RB 33/19

M.723/51

DEPARTMENT OF MINES

SOUTH AUSTRALIA

GYPSUM DEPOSITS - MANCHETOWN PLAIN

Location.

Miscellaneous gypsum leases 463, 536(Section CM2), 535(Sec.13), 544(Sec.14), and 543(Sec.33), Hd. Paisley, situated on Manchetown Plain, east of the River Murray within several miles of Manchetown.

Previous Investigations.

C.H. Willington (Dept. of Mines) submitted a sample of gypsum from M.L. 463 in 1951 to the Assay Department for partial analysis.

Production.

About 760 tons of flour gypsum, mostly derived from M.L. 463, have been produced for agricultural purposes and for the manufacture of Tartaric acid during the years 1940-1950.

Plan. 52-61

The accompanying plan was prepared on a scale of 2 inches to the mile after an inspection was made of the deposits by the writer in January, 1952.

Geological Setting.

Manchetown Plain is situated immediately east of the River Murray, it is flat with east-west trending sand hills providing topographic relief. Travertine with loam and clay form a surface mantle over Tertiary fossiliferous limestones (cliff rock) which outcrop in the Murray cliffs and have been intersected in bores sunk in the area for underground water supplies.

Gypsum Deposits.

The gypsum deposits occur in depressions on the Manchetown Plain several miles east of the River Murray

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and leases have been pegged on low dunes which have been blown up at the edges of the depressions. Coarse crystalline gypsum occurs in some of the depressions with clay and, although these flats have not been fully tested by boring, there appears to be too great an admixture of clay, and cover of soil and clay, for these to provide a supply of gypsum. At the margins low drifts of fine seed covered by one to two feet of gypsum flour have been blown up but these are low and limited in areal extent.

The gypsum has probably been deposited in the floors of the depressions by summer evaporation of saline waters during a period when the groundwater table was higher than at present, and approximately coinciding with the floors of these depressions. The present day underground water table stands about 70 feet below ground surface and analyses of these waters in this locality indicate that calcium sulphate makes up to 14% of the total dissolved saline matter.

(i) M.L. 463 covers the greatest developments of dune gypsum in the area which have been blown up as low drifts at the western margin of a broad depression. Three boreholes were sunk with a post-hole digger on this deposit; logs of these holes were as follows :-

Bore No. 2.	0 - 24"	flour gypsum.
	- 30"+	seed gypsum with abundant fines.
Bore No. 3.	0 - 18"	flour
	- 24"	seed gypsum
	-	stained crystalline gypsum in clay.

Flour gypsum has been removed to a depth of about two feet over a large area of the lease; it overlies 'seed' gypsum which is associated with a considerable amount of fines.

A hole was sunk on the floor of the depression beyond the bank of wind-blown gypsum and passed through the following :-

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Bore No. 7. 0 - 14" loam with nodular travertine.

- 28" gypseous flour.

- 30"+crystalline gypsum in clay.

(ii) M.L.536 has been pegged on low drifts of gypsum on the eastern margin of the same broad depression. A bore sunk on this lease penetrated the following :-

Bore No. 4. 0 - 18" flour gypsum

- 34" fine seed gypsum

- hard iron-stained crystalline gypsum.

(iii) M.L.535 covers dunes of flour and seed gypsum which are up to 10 feet high. Bore No. 5 (on top of a dune) penetrated two feet of flour over discoloured seed gypsum.

(iv) M.L.543 and M.L.544 cover low drifts of flour gypsum which are limited in extent. Bore No. 6 (on edge of a 15 ft. high dune) in M.L.544 passed through the following :-

0 - 12" flour

- 16" impure crystalline gypsum.

Partial Analyses of gypsum samples.

No.	Insoluble matter.	Ferric oxide (Fe_2O_3)	Calcium Carbonate ($CaCO_3$)	Gypsum ($CaSO_4.2H_2O$)
1.	6.83	0.35	2.28	87.42
2.	11.85	0.65	0.53	82.98
3.	13.30	0.89	0.05	81.06
4.	8.78	0.52	0.58	85.90
5.	25.33	2.15	0.17	64.17
6.	12.23	1.17	0.68	79.46

Conclusions.

The seed gypsum deposits located on Blanchetown Plain, east of the River Murray in Hundred of Paisley, are of low to moderate grade. The 'seed' occurs as a mixture of fine gypsum dust and coarser crystals of gypsum up to several millimetres across, which have been blown up into low dunes

and as banks up to five feet in thickness at the margins of gypseous depressions.

1. In M.L.463 an average thickness of 1½ ft. of seed gypsum could possibly be removed over a width of 50 yards for about 15 chains. Assuming that one ton of gypsum occupies 30 cub. ft., about 7,000 tons of gypsum could be won.

2. In M.L.536 an average thickness of 1½ ft. of seed gypsum could possibly be worked over a width of about 40 yards for a length of about 10 chains, i.e., approximately 4,000 tons of gypsum might be recoverable.

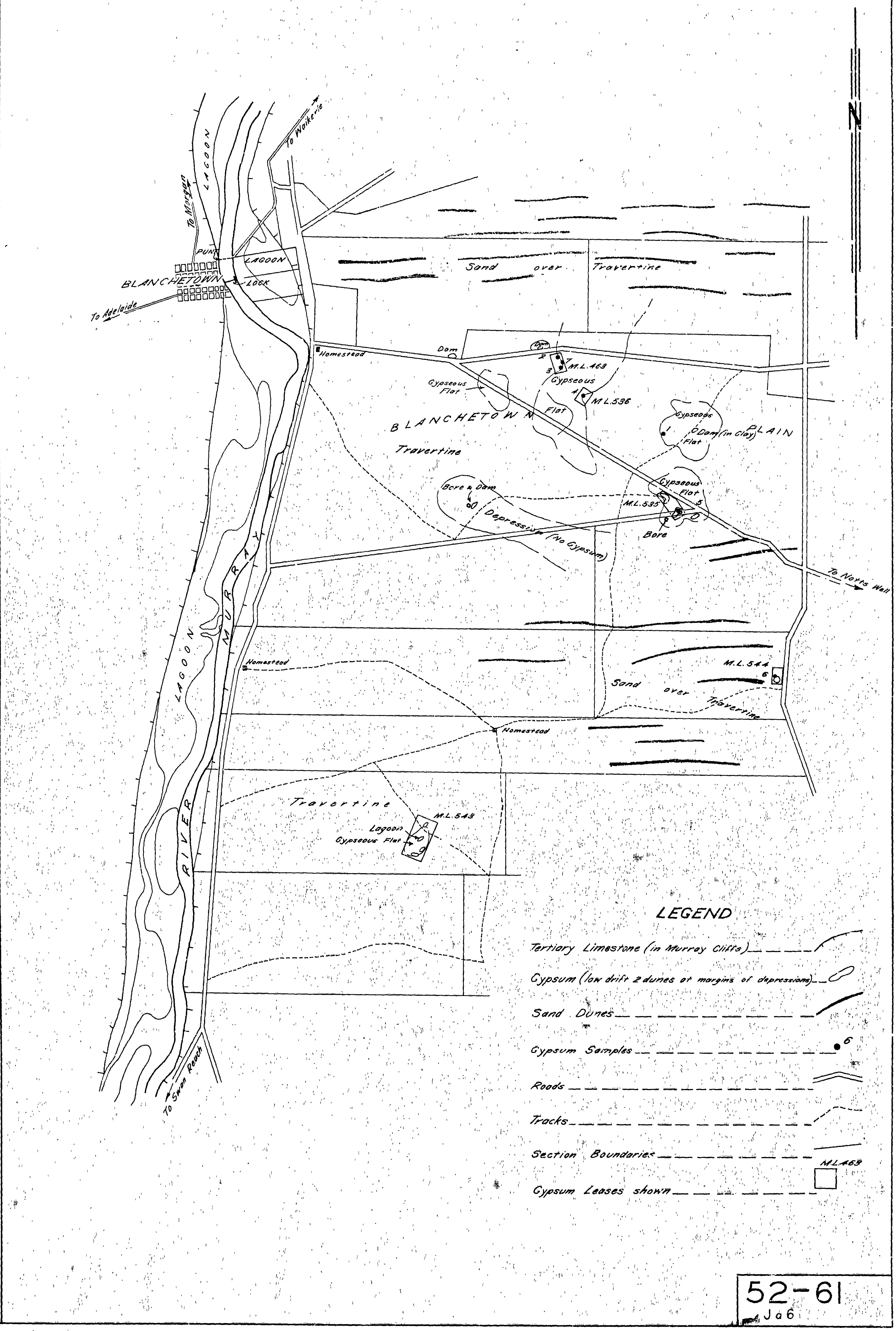
3. In M.L.535 the reserves of seed gypsum are similarly small and in the other leases negligible.

4. In all cases the 'seed' is covered by about 2 feet of gypsum flour. More detailed mapping and intensive sampling of the deposits would be necessary before a reliable estimate of tonnage and grade could be given.

R. K. Johns.

(R. K. Johns)
ASSISTANT GEOLOGIST.

26.3.52
RKJ/SMc.



S.A. DEPT. OF MINES

GYPSUM DEPOSITS

BLANCHETOWN PLAIN

HD. PAISLEY

Associated Drawing | No. | No. | Amendment | Ed | Date

Req. No.
D.M.
Compiled from Sketch supplied by R.K. Johns

Approved — for Director of Mines

Passed — C.D.

Drn.
Tcd. M.D.R.
Ckd. R.R.
Ed

Scale 40 Chains - 1 inch

52-61
Ja6

Date 8-2-52