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DEPARTMENT OF MINES
SOUTH AUSTRALIA

REPORT ON THE GROUNDWATER SUPPLIES IN PORTIONS OF THE HUNDRED HAINES & HUNDRED MENZIES

-KANGAROO ISLAND-

GENERAL

In the report D.M. 669/62, Report Book 55/110, on the groundwater prospects, Kangaroo Island, submitted November 1962, it was made clear that the chances of obtaining good stock supplies were poor in the Hundred Dudley, Haines and Menzies. However, it was considered that usable stock water could be obtained in the immediate vicinity of the Sections 166 and 176, Hundred of Haines, and also in the Cygnet Valley in the vicinity of Section 35, Hundred Menzies.

Since usable water is not readily available to farmers normally relying on surface run-off it was decided by the Water Conservation Committee to investigate these two sites. Drilling in the Hundred Haines started on the 8th January, 1963 and the work was completed on 28th February, drilling, however, was done intermittently during this period.

LOCATION OF THE DRILL SITES:

On Section 166, Hundred of Haines lies a large fresh-water lagoon which in normal years contains good quality water. A much smaller lagoon occurs on Sections 169 and 177. In January 1962 two bores were drilled one south and one north of the lagoon on Section 169 and in both bores good waters were encountered. Since the quantity of water in the lagoon on Section 166 was considerably larger than in the lagoon on Section 169 it was reasonable to assume that this lagoon would provide a better intake potential, and the prospects of obtaining good stock waters from bores appeared to be better.

Although no run-off has ever been noticed in a depression across the road between Sections 179 and 176 it appears that at shallow depth groundwater should move into the lagoon on Section 177. Drilling on a site close to this depression therefore seemed warranted.

Becore the decision of the Committee was taken, a bore adjacent to Section 35, Hundred of Haines had been abandoned, after yielding 300 gallons per hour of good stock quality water for nine hours. Therefore, reinstalling the casing in this bore or drilling of a new bore was recommended.

GEOLOGY AND HYDROLOGY

Schistose and Arkose rocks belonging to the Kanmantoo Series underlie the major part of the Hundred of Haines and they are in places overlain by remnants of the Tertiary sediments. The remainder is covered by recent material.

Cygnet Valley occupies a portion of the Hundred of Menzies and in this valley the Kanmantoo rocks are overlain by Permian Glacials which in turn are overlain by Tertiary limestones and sands which are covered by Recent material.

The Kanmantoo rocks are very hard and tough, and drilling into these rocks is only warranted if suitable intake areas are in the immediate vicinity of the drilling site and if a drilling plant with a fast penetration rate is available, as these factors did not apply in the area under consideration deep drilling was not warranted on the sites suggested. The Permian sediments overlying the Kanmantoo rocks have up to date only supplied saline waters and therefore bores should be discontinued after encountering these gravelly clays with boulder beds.

The Tertiary sediments contain good quality water where the original seawater has been flushed out completely. Since good quality water was previously obtained on Section 179 it appeared, there are no such saline connate waters in that area and that the conditions for obtaining good waters in

the vicinity of the freshwater lagoons were favourable.

Bore No. 1 drilled adjacent to Section 166 obtained stock quality water at 30 feet and to increase the supply it was continued to 42 feet. After 19 hours pumping the saline content had increased to such extent that the water was unsuitable for use.

Bore No. 2 was discontinued as a dry hole at 42 feet, it being considered that any deeper drilling would only encounter useless saline water similar to Bore No. 1. In view of the small quantity of usable water encountered in Bore No. 1 it was then decided to try a third bore not exceeding 40 feet in depth. However, the attached bore log shows clearly that completely different geological conditions were met in Bore No. 3. The first waters encountered were too saline for use and thus this bore was therefore abandoned.

In the Cygnet Valley good and stock water had previously been obtained in the past it was decided to reinstall the casing in the Mines Department Bore No. 9. However, it soon became clear that possibly owing to the disturbance of the strata due to inserting and pulling casing during the initial operations no water was now available here. Since in the immediate vicinity a 54 feet deep bore yields as much as 3,000 gallons per hour it was decided to drill a new bore approximately 25 yards west of bore nine. This bore No. 9A penetrated sediment quite different from those encountered in Bore No. 9, and cut only a seepage of water at 45 feet in tight silts.

These two last bores have shown clearly that the occurrence of good quality water in the Cygnet River Valley is very patchy and drilling in this area can be done only on a hit or miss basis. Apparently limestone remnants of the Tertiary limestones and sands occur and are separated from each other by almost impervious beds which in many cases contain unflushed saline water.

CONCLUSIONS & RECOMMENDATIONS

Further drilling, in the Hundred of Haines and Menzies

Kangaroo Island, for groundwater supplies cannot be recommended as the surface indications are insufficient to predict the availability of good quality water, and the majority of bores sunk met only very saline water.

The few known sources of water supplies, such as the shallow waters in the Nepean Bay area should be carefully guarded against pollution or otherwise made unsuitable for use.

18/3/63
CB:MIP:AWK

C. BLEYS
ASSIST. SENIOR GEOLOGIST
HYDROLOGY

Bore 1. Adjacent Section 166, Hundred Haines

0'	-	20'	Clay slightly sandy, dark buff.
20	-	36	Sand very fine to coarse sand some clay, cream.
36	-	41	Aeolianite, cream.

Water struck at 38 ft. saline after pumping.

Bore 2. Adjacent Section 176, Hundred Haines.

0'	-	16'	Silt and some sand, light brown.
16	-	34	Silt and some calcareous matter, buff.
34	-	40	Coarse sand with some clay, vari-coloured.
40			Limestone, cream.

Bore 3. Adjacent Section 166, Hundred Haines.

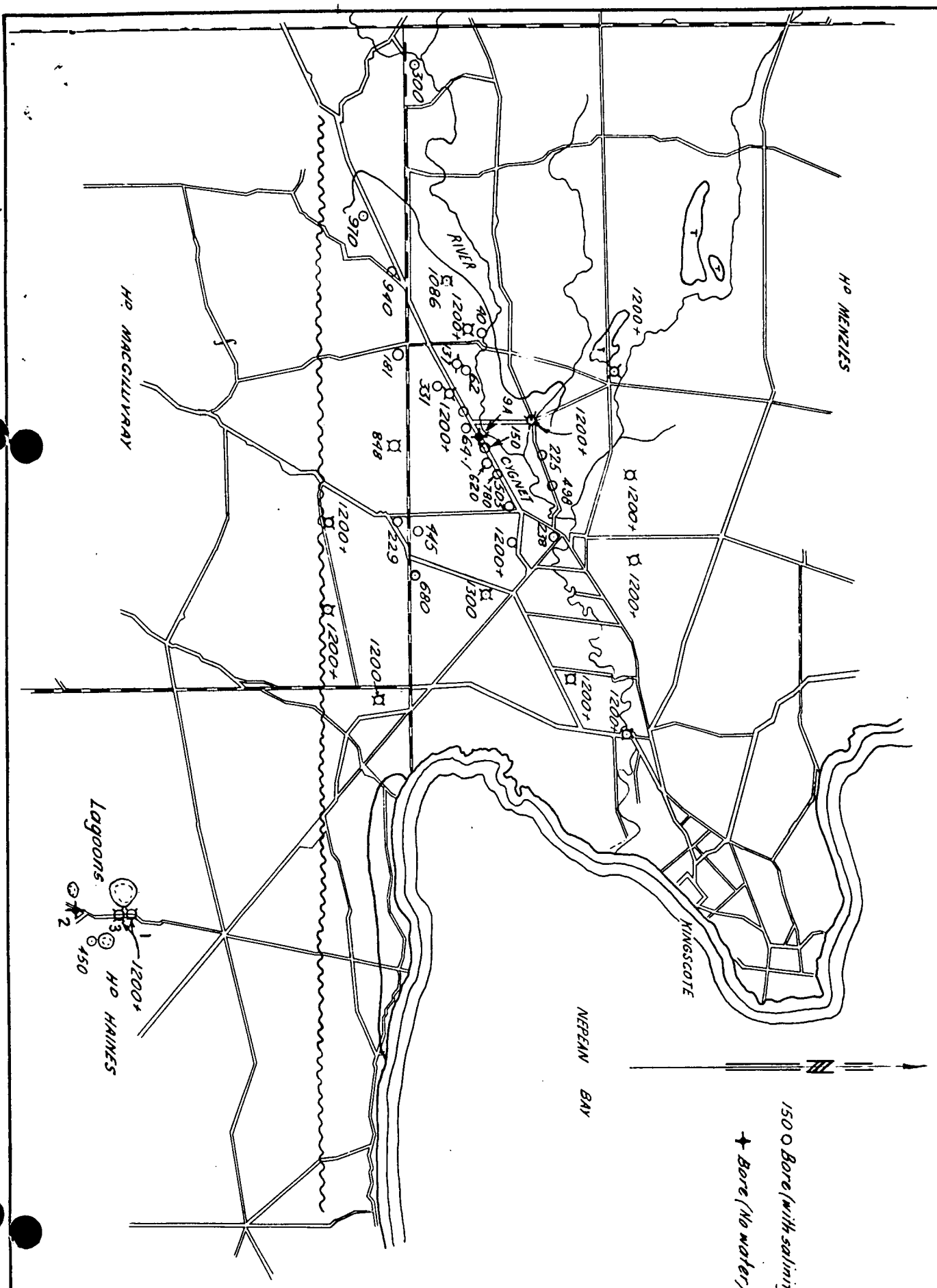
0'	-	22'	Silt with some clay, light brown.
22	-	40	Clay and silt, buff and light brown.
40			Aeolianite, cream.

Saline water at 40 ft.

Bore 9A. Adjacent Section 35, Hundred Menzies.

0'	-	15'	Silt and some clay, brown.
15	-	40	Silt, chocolate brown.
40	-	50	Silt and some clay, grey.
50	-	64	Clay with some grit, brown.
64	-	66	Sandstone silty, light grey.

Seepage at 45 ft. insufficient for windmill supply.



To accompany report by C. Bleys.

S.A. DEPARTMENT OF MINES

Approved	Passed	Drn.	UNDERGROUND WATER SURVEY	D.M.	Scale 1" To 1 Mile
		Tcd. B.L.G.	**CYGNET VALLEY**	Req.	S 3235
		Ckd.	WATER CONSERVATION COMMISSION		L3+8/9
Director		Exd.			Date 20-9-62

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