Hyd. Sect.

Department of Mines
South Australia

Rept. Bk. 48/131
G.S. 1355
D.M. 861/59
Hyd. 714

REPORT ON GROUNDWATER PROSPECTS

SECTION 84, HD. STOKES

Lands Department (J. A. Richards)

This property was inspected on 16/4/59.

REQUIREMENTS:

Advice on the possibility of obtaining water suitable for domestic purposes. A supply of several hundred gallons per hour is probably sufficient. Stock supplies are obtained from several soaks in the lower parts of the property.

LOCATION, TOPOGRAPHY:

Situated about 2 miles north of Yallunda Flat the property occupies hilly country along the watershed between the Tod River catchment area and drainage westerly towards Cummins.

Average rainfall in the area is reported to be approximately 18-20 inches per annum.

GEOLOGY, HYDROLOGY:

Bedrock of Archaean age, consisting of coarse grained gneiss with some mica schist, outcrops or occurs at shallow depth in the area. Overlying bedrock in certain areas is a thin deposit of lateritic gravels with some clay of probable Tertiary age. Along the gullies are thin deposits of alluvial sand, clay and gravel. The alluvium is derived by erosion of the lateritic mantle which formerly covered much of the high ground. Part of it is also derived by erosion of the exposed areas of bedrock.

In this area run-off is relatively rapid particularly from bedrock which generally has a low permeability. In the larger gullies a proportion of the run-off percolates downward into the alluvium and emerges at a lower level in the form of

soaks. This water varied considerably in salinity depending on rate of replenishment from rainfall. Where the alluvium has a low permeability surface water will not enter it readily and hence the shallow water becomes brackish.

The best soak contains water of only 14 grains per gallon and this would be suitable for general domestic purposes, including drinking if biologically pure. The other soaks yield water of much higher salinity generally suitable only for stock apart from the one situated in the north eastern corner. Water of 105 grains per gallon is obtained from this soak and although hard it would probably be suitable for domestic purposes.

In the vicinity of the house small supplies of groundwater in the form of soaks may occur in the gullies. Testing by means of a post hole auger is suggested along the gully north of the house. It is considered that the gully should be tested immediately south of the area where the soak of 970 grains occurs. Water from this soak percolates down into the alluvium of the main gully after a short surface flow. Thus groundwater immediately downstream of this soak would probably have a high salinity.

Further north there is apparently some freshening of the shallow groundwater, possibly derived by run-off from the western slopes of the gully. Testing in the area south of the soak of 105 grains for a distance of 5-10 chains is suggested if water of suitable quality or quantity is not found closer to the house.

To the south of the house it is unlikely that shallow groundwater will occur for a considerable distance down the gullies. A newly excavated dam in this area shows that bedrock occurs at shallow depth. Run off is apparently quite rapid as the sub-surface sediments contain a considerable proportion of clay.

Drilling into bedrock is not recommended as these rocks are unlikely to yield water suitable for domestic purposes. Some water may occur in the outer broken and decomposed zone

but it is usually brackish and in poor supply.

CONCLUSIONS AND RECOMMENDATIONS:

Water suitable for domestic purposes may be obtained at shallow depth in alluvium of the gully north of the house. It is suggested that testing be carried out in the area north of the abandoned dam and south of the saline soak, as shown on the plan. If no water is obtained or it is unsuitable as regards quality or quantity, testing should then be carried out south of the soak where 105 grains water occurs.

Good quality water occurs in a soak west of the house and could probably be developed for domestic use but it would involve a considerable length of pipeline. To the south it is doubtful whether shallow groundwater occurs within reasonable distance of the house.

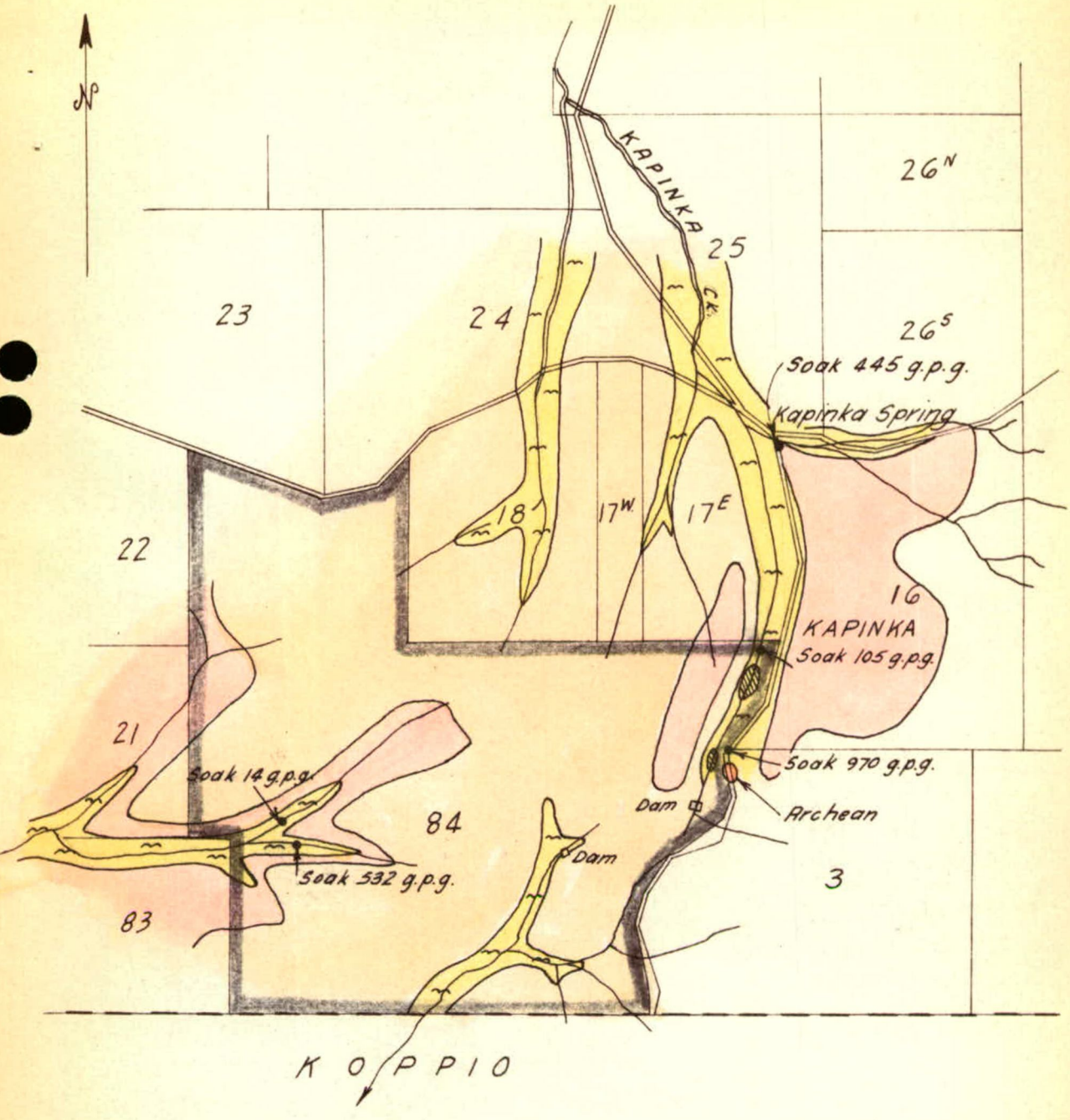
Water occurring in bedrock is generally quite brackish and in small supply and drilling is therefore not recommended.

If insufficient supplies of groundwater are obtained it is suggested that a dam be constructed across one of the small gullies near the house.

R. G. Shepherd

RGS:CERF
25/5/59

R. G. SHEPHERD
GEOLOGIST
HYDROLOGY



RECENT

Alluvium

TERTIARY

Lateritic clay & gravel

ARCHEAN

Coarse grained Augen gneiss & schist with quartz veins

Suggested areas for testing

To accompany report by R.G. Shepherd.

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	UNDERGROUND WATER SURVEY	D.M.	Scale 40ch to 1"
		Tcd. A.W.	SEC. 84	Req.	S2057
		Ckd.	Ho. STOKES		Dn3
Director		Exd.	LANDS DEPT. (J.A. RICHARDS)		Date 27-4-59

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