - 60.96 m     Siltstone; 80%; 99%, red brown, as above, 1%, grey, as above.  
Claystone; 20%, grading, interlaminated with silty claystone; 99%, red brown; 1% grey.
- 60.96 - 64.01 m     Siltstone; 70%; as above; 90%, red brown; 10%, mottled pink and grey.  
Claystone; 30%; as above; 70%, blue grey and grey; 30%, red brown.
- 64.01 - 67.06 m     Siltstone; 50%; as above, red brown.  
Claystone; 50% as above, pink.
- 67.06 - 70.10 m     Siltstone; 50%, as above, red brown to brown, strongly ferruginised.  
Claystone; 50%, partly micaceous, pink to purple, some siltstone-claystone interlaminated.
- 70.10 - 73.15 m     Siltstone; 50%, as above.  
Claystone; 50%, as above.
- 73.15 - 74.22 m     Siltstone; 50%, as above.  
Claystone; 50%, as above.
- CORE 1 Interval: 74.22-79.25 m Cut: 5.03 m Recovered: 4.95 m
- 74.22 - 74.52 m     Quartz sandstone; fine to very fine grained, dolomite, argillaceous, grey to green grey and pink, micaceous, (muscovite and biotite and green biotite?), glauconitic to very glauconitic. Some thin ferruginous bands, markedly cross bedded, graded bedding, scour and fully slump structures,, mud balls, worm trails, rare quartz crystal

filled vughs, 20 mm across. Some gypsum in vughs.  
Glaucinite concentrated in thin laminae or localised in rich sands up to 3 cms. and disseminated throughout.

- 74.52 - 76.27 m     Sandstone and siltstone; interlaminated in equal amounts; rare claystone.  
                         Sandstone; as above, 80%, pink; 20%, green grey.  
                         Siltstone; as for sandstone, colour variable, pink and red brown.  
                         Claystone; pink to purple colouration.
- 76.27 - 76.57 m     Sandstone; as above, with glauconite occurring, as above.
- 76.57 - 78.40 m     Sandstone, siltstone and claystone; equal amounts, 50%, grey; 50%, red to pink; interlaminated as in top 0.3 m of core. Glaucinite occurs in very rich bands. Also thin, red, iron rich, purple clay? bands.
- 78.40 - 78.53 m     Quartz siltstone; sandy, purple and blue grey, thin bedded. Vughs with quartz crystals, some phosphatic? brachiopods.
- 78.53 - 79.17 m     Sandstone; fine grained; siltstone, minor claystone, laminated to thin bedded, rare cross bedding and undulated bedding. Sandstone and siltstone; as above, grey. Siltstone with rare iron oxide clay bands, as above.  
                         Claystone; light blue-grey, moderately micaceous.
- 78.53 - 82.30 m     Dolomite; very silty, 1 cm. band.  
                         Siltstone; 80%, as above; 70%, red brown and dark purple; 30%, grey.  
                         Sandstone; 10%, quartzose, argillaceous, grey as above.  
                         Claystone; 10%, as above, dark purple.
- 82.30 - 85.34 m     Sandstone; 80%, fine grained, as in core, glauconitic.  
                         Siltstone; 15%, as above, purple.  
                         Claystone; 15%, as above, dark purple.

- 85.34 - 88.39 m      Sandstone; 80%, as above, 60%, fine grained; 40%, very fine grained, pink and grey.  
                         Siltstone and silty claystone; 15%, pink and purple.  
                         Claystone; 5%, shaly, little mica, purple.
- 88.39 - 91.44 m      Sandstone; 99%, as above.  
                         Claystone; 1%, silty, micaceous, dark purple.
- 91.44 - 94.49 m      Sandstone; 80%, dolomitic, fine grained - very fine grained, argillaceous, grey and grey green; 1%, very glauconitic, some pellets, fossil? casts.  
                         Siltstone; 15%, argillaceous, green-grey.  
                         Claystone; 5%, green-grey.
- 94.49 - 97.54 m      Siltstone; 100%, very dolomitic, hard, purple, slightly micaceous.
- 97.40 - 100.58 m      Siltstone; 80%, very dolomitic, hard, slightly micaceous, grey.  
                         Sandstone; 20%, dolomitic, very fine grained as above.
- 100.58 - 103.63 m      Siltstone; 80%, very dolomitic, purple, slightly micaceous.  
                         Sandstone; 20%, fine grained, as above, grey and purple mottled.
- 103.63 - 106.68 m      Sandstone; 100%, fine grained, light grey-pink to pale brown.
- 106.68 - 109.73 m      Siltstone; 80%, as above, red brown.  
                         Claystone; 20%, red brown and purple.
- 109.73 - 112.78 m      Siltstone; 100%, as above, 99%, dark brown; 1%, grey.
- 112.78 - 115.82 m      Siltstone; 50%, as above, brown.  
                         Claystone; 50%, as above, pink, purple, grey.  
                         Dolomite; 1%, microcrystalline, argillaceous, rare muscovite.



115.82 - 119.48 m Siltstone; 50%, as above, 91%, brown, 50% grey.

119.48 - 122.53 m No returns (drillers log - dolomite).

CORE 2 Interval: 122.53-125.58 m Cut: 3.05 m Recovered: 3.05 m

122.53 - 125.58 m Dolomite; sacchroidal, medium crystalline, white to light grey.

Green Swamp Well 1:250 000 Sheet area

BMR GREEN SWAMP WELL 1

0 - 3.05 m Sand, clay; 20%, red, brown, rounded quartz, medium grained; clay minerals.

Calcareous clay and sand; 80% white, light grey clay and crystals, soft.

3.05 - 6.10 m Calcareous clay and sand; 95%, white, light grey, clay and calcite crystals, soft.

Chert; 5%, white, cryptocrystalline slightly calcareous; some veining, hard (5.79-6.10 m hard).

6.10 - 9.1 m Clay; 60%, brown, white, soft, brown external stain, some quartz grains.

Calcareous clay and sand; 30%, white, microcrystalline, clay minerals, soft.

Limestone; 10%, white, microcrystalline, medium hard.

9.1 - 12.2 m Clay; 50%, brown, rare quartz grains, soft, partly indurated?, ferruginous?

Calcareous clay; 49%, white, clay minerals, slightly calcareous, soft.

Limestone; 1%, white, microcrystalline, hard, (brown clay - white clay at 10.67 m).

12.2 - 15.2 m Calcareous clay; 100%, brown, yellow, some white, partly ferruginous?, soft, some quartz silt.

- 15.2 - 18.3 m      Clay; 100%, brown, white, soft, some silt, ferruginous?
- 18.3 - 21.3 m      Clay; 100%, brown, white, soft, some silt, ferruginous?
- 21.3 - 24.4 m      Clay; 85%, brown, white, soft, some silt, ferruginous?  
Chert; 15%, cryptocrystalline, white, light grey, brown, hard.
- 24.4 - 27.4 m      Clay; 50%, brown, white, soft, some silt, ferruginous?  
Calcite sand; 40%, brown, calcite crystals, medium crystalline, possibly soft limestone, (change at 26.22 m)  
Chert; 8%, white, light brown, microcrystalline.  
Limestone; 2%, light brown, microcrystalline - medium crystalline, soft.
- 27.4 - 30.5 m      Calcareous dolomite; 90%; 50% brown, microcrystalline, saccharoidal, and silty (quartz), hard. 50% white light grey, microcrystalline, rare quartz silt, some veining, hard.  
Clay; 10%, white, soft.
- 30.5 - 33.5 m      Calcareous dolomite; 70%; 50%, brown microcrystalline, saccharoidal, partly dolomitic and silty, hard. 50% white, light grey, microcrystalline, rare quartz silt, some veining, hard.  
Clay; 30% as above (cavings?)
- 33.5 - 36.6 m      Dolomitic limestone; 75%, brown, microcrystalline, some silt, ferruginous hard.  
Calcareous dolomite; 20%, light grey, microcrystalline, clayey, quartz? silt, some chert fragments, medium hard.  
Chert; 5%, brown, cryptocrystalline, hard.  
(WATER 36.27 m    Supply 1200-1600 l/hr)
- 36.6 - 39.6 m      Calcareous dolomite; 100%; 50%, light grey, microcrystalline, clayey, medium hard.  
50%, brown, microcrystalline, silt? ferruginous, hard.

39.6 - 42.7 m      Dolomite; 95%; 40%, brown, micro-medium crystalline, partly silty, slightly calcareous, some chert? fragments (fossils?) hard.

Chert; 5%, brown, grey, cryptocrystalline, hard.

42.7 - 45.7 m      Dolomite; 90%; 70% brown, micro-medium crystalline, ferruginous? slightly silty. 30%, white, brown, mottled, micro-crystalline, partly siliceous, hard.

Chert; 10%, brown, grey, cryptocrystalline.

CORE 1 Interval: 44.81-45.03 m    Cut: 0.22 m    Recovered: 0.22 m

44.81 - 45.03 m      Dolomite; grey, brown, mottled, microcrystalline, ferruginised, partly silicified, blue-white cryptocrystalline chert - irregular nodules. Some fine grained pellets. Some blue-black spots, (manganese?), hard, tight.

45.03 - 45.72 m      Dolomite; 90%, brown, grey, microcrystalline, ferruginous, slightly silty, hard, tight.

Chert; 10%, brown, grey, cryptocrystalline.

45.72 - 48.77 m      Dolomite; 98%, grey, brown, brown and red mottled (1%), microcrystalline, ferruginous, some silt, hard, tight.

Chert; 20%, grey, cryptocrystalline, hard.

48.77 - 51.82 m      Dolomite; 100%, grey, brown, mottled microcrystalline, with medium crystalline patches, saccharoidal, ferruginous, small siliceous parts (fossil? fragments), hard, tight, Mn dendrites.

(More water 48.77 m - air lifting 4000 l/hr).

51.82 - 54.86 m      Dolomite; 100%, light brown-grey, micro-medium crystalline, partly ferruginous, hard, tight.

54.86 - 57.91 m      Dolomite; 100%, light brown-grey, micro-medium crystalline patches, saccharoidal in parts, vughy, fractures, hard, porous.

(more water at 59.00 m; 8000 l/hr).

- 57.91 - 60.96 m      Dolomite; 98%, grey-brown, micro-medium crystalline, ferruginous, veins, hard, partly fractured, fossil(?) fragments.  
Chert; 20%, dark brown-orange, cryptocrystalline, with fossil? fragments or clasts?
- 60.96 - 64.01 m      Dolomite; 100%, light brown, grey, micro-medium crystalline patches, slightly silty (grey), some saccharoidal, ferruginous, rare silicified fragments, hard, partly fractured.
- 64.01 - 67.05 m      Dolomite; 98%; 90%, dark grey, microcrystalline, carbonaceous?, argillaceous, silty?, hard, tight. Some veins, white, medium crystalline dolomite with tarry residue. Pyritic 10%, light brown-light grey, microcrystalline, as above.  
Clay siltstone; 2%, black, argillaceous, carbonaceous, soft, fissile. (as laminae?)
- 67.05 - 70.10 m      Dolomite; 95%. As above.  
Clay siltstone; 5%. As above.
- 70.10 - 73.15 m      Dolomite; 100%; 8%, light grey, very light brown, micro-medium crystalline, saccharoidal, light. 20% dark grey, microcrystalline, argillaceous, carbonaceous?, silty? hard, tight, some mottling, veins of white dolomite with tarry residue. Rare clay-siltstone.
- 73.15 - 76.20 m      Dolomite; 100%; 50%, dark grey, microcrystalline, argillaceous, carbonaceous? 30% light brown, microcrystalline. 20% green-grey, microcrystalline, argillaceous, soft, tight. Pyritic.
- 76.20 - 79.25 m      Dolomite; 100%; 80%, green-grey, microcrystalline, argillaceous, tight-soft, pyritic. 20% red-brown microcrystalline, argillaceous, ferruginous?, soft. Some dark grey as above (caving?).

- 79.25 - 82.30 m     Dolomite; 98%; 80%, dark red-brown, microcrystalline, argillaceous, ferruginous?, silty (mica?), soft, tight, pyritic. 20%, light brown-grey, mottled, microcrystalline, soft. Some vughs, porous. Some thin, alternating clay and silt laminae.  
Quartz sandstone; 2% purple, fine-medium grained, poor to average sorting, sub-angular to sub-rounded quartz (90%); ferruginous matrix.
- 82.30 - 85.34 m     Quartz sandstone; 90%; 90%, purple, rare white mottling, medium grained, rare coarse grained quartz, some blue chert? grains; average sorting, sub-angular to sub-rounded, ferruginous. 8%, white, medium grained, subrounded, average to well sorted, some black insolubles. 20%, red-brown, medium grained, poor-average sorting; ferruginous and siliceous matrix; medium hard.  
Dolomite; 10%, red-brown, microcrystalline, argillaceous, ferruginous soft. (Caving?).
- 85.34 - 88.39 m     Quartz sandstone; 95%, as above.  
Dolomite; 5%, as above. (Caving?).
- 88.39 - 91.44 m     Quartz sandstone; 98%, as above.  
Dolomite; 2%, as above (Caving?).
- 91.44 - 92.96 m     Quartz sandstone; 100%, as above.

BMR GREEN SWAMP WELL 2

- 0 - 3.05 m     Claystone; 80%, brown, argillaceous, micaceous, soft.  
Sand, clay, ironstone gravel; 20%, brown, red quartz, clay minerals, brown, ferruginous gravel.
- 3.05 - 6.10 m     Claystone-siltstone; 100%, white, brown, quartz silt, argillaceous, micaceous? ferruginous, soft.
- 6.10 - 9.15 m     Siltstone; 100%, red-brown, silty, argillaceous, friable, soft, some fine grained quartz sand; ferruginous.

- 9.15 - 12.19 m      Siltstone; 70%, as above.  
                      Clay; 30%, brown, rare grey, soft.
- 12.19 - 15.24 m      Siltstone; 70%, as above.  
                      Clay; 30%, as above.
- 15.24 - 18.29 m      Siltstone; 70%, as above.  
                      Clay; 30%, as above.
- 18.29 - 21.34 m      Siltstone; 100%, light brown, fawn, light grey, quartzose,  
                          micaceous, argillaceous, soft. Some clay.
- 21.34 - 24.38 m      Siltstone; 100%, as above.
- 24.38 - 27.43 m      Dolomitic siltstone; 50%, dark red-brown, argillaceous,  
                          micaceous, quartzose, microcrystalline, soft.  
                      Siltstone; 48%, very light grey, brown quartzose,  
                          argillaceous, soft.  
                          (Some dolomitic fine grained sandstone).
- 27.43 - 30.48 m      Dolomitic siltstone; 98%; 90%, as above. 10% very light  
                          grey-brown, silty microcrystalline, soft.  
                      Dolomitic sandstone; 2%, grey, fine grained, soft.
- 30.48 - 33.53 m      Dolomitic siltstone; 98%, 90% (as above). 10% (as above).  
                      Dolomitic sandstone; 2%, as above.
- 33.53 - 36.58 m      Dolomitic siltstone; 100%, red-brown, argillaceous,  
                          micaceous, quartzose, microcrystalline, ferruginous, soft.  
                          Some light grey siltstone. Rare fine-grained quartzose  
                          dolomite.
- 36.58 - 39.62 m      Dolomitic siltstone; 100%, 90%, as above. 10% light grey,  
                          silty, microcrystalline, argillaceous, tight. Some fine  
                          grained quartzose dolomite.
- 39.62 - 42.67 m      Dolomitic siltstone; 100%, as above.

- 42.67 - 45.72 m      Dolomitic siltstone; 100%, as above.
- 45.72 - 48.77 m      Dolomitic siltstone; 100%, as above.
- 48.77 - 51.82 m      Dolomitic siltstone; 70%, 50%, very light brown, micro-crystalline, quartzose, micaceous, argillaceous. 50% dark red-brown, microcrystalline, quartzose, argillaceous, soft, ferruginous.  
Dolomite; 2%, very light brown, microcrystalline, hard, tight.  
Chert; 10% light brown, grey, cryptocrystalline, hard.
- 51.82 - 54.86 m      Dolomitic siltstone; 95%, dark red-brown, silty (quartz), argillaceous, micaceous, microcrystalline, ferruginous, soft.  
Dolomite; 5%, light brown, microcrystalline, saccharoidal, slightly calcareous, hard, tight. Rarely quartzose.
- 54.86 - 57.91 m      Dolomitic siltstone; 100%, as above.
- 57.91 - 60.96 m      Dolomitic siltstone; 90%, as above.  
Dolomite; 10%, very light brown-grey, microcrystalline, hard, tight. Rare quartzose dolomite, 1%, hard, tight.  
(Water at 60.05 m, 3200 l/hr).
- 60.96 - 64.01 m      Dolomite; 70%, light brown, microcrystalline, hard, vughy porosity.  
Dolomite siltstone; 30%, dark red brown, rare grey mottling, argillaceous, micaceous, quartzose, ferruginous, soft, tight.
- 64.01 - 67.67 m      Dolomite; 98%, light grey, light brown, medium grey, microcrystalline, partly argillaceous (med. grey), hard, vughy porosity.  
Chert; 2%, light grey, cryptocrystalline, hard.

CORE 1 Interval: 67.67-69.37 m Cut: 1.70 m Recovered:

- 67.67 - 67.85 m Dolomite; brown, green, grey, microcrystalline, quartz silt (20%), argillaceous, hard, tight.
- 67.85 - 67.93 m Dolomite; green, brown, silty, argillaceous, black carbonaceous? flecks.
- 67.93 - 68.02 m Clay; grey, green, silty.
- 68.02 - 68.12 m Dolomite; green, grey, microcrystalline, quartz silt, argillaceous, black carbonaceous? flecks, hard; grades to:
- 68.12 - 68.48 m Dolomitic siltstone; dark red-brown, argillaceous, microcrystalline, ferruginous, partly mottled, slightly quartzose, soft.
- 68.48 - 68.71 m Dolomite; grey, green, some brown, microcrystalline, argillaceous, banded (clay? minerals), some quartz silt, some argillaceous layers, hard.
- 68.71 - 68.90 m Clay; brown.
- 68.90 - 68.98 m Dolomite; grey, green, mottled brown, microcrystalline, some fine quartz silty, slightly argillaceous, hard.
- 68.98 - 69.16 m Clay; medium grey, silty.
- 69.16 - 69.24 m Dolomite; medium grey, green mottled brown, quartz silt, black carbonaceous? flecks and laminae discontinuous, hard, tight.

BMR GREEN SWAMP WELL 3

- 0 - 3.05 m Sand and clay; 80%, red-brown, quartz and clay minerals.  
Ironstone gravel; 20%, purple, brown, ferruginous, hard.



- 3.05 - 6.10 m      Clay sandstone; 90%, orange, yellow, brown, argillaceous, fine grained, angular sub-angular quartz, ferruginous, soft.  
Clay-siltstone; 10%, yellow, white, clay minerals and quartz silt, soft.
- 6.10 - 9.14 m      Siltstone; 50% red-brown, micaceous, argillaceous, quartz? silt, ferruginous, soft.  
Quartz sandstone; 50%, white, brown mottling, fine grained quartz, sub-angular, well sorted, soft.
- 9.14 - 12.19 m      Quartz sandstone; 90%, white, brown, yellow mottling, fine-medium grained, poor sorting, sub-rounded, white, hard, clay? matrix, tight.  
Siltstone; 10%, brown, red, argillaceous, soft.
- 12.19 - 15.24 m      Siltstone; 95%, red, brown, white-tan, tan (alternating thin beds), micaceous, quartz silt, argillaceous, laminated (banded-white/tan), fine-grained quartz, angular, average sorting, some very fine grained quartz sand, hard, tight.  
Quartz sandstone; 5%, white, fine-grained sub-angular, average sorting, hard.
- 15.24 - 18.29 m      Siltstone; 95%, as above.  
Quartz sandstone; 5%, white, yellow-brown mottled, fine-medium grained, sub-angular - sub-rounded, average sorting, medium hard. Hard white clay? matrix.
- 18.29 - 21.34 m      Siltstone; 80%, as above.  
Claystone; 10%, purple, grey, yellow, argillaceous, soft.  
Quartz sandstone; 10%, white, yellow, fine-medium grained, poorly sorted, sub-rounded, hard. Some insoluble black minerals, (tourmaline?).
- 21.34 - 24.38 m      Siltstone; 70%, yellow-tan, brown-red, grey, quartz silt, micaceous, argillaceous, fissile, medium hard; black spots, (Mn?).  
Clay; 20%, yellow, tan, purple, grey, argillaceous, soft.  
Quartz sandstone; 10%, grey, fine-grained, sub-angular to sub-rounded, average sorting, clay? matrix, medium hard.



- 48.77 - 51.82 m     Quartz sandstone; 50%, white, grey, as above.  
                      Quartz sand; 50%, as above.
- 51.82 - 54.86 m     Clay; 50%, dark brown, argillaceous, soft.  
                      Clay silt; 50%, dark brown, argillaceous, quartz silt,  
                      angular, loose. Rare white, grey quartz sandstone.
- 54.86 - 57.91 m     Clay, silt, quartz sand; 100%, yellow, brown, argillaceous,  
                      quartz silt and fine sand, angular, average sorting, loose,  
                      some slightly harder bands.
- 57.91 - 60.96 m     Clay, silt, quartz sand; 80%, as above.  
                      Quartz sandstone; 20%, white, yellow, fine grained, sub-  
                      angular, average sorting, medium hard.
- 60.96 - 64.01 m     Siltstone-sandstone; 70%, grey, quartz silt-fine sand,  
                      angular, well sorted, argillaceous, slightly calcareous,  
                      hard.  
                      Clay; 30%, yellow, red-brown, argillaceous, ferruginous?,  
                      some silt, soft.
- 64.01 - 67.06 m     Quartz sand; 60%, yellow-brown, fine grained, sub-rounded,  
                      well sorted, loose, (possibly soft sandstone).  
                      Clay-siltstone; 20%, medium grey-light brown, argillaceous,  
                      micaceous?, quartz silt, medium soft.  
                      Quartz sandstone; 20%, white, light yellow, fine grained,  
                      sub-angular, well sorted, medium hard, porous.
- 67.06 - 70.10 m     Quartz, sand, silt, clay; 50%, medium yellow-brown, fine  
                      grained quartz, angular - sub-angular, mixed clay and silt,  
                      loose.  
                      Clay-siltstone; 45%, as above.  
                      Quartz sandstone; 5%, white, fine grained, sub-rounded,  
                      average sorting, clay? matrix, medium hard, porous.
- 70.10 - 73.15 m     Quartz sandstone; 60%, yellow, as above.  
                      Clay-siltstone; 40%, dark red-brown, purple, argillaceous,  
                      quartz silt, micaceous, ferruginous? soft.

- 73.15 - 76.20 m      Quartz sand, clay; 95%, yellow, brown, white fine quartz sand, sub-angular, well sorted, loose clay admixture. Quartz sandstone; 5%, brown-red, white, yellow, fine-grained, well sorted, ferruginous?, sub-angular, medium hard, porous.
- 76.20 - 79.25 m      Quartz sand; 90%, yellow-brown, white fine grained quartz, sub-angular, well sorted, loose (possibly soft sandstone). Quartz sandstone; 10%, brown, yellow, some banding, quartz, fine grained, angular, well sorted, medium hard, clayey, ferruginous matrix.
- 79.25 - 82.30 m      Sand; 90%, as above.  
Quartz sandstone: 10%, brown and grey, as above.  
Rare chert fragments.
- 82.30 - 85.34 m      Quartz sand; 60%, as above.  
Quartz sandstone; 30%, white, brown, fine grained, well sorted, partly calcareous, medium hard, porous.  
Clay-siltstone; 10%, red-brown, argillaceous, micaceous? quartz silt, slightly calcareous, medium soft. Rare chert.
- 85.34 - 88.39 m      Quartz sand; 50%, brown, white, as above.  
Quartz sandstone; 30%, brown, as above.  
Clay-siltstone; 20%, brown, some yellow laminae, as above.
- CORE 1 Interval: 88.39-91.44 m      Cut: 3.05 m      Recovered: 2.99 m
- 88.39 - 88.72 m      Dolomitic siltstone; medium brown, rare white mottling, micaceous, argillaceous, microcrystalline, quartz silt, ferruginous. Some fine quartz sand in white lenses.
- 88.72 - 89.07 m      Claystone-siltstone; laminae, dark brown horizontal and inclined, (slurry? beds). Small vughs, white discontinuous layers and lenses of quartzose dolomite. Dark brown clay layers, discontinuous. Some load casting and possible scour surfaces.

- 89.07 - 89.12 m Claystone and dolomitic quartz sandstone; grey-green clay layers, with lenses of light grey-brown dolomitic sandstone.
- 89.12 - 89.40 m Dolomitic quartz sandstone; very light grey-green, fine grained, microcrystalline, fine quartz silt and sand, micaceous, hard, porous; brown and green clay laminae. Alternating white brown layers, lenses, mottled, ferruginous, dark brown, micaceous, silty clay laminae.
- 89.40 - 90.26 m Dolomitic quartz sandstone; medium-light brown, microcrystalline, fine grained, micaceous, quartz silt, hard, tight.
- 90.26 - 90.39 m Calcareous sandstone; white, light grey, fine grained, well sorted, sub-rounded quartz; white calcareous matrix, tight, hard.
- 90.39 - 90.48 m Claystone and quartz sandstone; light brown, fine grained, quartz layers, alternating with dark brown claystone layers.
- 90.48 - 91.37 m Dolomitic quartz sandstone; dark brown, white mottled lenses and layers (approx 1" thick), fine grained quartz, microcrystalline, argillaceous, micaceous, silty, with clayey, micaceous laminae, ferruginous. Small vughs, rarely large (1" diam), generally porous, hard.

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- 0 - 3.05 m Quartz sandstone; 95%; 50%, orange, dark brown, fine grained, average sorting, sub-angular, ferruginous?, hard, siliceous matrix. 50%, white fine-medium grained, poor to average sorting, sub-angular to sub-rounded, black insolubles, white siliceous matrix, hard, tight. Sand clay; 5%, brown, grey, fine grained quartz, some clay minerals. Rare limestone fragments.

- 3.05 - 6.10 m      Quartz sandstone; 50%, white, some brown-yellow mottling, (ferruginous?), fine-medium grained, poor-average sorting, sub-angular to sub-rounded, white siliceous matrix, hard, tight, black insolubles.  
Siltstone-claystone; 50%, white, very fine grained, clay minerals, angular quartz silt, fissile, tight, medium hard; rare scattered sub-angular quartz sand.
- 6.10 - 9.14 m      Quartz sandstone; 60%, white, light grey, fine grained, average to well sorted, sub-rounded, black insolubles, clay? matrix, soft porous.  
Claystone; 20%, white, clay minerals, scattered quartz silt, soft, tight.  
Clay; 20%, white, soft.  
(Seep of water at 6.40 m, more at 7.01 m)
- 9.14 - 12.19 m      Claystone; 70%, as above.  
Clay; 20%, as above.  
Quartz sandstone; 10%, as above.
- 12.19 - 15.24 m      Quartz sand; 70%, white, light grey, fine grained, well sorted, sub-rounded, some black insolubles, loose.  
Clay; 20%, as above.  
Quartz sandstone; 10%, as above.  
(More water)
- 15.24 - 18.29 m      Quartz sand; 70%, as above.  
Clay; 30%, as above.
- 18.29 - 21.34 m      Quartz sand; 90%, as above.  
Quartz sandstone; 10%, as above.
- 21.34 - 24.38 m      Quartz sand; 80%, as above.  
Quartz sandstone; 10%, as above.  
Clay; 10%, white, soft, rare fine quartz sand and silt with red clay-silt, ferruginous laminae.



- 48.77 - 51.82 m      Quartz sandstone; 95%, white, medium brown, medium yellow, fine-medium grained, sub-angular, average sorting, partly dolomitic (brown), ferruginous, medium porous, hard.  
Siltstone; 5%, dark-medium brown, argillaceous, quartz silt, ferruginous, tight, soft.
- 51.82 - 54.86 m      Quartz sandstone; 100%, medium brown, minor white, yellow; medium grained, average sorting, sub-angular to sub-rounded, black insolubles, partly dolomitic, porous, medium hard.
- 54.86 - 57.91 m      Quartz sandstone; 100%, brown, white, as above.
- 57.91 - 60.96 m      Quartz sandstone; 100%, as above.
- 60.96 - 64.01 m      Quartz sandstone; 95%, as above.  
Clay; 5%, white, soft.
- 64.01 - 67.06 m      Quartz sandstone; 90%, brown, white, fine grained, sub-angular, average sorting, red and white laminae, black insolubles, white mica; dolomitic matrix (brown), soft, porous.  
Clay; 5%, white, soft, as laminae.  
Ironstone; 5%, (caving?).
- 67.06 - 70.10 m      Quartz sandstone; 95%; 80%, brown, fine grained, average sorting, sub-angular, ferruginous, dolomitic, 15% white, light grey - as above. 5%, green-grey, fine grained, micaceous (biotite), poorly sorted, sub-angular, dolomitic, porous.  
Clay-siltstone; 5%, red-brown, argillaceous, quartz silt, tight, soft.
- 70.10 - 73.15 m      Quartz sandstone; 65%, brown, white, grey green, as above.  
Silty dolomite; 30%, medium - dark grey, microcrystalline, with glauconite, micaceous, quartz silt, hard, tight. Some light grey, white.  
Chert; 5%, grey, cryptocrystalline, hard. Rare brown clay-siltstone.



- 73.15 - 76.20 m      Quartz sandstone; 95%; 65%, brown, fine grained, as above.  
25%, white fine grained, as above. 5%, green-grey,  
micaceous, as above.  
Dolomite; 3%, white, microcrystalline, hard, tight.  
Chert; 2%, as above.
- 76.20 - 79.25 m      Quartz sandstone; 80%; 85%, brown fine grained, as above.  
10%, white, fine grained, as above. 5%, green-grey,  
micaceous, as above.  
Siltstone; 20%, brown, quartz silt, micaceous (biotite),  
dolomitic, hard, tight.
- 79.25 - 82.30 m      Quartz sandstone; 100%; 80%, brown, fine grained, as above.  
15%, white, fine grained, as above. 5%, green-grey,  
micaceous, as above.
- 82.30 - 85.34 m      Quartz sandstone; 100%; 70%, brown, fine grained as above.  
25%, white, fine grained, as above. 5%, green-grey,  
micaceous, as above. Rare grey chert.
- 85.34 - 88.39 m      Quartz sandstone; 100%; 50%, brown, fine grained, as above.  
50%, white, light grey, fine grained, as above. 1% green-  
grey, micaceous, as above.
- 88.39 - 91.44 m      Quartz sandstone; 100%; 95%, brown, fine grained, as above.  
5%, light grey, fine grained, as above. Rare brown,  
micaceous siltstone.
- CORE 1 Interval: 91.44-91.49 m      Cut: 0.05 m      Recovered: 0.05 m
- 91.44 - 91.49 m      Quartz sandstone; dark brown, fine grained, sub-rounded,  
well sorted; ferruginous? dolomitic matrix, porous, medium  
hard.
- 91.49 - 94.49 m      Quartz sandstone; 80%, brown, minor green-grey, fine  
grained, sub-angular, well sorted, black insolubles,  
micaceous; dolomitic matrix, porous, medium hard.  
Siltstone; 20%, dark brown, argillaceous, micaceous, quartz  
silt, rare quartz sand, tight, soft.

- 94.49 - 97.54 m     Clay-siltstone; 60%; 95%, dark brown, argillaceous, micaceous, some large biotite or black carbonaceous? material, some quartz silt, scattered quartz sand, dolomitic, soft, tight. 5%, green-grey, micaceous, clay layers, soft.  
Quartz sandstone; 40%, brown, grey-green, as above.
- 97.54 - 100.58 m     Clay-siltstone; 70%; 60%, dark brown, as above. 20%, green-grey, argillaceous, micaceous, dolomitic, quartz silt. 20%, purple, quartz silt, grey-green mottling, ferruginous?  
Quartz sandstone; 30%, brown, as above. Some gypsum.
- 100.58 - 103.63 m     Quartz sandstone; 55%; 95%, light grey, fine grained, sub-rounded, well sorted, black insolubles, calcareous matrix. 5%, brown, as above.  
Dolomite; 40%, medium-dark grey-brown, microcrystalline, partly argillaceous, tight, hard.  
Siltstone; 5%, dark brown, purple, argillaceous, micaceous, soft.  
Rare gypsum.
- 103.63 - 106.68 m     Dolomite; 80%, light grey-brown, medium-dark grey-brown, microcrystalline, partly argillaceous, carbonaceous, some glauconite or chlorite. Some dark grey, carbonaceous laminae with chlorite? and quartz silt, hard, tight.  
Quartz sandstone; 20%, brown, light grey, fine grained, as above. Rare siltstone, brown, purple, as above.
- 106.68 - 109.73 m     Quartz sandstone; 90%; 60%, light grey, fine grained, well sorted, sub-rounded, black insolubles, dolomitic matrix, 40%, brown, as above. Some micaceous layers, hard, porous.  
Siltstone; 10%, dark brown, argillaceous, micaceous, quartz silt, carbonaceous? flakes, soft.
- CORE 2 Interval: 109.73-112.78 m     Cut: 3.05 m     Recovered: 3.05 m
- 109.73 - 109.75 m     Siltstone-sandstone; pink, fine grained.
- 109.75 - 109.85 m     Siltstone and claystone; grey.

- 109.85 - 112.6 m Siltstone; red brown, some laminae of siltstone; grey, and claystone; red brown, cross laminae, worm burrows and trails, vughs, some with gypsum.
- 112.16 - 112.78 m Claystone; red brown with Claystone; green grey near top (3 cm).  
Quartz siltstone; 85%, grading to fine grained sandstone; 95%, red brown, some pink, 5%, grey; dolomitic, micaceous, 1% heavy minerals, black; laminated, cross laminated, worm trails and burrows, uncommon vughs up to 2" diameter, some gypsum-filled.  
Claystone; 15%; 75%, red brown, some purple; 25%, grey and green grey; dolomitic, micaceous to very micaceous, some interlaminated siltstone, undulated bedded.
- 112.78 - 115.82 m Quartz siltstone; 90%; 99%, red brown; 1% grey; dolomitic, medium hard to soft, micaceous.  
Claystone; 10%, red brown, dolomitic, shaly, micaceous, soft.
- 115.82 - 118.87 m Quartz siltstone; 90%, red brown, as above.  
Claystone; 10%, red brown, as above.
- 118.89 - 121.92 m Quartz siltstone; 90%, red brown, as above.  
Claystone; 10%, red brown, as above.
- 121.92 - 124.97 m Quartz siltstone; 90%; 90%, red brown; 10%, grey, as above.  
Claystone; 10%, as above.
- 124.97 - 128.02 m Quartz siltstone; 80%; 90%, red brown; 10% grey, as above.  
Claystone; 20%; 75%, red brown; 25%, purple, as above.
- 128.02 - 131.06 m Quartz siltstone; 80%, red brown, as above.  
Claystone; 20%, red brown, as above.
- 131.06 - 134.11 m Quartz siltstone; 90%; 99%, red brown; 1%, grey, as above.  
Claystone; 10%, red brown, as above; with gypsum crystals.

- 134.11 - 137.16 m Quartz siltstone; 80%; 90%, red brown; 10% grey, as above.  
Claystone; 20%; 90%, red brown; 5%, blue grey; 5%, purple, as above.
- 137.16 - 140.21 m Quartz siltstone; 90%; 95%, red brown; 5%, grey, as above.  
Claystone; 10%; 99%, red brown; 1%, blue-grey, as above.  
Trace whitish aphanitic dolomite.
- 140.21 - 143.26 m Quartz siltstone; 90%;, 99%, red brown; 1% grey, as above.  
Claystone; 10%; 99%, red brown; 1%, grey, as above.
- 143.26 - 146.30 m Quartz siltstone; 99%; 95%, red brown; 5%, grey, as above.  
Claystone; 1%; 100%, red brown, as above.  
Trace whitish aphanitic dolomite.
- 146.30 - 149.35 m Quartz siltstone; 99%; 95%, red brown; 5%, grey, as above.  
Claystone; 1%; 100%, red brown, as above.  
Aphanitic dolomite, whitish, 1%.
- 149.35 - 152.40 m Quartz siltstone; 99%; some grading to sandy siltstone; 95%, red brown; 5%, grey, as above but much of it very soft.  
Claystone and clay; 1%, red brown, as above.
- 152.40 - 155.45 m Quartz siltstone; 90%; 95%, red brown; 5%, grey, as above.  
Claystone; 10%; 100%, red brown, as above.
- 155.45 - 158.50 m Quartz siltstone; 60%;, 50%, red brown; 50%, grey, as above, with pyrite and gypsum.  
Dolomite; 40%; 79%, buff, aphanitic; 20%, dark grey; 1%, pink; 95%, as above, some silty - very fine sandy, some muscovite.
- 158.50 - 161.54 m Quartz siltstone; 80%; 50%, red brown; 5% grey, as above.  
Dolomite; 20%, buff to grey, micaceous, aphanitic.
- 161.54 - 164.59 m Quartz siltstone; 50%; 99%, red brown; 1%, grey, as above.  
Claystone; 50%, red-brown.

164.59 - 167.64 m Quartz siltstone; 95%;, 95%, red brown; 5% grey, as above.  
Claystone; 5%, red-brown.

167.64 - 170.69 m Quartz siltstone; 95%; 95%, red brown, 5% grey, as above.  
Claystone; 5%; 90%, red brown; 10%, purple, as above.

170.69 - 173.74 m Quartz siltstone; 80%; 95%, red brown, soft, as above; 5%,  
grey, grading to silty dolomite.  
Dolomite; 15%; 50%, pink; 50%, grey, aphanitic, as above.  
Gypsum and dolomite crystals.  
Claystone; 5%; 90%, red brown; 10%, pink, as above.

173.74 - 176.78 m Claystone; 90%; 100%, red brown, soft, grading to clay.  
Quartz siltstone; 10%; 50%, red brown; 50%, grey, as above.  
Dolomite; 1%, grey, aphanitic.

176.78 - 178.31 m Claystone-clay; 90%, red brown, soft, as above.  
Quartz siltstone; 8%, grey, as above.  
Dolomite; 2%, pink, grey, aphanitic, hard.

CORE 3 Interval: 178.31-179.63 m Cut: 1.32 m Recovered: 1.32 m

178.31 - 179.63 m Dolomite; uniform; aphanitic, hard, grey, with thin  
claystone-siltstone, dolomitic, laminae, 1 cm - 6 cms apart.  
Worm trails; gypsum, vughs, stylolites.  
Dolomite; 99%, grey - light grey, aphanitic, possibly rare  
pelletal, slightly calcareous, hard; rare mica (muscovite).  
Vughs, (179.52 m) up to 2.5 cm diameter, and many solution  
pits, most small pits and vughs-gypsum filled (colourless  
and pink), some larger vughs-dolomite lined. Some calcite in  
veins and pits. Joints (near vertical), small joints -  
gypsum filled. Stylolites, mostly low amplitude, rarely over  
2 mms.  
Claystone-siltstone; 1%, dark grey, dolomitic, micaceous,  
laminated (max. thickness 0.5 cm) some undulate bedding,  
rare worm trails, some haematite? flecks, medium hard.

BMR GREEN SWAMP WELL 5

0 - 3.05 m	<u>Sand</u> ; red, with ironstone pebbles up to 3 cm.
3.05 - 6.10 m	<u>Quartz sandstone</u> ; 100%, medium to fine grained, argillaceous, well sorted, sub-rounded, white, yellow and pink, silicified in part, with silica brecciation, (Bedded-nearby outcrop). Hard to friable. Solution pits filled with pink zeolite?, or colloidal silica.
6.10 - 9.14 m	<u>Quartz sandstone</u> ; 100%, argillaceous, as above.
9.14 - 12.19 m	<u>Quartz sandstone</u> ; 100%, as above, with much white, clay matrix.
12.19 - 15.24 m	<u>Quartz sandstone</u> ; 100%, as above, with some red colouration.
15.24 - 18.29 m	<u>Quartz sandstone</u> ; 100%, as above, (but more porous and friable); 80%, red; 20%, white.
18.29 - 21.34 m	<u>Quartz sandstone</u> ; 100%, as above, 90%, red; 10% white. (Water seepage).
21.34 - 24.38 m	<u>Quartz sandstone</u> ; 100%, as above, 50%, red; 50%, white.
24.38 - 27.43 m	<u>Quartz sandstone</u> ; 100%, as above, 40%, red; 60%, white.
27.43 - 30.48 m	<u>Quartz sandstone</u> ; 100%, as above, 80%, dark red brown; 20%, white.
30.48 - 33.53 m	<u>Quartz sandstone</u> ; 100%, as above, 90%, reddish brown; 10%, white.
33.53 - 36.58 m	<u>Quartz sandstone</u> ; 100%, as above, 99%, reddish brown; 1%, white. (Water at 36.57 m; 6000-8000 l/hr).

36.58 - 39.62 m	<u>Quartz sand</u> ; 70%, red (possibly soft sandstone). <u>Quartz sandstone</u> ; 30%, red brown, soft, friable.
39.62 - 42.67 m	<u>Quartz sand</u> ; 100%, red, as above, (possibly soft sandstone).
42.67 - 45.72 m	<u>Quartz sand</u> ; 100%, as above.
45.72 - 48.77 m	<u>Quartz sand</u> ; 100%, as above.
48.77 - 51.82 m	<u>Quartz sand</u> ; 100%, as above.
51.82 - 54.86 m	<u>Quartz sand</u> ; 100%, as above.
54.86 - 57.91 m	<u>Quartz sand</u> ; 100%, as above.
57.91 - 60.96 m	<u>Quartz sand</u> ; 100%, as above.
60.96 - 64.01 m	<u>Quartz sand</u> ; 100%, as above.
64.01 - 67.06 m	<u>Quartz sand</u> ; 100%, as above.
67.06 - 70.10 m	<u>Quartz sand</u> ; 100%, as above.
70.10 - 73.15 m	<u>Quartz sand</u> ; 100%, as above.
73.15 - 76.20 m	<u>Quartz sand</u> ; 99%, red, as above. <u>Quartz siltstone</u> ; 1%, purple, moderately ferruginised, micaceous, moderately hard. (Ironstone, sandstone caving from surface).
76.20 - 79.15 m	<u>Quartz sand</u> ; 99%, red, as above. <u>Quartz siltstone</u> ; 1%, purple, ferruginised, micaceous to very micaceous.
79.25 - 82.30 m	<u>Quartz sand</u> ; 99%, red, as above. <u>Quartz sandstone</u> ; 1%, medium grained, argillaceous, mottled, red-brown and grey, micaceous, soft.

Quartz sandstone; 1%; 50%, fine grained, moderately soft, mottled grey and green grey, with haematite staining, very micaceous. 50%, hard, dolomitic, pink, very micaceous, well sorted, but with poorly sorted laminae of quartz - feldspathic sandstone.

Quartz siltstone; 1%, dolomitic, hard, purple, slightly micaceous.

Dolomite; 1%, argillaceous, mottled pink, green, pale violet, green grey, with solution pits.

82.30 - 85.34 m

Quartz sand; 50%, red as above.

Quartz sandstone; 30%; 50%, medium-fine grained, moderately soft, mottled, red brown, grey and green grey, micaceous. 50%, pink, hard, dolomitic, micaceous.

Quartz siltstone; 10%, purple, dolomitic, shaly, micaceous.

Dolomite; 10%, argillaceous, mottled pink, green, pale violet, green grey, some silicified.

85.34 - 87.48 m

Quartz sand; 95%, red as above.

Quartz sandstone; 3%, fine-medium grained, red-brown, grey and green-grey, dolomitic, as above.

Dolomite; 2%, argillaceous, mottled pink, green grey, grey, micaceous.

Chert; 1%, cryptocrystalline, pink, white.

CORE 1    Interval: 87.48-89.92 m    Cut: 2.44 m    Recovered: 0.18 m

87.48 - 87.66 m

Siltstone; 100%, argillaceous, dolomitic, red brown, with rare green-grey mottling, moderately hard, micaceous, lenses of more argillaceous siltstone (2 cm x 0.5 cm.). Medium bedded, worm? trails.

BMR GREEN SWAMP WELL 6

0 - 3.05 m

Quartz sand; 60% red, fine-medium grained, rounded to sub-angular grains.

Pisolithic gravel; 40% red and brown.



- 3.05 - 6.10 m      Quartz sandstone; 100% buff-grey, silty, very fine to medium grained, angular to sub-rounded, a few limonite and chalcedony grains.
- 6.10 - 9.14 m      Quartz sandstone; 100% buff-grey, very silty fine grained, poorly sorted, subangular to sub-rounded. Some siltstone, limonite and mica grains.
- 9.14 - 12.19 m      Quartz sandstone; 100% red-brown, as above.
- 12.19 - 15.24 m      Quartz sand; 100% light brown, fine to very fine grained, angular to sub-angular with moderate sorting.
- 15.24 - 18.29 m      Quartz sandstone; 95% buff, red, fine grained, sub rounded to sub-angular and moderate sorting. Very fine grained silica cement.  
Siltstone; 5%, yellow and white, micaceous.
- 18.29 - 21.34 m      Quartz sand; 60% red, fine grained, sub-rounded with moderate sorting.  
Siltstone; 40%, buff with a few sand sized quartz grains and some mica.
- 21.34 - 24.38 m      Quartz sand; 90%, as above.  
Siltstone; 10%, as above.
- 24.38 - 27.43 m      Calcareous siltstone; 95%, grey with some distinct sand sized quartz grains and siliceous matrix.  
Siltstone; 5%, white to grey, slightly calcareous, some sand sized quartz grains and siliceous matrix.
- 27.43 - 30.48 m      Calcareous siltstone; 85%, as above.  
Siltstone; 15%, white-grey, as above.

CORE 1: Interval: 30.48-32.16 m Cut: 1.68 m Recovered: 1.68 m

30.480 - 32.156 m Quartz sandstone; 100%, white-grey, fine to very fine grained with moderate sorting, sub-angular grains dominant. Rare opaque minerals, silica cement.

32.16 - 33.53 m Quartz sandstone; 95%, buff-grey, very fine grained, subangular to sub-rounded with moderate to good sorting. Slightly calcareous.  
Siltstone; 5%, grey-green.

33.53 - 36.58 m Siltstone; 40%, red-brown, very fine grained.  
Siltstone; 30%, white-grey, dolomite with some sand sized quartz grains.  
Quartz sand; 30%, red-brown, sub-rounded, fine grained with moderate sorting.

36.58 - 39.62 m Siltstone; 50%, grey-green, siliceous.  
Quartz sandstone; 45%, white, fine grained, silty sub-rounded, moderate sorting.  
Quartz sand; 5%, red-brown, fine grained sub-rounded.

39.62 - 42.67 m Quartz sandstone; 95% buff-white, silty, very fine grained, sub-angular to sub-rounded. Very fine grained silica cement.  
Siltstone; 5%, grey-red.

42.67 - 45.72 m Siltstone; 50%, red-brown, micaceous and dolomitic with a few sand sized quartz grains.  
Siltstone; 30% grey-green; dolomitic with some? chlorite grains.  
Calcareous sandstone; 20%, white, quartz sandstone with a calcareous cement.

45.72 - 48.77 m Siltstone; 100%, grey-white, micaceous and dolomitic, some quartz grains, a few sand sized glauconite grains.

48.77 - 51.82 m	<u>Quartz sandstone</u> ; 50% white, very fine grained in dolomitic matrix. Grains subangular to subrounded. <u>Siltstone</u> ; 50%, red, grey-green, micaceous and dolomitic.
51.82 - 54.86 m	<u>Quartz sandstone</u> ; 80%, as above. <u>Siltstone</u> ; 20%, red and white, as above.
54.86 - 57.91 m	<u>Quartz sandstone</u> ; 70%, as above. <u>Siltstone</u> ; 30%, red, dolomitic, micaceous.
57.91 - 60.96 m	<u>Dolomite</u> ; 85%, buff, fine grained. <u>Quartz sandstone</u> ; 10%, as above. <u>Siltstone</u> ; 5%, as above.
60.96 - 64.01 m	<u>Siltstone</u> ; 100%, red and grey, dolomitic, some limonite and mica with rare chips of dolomite.
64.01 - 67.06 m	<u>Dolomite</u> ; 90% pink-cream, very fine grained. <u>Siltstone</u> ; 10% grey-green to red with rare mica.
67.06 - 70.10 m	<u>Siltstone</u> ; 100%, red-grey, dolomitic, some limonite staining and mica.
70.10 - 73.15 m	<u>Siltstone</u> ; 100%, as above.
73.15 - 76.20 m	<u>Siltstone</u> ; 100%, as above.
<u>CORE 2</u> <u>Interval</u> : 76.20-77.88 m <u>Cut</u> : 1.68 m <u>Recovered</u> : 1.68 m	
76.20 - 76.53 m	<u>Siltstone</u> ; 100% red brown to grey green, micaceous, thinly laminated. A few fine sand sized quartz grains.
76.53 - 77.09 m	<u>Siltstone</u> ; 100% grey green, sandy, micaceous and thinly laminated. Bedding partly disrupted.

- 77.09 - 77.42 m     Siltstone; 100% red thinly laminated, some claystone lenses.
- 77.42 - 77.88 m     Siltstone; 100% grey-green partly micaceous, many discontinuous laminations.
- 77.88 - 79.25 m     Siltstone; 100% grey-red, dolomitic, some limonite staining and mica.
- 79.25 - 82.30 m     Dolomite; 80%, cream microcrystalline. Rare chips of chalcedory.  
                      Siltstone; 20%, cream, dolomitic, ?glauconite grains.
- 82.30 - 85.34 m     Dolomite; 80%, as above.  
                      Siltstone; 20%, grey as above.
- 85.34 - 88.39 m     Dolomite; 50%, grey, coarsely crystalline.  
                      Siltstone; 50%, red-grey, dolomitic.
- 88.39 - 91.44 m     Siltstone; 100%, red-grey slightly dolomitic and micaceous.
- 91.44 - 94.49 m     Siltstone; 100%, as above.
- 94.49 - 97.54 m     Siltstone; 100%, buff-pink, dolomitic. Rare dolomite and mica grains.
- 97.54 - 100.58 m    Siltstone; 100%, as above.
- 100.58 - 103.63 m   Siltstone; 100%, white, dolomitic and micaceous.
- 103.63 - 106.68 m   Siltstone; 100%, pink, as above.
- 106.68 - 109.73 m   Siltstone; 100%, as above.
- 109.73 - 112.78 m   Siltstone; 90%, red-brown dolomitic and micaceous.  
                      Dolomite; 10%, cream, very fine grained.

112.78 - 115.82 m	<u>Siltstone</u> ; 60%, as above. <u>Dolomite</u> ; 40%, as above.
115.82 - 118.87 m	<u>Siltstone</u> ; 95%, red, slightly dolomitic. <u>Dolomite</u> ; 5% as above.
118.87 - 121.92 m	<u>Siltstone</u> ; 100%, as above.
121.92 - 124.97 m	<u>Siltstone</u> ; 100%, as above.
124.97 - 128.02 m	<u>Siltstone</u> ; 95%, as above. <u>Dolomite</u> ; 5%, cream, fine grained.
128.02 - 131.06 m	<u>Siltstone</u> ; 100% red and white as above.
131.06 - 134.11 m	<u>Siltstone</u> ; 100%, as above.
134.11 - 137.16 m	<u>Siltstone</u> ; 100%, as above.
137.16 - 140.21 m	<u>Dolomite</u> ; 90%, grey-white, fine crystalline. <u>Siltstone</u> ; 10%, as above.
140.21 - 143.26 m	<u>Dolomite</u> ; 100%, as above.
143.26 - 146.30 m	<u>Dolomite</u> ; 95%, as above. <u>Siltstone</u> ; 5%, white, quartzose, with some gypsum.
<u>CORE 3</u> Interval:	143.87-146.61 m <u>Cut</u> : 2.74 m <u>Recovered</u> : 2.65 m
143.87 - 144.07 m	<u>Siltstone</u> ; 100%, grey green with wavy lamination, a few coarser siltstone bands. Rare vughs with gypsum fillings.
144.07 - 144.48 m	<u>Dolomite</u> ; 100%, black-grey, fine to medium grained, a few siltstone laminate. Gypsum vein 12 mm thick.
144.48 - 144.73 m	<u>Dolomite</u> ; 100%, as above but with abundant large vughs with gypsum fillings.

- 144.73 - 145.09 m Dolomite; 100%, black-grey, fine to medium grained with a few siltstone beds to 25 mm thick.
- 145.09 - 145.69 m NO RECOVERY
- 145.69 - 146.46 m Dolomite; 100% as above with some strongly undulating laminations possibly of algal origin.
- 146.46 - 146.61 m Siltstone; 100% light grey, hard with thin lamination.
- 146.61 - 149.352 m Siltstone; 80%, white and red, dolomitic, micaceous.  
Dolomite; 20%, cream, finely crystalline.
- 149.352 - 152.400 m Siltstone; 100%, red dolomitic micaceous, with rare gypsum.
- 152.400 - 155.448 m Siltstone; 100%, red and grey, dolomitic micaceous.
- 155.448 - 158.496 m Siltstone; 100%, as above.
- 158.496 - 161.544 m Siltstone; 100%, as above.
- 161.544 - 164.592 m Siltstone; 100%, as above.
- 164.592 - 167.640 m Siltstone; 100%, as above.
- 167.640 - 170.688 m Siltstone; 100%, as above.
- 170.688 - 173.736 m Siltstone; 100%, buff brown, dolomitic and micaceous.
- 173.736 - 176.784 m Siltstone; 100%, as above.
- 176.78 - 179.83 m Siltstone; 100%, as above.
- 179.83 - 182.27 m Siltstone; 100%, as above.

CORE 4    Interval:   182.27-185.17 m    Cut:   2.90 m    Recovered:   2.90 m

182.27 - 185.17 m    Siltstone; 100%, red brown, green thinly laminated with laminations often disrupted. Thin gypsum band throughout up to 6 mm thick.

185.17 - 185.93 m    Siltstone; 100% red, as above with some gypsum.

185.93 - 188.98 m    Dolomite; 100%, grey-buff, microcrystalline dolomite, traces of gypsum.

188.98 - 192.02 m    Dolomite; 100%, as above.

192.02 - 195.07 m    Dolomite; 100%, as above.

195.072 - 197.21 m    Dolomite; 100%, as above.

CORE 5    Interval:   197..1-199.64 m    Cut:   2.43 m    Recovered:   2.43 m

197.21 - 199.64 m    Siltstone; 100%, grey, green to red thinly laminated with gypsum veins to 50 mm thick.

199.64 - 201.17 m    Siltstone; 90%, red, white, dolomitic and micaceous with gypsum veins.

Dolomite; 10%, cream to grey fine grained.

201.17 - 204.22 m    Dolomite; 80%, as above.

Siltstone; 20%, as above.

204.22 - 207.26 m    Dolomite; 95%, as above.

Siltstone; 5%, as above.

207.26 - 210.31 m    Siltstone; 100%, grey to red, dolomitic. Some gypsum chips.

210.31 - 213.36 m    Dolomite; 100%, grey, fine to medium grained.

213.36 - 213.97 m    Dolomite; 50%, as above.

Siltstone; 50%, red, dolomitic with some gypsum.

CORE 6    Interval: 213.97-217.17 m    Cut: 3.20 m    Recovered: 3.20 m

- 213.97 - 216.82 m    Siltstone; 100%, green and red dolomitic with some gypsum veins and cavity fillings.
- 216.82 - 217.17 m    Dolomite; 100% white-grey, fine grained, thinly laminated. Trace of vein gypsum.
- 217.17 - 219.46 m    Dolomite; 80%, as above.  
                          Siltstone; 20%, as above.
- 219.46 - 222.50 m    Siltstone; 100%, red, micaceous and dolomitic. Some gypsum.
- 222.50 - 225.55 m    Siltstone; 100%, as above.
- 225.55 - 228.60 m    Dolomite; 80% grey, black, fine grained.  
                          Siltstone; 20%, as above.
- 228.60 - 229.21 m    Dolomite; 100% white to grey, fine grained. Trace red siltstone.

CORE 7    Interval: 229.21-232.11 m    Cut: 2.90 m    Recovered: 1.22 m

- 229.21 - 230.28 m    Siltstone; 90% grey-green, thinly laminated to massive. Some gypsum.  
                          Dolomite; 10%, grey, fine grained interbedded with siltstones.
- 230.28 - 230.89 m    Dolomite; 100%, white to grey fine grained, highly gypsiferous. Gypsum occurs as cavity fillings. Laminated to massive with gypsum present as veins and vugh fillings.
- 232.11 - 234.70 m    Dolomite; 100% as above but with no siltstone.
- 234.70 - 237.74 m    Dolomite; 100% as above.
- 237.74 - 240.79 m    Dolomite; 100% as above.



237.74 - 240.79 m Dolomite; 100% as above.

240.73 - 242.62 m Dolomite; 95% as above.  
Siltstone; 5% white, dolomitic.

CORE 8 Interval: 242.62-245.52 m Cut: 2.90 m Recovered: 2.90 m

242.62 - 245.52 m Dolomite; 100%, buff-grey, fine grained with gypsum filled vughs, stylolites common.

245.52 - 246.89 m Dolomite; 100%, light grey, finely crystalline. Some gypsum.

246.89 - 249.94 m Dolomite; 100% as above.

249.94 - 252.98 m Dolomite; 100% as above.

252.98 - 256.03 m Dolomite; 95% as above.  
Siltstone; 5% red and white micaceous.

256.03 - 259.08 m Dolomite; 95% as above.  
Siltstone; 5% as above.

259.08 - 260.30 m Dolomite; 95% as above.  
Siltstone; 5% as above.

CORE 9 Interval: 260.30-263.20 m Cut: 2.90 m Recovered: 2.90 m

260.30 - 261.93 m Dolomite; 100% grey, finely crystalline, with gypsum abundant as veins and vugh fillings.

261.93 - 262.80 m Siltstone; 100%, grey, dolomitic micaceous, sandy thinly laminated with some gypsum.

262.80 - 262.76 m Sandstone; 100% grey, thinly laminated glauconitic quartzose. Subrounded to subangular grains.

262.76 - 263.20 m Siltstone; 100% grey, micaceous dolomitic and thinly laminated.

263.20 - 265.18 m Siltstone; 100%, grey-white, dolomitic with some iron staining.

265.18 - 268.22 m Siltstone; 100% grey micaceous dolomitic. Rare chips of dolomite.

268.22 - 271.27 m Siltstone; 100% as above but with some gypsum.

271.27 - 274.32 m Siltstone; 100% as above.

274.320 - 274.93 m Siltstone; 100% as above.

CORE 10 Interval: 274.93-277.67 m Cut: 2.74 m Recovered: 2.69 m

274.93 - 277.62 m Siltstone; 100% grey, thin to medium laminations, slightly dolomitic and micaceous.

277.62 - 280.42 m Dolomite; 85%, grey-white, fine-medium grained.  
Siltstone; 15% grey, some gypsum.

280.42 - 283.46 m Dolomite; 90% as above.  
Siltstone; 10% as above.

283.46 - 286.51 m Dolomite; 100% as above.

286.51 - 289.56 m Dolomite; 100%, grey-black and blue grey, fine grained with trace of gypsum.

289.56 - 292.61 m Dolomite; 100% as above with trace gypsum.

292.61 - 293.22 m Siltstone; 50% grey to white, dolomitic.  
Dolomite; 35% as above.  
Gypsum; 10% white crystalline.

CORE 11 Interval: 293.22-295.35 m Cut: 2.13 m Recovered: 2.13 m

293.22 - 295.35 m Dolomite; 100% grey to red, fine to medium crystalline.  
Abundant gypsum and traces of pyrite.

295.35 - 298.70 m Siltstone; 60% as above.

Dolomite: 40% as above.

298.70 - 301.75 m Dolomite; 60% white, fine grained.

Siltstone; 35% white-grey, dolomitic.

Gypsum; 5% white crystalline.

301.75 - 304.80 m Dolomite; 100% as above with trace of gypsum.

304.80 - 307.85 m Dolomite; 100% as above.

307.85 - 310.59 m Dolomite; 100% as above.

CORE 12 Interval: 310.59-313.66 m Cut: 3.07 m Recovered: 3.07 m

310.59 - 312.12 m Dolomite; 100%, light to dark grey, fine grained, with thin irregular laminations. Cavities filled or partly filled with gypsum and quartz. Some stylolites.

312.12 - 313.36 m Dolomite; 100%, coarse grained dark grey to black. Thinly laminated with some stylolite.

313.36 - 313.66 m Siltstone; 100% grey, green, thinly laminated.

313.66 - 313.94 m Dolomite; 100% as above.

313.94 - 316.99 m Dolomite; 90% as above.

Siltstone; 10% grey-red, dolomitic.

316.99 - 320.04 m Dolomite; 80% as above.

Siltstone; 20% as above with trace pyrite.

320.04 - 323.09 m Dolomite; 95% as above.

Siltstone; 5% as above.

323.09 - 326.14 m Dolomite; 100% as above.

326.14 - 329.18 m Dolomite; 100% as above.

329.18 - 332.23 m Dolomite; 100% as above with quartz and gypsum fillings.

332.23 - 333.06 m Dolomite; 100% as above.

CORE 13 Interval: 333.06-337.11 m Cut: 4.05 m Recovered: 4.05 m

333.06 - 337.11 m Dolomite; 100% grey-black fine grained, thinly to thickly bedded. Rare siltstone beds.

Barrow Creek 1:250 000 Sheet area

BMR BARROW CREEK 18 (Grg 18)

Location: Lat 145°11'35" Long 21°8'32"

Elevation: 378 m

Drilled: 24 to 26/12/62

0 - 54.9 m Brown clay, gravel and sand.

54.9 - 92.4 m White clay with quartz granules.

92.4 - 93.0 m Purple puggy clay.

93.0 - 96.0 m CORE 1 Interval: 93.0-96.0 m Cut: 3.00 m Recovery: 2.29 m  
Dolarenite, light green medium grained, micaceous, discrete sand grains (10%), rare low amplitude stylolites, occasional sandy and silty lenses 3 mm to 2.5 cm thick, pink and dark green. Brachiopod at 93.34 m recognised by Dr A.A. Opik (Milligan, 1963) as having a structure characteristic of an age no older than Early Cambrian, also contains garnets and ?other heavy minerals.

Lander River 1:250 000 Sheet area

BMR LANDER RIVER 1

Drilled to 5 m with air

Cased to 5 m with 12.7 cm casing

0 - 3 m Sand. red-brown, coarse to fine-grained, medium sorted, well rounded, sparse silt and clay matrix, poorly consolidated, quartzose, rare coarse grains of ferruginised sediment.

- 3 - 6 m      Sandstone, white, fine grained, quartzose, well sorted, well rounded, hard, interbedded with Sandstone, white, medium grained, poorly sorted, abundant silt and clay matrix, highly silicified, hard, contains rounded, frosted, coarse quartz grains.
- 6 - 9 m      Sandstone, white fine grained, quartzose, well rounded, well sorted, minor clay matrix, slightly silicified, moderately hard, contains a few rounded, frosted quartz grains and few pebbles.
- 9 - 12 m      Sandstone, white, fine to very fine grained, silty, quartzose, slightly silicified, moderately hard, contains a few rounded, frosted quartz sand grains.
- 12 - 15 m      Sandstone, white, fine to very fine grained, silty and clayey, contains a few ferruginised concretions and rare quartz pebbles.
- 15 - 18 m      Sandstone, white, fine to very fine grained, silt and clay matrix, well rounded, well sorted,,moderately soft.
- 18 - 21 m      Sandstone, white, fine grained, well rounded, well sorted, moderately soft, very little matrix.
- 21 - 24 m      Sandstone, white, medium to very fine grained, well rounded, well sorted, silt and clay matrix in fine grained rocks, moderately soft to soft.
- 24 - 27 m      Sandstone, white, fine grained, well rounded, well sorted, slightly silicified, moderately soft, rare ferruginised concretions.
- 27 - 28.6 m      Sandstone, light brown, well rounded, well sorted, soft, unconsolidated little matrix.

CORE 1 - Interval 28.60-31.60. Cut 3.00 m Recovered 1.21 m.

28.60 - 30.39 m	<u>Sandstone</u> , light brown, very well sorted, well rounded, fine grained, no matrix, unconsolidated, no recovery.
30.39 - 31.60 m	<u>Sandstone</u> , white to light brown, well rounded, well sorted, little matrix, even texture, medium to thinly bedded, moderately soft to soft, even fracture.
31.6 - 33 m	<u>Sandstone</u> , light brown, medium grained, well rounded, well sorted, unconsolidated, little matrix.
33 - 36 m	<u>Sandstone</u> , light brown, medium grained, well rounded, well sorted, unconsolidated, little matrix.
36 - 39 m	<u>Sandstone</u> , as above.
39 - 42 m	<u>Sandstone</u> , as above.
42 - 45 m	<u>Sandstone</u> , light brown, medium grained, well sorted, well rounded, unconsolidated, little matrix.
45 - 48 m	<u>Sandstone</u> , light brown, medium-grained, well sorted, well rounded, unconsolidated little matrix.
48 - 51 m	<u>Sandstone</u> , light brown, very fine grained, rare coarse frosted grains, poorly sorted, moderately soft, clay matrix.
51 - 54 m	<u>Sandstone</u> , dark red-brown, v. fine grained, poorly sorted, clayey cement, rare coarse, rounded, frosted grains, moderately soft, ferruginous.
54 - 57 m	<u>Sandstone</u> , brown, v. fine grained, well to poorly sorted, clayey and silty in parts, contains rare medium rounded, frosted grains and coarse angular ironstained grains.

- 57 - 60 m      Sandstone, brown, fine grained, poorly sorted, well rounded to angular, clay and silt matrix, soft to moderately hard, ferruginised.
- 60 - 62 m      Siltstone, brown, poorly sorted, clayey, contains a few fine to coarse sand grains, some rounded and frosted, soft, puggy when wet.
- 62 - 63 m      Siltstone, ?dolomite, micaceous, brown and grey, moderately hard, slight fissility.
- 63 - 66 m      Siltstone, ?dolomitic, grey, micaceous, finely crystalline, moderately hard, slight fissility.
- 66 - 69 m      Siltstone, ?dolomitic, grey, finely to medium crystalline, moderately hard, slight fissility.
- 69 - 71 m      Siltstone, ?dolomitic, grey, medium to finely crystalline, moderately hard, slight fissility.
- CORE 2 - Interval: 71.00-71.60.   Cut: 0.06 m   Recovered: 0.60 m
- 70.00 - 71.60 m      Limestone, white, medium crystalline, moderately hard laminated (10%) almost completely replaced by dolomite, black, finely crystalline, enclosing residual fragments and beds of limestone, to 2 cm thick and replacing laminated limestone irregularly, particularly along lamination; sparse blue green ?chlorite and medium crystalline orange ?quartz occurs along boundaries of fragments, with chlorite extending along laminae of limestone fragments.
- CORE 3 - Interval: 72.10-75.10 m   Cut: 3.00 m   Recovered: 3.00 m
- 72.10 - 75.10 m      Limestone, white, medium crystalline, hard, laminated, replaced along laminae by black, finely crystalline dolomite, sparse round bodies of pyrite to 3 mm across, one round body of byrite 1 cm across infilled with black dolomite.

CORE 4 - Interval: 75.10-78.09 Cut: 3.00 m Recovered: 2.97 m

75.10 - 78.09 m Limestone, white, medium crystalline, hard, contains about 20% of grains, tracings laminae and irregular bodies of dolomite, grey, moderately hard, finely crystalline, contains sparse finely crystalline bodies of pyrite to 3 mm across, possibly bioturbated.

CORE 5 - Interval: 78.10-81.10 m Cut: 3.00 m Recovered: 3.00 m

78.10 - 79.28 m Limestone, as above.

79.28 - 79.55 m Mudstone, dark brown, moderately soft, clayey, fissile, contains abundant ferruginous concretions up to 1 mm, across, grades into overlying bed.

79.55 - 81.00 m Limestone, as above, pink towards top, sharp contact with overlying bed.

CORE 6 - Interval: 81.10-84.10 m Cut: 3.00 m Recovered: 3.00 m

81.10 - 81.61 m Limestone, as above.

81.61 - 82.20 m Mudstone, dark brown to dark grey, laminated, ferruginised, bioturbated, moderately soft to moderately hard, grades to ?dolomite in parts, contains abundant ferruginous concretions about 1 mm across, fissile, contains rare indurated fragmented laminae of white claystone, grades into overlying bed.

82.20 - 82.70 m Limestone, as above, grades into mudstone, dark brown, moderately hard, laminated, fissile, in two beds 5 cm and 7 cm thick, grades into overlying bed.

82.70 - 82.90 m Oolitic mudstone, red-brown, moderately hard, composed almost entirely of ferruginous concretions, about 1 mm across, resinous lustre, slightly fissile.



- 82.90 - 83.00 m      Limestone, white, very coarsely crystalline, possibly contains shell fragments, hard, contains a few ferruginous concretions to 1 mm across, slightly fissile.
- 83.00 - 84.10 m      Limestone, white, coarsely to very coarsely crystalline, contains tractings, laminae, beds and irregular bodies of dolomite grey, moderately soft, finely crystalline, fissile, contains fossil fragments.
- Seepage of water at 9 m depth. Water was blown from 20 m produced a minimum of 6000 l/hr water from the hole. Aquifer is probably a poorly consolidated sandstone of the Lake Surprise Sandstone.

BMR LANDER RIVER 2

Drilled with mud from 3 m

Cased to 5 m with 12.7 cm casing

- 0 - 3 m      Sand, red-brown, fine to coarse grained, moderately sorted subangular to well rounded, little matrix, poorly consolidated.
- 3 - 6 m      Sandstone, light green, poorly sorted, moderately soft, fine grained, well rounded, clayey matrix, interbedded with sandstone, light brown, well sorted, well rounded with some coarse angular grains, fine to coarse abundant granules, soft, poorly consolidated, some pebbles to 2 cm across, weathered.
- 6 - 9 m      Sandstone, as above.
- 9 - 12 m      Sandstone, as above.
- 12 - 15 m      Sandstone, brown, fine and medium grained, moderately to well sorted, subangular to well rounded, some grains frosted. contains angular granules to 5 m across, moderately soft, poorly consolidated, weathered.

- 15 - 18 m      Sandstone, brown, fine to coarse grained, silt and clay matrix, moderately sorted, moderately hard, angular to subrounded, poorly consolidated, weathered.
- 18 - 21 m      Sandstone, white, fine grained, poorly sorted, silty and clayey, angular to rounded, moderately hard, slightly silicified, interbedded with sandstone, dark brown, poorly sorted, fine grained, angular, clayey, moderately soft.
- 21 - 24.2 m      Sandstone, brown, fine grained, well sorted, subangular, moderately soft, poorly consolidated, rare mica flakes, contains black ?manganese oxide tracings.
- CORE 1 - Interval: 24.20-25.60      Cut: 1.40 m      Recovered: 1.09 m
- 24.43 - 25.17 m      Sandstone, brown, coarse grained, well sorted, poorly consolidated, no matrix, porous, contains a few granules.
- 25.17 - 25.60 m      Siltstone, green at top, brown at base, coarse to fine and angular to rounded sand grains abundant, moderately soft, contains abundant burrows.
- 25.6 - 27 m      Siltstone, light green to light brown, sandy, contains sparse angular granules, moderately soft.
- 27 - 30 m      Siltstone, as above.
- 30 - 33 m      Sandstone, brown, fine grained, poorly sorted, angular, clay matrix, soft, contains sparse granules, weathered, puggy when wet.
- 33 - 36 m      Sandstone, as above.
- 36 - 39 m      Siltstone, brown and white, soft, puggy when wet, contains abundant angular fine to coarse grains and granules, weathered.

39 - 42 m            Siltstone, as above.

42 - 45 m            Siltstone, as above.

45 - 48 m            Siltstone, light green, sandy, contains abundant fine to coarse angular sand grains, clayey, soft, puggy when wet.

48 - 51.55 m        Siltstone, as above.

CORE 2    Interval: 51.55-54.25 m    Cut: 2.70 m    Recovered: 2.49 m

51.86 - 52.68 m    Siltstone, light green, contains abundant fine to coarse, rounded to angular sand grains, soft, fissile, slightly puggy when wet, contains worm burrows tracings of ?manganese oxide, appears to be separating fragments up to 5 cm across of sandstone, red-brown, moderately sorted, angular, moderately hard, ferruginised.

52.68 - 54.25 m    Sandstone, red brown, fine to coarse grained, contains small worm burrow, porous, moderately hard, ferruginised.

54.25 - 56 m        Sandstone, brown, fine grained, rounded to angular, poorly sorted, ferruginised, moderately hard, overlying sandstone, light green, poorly sorted, fined grained, contains a few medium and coarse grains, angular, rare rounded grains, soft.

56 - 59 m            Siltstone, sandy, light green, clayey, soft, contains abundant fine to hard fragments or laminae of white and green moss agate, contains several beds to 10 cm thick of dolomite, medium crystalline, light brown, hard, possibly bedded.

59 - 62 m            Claystone, silty, sandy, light green, soft, friable, puggy when wet, contains abundant silt and fine to coarse angular lithic sand grains, contains beds or fragments of white and green moss agate, interbedded with dolomite, brown to grey, medium crystalline, hard.

62 - 65.2 m      Claystone, light green, silty and sandy, soft, friable, puggy when wet, contains a few coarse to fine angular sand grains, interbedded with dolomite, brown, hard, medium crystalline, in beds to 10 cm thick.

CORE 3    Interval: 65.20-68.20 m    Cut: 3.00 m    Recovered: 2.92 m

65.28 - 66.31 m      Claystone, light green, soft, friable, puggy when wet, silty, contains a few fine angular sand grains, contains irregular bodies to 5 mm across of claystone, green, moderately hard, possibly slightly silicified, even texture, irregular areas of brown iron staining.

66.31 - 66.37 m      Sandstone, dolomitic, white, fine grained, well sorted, angular, moderately hard.

66.37 - 68.20 m      Dolomite, white, very finely crystalline, very hard, numerous cavities to 2 cm across, algal mat texture, even texture throughout, appears to contain brecciated fragments to 5 mm across in parts.

NOTE

Water was blown from 5 m depth. About 50 gph was produced from aeolean sand for 5 mins.

Water was blown from 25 m depth. About 6000 l/hr was produced for 10 mins.

BMR LANDER RIVER 3

Drilled with air to 17.15 m

Cased to 10 m with 12.7 cm casing

0 - 3 m      Sand, red-brown, medium to fine grained, angular with rare sub-rounded grains, contains sparse granules and coarse grains, little silt and clay, unconsolidated.

3 - 6 m      Sand, red-brown, as above.

6 - 9 m      Sand, light brown, coarse to medium grained, contains numerous granules, angular, unconsolidated.

9 - 12 m                    Siltstone, brown, rare light green, sandy, very weathered, moderately soft, grades to fine grained sandstone in parts.

12 - 15.15 m                Siltstone, brown, sandy, very weathered, moderately soft, rare manganese oxide staining, contains granules of quartz and ferruginised sediment.

CORE 1    Interval: 15.15-17.15 m    Cut: 2.00 m    Recovered: 1.85 m

Siltstone, brown, medium grained, contains abundant angular quartz and lithic sand grains, clayey, moderately soft, friable, fissile in parts, highly weathered, contains several laminae and beds of calcite.

17.15 - 21 m                Siltstone, brown, sandy, contains sparse coarse angular quartz grains, very weathered, moderately soft, rare fine mica.

21 - 24 m                    Siltstone, brown, sandy, grades to fine sandstone in parts, contains a few angular granules and pebbles, micaceous, moderately soft.

24 - 27 m                    Sandstone, brown, coarse grained, angular, poorly sorted, silty and clayey matrix, moderately soft, very weathered, contains a few granules and pebbles.

27 - 30 m                    Sandstone, brown, fine grained, angular, moderately sorted, moderately soft, contains a few granules, interbedded with siltstone, brown, sandy, moderately soft, weathered.

30 - 33 m                    Sandstone, coarse grained, angular to sub-angular, well sorted to poorly sorted, silty in parts, contains a few granules, moderately soft, weathered.

33 - 36 m                    Siltstone, brown, clayey, moderately soft, weathered, interbedded with claystone, brown, soft, puggy when wet.

- 36 - 39 m      Siltstone, brown, clayey, soft, weathered, slightly micaceous.
- 39 - 42 m      Sandstone, brown, fine grained, angular, poorly sorted, silty and clayey, grades to siltstone in parts, highly weathered, contains numerous granules, moderately soft.
- 42 - 45 m      Sandstone, fine grained, brown, poorly sorted, grades to siltstone in parts, highly weathered, overlying sandstone, red-brown, fine grained, angular to rounded, moderately soft, weathered.
- 45 - 48 m      Sandstone, red-brown, fine grained, silty and clayey, poorly sorted, soft.
- 48 - 57 m      Sandstone, as above, silicified, hard, interbedded with claystone, white, silicified, hard, and minor sandstone, white, medium grained, well sorted, well rounded.
- 51 - 54 m      Sandstone and claystone, as above, claystone, white, soft, puggy.
- 54 - 57 m      Claystone, yellow-brown and white, soft, puggy when wet, silty, contains a few sand grains, and white, silicified, hard beds.
- 57 - 60 m      Claystone, yellow-brown and white, silty, sandy, contains rare rounded quartz grains, soft, puggy when wet, poorly consolidated.
- 60 - 63 m      Claystone, light brown and white, very sandy, contains rounded coarse quartz grains, soft, puggy when wet, poorly consolidated.
- 63 - 66 m      Sandstone, light brown, medium grained, very clayey, soft, puggy when wet, contains fragments of claystone, white, moderately soft, fissile, even texture and sandstone, white, fine grained, well sorted, well rounded, quartzose hard.

CORE 2    Interval: 64.80-67.40 m    Cut: 2.60 m    Recovered: 1.05 m

64.80 - 65.10 m    Siltstone, white, clayey, contains a few sandy laminae, moderately soft, even fracture, abundant fine mica flakes, ?gypsiferous, shows strong slumping at base with overturning of laminae, waxy texture.

65.10 - 66.65 m    No recovery, probably lithology below.

66.65 - 67.25 m    Sandstone, white, fine to coarse grained, well rounded, frosted, moderately sorted, soft, friable, slight clay matrix, contains angular fragments 15 cm across of quartzite, white, coarse grained, laminated, well rounded, frosted, well sorted, very hard, and fragments to 15 cm across of claystone, white, soft, fissile, even texture, waxy, regular fracture.

Core 2 is probably a slump breccia with clasts of hard quartzite, but its interpretation as a fault breccia cannot be disproved.

Hole blown from 26 m and produced 2800 l/hr over a period of 30 mins. Hole sited on a gentle rise, possibly bedrock, rising out of flat plain. This may have caused the lack of Cainozoic section.

BMR LANDER RIVER 4

Cased to 5 m with 12.7 cm casing

0 - 3 m    Sand, red-brown, medium grained, moderately sorted, sub-angular to sub-rounded, unconsolidated.

3 - 6 m    Sand, as above, slightly consolidated, overlying sandstone, fine grained, yellow-brown, poorly sorted, very silty and clayey, angular to sub-rounded, soft, highly weathered.

6 - 9 m    Siltstone, brown, contains abundant rounded and frosted to angular sand grains, clayey, soft, contains tracings and laminae of white, soft, weathered, silicified siltstone.

- 9 - 12 m      Siltstone, brown, contains angular to rounded and frosted sand grains, clayey, soft, highly weathered.
- 12 - 15 m      Siltstone, as above, rare angular granules.
- 15 - 18 m      Sandstone, fine grained, brown, poorly sorted, subrounded, silty and clayey, soft, weathered, contains rare angular granules.
- 18 - 21 m      Siltstone, brown, contains abundant rounded, frosted to angular sand grains, soft, weathered, contains rare angular grains.
- 21 - 24 m      Siltstone, as above.
- 24 - 27 m      Sandstone, medium grained, brown, light green where unweathered, rounded, poorly sorted, very silty and clayey, contains a few angular granules, weathered.
- 27 - 30 m      Sandstone, as above.
- 30 - 33 m      Siltstone, brown, contains abundant rounded sand grains, poorly sorted, clayey, silty, moderately soft, weathered.
- 33 - 36 m      Siltstone, as above, grades to sandstone, slightly silicified in parts, slightly ferruginised in parts, weathered, moderately soft.
- 36 - 39 m      Siltstone, as above, interbedded with siltstone, light brown, soft, clayey, fissile, sandstone, red-brown, angular, fine grained, well sorted and claystone, light green, soft, possibly unweathered.
- 39 - 42 m      Sandstone, fine grained red-brown, angular, well sorted, moderately soft interbedded with claystone, light grey, moderately hard, slightly silicified, slightly weathered.



- 42 - 45 m      Sandstone, brown, medium grained, angular to rounded, silty and clayey, poorly sorted, moderately soft, weathered, contains a few beds of claystone, light green-grey, soft, waxy texture, ?unweathered.
- 45 - 46.9 m      Claystone, white, moderately soft, to hard, silicified, weathered, contains a few beds of siltstone, brown, clayey, rare red grains, soft, puggy when wet.
- CORE 1 - Interval: 46.90-48.60    Cut: 1.70 m    Recovered: 1.05 m
- 47.55 - 48.60 m      Claystone, very calcareous, white, moderately soft, friable in parts, contains laminae with coarse rounded quartz sand grains; broken, slightly weathered, contains a few angular dolomite fragments to 1 cm across.
- CORE 2 - Interval: 48.60-49.60 m    Cut: 1.00 m    Recovered: 0.45 m
- 49.15 - 49.60 m      Claystone, very calcareous, sparse beds to 1 cm thick contain quartz sand grains, intensely silicified in most parts, but with sparse beds to 15 cm thick only partly silicified and slightly weathered, friable and partly broken, with most core loss in these beds; highly silicified beds are hard but contain a few laminae and thin beds of unsilicified calcareous claystone; silicification is preferential, giving rise to very hard angular fragments of highly silicified claystone in a matrix of hard, more finely brecciated calcareous claystone with laminae, irregular bodies, and angular fragments of white to clear agate. Some examples showing dendritic moss texture due to slight manganese oxide staining; 51-95 to 52-05 m angular, hard fragments in a soft matrix, between 51.95 and 52.05 m give appearance of slump fault breccia, similar to basal core in Lander River 3.
- CORE 3 - Interval: 49.60-50.70    Cut: 1.10 m    Recovered: 1.10 m
- 49.60 - 50.70 m      Claystone, as above.

CORE 4 - Interval: 50.70-52.05 m   Cut: 1.35 m   Recovered: 1.35 m

50.70 - 52.05 m   Claystone, as above.  
Hole was blown from 30 m but produced no flow of water.

BMR LANDER RIVER 5

0 - 3 m   Sand, red-brown, fine grained, rounded, containing a few medium and coarse grains, moderately sorted, quartzose, little silt and clay, unconsolidated.

3 - 6 m   Siltstone, brown, moderately soft, weathered, some grains red-brown and ferruginised, contains rare rounded fine quartz sand grains, angular coarse quartz grains and rare granules, slightly silicified.

6 - 9 m   Sandstone, red brown and white, fine grained, rounded, silty and clayey, poorly sorted, contains angular coarse grains, ferruginised and silicified, weathered.

9 - 12 m   Siltstone, red-brown and light grey, sandy, clayey, ferruginised and weathered in parts, moderately soft.

12 - 15 m   Siltstone, white to brown, clayey, weathered, moderately soft.

15 - 18 m   Siltstone, as above.

18 - 21 m   Sandstone, light brown, fine grained, subangular, poorly sorted, very silty and clayey, weathered.

21 - 24 m   Siltstone, light brown to white, silicified, moderately soft to hard, weathered.

24 - 27 m   Claystone, brown, soft, puggy when wet, rare sand grains, contains sparse white, hard silicified beds, weathered.

- 27 - 30 m      Claystone, brown, soft, puggy when wet, contains a few fine to coarse angular quartz grains and granules and rare white, hard, silicified claystone, weathered.
- 30 - 33 m      Claystone, brown, silty, soft, puggy when wet, contains abundant coarse to fine angular quartz grains and rare white, hard, silicified claystone, weathered.
- 33 - 36 m      Claystone, as above, contains a few light grey, soft, silty beds (?unweathered).
- 36 - 39 m      Sandstone, white, fine to medium grained, angular, poorly sorted, contains abundant silty clay, puggy when wet, soft, slightly weathered.
- 39 - 42 m      Claystone, light brown and white, soft, puggy when wet, rare silt grains, slightly weathered.
- 42 - 45 m      Claystone, white and light grey, soft, contains rounded clay clasts up to 3 mm across, puggy when wet, slightly weathered.
- 45 - 48 m      Claystone, as above, underlain by sandstone, red-brown, fine to medium grained, moderately sorted, silty, rounded, frosted quartz grains, possibly aquifer, ?mottled in part, moderately hard.
- 48 - 51 m      Claystone, light brown, soft, puggy when wet, silty and sandy, contains numerous white, hard silicified beds.
- 51 - 54 m      Claystone, white, hard, extremely silicified, contains thin tracings of agate, and slight manganese staining, contains a few white, soft beds, puggy when wet, little recovery.
- 54 - 56 m      Claystone, as above.

CORE 1    Interval: 56.00-57.60 m    Cut: 1.60 m    Recovered: 1.40 m

CORE 2    Interval: 57.60-59.60 m    Cut: 2.00 m    Recovered: 1.40 m

58.20 - 58.30 m    Claystone, as above; grades to grey in parts.

58.30 - 59.60 m    Claystone, white, soft, fissile, contains rounded claystone clasts to 5 cm across, slightly calcareous, finely crystalline, contains rare sand grains, grades to claystone with coarse rounded and fine angular sand grains at base.

59.6 - 63 m    Claystone, white, grades from soft, puggy when wet, to hard, silicified.

63 - 66 m    Claystone, white, grades from moderately hard to moderately soft, slightly silicified to moderately silicified.

66 - 69 m    Claystone, white, soft to moderately soft, unsilicified to slightly silicified, puggy when wet.

69 - 72 m    Claystone, white, grades from hard and silicified to soft and puggy when wet.

72 - 75 m    Claystone, light brown, contains white and orange-brown beds, soft, puggy when wet, silty and sandy, finely crystalline.

75 - 78 m    Claystone, light brown, silty and sandy, soft, puggy when wet, contains coarse, rounded, frosted sand grains, contains beds of siltstone, white and orange brown, soft, slightly micaceous and sandstone, white, fine grained, well sorted, frosted.

78 - 81 m    Claystone, siltstone and sandstone as above.

81 - 84 m    Claystone, siltstone and sandstone, as above, sandstone is hard.

- 84 - 87 m      Claystone, light brown, sandy, soft, puggy when wet, interbedded with sandstone, orange-brown, fine grained, subrounded to rounded, very poorly sorted, silty and clayey and claystone, grey, silty, soft to moderately soft, even texture, sparse fine mica.
- 87 - 90 m      Claystone, light brown, light grey and red brown, moderately soft to soft, puggy, when wet, sparse fine mica.
- 90 - 93 m      Claystone, as above, contains rare beds of siltstone, dark brown, hard ferruginised.  
No core was taken at base of hole as Core 2 jammed in barrel due to clayey nature, and core barrel had to be destroyed to extract the core.  
Hole blown from 33.5 m for 30 mins. At first produced 200 l/hr but flow gradually increased to 6000 l/hr after 30 mins, and was still increasing. Water cleared quickly.

BMR LANDER RIVER 6

Hole drilled with mud from 9 m  
12.7 m casing set to 5 m

- 0 - 3 m      Sand, red-brown, medium grained, moderately sorted, rounded, contains fine and angular coarse grains, sparse clay matrix, poorly consolidated.
- 3 - 6 m      Sandstone, brown, fine grained, angular, poorly sorted, contains thin vein of weathered silica, poorly consolidated.
- 6 - 9 m      Sandstone, light brown to white, fine grained, poorly sorted, angular, contains abundant coarse grains, silicified and hard in parts, generally moderately hard.
- 9 - 12 m      Sandstone, brown, coarse grained, angular, poorly sorted, contains abundant angular granules, poorly consolidated.

- 12 - 15 m      Sandstone, as above, highly ferruginised, underlain by sandstone, white, fine to medium grained, angular and rounded, contains coarse angular grains, poorly sorted.
- 15 - 18 m      Sandstone, light red-brown and white, medium grained, rounded, well sorted, poorly consolidated.
- 18 - 21 m      Sandstone, light red-brown, medium grained, well rounded, well sorted, poorly consolidated.
- 21 - 24 m      Sandstone, pink and white, fine grained, well rounded, well sorted, sparse white clay matrix, soft, poorly consolidated.
- 24 - 27 m      Sandstone, light pink, fine grained, well rounded, well sorted, poorly consolidated.
- 27 - 30 m      Sandstone, as above.
- 30 - 33 m      Sandstone, as above.
- 33 - 36 m      Sandstone, white, fine grained, well rounded, rarely sub-rounded, well sorted, sparse white clay matrix, poorly consolidated.
- 36 - 39 m      Sandstone, white, fine grained, well rounded, sparse white clay matrix, poorly consolidated, slightly puggy when wet.
- 39 - 42 m      Sandstone, light pink, fine grained, well rounded, bimodal, sorting, well sorted with clay matrix, puggy when wet, poorly consolidated.
- 45 - 48 m      Sandstone, light pink, fine grained, well rounded, well sorted, sparse white clay matrix, poorly consolidated.
- 48 - 51 m      Sandstone, as above.

- 51 - 54 m      Sandstone, white, very fine grained, well rounded, poorly sorted, contains abundant silt and clay matrix, soft, poorly consolidated.
- 54 - 57 m      Sandstone, white, very fine grained, moderately sorted, well rounded, silt and clay matrix, poorly consolidated.
- 57 - 60 m      Sandstone, white, very fine grained, rounded, poorly sorted, silty and clayey, moderately soft.
- 60 - 63 m      Sandstone, white, fine grained, well rounded, poorly sorted, silt and clay cement, moderately soft.
- 63 - 66 m      Sandstone, light pink, fine grained, well to moderately rounded, well sorted, poorly consolidated.
- 66 - 69 m      Sandstone, light pink, well rounded, well sorted, poorly consolidated.
- 69 - 72 m      Sandstone, as above.
- 72 - 75 m      Sandstone, as above.
- 75 - 78 m      Sandstone, light pink, fine grained, well rounded, moderately sorted, contains some white, poorly sorted beds, silt and clay matrix, poorly consolidated.
- 78 - 81 m      Sandstone, as above.
- 81 - 84 m      Sandstone, light pink, fine grained, well rounded, well sorted, poorly consolidated.
- 84 - 87 m      Sandstone, white, fine grained, well rounded, poorly sorted, silt and clay matrix, slight iron-staining, moderately hard.
- 87 - 90 m      Sandstone, as above.

90 - 93 m      Sandstone, white, fine grained, well rounded, moderately sorted, slight silt and clay matrix, moderately hard.

CORE 1    Interval: 93.00-95.60.    Cut: 2.60 m    Recovered: 2.54 m

93.06 - 95.60 m      Sandstone, white, fine grained, bimodal sorting with well sorted grains in clay matrix, rounded, even texture, regular fracture, vague slump structures, at 93.50 m, moderately hard.

CORE 2    Interval: 95.60-97.30 m    Cut: 1.70 m    Recovered: 1.52 m

95.78 - 97.30 m      Sandstone, white, fine grained, bimodal sorting with well sorted grains in clay matrix, even texture, regular fracture, moderately hard.

CORE 3    Interval: 97.30-100.30 m    Cut: 3.00 m    Recovered: 2.72 m

97.58 - 100.30 m      Sandstone, white with light brown laminae, medium grained rounded, bimodal with well sorted sand grains in clay matrix, lamination due to variations in clay content, lamination dips at up to 5°, probably primary, regular fracture along lamination, moderately hard.

CORE 4    Interval: 100.30-103.30 m    Cut: 3.00 m    Recovered: 2.76 m

100.54 - 101.00 m      Sandstone, white, medium grained, bimodal sorting with well sorted sand in clay matrix, laminated with several clayey laminae, regular fractures.

101.00 - 103.30 m      Sandstone, white, fine grained, even texture, well sorted with clay matrix, moderately rounded, regular fractures. Water was blown from 27 m at 12000 l/hr for 20 mins, white and clayey but settles quickly.



BMR LANDER RIVER 7

Hole drilled with mud from 6 m

12.7 cm casing set to 5 m. Casing slipped into hole.

- |           |  |
|-----------|--|
| 0 - 3 m   | <u>Sand</u> , red-brown, medium grained, subrounded to rounded, hard angular coarse grains, well sorted, little matrix, unconsolidated.  |
| 3 - 6 m   | <u>Sandstone</u> , light brown, coarse grained, angular, poorly sorted, silty and clayey, moderately soft, contains ferruginous concretions to 1 cm across and rare angular granules, weathered. |
| 6 - 9 m   | <u>Sandstone</u> , light brown, rounded and angular, fine grained, poorly sorted, contains angular granules and pebbles of silicified sandstone in silt and clay matrix, poorly consolidated.    |
| 9 - 12 m  | <u>Sandstone</u> , brown, very coarse grained, contains numerous granules, angular and rounded, well sorted, poorly consolidated, slight mica.   |
| 12 - 15 m | <u>Sandstone</u> , red-brown, fine grained, very well rounded, well sorted, some silt and clay matrix, poorly consolidated, slightly ferruginised.   |
| 15 - 18 m | <u>Sandstone</u> , as above.   |
| 18 - 21 m | <u>Sandstone</u> , orange, fine grained, very well rounded with rare angular grains, very well sorted, rare silt and clay matrix, poorly consolidated.   |
| 21 - 24 m | <u>Sandstone</u> , light orange, as above.   |
| 24 - 27 m | <u>Sandstone</u> , light orange, very fine grained, rounded to subrounded, well sorted, rare silt and clay, poorly consolidated.   |

- 27 - 30 m      Sandstone, light pink, fine grained, well rounded, well sorted, rare silt and clay, poorly consolidated.
- 30 - 33 m      Sandstone, light brown, fine grained, well rounded, well sorted, contains abundant orange brown, very fine rounded grains probably falling into hole from above.
- 33 - 36 m      Sandstone, as above.
- 36 - 39 m      Sandstone, white, very well rounded, very well sorted, fine grained, poorly consolidated, rare silt and clay matrix, rare orange-brown grains probably fallen into hole from above.
- 39 - 42 m      Sandstone, as above.
- 42 - 45 m      Sandstone, as above.
- 45 - 48 m      Sandstone, white, fine grained, well rounded to subrounded, poorly consolidated, rare silt and clay matrix.
- 48 - 51 m      Sandstone, as above.
- 51 - 54 m      Sandstone, as above.
- 54 - 57 m      Sandstone, white, fine grained, moderately sorted with abundant medium and very fine grains, some silt and clay, rounded to subrounded, poorly consolidated.
- 57 - 60 m      Sandstone, white, fine grained, rounded to subrounded, well sorted, poorly consolidated, contains a few fine, rounded, red-brown grains, probably fallen into hole from above.
- 60 - 63 m      Sandstone, as above.
- 63 - 66 m      Sandstone, light pink, fine grained, well sorted, well rounded, soft, little matrix.

66 - 69 m	<u>Sandstone</u> , as above.
69 - 72 m	<u>Sandstone</u> , as above.
72 - 75 m	<u>Sandstone</u> , as above.
75 - 78 m	<u>Sandstone</u> , as above.
78 - 81 m	<u>Sandstone</u> , as above, rare rounded medium grains.
81 - 84 m	<u>Sandstone</u> , as above, some subrounded grains.
84 - 87 m	<u>Sandstone</u> , light pink, fine grained, well sorted, well rounded, soft, little matrix.
87 - 90 m	<u>Sandstone</u> , as above.
90 - 93 m	<u>Sandstone</u> , as above.
93 - 96 m	<u>Sandstone</u> , as above.
96 - 101.10 m	<u>Sandstone</u> , as above.

CORE 1    Interval: 101.10-104.10 m    Cut: 3.00 m    Recovered: 2.58 m

101.52 - 104.10 m	<u>Sandstone</u> , white, fine grained, grades to medium in parts, well rounded, well sorted, slight white clay matrix, hard, even fracture, even texture, rare indistinct laminae at up to 20°, possible organic burrows in intervals 101.52 to 101.62 m and 105.50 to 105.90 m oriented both vertically and horizontally, rare soft clayey laminae, soft and friable from 106.00 to 106.40 m.
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CORE 2    Interval: 104.10-107.10 m    Cut: 3.00 m    Recovered: 2.58 m

104.32 - 107.10 m	<u>Sandstone</u> , as above.
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CORE 3    Interval:   107.10-110.10 m    Cut:   3.00 m    Recovered:   3.00 m

107.10 - 110.10 m    Sandstone, as above.

CORE 4    Interval:   110.10-113.10 m    Cut:   3.00 m    Recovered:   3.00 m

110.10 - 113.10 m    Sandstone, as above.

Water was blown from the hole at well in excess of  
1200 l/hr.

PARKLANDS BORE

0 - 1.52 m    Sandstone, brown, fine grained, silty.

1.52 - 4.57 m    Sandstone, brown, fine to medium grained, silty.

4.57 - 6.01 m    Sandstone, creamy brown, fine to medium grained, silty.

6.01 - 7.62 m    Siltstone, brown, medium grained, sandy.

7.62 - 9.14 m    Sandstone, grey, fine-medium and coarse grained.

9.14 - 19.81 m    Sandstone, brown, fine-medium and coarse grained, silty.

19.81 - 24.38 m    Sandstone, fine-coarse and very coarse, very silty.

24.38 - 27.43 m    Sandstone, brown, medium-coarse and very coarse, slightly  
silty.

27.43 - 30.48 m    Sandstone, brown, fine to medium and coarse grained, silty,  
clayey.

30.48 - 33.53 m    Siltstone, grey and pale brown, with very fine sand grains.

33.53 - 36.58 m    Sandstone, very fine to fine and medium grained, silty.

36.58 - 43.59 m    Sandstone, red-brown, fine grained, silty.

NUMAGALONG BORE

- 0 - 12.19 m      Sandstone, medium-coarse grained, silty.
- 12.19 - 18.29 m      Sandstone, brown, fine-medium grained, silty.
- 18.29 - 21.34 m      Sandstone, reddish-brown, fine to very coarse grained.
- 21.34 - 24.38 m      Sandstone, pale brown to grey, medium to coarse grained, very silty.
- 24.38 - 30.48 m      Siltstone, khaki and pale brown  
(?Tertiary) (Could perhaps be lower Palaeozoic (UNM)).

Bonney Well 1:250 000 Sheet area

BMR BONNEY WELL 1

Drilled with mud from 12 m

Cased to 5 m with 12.7 cm casing.

- 0 - 3 m      Sand, red-brown, coarse to fine grained, quartzose, poorly sorted, subangular, contains abundant silt and clay, sparse granules, soft, poorly consolidated.
- 3 - 6 m      Sandstone, brown, medium to fine grained, quartzose, poorly sorted, subangular, contains abundant silt and clay, sparse granules, moderately soft, moderately consolidated.
- 6 - 9 m      Sandstone, as above, but with a few ironstone concretions and bleached fragments, typical of mottled zone of laterite soil profile.
- 9 - 12 m      Sandstone, brown, medium to fine grained, quartzose, sub-angular to subrounded, poorly sorted, contains abundant silt and clay, sparse granules and pebbles, moderately hard, few silicified beds; basal 1 m is unconsolidated coarse quartz sand, angular, well sorted.

- 12 - 15 m      Claystone, white, soft, friable, puggy when wet, sparse fine mica flakes, thin laminations shown by hardness variation in some fragments.
- 15 - 18 m      Claystone, white, silty, soft, friable, puggy when wet, abundant fine mica flakes, and medium angular quartz grains.
- 18 - 21 m      Siltstone, sandy white, moderately soft, micaceous, contains abundant fine sand grains and common coarse angular quartz grains.
- 21 - 24 m      Sandstone, white, fine grained, subangular to rounded, some grains frosted, poorly sorted, silty and clayey matrix, soft, friable, puggy when wet, micaceous.
- 24 - 27 m      Sandstone, white, fine grained, rounded to subrounded, moderately sorted, common clay and silt matrix, soft, friable puggy when wet, micaceous, rare coarse angular iron stained quartz grains.
- 27 - 30 m      Sandstone, as above, common medium-grained angular iron stained quartz grains.
- 30 - 33 m      Claystone, silty white, soft, friable, puggy when wet, even texture, abundant fine mica flakes.
- 33 - 36 m      Claystone, silty, white, soft, friable, puggy when wet, rare hard ferruginous concretions.
- 36 - 37.5 m      Claystone, white to grey, soft, friable, puggy when wet, sparse fine mica grains.
- 37.5 - 39 m      Claystone, brown, silty, soft, friable, puggy when wet, contains rare coarse quartz grains.
- 39 - 42 m      Claystone, brown, silty, soft, friable, puggy when wet.

- 42 - 45 m      Sandstone, brown, fine to medium grained, angular, poorly sorted, silty and clayey matrix, soft, friable, puggy when wet, contains ferruginous concretions.
- 45 - 48 m      Sandstone, as above, interbedded with sandstone, white, fine grained, well sorted, well rounded, some grains frosted, moderately hard.
- 48 - 51 m      Claystone, brown and grey, soft, friable, puggy when wet, interbedded with sandstone, white, fine grained, well sorted, even texture, well rounded.
- 51 - 54 m      Sandstone, brown, fine grained, poorly sorted, clay and silt matrix, soft, friable, puggy when wet, interbedded with sandstone, white, fine grained, moderately hard, well sorted, well rounded.
- 54 - 57 m      Sandstone, fine to medium grained, soft, friable, poorly consolidated, poorly sorted, subangular to well rounded, coarse frosted grains and coarse iron stained grains common.
- 57 - 60 m      Sandstone, as above.
- 60 - 63 m      Siltstone, clayey, light brown, soft, puggy when wet, contains a few sand grains, interbedded with sandstone, fine grained, well sorted, well rounded, moderately hard.
- 63 - 66 m      Claystone, grey, moderately soft, fissile, micaceous, interbedded with sandstone, pale brown, fine grained, well rounded to subrounded, well sorted, moderately hard, micaceous.
- 66 - 69 m      Claystone and Sandstone, as above.
- 69 - 72 m      Sandstone, pale brown, fine grained, well rounded, well sorted, moderately hard, contains thin bed of pink to red chert, hard.

72 - 74 m      Sandstone, pale brown to pale pink, fine grained, well rounded, well sorted, moderately hard, interbedded with sparse beds of claystone, grey, micaceous, moderately soft.

CORE 1:   Interval:   74.00-76.00 m   Cut:   2.00 m   Recovery:   1.60 m

74.00 - 75.60 m      Sandstone; white to pink, medium to coarse grained, well sorted, well rounded, moderately hard, contains a few coarse, frosted, well rounded quartz grains, laminated and cross laminated, contains abundant coarse to fine black mica flakes, a few well rounded, coarse green glauconite grains, one bed contains coarse angular sand grains and granules of pink feldspar, some beds contain fragments of calcite up to 5 mm across, some of which are derived from brachiopods, some beds contain clay clasts to 1 cm across; beds range from 1 cm to 20 cm in thickness, interbedded with claystone, grey, moderately soft, contains abundant fine to coarse, black and white mica flakes, laminated in parts, contains thin lenses and irregular bodies to 1 cm thick of sandstone, as above, caused by bioturbation.  
No water test completed, but other holes which penetrated well sorted sandstones produced flows of at least 2400 l/hr.

BMR BONNEY WELL 2

Drilled with mud from 6 m.

Cased to 5 m with 12.7 cm casing

0 - 3 m      Sand, red-brown, coarse grained, angular, medium sorted, poorly consolidated, contains sparse silt and clay.

3 - 6 m      Sand, red-brown, coarse-grained, medium sorted, contains later .tised sediment fragments, poorly consolidated.

6 - 9 m      Siltstone, white, clayey, sandy, highly silicified, highly weathered, soft, waxy texture.



- 9 - 12 m      Sandstone, light brown, fine grained, poorly sorted, silty and clayey, angular, rare coarse grains, moderately hard, silicified, weathered.
- 12 - 15 m      Sandstone, brown, fine to coarse grained, poorly to moderately sorted, angular, moderately soft, contains granules and small pebbles.
- 15 - 18 m      Sandstone, light green, fine grained, poorly sorted, angular, moderately hard, rare medium grained, moderately sorted angular grains, contains granules.
- 18 - 21 m      Sandstone, dark brown, fine grained, moderately sorted, angular, moderately hard, sparse silt and clay, very weathered.
- 21 - 24 m      Sandstone, light brown, coarse grained, angular, well sorted, contains some coarse grains of ferruginised sediment, poorly consolidated.
- 24 - 27 m      Sandstone, light brown, coarse grained, angular, well sorted, poorly consolidated.
- 27 - 30 m      Sandstone, light brown, coarse grained, angular, well sorted, poorly consolidated.
- 30 - 33 m      Sandstone, red-brown, fine grained, angular, poorly sorted, moderately hard, clayey and silty, weathered, ferruginised.
- 33 - 36 m      Sandstone, light brown and red-brown, fine grained, angular, moderately soft to moderately hard, contains angular quartz granules.
- 36 - 39 m      Sandstone, red-brown, fine grained, poorly sorted, angular, moderately hard.
- 39 - 42 m      Sandstone, as above.

- 42 - 45 m      Sandstone, as above.
- 45 - 48 m      Siltstone, light brown, sandy, contains abundant fine, angular to rounded sand grains, moderately soft, grades to fine grained sandstone in parts, weathered.
- 48 - 51 m      Sandstone, white to light brown, fine to medium grained, poorly sorted, angular to rounded and frosted, very silty and clayey, rare fine mica, weathered.
- 51 - 54 m      Sandstone, as above.
- 54 - 57 m      Sandstone, white, fine grained, well to poorly sorted, angular, grades into siltstone and claystone in parts, moderately hard to moderately soft, weathered.
- 57 - 60 m      Sandstone, white to light brown, fine grained, rarely medium grained, angular, grades from well sorted to poorly sorted, grades to siltstone in parts, moderately hard to moderately soft, contains rare rounded, frosted grains.
- 60 - 63 m      Siltstone, brown, sandy, contains abundant fine sand grains, clayey, soft, puggy when wet, overlain by sandstone, white, fine grained, well sorted, angular, moderately hard.
- 63 - 66 m      Sandstone, light brown, coarse to fine grained, rounded, frosted, poorly consolidated, well sorted.
- 66 - 69 m      Sandstone, as above.
- 69 - 72 m      Sandstone, brown, medium grained, well sorted, well rounded, rare angular grains frosted, sparse brown clay cement, poorly consolidated.
- 72 - 75 m      Sandstone, brown, rarely white, medium to fine grained, well sorted, well rounded, some grains frosted, sparse brown and white matrix, poorly consolidated.

75 - 78 m            Sandstone, as above.

78 - 81 m            Claystone, light green, rarely brown and white, silty, sandy, soft, puggy when wet.

81 - 84 m            Claystone, as above.

84 - 87 m            Claystone, light green, soft, silty, sandy, puggy when wet, contains a few beds of siltstone, dolomitic, white, moderately hard.

CORE 1:   Interval:   87.00-90.00 m   Cut:   3.00 m   Recovered:   1.40 m

88.6 - 88.95 m       Claystone, light green moderately soft, very fissile, highly micaceous with black and white coarse mica flakes interlaminated with siltstone, very light green, moderately hard, micaceous.

88.95 - 90.00 m       Siltstone, grades to very fine sandstone with a few rounded grains, many black and white coarse mica flakes, regular fracture, jointed vertically, contains thin laminae of light green soft, micaceous claystone, possibly derived from tuffaceous rocks, horizontal organic trails on surfaces of laminae.

90 - 93 m            Claystone, and Siltstone, as above.

93 - 96 m            Claystone, light green and brown, and Siltstone, as above.

96 - 99 m            Claystone and Siltstone, as above.

CORE 2   Interval:   101.45 m   Cut:   3.00 m   Recovered:   1.50 m

102.95 - 103.40 m   Sandstone, white, fine grained, very well to subrounded, very well sorted, little clay matrix, very soft, poorly consolidated, sample mostly decomposed due to exposure to heavy rain.

103.40 - 104.45 m Sandstone, white, some light brown iron staining on indistinct laminae, fine grained, rounded to subrounded, well sorted, bimodal sorting with clayey cement, indistinct laminae dip at 20°, possibly due to slumping, moderately hard, regular fracture, vertical joint, rare green soft silty laminae.

Hole was blown from 65 m, producing 6000 l/hr of water.

Note: Bubbles from hole for at least 3 weeks after drilling, possibly due to air blown into formation during water test.

BMR BONNEY WELL 3

Hole drilled with mud from 6 m

Hole diameter 11.4 m

12.7 cm casing set to 5 m

- 0 - 3 m Clay, red-brown, very silty, soft, unconsolidated, contains beds of white, hard, silicified sediment and light brown, moderately soft siltstone.
- 3 - 6 m Sandstone, white, coarse to fine grained, moderately sorted, angular, soft, contains rare mica and feldspar, very weathered.
- 6 - 9 m Sandstone, brown, fine grained, moderately sorted, angular, moderately soft, very weathered, contains a few angular and mica flakes.
- 9 - 12 m Granule conglomerate, angular, moderately sorted with abundant angular coarse sand grains, poorly consolidated, weathered, soft.
- 12 - 15 m Sandstone, light brown, fine to coarse grained, poorly sorted, angular, very clayey, silty, weathered.
- 15 - 18 m Sandstone, brown and light grey, fine to coarse grained, poorly sorted, angular, silty and clayey, soft, weathered, a few fine mica flakes.

- 18 - 21 m      Siltstone, light brown, soft, friable, weathered, sandy.
- 21 - 24 m      Siltstone, light grey and orange-brown, soft, contains fine white, mica, slightly puggy when wet.
- 24 - 27 m      Sandstone, as below.
- 27 - 30 m      Sandstone, light brown, medium to coarse grained, poorly sorted, silty and clayey, angular, soft, contains a few mica flakes.
- 30 - 33 m      Siltstone, light brown, soft, sandy friable, slight mica.
- 33 - 36 m      Siltstone, as above.
- 36 - 39 m      Siltstone, as above, a few angular granules.
- 39 - 42 m      Siltstone, light brown and light grey, soft, slightly sandy, slightly puggy when wet. sparse mica, weathered.
- 42 - 45 m      Siltstone, as above.
- 45 - 48 m      Siltstone, as above.
- 48 - 51 m      Siltstone, light brown and white, sandy, contains a few angular coarse sand grains, soft, sparse white mica flakes.
- 51 - 54 m      Sandstone light brown, fine grained, poorly sorted, very silty and clayey, soft.
- 54 - 57 m      Siltstone, brown, moderately hard, very clayey, even texture.
- 57 - 60 m      Siltstone, dark brown, soft, slightly puggy when wet, very clayey, contains a few angular coarse to fine sand grains.
- 60 - 63 m      Siltstone, brown, soft, slightly puggy when wet, clayey, contains rare fine mica flakes.

- 63 - 66 m      Siltstone, white, brown and purple-brown, soft, slightly puggy when wet, weathered.
- 66 - 69 m      Siltstone, brown, clayey, soft, slightly puggy when wet, weathered, fine mica flakes.
- 69 - 72 m      Sandstone, brown, angular, fine grained, poorly sorted, very silty and clayey, soft, interbedded with claystone, white, soft, puggy when wet, silty.
- 72 - 75 m      Sandstone and claystone, as above.
- 75 - 78 m      Siltstone, brown, soft, clayey and sandy, interbedded with claystone, white, silicified and weathered, moderately hard, stained purple-brown in parts.
- 78 - 81 m      Siltstone and claystone, as above.
- 81 - 84 m      Siltstone, white, soft, clayey and sandy, contains fine white mica, silicified, hard and white ferruginised, moderately hard and purple brown in parts, contains a large feldspar granule.
- 84 - 87 m      Claystone, orange-brown, rarely white, puggy when wet, contains angular fine sand grains, possibly weathered green chlorite.
- 87 - 106.95 m      Granite or Acid Gneiss, coarsely crystalline (5 m), very soft, decomposed. Cuttings are predominantly of angular quartz with rare green chlorite, white mica and medium crystalline (1 mm) amphibole in soft orange brown clay matrix (possibly decomposed feldspar). The chlorite, mica and amphibole fragments become more prominent towards base of interval. Drilling rate is 30 cm per hour at base of interval.

CORE 1    Interval: 106.95-109.95 m    Cut: 3.00 m    Recovered: 2.15 m

107.80 - 109.95 m    Pegmatite, light pink, very hard, composed almost entirely of extremely coarsely crystalline (up to 1 m) feldspar showing perthitic texture with light orange-pink feldspar interspersed with white to clear feldspar in thin bodies parallel to cleavage up to 2 cm thick, contains a few biotite crystals 3 cm thick and 10 cm long throughout, fractured in parts with iron staining and rare pyrite and white clay or mica in fractures, several fragments of green chlorite with disseminated biotite flakes to 5 mm across at top of core.