DEPARTMENT OF MINES
SOUTH AUSTRALIA

Report on

TEST BORING OF SAND DEPOSIT

SEC. 366, HUNDRED WILLUNGA

(ALBERT'S SAND PIT LTD.)

by

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Geologist
NON METALLICS SECTION
GEOLOGICAL SURVEY

CONTENTS

Plan No.	Title	Scale
63-516	Location of Boreholes Section 366, Hd. Willunga (Albert's Sand Pit Ltd.)	1 inch = 5 chai
S 3401	Graph of Sieve Analyses	-

Rept. Bk. No. 56/118
G.S. No. 2627
D.M. 1620/60

28th May, 1963

Report on

TEST BORING OF SAND DEPOSIT

SEC. 366, HUNDRED WILLUNGA

(ALBERT'S SAND PIT LTD.)

1. INTRODUCTION

Following a request from Mr. J. Albert, 3 holes were bored at the sand pit on section 366, Hd. Willunga, 4 miles by road south of the township of Noarlunga between 3rd and 8th May, 1963.

Complete geological logs of all the boreholes, which are located on the accompanying plan no. 63-516, are appended.

Samples were submitted to the Australian Mineral Development Laboratories for sieve analysis and the determination of clay content, the results of which are compared graphically with standard specifications on plan no. S 3401.

Previous Reports

Johns, R.K. (1962). Sand Deposit - Maslin Beach, sec. 365, Hd. Willunga. Min. Rev. 114, p. 115-124.

Miles, K.R. (1944) Noarlunga Sand Deposit. Min. Rev. 81, p. 85-89.

Olliver, J.G. (1961) Test Drilling of Tertiary Sand Deposit, Sec. 366, Hd. Willunga. Min. Rev. 111, p. 101-109.

Olliver, J.G. (1961) Test Drilling of Tertiary Sand Deposit, sec. 360, 363, 366, 367, Hd. Willunga. Unpub. Rept. Bk. No. 52/30.

Reynolds, M.A. (1953) The Cainozoic Succession of Maslin and Aldinga Bays, S.A. Trans. Roy. Soc. S.Aust. vol. 76, p. 114-140.

2. RESULTS OF BORING

Borehole no. 1

Below 6 feet of surface loam and kunkar, 66 feet of yellow-brown sandy clay of uncertain age were intersected. As no fossils were detected under microscopic examination (W.K. Harris, pers. comm.), the sediments probably represent a very clayey lens at the top of the North Maslin Sands. The

borehole bottomed at 108 feet after penetrating 36 feet (from 72 to 108 feet) of coarse and poorly sorted sands which were gritty below 99 feet. Occasional thin clayey seams were noted with a gravel layer containing up to 1 inch diameter rounded quartz pebbles from 86 to 90 feet.

Borehole no. 2

A similar sequence was intersected, with 6 feet of Recent sediment and 42 feet (from 6 to 48 feet) of brownish sandy and gritty clay covering 60 feet (48 to 108 feet) of coarse, poorly sorted sand.

Borehole no. 3

This hole was bored in the quarry, approximately 30 feet below natural surface level. White slightly clayey sand at the top passes into silt and very fine sand from 3 to 12 feet. Medium grained, well-sorted sand from 12 to 33 feet is underlain by coarser poorly sorted red sand.

Permian clay, at the base of the Tertiary sand, was reached at 54 feet.

3. RESULTS OF SIEVE ANALYSES

The results of the 4 samples submitted for sieve analyses are tabulated below -

Mesh B.S.S.		Weight percent			
		Bore No. 1 (72-108 feet)	Bore No. 2 (48-108 feet)	Bore No. 3 (0-33feet)	Bore No. 3 (33-54feet
	+ ⅜ inch	-	-	-	-
-⅜	+3/16 "	0.6	0.5	-	-
-3/16	+ 7 mesh	3.9	3.4	0.1	1.5
- 7	+14 "	13.0	19.5	4.6	11.6
-14	+25 "	14.8	23.2	10.9	16.9
-25	+52 "	25.3	25.1	17.6	25.1
-52	+100 "	25.7	18.4	28.7	29.1
-100	+200 "	7.0	2.9	17.3	4.0
-200		9.7	7.0	20.6	11.8
		100.0	100.0	100.0	100.0
Clay Content		6.0	4.4	7.8	7.6

The sample from borehole no. 2 fulfils requirements for all building purposes with 4.4% clay by weight. The samplesfrom borehole no. 1 and the lower 21 feet of borehole no. 3 are slightly finer than British Standard Specification 882 (1954): Concrete fine aggregate containing 6.0% and 7.8% clay respectively (see graph - plan no. S 3401). The upper 33 feet of sand from borehole no. 3 (7.6% clay) is too fine and falls outside the limits of building specifications.

4. CONCLUSIONS

Basal Tertiary (North Maslin) sands extend south of the present pit under an increasing thickness of overburden, from 48 feet in borehole no. 2 to 72 feet in borehole no. 1.

The top of the North Maslin Sands dips very gently to the south.

Permian clays at the base of the sands were reached in borehole no. 3 at approximately 84 feet below natural surface level.

All samples except the top 33 feet of sand from borehole no. 3 are suitable for building purposes.

J. G. Olliver
Geologist
NON METALLICS SECTION

JGO:AGK
28/5/63

APPENDIX

GEOLOGICAL LOGS OF BOREHOLES

LOG OF GEMCO BOREHOLE NO. 1

PROJECT: ALBERT'S SAND PIT LTD.

SEC.: 366 HD.: Willunga CO.: Adelaide

R.L.: DEPTH: 108 feet DRILLER: D. Kakoschke

LOGGED BY: J.G. Olliver DATE: 9/5/63

Depth (feet) From	To	Description
0	6	Loam over kunkar.
6	72	Yellow-brown sandy clay.
72	99	Mid brown to orange-brown sand, fine and even grained at top but coarser and poorly sorted below 78 feet. 86 - 90 feet - some 1 inch rounded quartz pebbles. 90 - 93 feet - yellow-brown clayey sand seam. 93 - 96 feet - light yellow clay seam.
99	108	Orange-brown gritty sand with a yellow clay seam near the base.

Limit of plant 108 feet.

LOG OF GEMCO BOREHOLE NO. 2

PROJECT: ALBERT'S SAND PIT LTD.

SEC.: 366 HD.: Willunga CO.: Adelaide

R.L.: DEPTH: 108 feet DRILLER: D.Kakoschk

LOGGED BY: J.G. Olliver DATE: 9/5/63

Depth (feet) From	To	Description
0	6	Loam over kunkar and light brown sandy clay.
6	42	Red-brown to yellow-brown sandy and gritty clay.
42	48	Red-brown clayey sand.
48	108	Red-brown coarse and poorly sorted sand, gritty from 100 to 108 feet. 85-88 feet - thin seam of white clay.

Limit of plant 108 feet.

LOG OF GEMCO BOREHOLE NO. 3

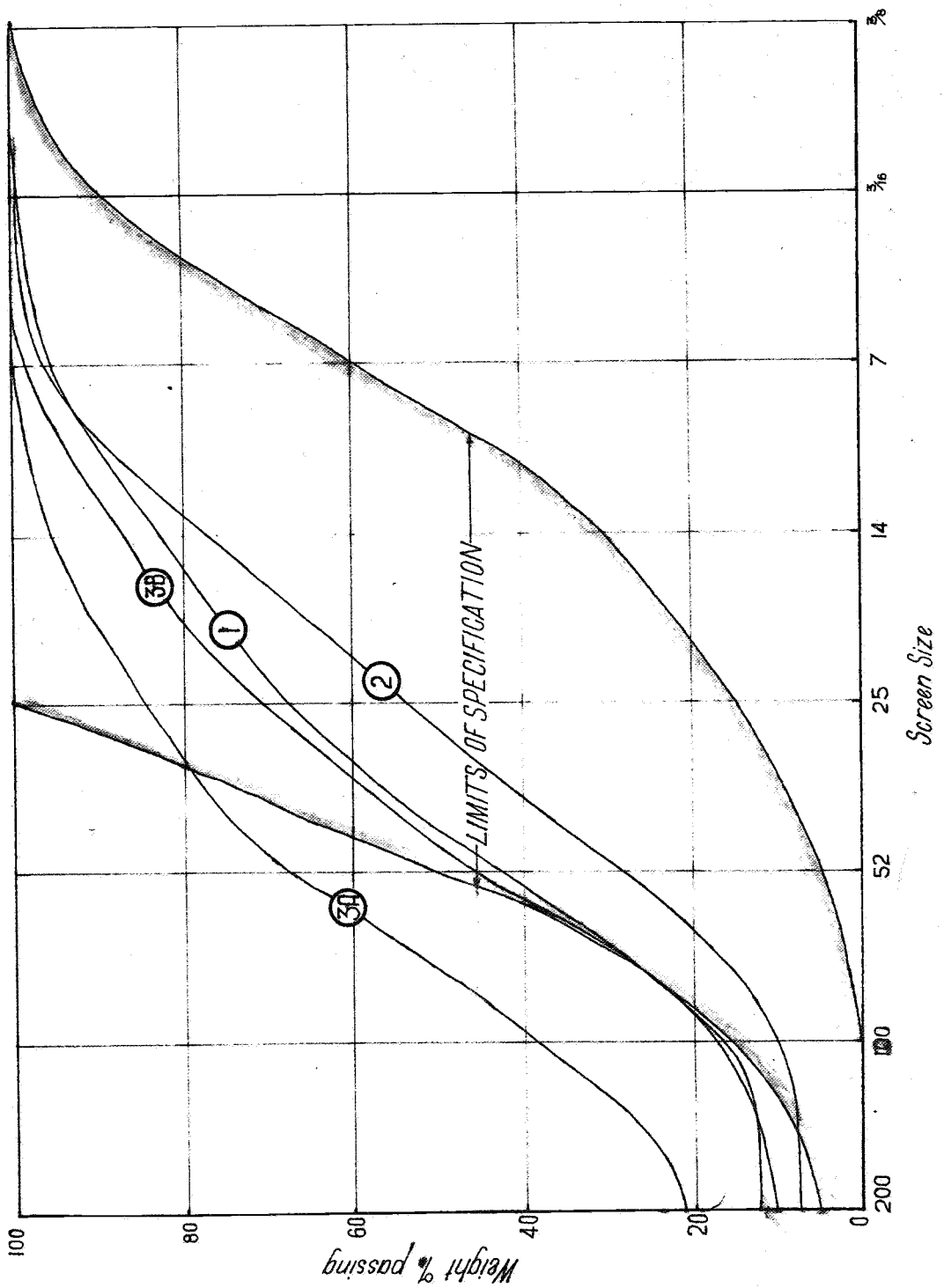
PROJECT: ALBERT'S SAND PIT LTD.

SEC.: 366 HD.: Willunga CO.: Adelaide

R.L.: DEPTH: 57 feet DRILLER: D. Kakoschl

LOGGED BY: J.G. Olliver DATE: 9/5/63

Depth (feet) From	To	Description
0	3	White slightly clayey fine to medium grained sand.
3	12	Pale yellow to white silt to very fine sand.
12	18	Yellow medium grained sand.
18	33	Pale yellow to white well sorted sand
33	54	Pink-brown to red with depth poorly sorted sand, slightly coarser with depth.
54	57	Pale brown sandy clay.



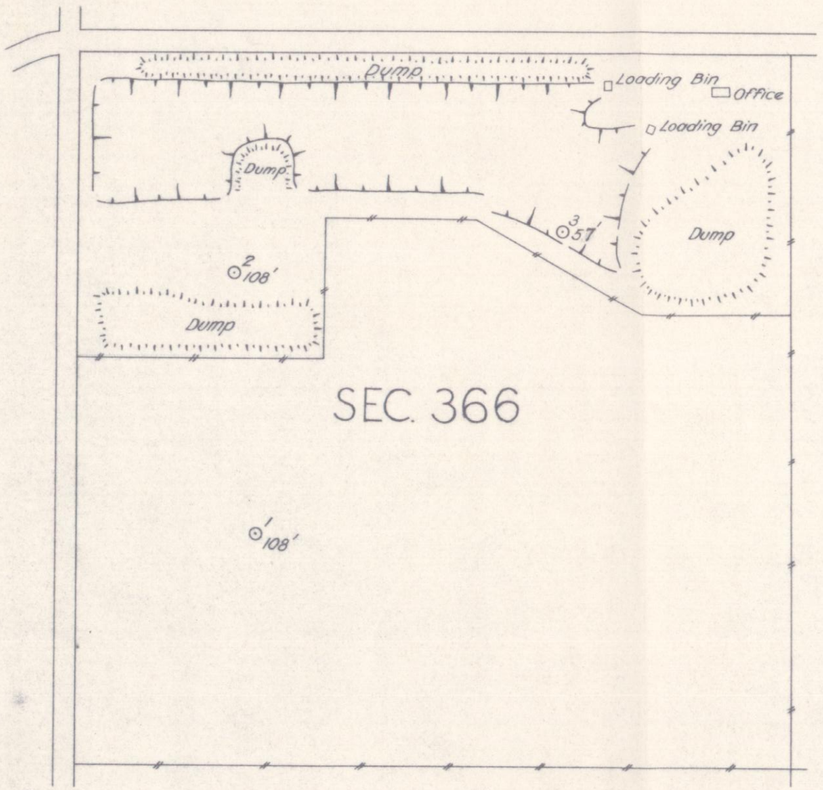
Bore No.	Footage
1.	72 – 108
2.	48 – 108
3(A)	0 – 33
3(B)	33 – 54

To accompany report by J.G. Olliver

S.A. DEPARTMENT OF MINES

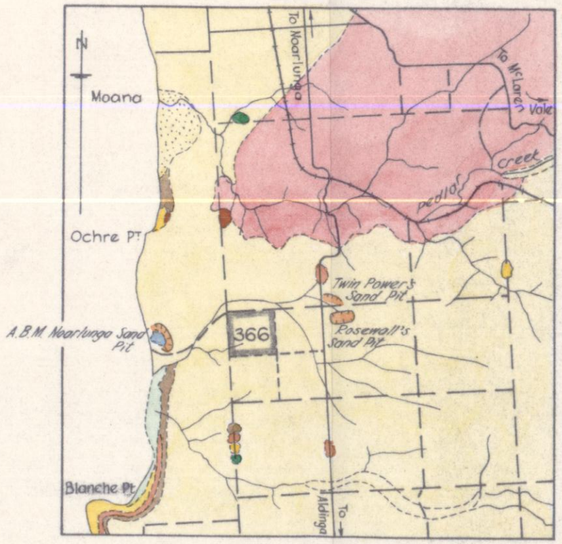
Approved	Passed	Drn.	SAND DEPOSIT	D.M.	Scale
		Tcd. G.M.	Hd Willunga Sect. 366	Req.	S3406
		Ckd.	B.S.S. 882 (1954) Concrete Fine Aggregate		Ha 11
Director		Exd.	ALBERT'S SAND PIT LTD.		Date 27.5.63

200—2·61 S805



Gemco Boreholes ⊙ 2 Number 108' Depth

Scale 0 1 2 3 4 5 10 15 Chains



LOCALITY PLAN
Scale: 1 inch = 1 mile

LEGEND

QUATERNARY

Recent — Alluvial clays with sands & gravels

White siliceous & calcareous back-shore beach dunes

Pleistocene — Mottled clays

TERTIARY

Pliocene — Freshwater gravels & sandstones, frequently lateritised

Oligocene to Miocene — Port Willunga beds – Bryozoal sands & limestones

Blanche Point Marls – Marls & sands

Eocene — Torachilla Formation – Fossiliferous glauconitic limestone
South Maslin sands – Dark green to purplish blue glauconitic sands with rounded grains of limonite

Eocene — North Maslin sands – White & brown quartz sand

PALAEOZOIC

Permian — Glacio fluvial clays

PROTEROZOIC

Marinoan — Chocolate, purple, brown & lesser grey & green slates with thin quartzites & dolomites

To accompany report by J. G. Olliver

S.A. DEPARTMENT OF MINES

ALBERT'S SAND PIT
SEC. 366 HD. WILLUNGA
LOCATION OF BOREHOLES

Approved	Passed	Dm. G.J.O.	Scale: As shown
		Trd. R.E.A.	63-516
		Cld.	Ha 11
Director		Exd.	Date 30-5-63

No.	Amendment	Exd.	Date

200—2.61 3605