GROUNDWATER SURVEY

Part.Section 955, Lot 3 Hundred Kuitpo

- W.W. Dart -

by

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Department of Mines
South Australia —

DEPARTMENT OF MINES
SOUTH AUSTRALIA

Rept.Bk.No.73/100
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GROUNDWATER SURVEY

Location

General: 1.6 km on right from Kangarilla travelling towards Meadows.

Region: 4

County: Adelaide

Hundred: Kuitpo

Section: Pt. 955, Lot 3

Owner: W.W. Dart

Postal Address: 25 Cungena Avenue,
PARKHOLME, 5043

Telephone: 77-3693 (home)
23-1733 (work)

Requirements

Water required for: Domestic, lucerne & vegetables.

Quantity: About 1.3 l/sec.

Quality: Should be less than about 1 000 mg/l for all above uses. Lucerne may be irrigated with water up to 3 000 mg/l.

Other factors: The applicant requires enough water to irrigate about 0.4 hectares.

HYDROGEOLOGICAL REPORT

Physiography and Land Use

The applicant's property comprises portion of the southern slopes of Dashwood Gully - about 1 km from Kangarilla. Land elevation ranges from about 170-200 m above sea level. Fruit and other trees have been planted on the property which is at present used for stock grazing and limited pasture growing. The property is only 2.4 hectares.

Climate

Nearest rainfall station: Clarendon

Mean annual rainfall: 825 mm

Remarks on rainfall pattern: The applicant reports about an 800 mm average rainfall on his land - very similar to Clarendon. The pattern is typical of the Adelaide hills - most rain falling in winter. The owner requires additional water during the drier summer months when less than 25 mm rain is recorded.

Surface Hydrology

Creek name: None on property - but Dashwood Gully Creek runs just to the north.

Characteristics: Dashwood Gully Creek is perennial - flowing strongly in winter but at a much slower rate in summer.

Springs: None on the property.

Surface storage: None on property.

Geology

Soil Cover: Soil cover is virtually complete except for small outcrops of bedrock on the northern edge and the upper slopes of the property. It is mainly composed of a dark to light brown silty soil with fragments of bed rock and vein quartz. It becomes reddish brown and more clayey at depth, particularly up slope. Maximum thickness is only about 1-2 m.

Rock Units: Torrensian phyllites and quartzite.

Lithology: The phyllites are light, yellowish to grey when fresh and contain injected quartz veins. The quartzite is medium and coarse grained, white, partly cross bedded, rather massive and about 20-40 m thick.

Direction and Amount of Dip: 20-30° to the south east.

Structural Features: The quartzite is reasonably well jointed and fractured as seen in the quarry near the house

Aquifer Assessment

Type: Water table - water is expected in the pore spaces, fractures and joints in the quartzite and in fractures within the phyllites. Very small supplies are expected in the phyllites. Also, on weathering, these rocks produce clayey breakdown products which tend to seal the fractures and impede water flow. Soluble salts are also introduced into the bore which increase the salinity.

The quartzite bed is considered the best aquifer - much more water of better quality is usually obtained from this type of rock.

Extent: The quartzite underlies the property at varying depths. It dips into the hill side and could be intersected at the water table at the lower end of the property.

Potential Recharge: Recharge is expected from downward seepage of water to the water table from the adequate rainfall and from the discharge down Dashwood Gully Creek.

Borehole Site Location

General: No new site was chosen.

Reason for location: An existing bore on the property, drilled to a depth of 33 m, produces good quality water (550 m.g./l.) but only a limited supply. According to the owner, the bore will only supply water for about 20 minutes a day before sucking air. The owner also reported that the bore, drilled by percussion methods, was stopped when drilling became very slow due to presence of hard quartz veins and possible quartzite. In other words the bore was terminated prematurely. It is suggested that the bore now be deepened by 15-20 metres, preferably with a rotary rig so as to intersect the quartzite bed exposed on the north eastern edge of the property.

Proposed Depth: 45-55 m

Expected Yield: 0.6-1.3 l/sec.

Expected Quality: 500-1 000 mg/l.

Probable Log: 0 - ?40 m - Soil and weathered siltstone, phyllite.

?40 m- ?0 m - Quartzite.

?70 m+ Phyllite.

Drilling and Testing Recommendations

Drilling Hazards: No real hazards are expected. A rotary rig is recommended for the deepening of this borehole since hard formations will be encountered.

Sampling: Any waters cut should be sampled and brought into the Department for testing (free of charge).

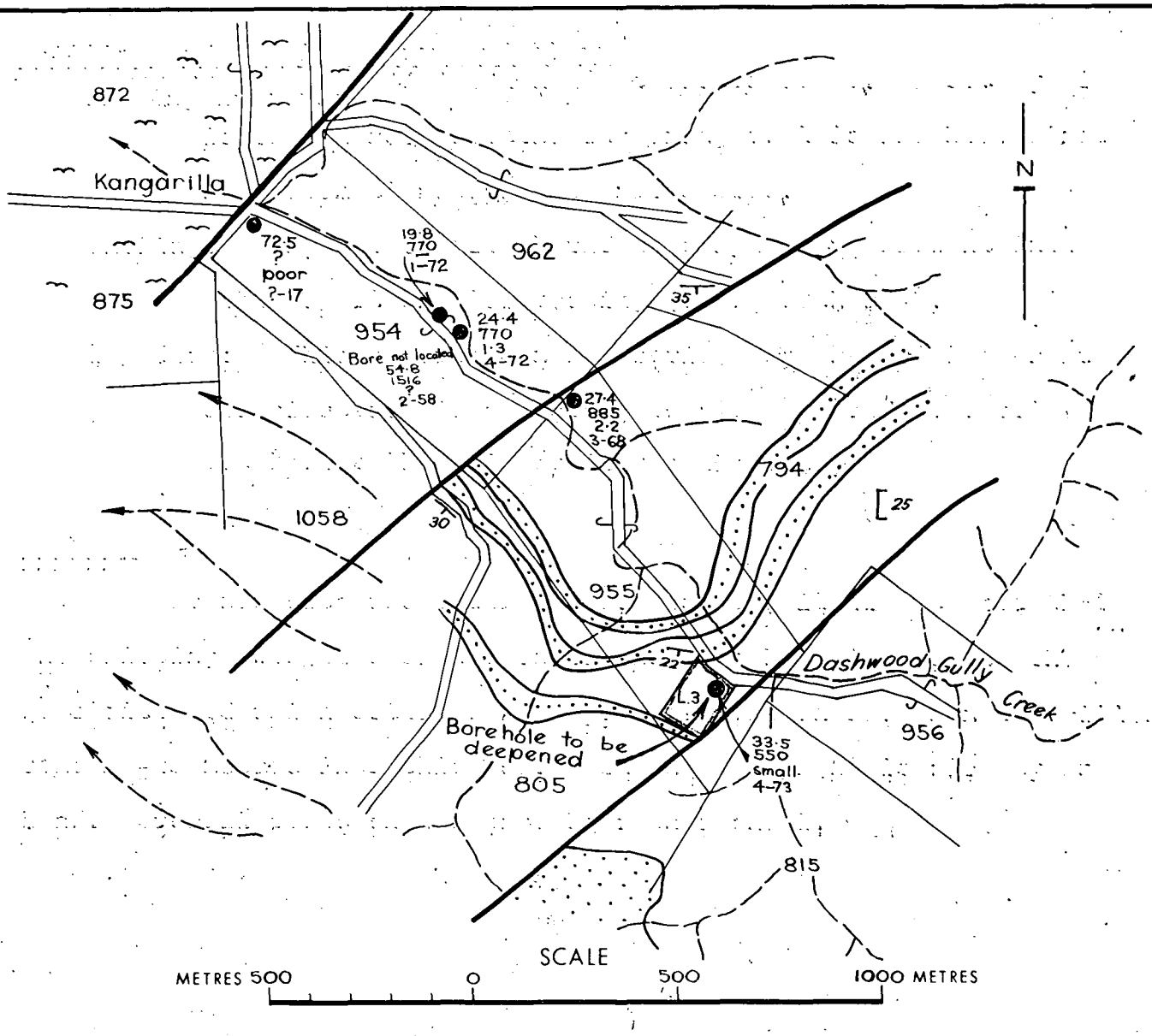
Pump Test: This service can be provided by the driller or pump distributor. Some testing of yield should be carried out before the driller leaves the site.

Summary

No new site was recommended. Instead it is proposed that the existing bore be deepened until the bore hole intersects the quartzite bed which outcrops nearby. The bore should then be drilled some 20-25 metres into this bed. Pumping equipment is already on hand. Overall costs should thus be rather small.

AFW:FdeA
11.4.73

GEOLOGIST: A.F. WILLIAMS
Survey Date: 4.4.73



LEGEND

Slope alluvium – clays with bedrock fragments

Stonyfell Quartzite – white thick bedded quartzite with interbedded phyllites. Some quartz veins. } Torrensian

Existing borehole ● 160 –Depth in metres
2015 –Salinity in milligrams per litre
5 –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

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