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Department of Mines South Australia

REPORT ON GROUNDWATER PROSPECTS

SECTION 12, HD. MORTLOCK

L.A. & N.J. Sampson

This property was inspected on 11/8/59.

REQUIREMENTS:

Advice on the prospects of obtaining water suitable for irrigation, a supply of several thousand gallons per hour being required.

LOCATION. TOPOGRAPHY:

Situated about $3\frac{1}{2}$ miles westward of Edillilie the property occupies undulating country with a broad depression trending southerly through the western part. Drainage is southerly along this depression toward Lake Wangary.

Average rainfall in the area is approximately 18 inches per annum.

GEOLOGY. HYDROLOGY:

Bedrock of Archaean age, consisting of gneiss, schist and quartzite underlies the area generally, in some places at considerable depth. The nearest outcrops are along the North Block-South Block range, where quartzite is quite prominent.

Overlying bedrock in parts is a succession of sands and clays, lignitic in part, of variable thickness and extent. These sediments which are Tertiary in age have been intersected in a deep bore at Cummins and are overlain by alluvium of Pleistocene-Recent age.

The alluvium consists of sand and clay with some gravel and includes reworked ferruginous gravel or laterite. The laterite, which is Tertiary in age, occurs as a thin veneer overlying bedrock in the high ground east of Edillilie. Water occurs in the Tertiary sediments but it is too saline for general use and as better quality water can normally be obtained in the overlying alluvium, deep drilling is not recommended.

Nowever, the quality of the shallow groundwater varies considerably, depending on conditions of replenishment and permeability of the sediments. A number of shallow bores have been drilled along the eastern side of the large depression and yielded mainly salt water. Samples from two wells in the higher part of the property were found to contain 445 and 110 grains per gallon respectively. The latter, which has not been in use for a considerable period would probably become more saline with continuous pumping. This is because the deeper water is generally more saline as shown by a bore drilled in the southern part of the property. In this bore relatively fresh water was obtained at shallow depth but on deepening saline water was encountered. At the time of the inspection water from this bore contained 940 grains per gallon, which probably represents a mixture of the two waters.

Near the northern boundary of the property, a well and bore yields water of 50 grains per gallon while a short distance away the groundwater is highly saline. It is considered that the fresh water is derived from intakes along the gully to the north west. The water is contained in sand, which is apparently quite permeable but probably of limited extent. The alluvial deposits generally appear to contain a number of this discontinuous beds of sand and olay with some gravel. For this reason there may be considerable variations in salinity of the groundwater.

The sand horizon in which good quality water occurs may continue to the west and north west of the well. Drilling should therefore be continued at the present site and if good quality water is encountered, construction of a well may be the best means of obtaining sufficient for limited irrigation.

It is unlikely that the supply would exceed 1,200 gallons per hour from any one well. If the pumping rate is excessive then there is a possibility of the water becoming saline as a result of influx of saline water from surrounding areas.

-2-

Good quality water is reported to occur at shallow depth along the western boundary of the property. This could probably be developed for limited irrigation if the quality and quantity are suitable. Saline groundwater is expected to occur in the vicinity so that pumping would need to be carefully controlled.

Water suitable for stock may occur toward the southern boundary of the property. The first water encountered should be developed, if possible, as the deeper water is generally too saline for stock. Testing of the more elevated areas is recommended in preference to the depressions which tend to be saline and to yield saline groundwater.

CONCLUSIONS AND RECOMMENDATIONS:

Water suitable for irrigation may be obtained from coarse sand at the site at present being drilled. If suitable, a well is probably the best means of obtaining a supply suitable for limited irrigation. The good quality groundwater reported near the western boundary of the property might also be developed. In both areas excessive pumping might result in the groundwater becoming too saline for irrigation purposes.

In the southern part of the property some testing of the shallow groundwater for stock purposes is suggested. Better quality water is expected to occur beneath the more elevated parts of the area.

RGS:CERF 24/8/59

R. J. The TEPHERD GEOLOGI



PLIESTOCENE · RECENT Alluvial sand clay & gravel including resorted Tertiory laterite Saline depressions

Existing Bore Site .

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