DEPARTMENT OF MINES
SOUTH AUSTRALIA

GROUNDWATER SURVEY

Hundred Parra Wirra, Part Section 134

- J.M. Keen -

by

S.R. BARNETT
GEOLOGICAL ASSISTANT

26th June, 1973

Rept.Bk.No. 73/156
G.S. No. 5161
Hyd. No. 2554
D.M. No. 673/73

RB 73/156

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GROUNDWATER SURVEY

Location

General: 10 km north of Birdwood

Region: 4

County: Adelaide

Hundred: Parra Wirra

Part Section: 134

Owner: J.M. Keen

Postal Address: 21 Malcolm Avenue,
HOLDEN HILL

Telephone: 615500 or 973000 Ex. 49

Requirements

Water required for: Irrigation and watering of stock.

Quantity: 2.5 l/sec (2000 g.p.h.)

Quality: As good as possible.

HYDROGEOLOGICAL REPORT

Physiography and Land Use

The property inspected straddles a low east-west ridge with gentle slopes about 426 metres above sea level. Most of the property was covered with natural scrub but at the time of the inspection, half of the property had been cleared by bull-dozer.

Climate

Nearest rainfall station: Birdwood.

Mean annual rainfall: 730 mm (28.87 ins).

Remarks on rainfall pattern: The mean monthly distribution over the past 77 years to 1964 has been in inches (1 inch = 100 points).

Month	Jan	Feb	Mar	Apr	May	Jun
Points	97	91	98	218	331	413
Month	Jul	Aug	Sep	Oct	Nov	Dec
Points	398	397	319	252	154	119

Surface Hydrology

There are no creeks, springs or surface storages on the property.

Geology

Soil Cover: A thick mantle of a dark brown-grey sandy soil covers the property with isolated outcrops of massive vein quartz trending north-south.

Rock Units: Quaternary - alluvial flood plains
Tertiary - sands and gravels
Proterozoic - Torrensian Burra Group

Lithology: Quaternary - alluvial silts, sands and gravels
Tertiary - undifferentiated white quartz sands with ferruginous matrix overlying the Proterozoic bedrock.
Proterozoic - interbedded feldspathic quartzite and shale with massive veins of white quartz.

Direction and Amount of dip: Regionally, the bedrock is dipping about 50^{o} to the east.

Aquifer Assessment

Type: Free water table. Groundwater is stored in the joints and fractures of the bedrock. The clay weathering products of the shales tend to infill these joints and fractures and hence reduce the storage capacity and also increase salinities.

Potential Recharge: Recharge is expected to be moderate at best due to the infilling of joints and fractures.

Borehole Site Location

General: A borehole site is recommended for the southwest corner of the property, preferably over outcrops of milky white quartz.

Reason for location: The southwest corner is the lowest point on the property. Hence the depth to the water table will be minimal. Also the hard vein quartz, if fractured, should contain better supplies of groundwater than the shales.

Proposed Depth: 45 - 60 m.

Expected Yield: 1.0 - 3.0 l/sec (800 - 2500 g.p.h.).

Expected Quality: 4000 - 6000 mg/l.

Probable Log: 0 - 3 m alluvial sands and silts
3 - 6 m Tertiary sands and gravels (?)
6 - ? m Interbedded slates and quartzites.

Drilling and Testing Recommendations

Drilling Hazards: The bore should be cased to the top of unweathered rock with the casing extending 0.5 metres above ground level to prevent influx of sediment into the bore.

Sampling: All waters cut and at intervals in the aquifer to detect any increase in salinity. Samples (26 fl oz) should be brought into the Department for testing free of charge. A geological log would be appreciated.

Pump Test: This service can be supplied by the driller and/or pump distributor.

Summary

The property was inspected geologically and a borehole site is recommended for the southwest corner of the property. The supply expected (4 - 6000 mg/l at 100 - 3.0 l/sec (800 - 2500 g.p.h.) from 45 - 60 m) is suitable for stock supplies but is too saline for irrigation of lucerne and human consumption. Rainwater catchment is recommended for a drinking supply.

26th June, 1973
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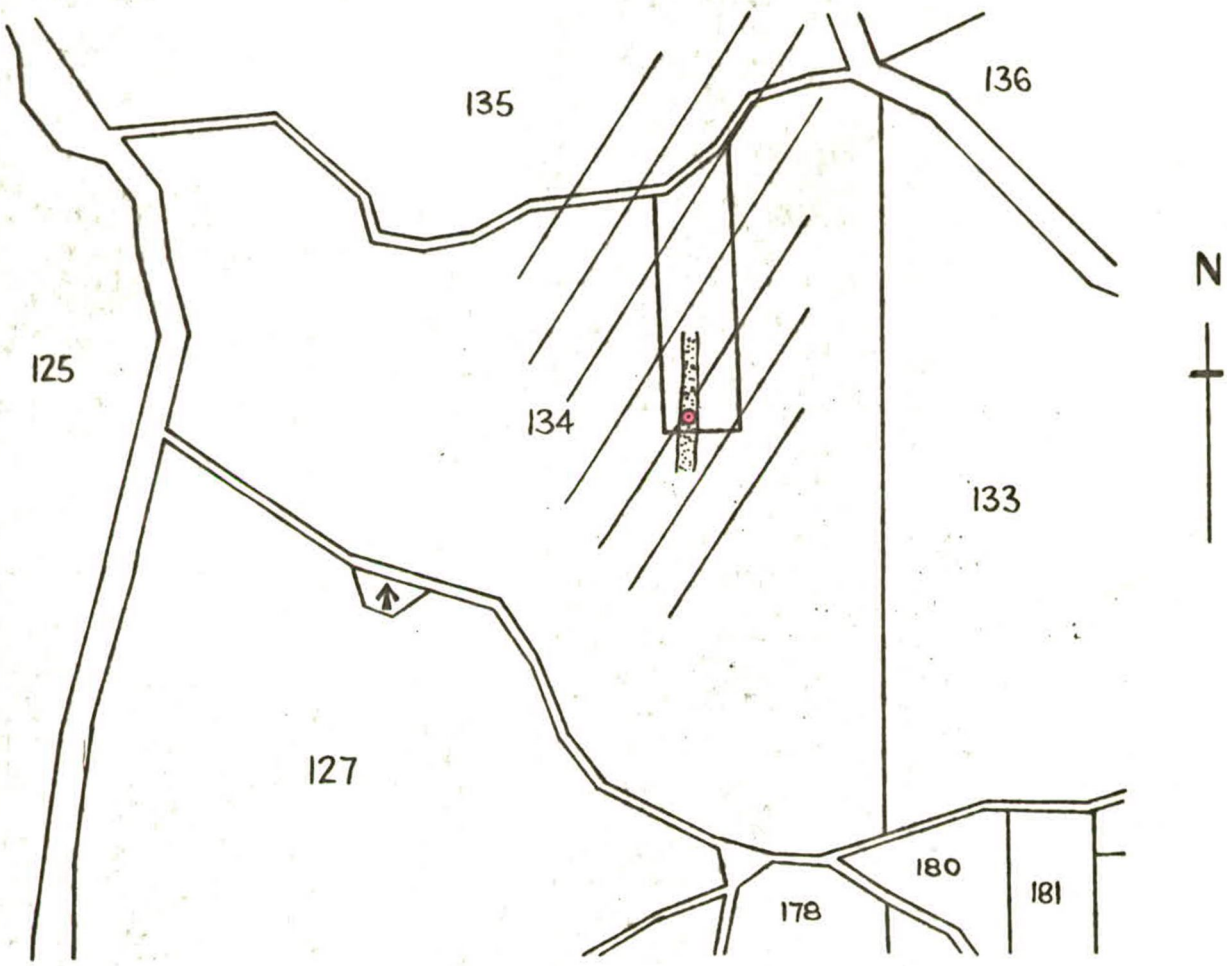
S.R. BARNETT
GEOLOGICAL ASSISTANT

Survey Date: 20/6/73



SCALE

METRES 500 0 500 1000 METRES

LEGEND

Torrensian – Burra Group : feldspathic quartzites with interbedded shales

Massive milky white quartz vein

Existing borehole ● 160 –Depth in metres
2015 –Salinity in milligrams per litre
5000 –Supply in litres per sec.
2-72 –Month , year

Well ■

Spring ✢

Abandoned borehole ■

Proposed boresite ⊙

Strike and dip of bedding 60

Strike and dip of jointing 50

Strike and dip of foliation 35

Strike and dip of cleavage 45

Geological boundary

Fault line

Drainage lines

Surface storage

DEPARTMENT OF MINES - SOUTH AUSTRALIA

HYDROGEOLOGY SECTION	GROUNDWATER SURVEY PT. SEC. 134. HD. PARA WIRRA J. M. KEEN	Date. 27 JUNE '73
Compiled. S.R. Barnett		Drg.No. S10362 Ha4
Drn. D.J.M. Ckd.		

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