

**DEPARTMENT OF MINES
SOUTH AUSTRALIA**

**GEOLOGICAL SURVEY
ENVIRONMENT & RESOURCE DIVISION**

SCOUT DRILLING FOR CONSTRUCTION SAND

Sections 151, 152, Hd. Willunga

by

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Industrial Minerals**

15th May, 1974

**Rept.Bk.No. 74/112
G.S. No. 5430
D.M. No. 165/74**

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S10633	Location of Drill Holes	1:50 000
	Sections 151, 152, Hd. Willunga	
S10802	Geological Section	1: 5 000
	Sections 151, 152, Hd. Willunga	

DEPARTMENT OF MINES
SOUTH AUSTRALIA

Rept.Bk.No. 74/112
G.S. No. 5430
D.M. No. 165/74

SCOUT DRILLING FOR CONSTRUCTION SAND

Sections 151, 152, Hd. Willunga

ABSTRACT

The Eocene succession unconformably overlain by Quaternary units has been intersected in drilling for construction sand near the northern margin of the Willunga Basin.

The two deep drill holes were abandoned in Middle Eocene North Maslin Sand and depth to bedrock is not known.

The coarsest grained sand in the bottom of drill hole No. B2/73, would satisfy construction specifications after washing. Better quality sand is expected beyond the limit of drilling at depths at present not economically workable.

Zones of fine relatively clean sand are not suitable for foundry or glass usage.

INTRODUCTION

Pioneer Concrete Pty. Ltd. hired S.L. & L.M. Juett (Drilling Contractors) to drill for construction sand in a vineyard comprising part sections 151, 152, Hd. Willunga, Co. Adelaide, one kilometre east of the operating sand pits at Maslin Beach (see plan No. S10633).

The property lies within the Extractive Industry Zone as proposed in the Interim Development Plan of the District Council of Willunga.

Duplicate samples were supplied to the Department of Mines to assist in the evaluation of sand resources in the Willunga Basin. Geological logs of the drill holes comprise Appendix A.

A complete set of samples from drill holes No. B2/73 and No. B3/73 were submitted for palaeontological examination, which is the subject of a

separate report Rept.Bk.no. 74/31 by J.M. Lindsay (Assistant Senior Palaeontologist) and W.K. Harris, (Assistant Senior Palynologist).

Samples of possible construction sand or foundry sand were submitted to Australian Mineral Development Laboratories for laboratory evaluation. These results are attached as Appendix B.

GEOLOGICAL SETTING

The Willunga Basin is a tectonic valley in Precambrian sediments of the Adelaide System, bounded on the southeast by the Willunga Fault and on the west by Gulf St. Vincent. The basin occupies a northeast-southwest depression approximately 160 square kilometres in area. Orientation is due to late Tertiary fault movements, which also tilted the basin to the ^{South}~~North~~ east at a low angle.

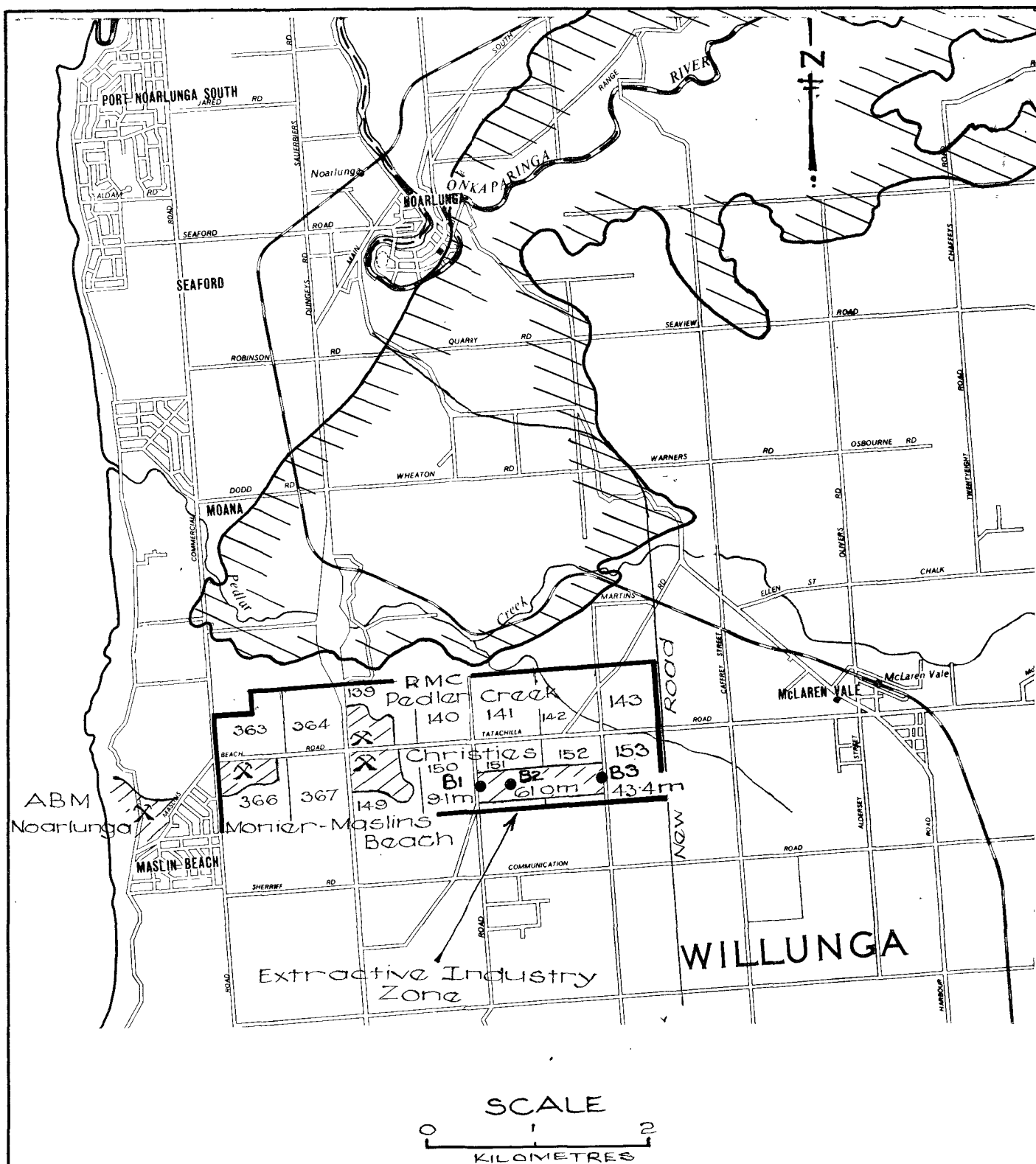
Bedrock, represented by Marinoan slates and quartzites, outcrops along the northern rim at Ochre Cove and in Pedlar Creek. Permian and Tertiary sediments fill the basin to a maximum known thickness of 207 metres, but are generally covered by a veneer of Recent soil, calcrete and alluvium.

Sand is mined in the northwestern corner of the Willunga Basin from the basal Tertiary (Middle Eocene) North Maslin Sands, which rest unconformably on an undulating surface of Marinoan sediments, or in some areas, Permian fluvio glacial clays (Olliver & Weir, 1967). The basal non marine sands and the succeeding younger marine sequence dip gently to the southeast.

The property tested is 0.5 kilometres south of a proven deposit of construction sand on section 142, Hd. Willunga (Olliver & Weir, op. cit.).

DRILLING PROGRAMME

Initially three scout holes were planned to 61.0 metres (200 ft) with follow up grid drilling if potential construction sand was encountered



Cambrian - Pre Cambrian Bedrock..... 
 Sand Quarry..... 

NON METALLICS SECTION	DEPARTMENT OF MINES - SOUTH AUSTRALIA	Scale: 1:50000
Compiled: J.G.O	LOCATION OF DRILLHOLES SEC 151, 152 HD WILLUNGA PIONEER CONCRETE PTY. LTD.	Date: 20 Dec 1973
Drn. R.B. Ckd. A.F.		Drg. No. S10633
		Hall

at reasonable depth. The programme (see Table 1) of only 113.5 metres was completed during May - June, 1973. Drill hole locations are shown on plan No. S10633.

Table 1. Drilling Programme, Sections 151, 152,

Hd. Willunga

<u>Drillhole No.</u>	<u>Rig.</u>	<u>Depth metres (feet)</u>	<u>Comment</u>
B1/73	auger	9.1 (30)	abandoned, could not penetrate tight clay.
B2/73	percussion	61.0 (200)	completed to target depth
B3/73	percussion	43.4 (143)	abandoned, no coarse sand

RESULTS OF DRILLING

The sedimentary sequence encountered is summarised in Table 2 and represented graphically on the geological section (plan No. S10802) Geological logs comprise Appendix A.

Table 2. Results of Drilling

Age	Unit	Drillhole Intervals (metres)		
		B1/73	B2/73	B3/73
Quaternary	Soil profile	0-1.5	0-2.0	0-3.0
?Plio Pleistocene	Carisbrooke Sand	1.5-9.1	2.0-16.8	3.0-7.6
Late Eocene	Blanche Point Soft Marls	-	-	7.6-13.8
	Blanche Point Banded Marls	-	16.8-22.9	13.8-25.9
	Blanche Point Transitional Marls	-	22.9-26.0	25.9-29.0
	Tortachilla Limestone	-	26.0-28.1	29.0-31.0
?Late Eocene	South Maslin Sand	-	28.1-36.5	31.0-35.1
Middle Eocene	North Maslin Sand	-	36.5-61.0	35.1-43.4

The yellow, brown and red Carlsbrooke Sand is very fine to fine grained, mainly clean sand in drill hole No. B2/73, but coarser and slightly clayey in drill hole No. B3/73.

Blanche Point Soft Marls, encountered only in drill hole No. B3/73, comprise mottled clay and claystone.

Blanche Point Banded Marls are mainly grey to white limestone and marl with green glauconite and yellow ferruginous mottling in the lower portions.

Blanche Point Transitional Marls vary from yellow clay in drill hole No. B2/73 to mottled marly sand in drill hole No. B3/73. Tortachilla Limestone is very sandy glauconitic clay in drill hole No. B2/73 and pale brown limestone with glauconite blebs in drill hole No. B3/73.

The South Maslin Sand, the oldest marine unit in the Willunga Basin is characteristically yellow and brown ferruginous quartz sand. The base has been placed at the first appearance of grey clay (Lindsay & Harris, 1974).

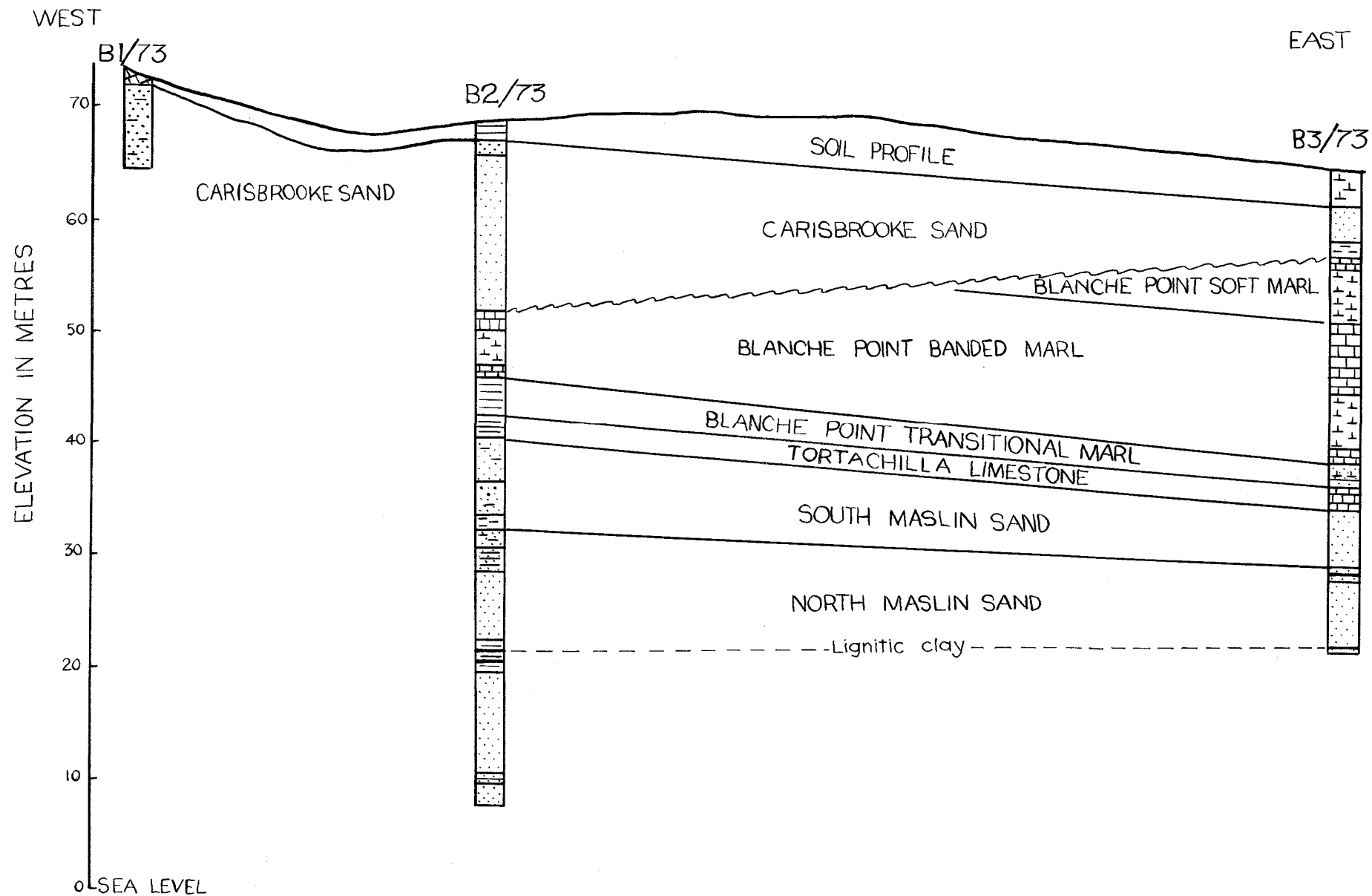
The non marine North Maslin Sand, comprising mainly quartz-sand ranges in colour from white or grey to yellow, brown and red. Grain size varies from fine to coarse and flakes of mica are widespread. Seams of grey clay are present with black lignitic bands rich in spores and pollen from 46.0 metres to 48.5 metres in drill hole No. B2/73 and from 42.5 metres to 43.5 metres in drill hole No. B3/73.

Microscopic descriptions of all units with palaeontological and palynological data are contained in Lindsay & Harris (1974).

RESULTS OF LABORATORY TESTING

Construction Sand

The coarsest sand intersected in the programme was from 58.9 metres to 61.0 metres in drill hole No. B2/73.



DEPARTMENT OF MINES — SOUTH AUSTRALIA

Drn. J.G.O.
Tcd. L.R.
Ckd. A.E.
Exd.

PIONEER CONCRETE PT. LTD.
SECS. 151, 152 HD. WILLUNGA
WEST - EAST SECTION
THROUGH BOREHOLES

SCALE: VERTICAL 1:500
HORIZONTAL 1:5,000
S10802
HQ 11
DATE: 26 MARCH 1974

The 8.9% passing 200 mesh in this sample is in excess of the 4% maximum specified by Australian Standard A77, 1957-Fine Aggregate. The grading of the sample falls marginally outside the limits for mortar sand which tolerate 10% passing 200 mesh. (See Appendix B - plan No. S10634).

Washing to remove a proportion of the fines should produce sand satisfactory for construction purposes.

Foundry Sand

Two samples (detailed in Table 3) were incorporated in the departmental foundry and glass sand project.

Table 3. Samples Tested for Foundry and Glass Use

<u>Sample No.</u>	<u>Drillhole</u>	<u>Interval (metres)</u>	<u>Unit</u>
FS20/73	B2/73	3.0 - 16.8	Carisbrooke Sand
FS21/73	B3/73	50.3 - 57.9	North Maslin Sand

M. Ware (Scientific Officer - Andel) reports that both samples represent bimodal sand unsuitable for foundry use (See Appendix B - plan No. S10635). FS20/73 has a high clay content of 15% and a wide size distribution. Both samples contain excessive iron oxide at 1.9% and 1.15% Fe_2O_3 respectively. However FS21/73 is a high silica sand with 96.5% SiO_2 and may be suitable for glass manufacture after treatment.

CONCLUSIONS

Scout drilling, one kilometre east of the sand pits at Maslin Beach, intersected construction sand below overburden which is considered too thick for economic recovery at present day prices.

Quaternary units and ?Plio Pleistocene Carisbrooke Sand unconformably overlies an Eocene sequence of Blanche Point Banded Marl, Blanche Point Transitional Marl, Tortachilla Limestone, South Maslin Sand and North Maslin Sand.

The two deep drill holes were stopped in North Maslin Sand before Precambrian bedrock was reached.

Lignitic clay seams within North Maslin Sand contain abundant spores and pollen and are regarded as comparable but younger than the lens of black clay in the ABM Noarlunga Sand Pit at Maslin Beach.

The interval of coarse sand from 58.9 metres to 61.0 metres in drill hole No. B2/73 requires washing to be suitable for construction purposes. Better quality sand probably exists at greater depths.

The fine sands from both the Carisbrooke Sand and North Maslin Sand have no potential for foundry use. Relatively clean sand in drill hole B3/73 between 50.3 metres and 57.9 metres might be suitable for glass manufacture after further processing but overburden in this property is too thick to warrant development.

15th May, 1974
JGO:IA


J.G. OLLIVER
SENIOR GEOLOGIST
INDUSTRIAL MINERALS SECTION

REFERENCES

- Lindsay, J.M. and Harris, W.K., 1974. Biostratigraphy of Two Boreholes near the Northern Margin of the Willunga Sub-basin.
Rept.Bk. 74/31 (unpub.).
- Olliver, J.G. and Weir, L.J., 1967. The Construction Sand Industry in the Adelaide Metropolitan Area.
Report of Investigation No. 30 p. 8-27.

A P P E N D I X A
G E O L O G I C A L L O G S O F D R I L L H O L E S

LAT

LOG OF PERCUSSION DRILL HOLE

RIGS L. G. L. M. JUETT

LONG

DEPTH 9.1 m

PURPOSE NON METALLICS

PROJECT PIONEER CONCRETE PTY. LTD.

ANGLE VERTICAL

MINERAL CONSTRUCTION

PLAN REF. S10633 SEC 151 HD WILLUNGA

AZIMUTH

BORE S/No

D.M. 165/74 REPT. BK.

ELEV. 73.3 m

AGE FORM	CLASS	DESCRIPTION	LOG	DEPTH m	GRAIN SIZE	CLAY: SAND	SPECIAL COMMENTS	DEPTH FT.	
VF	F	M	C	VC	CS	VS	MS	SS	CL
SOIL									
Pale brown calcareous clay									Some calcareous fragments
Reddish yellow to red sand									
Dark red sand									
Hole abandoned at 9.1 metres									

GRAIN SIZE (mm)		CLAY: SAND (%Clay)		MOISTURE	ENVIRONMENT & RESOURCES DIVISION	
VF	Very fine sand 0.05-0.15	SA	Clean sand 0-5		DRILL NO. PRIVATE	LOGGED
F	Fine sand 0.15-0.25	SC	Slightly clayey 5-15		TYPE	J. G. OLLIVER
M	Medium sand 0.25-0.50	MC	Moderately clayey 15-30		DRILLER G. JUETT	DATE 13.7.73
C	Coarse sand 0.50-1.00	VC	Very clayey 30-45		START	TCD. R. B.
VC	Very coarse sand 1.00-2.00	CS	Clay sand 45-55		FINISH	CKD.
P	Pebbles 2.00-64.00	VS	Very sandy 55-70			
CO	Cobbles 64.00-256.0	MS	Moderately sandy 70-85			
		SS	Slightly sandy 85-95			
		CL	Clay 95-100			

SHEET 1 OF 1	DRG. NO. S108033
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LAT
LONG
PURPOSE NON METALLICS
MINERAL CONSTRUCTION
BORE S/No

DEPARTMENT OF MINES—SOUTH AUSTRALIA

LOG OF PERCUSSION DRILL HOLE

PROJECT PIONEER CONCRETE PTY LTD.
PLAN REF S10633 SEC 151 HD WILLUNGA
D.M. 185/74 REPT. BK.

HOLE NO B2/73
RIG SL&LMJUETT
DEPTH 61.0 M
ANGLE VERTICAL
AZIMUTH
ELEV 68.5 m

AGE FORM	CLASS	DESCRIPTION	LOG	DEPTH m	GRAIN SIZE	CLAY: SAND	SPECIAL COMMENTS	DEPTH FT.
SOIL QUATERNARY	OVER-BURDEN	Minor soil over brown clay		2				
CARISBROOKE SAND (PLIO-PLEISTOCENE)	FINE SAND	Mottled brown sand.		4				10
		Red sand		6				20
		Yellow sand		8				30
			10					
		Brown sand		12				40
		Yellow sand		14			A few 5mm rounded quartz grains	50
			16					
BLANCHE PT. Banded MARL (LATE EOCENE)		White to grey calcareous clay to fossiliferous limestone		18				60
			20				70	
		Olive to yellow mottling soft limestone		22				
			24				80	
BLANCHE PT. TRANSITIONAL MARL (LATE EOCENE)		Yellow clay		26				
			28					
TATACHILLIA PT. TRANSITIONAL LIMEST. LATE EOCENE		Olive clay		30				
		Green glauconitic clay		32			white limestone fragments with mollusca casts	90
STH. MASLIN SAND (? LATE EOCENE)	WASTE	Brown sand		34				100
		Yellow sand		36			A few quartz grains up to 5mm & mica flakes	110
		Yellow silt-clay		38			Fine mica flakes scattered throughout	115
		Banded yellow very sandy clay & grey mod. sandy clay		40				120
NINTH MASLIN SAND (MIDDLE EOCENE)		Grey clay						

GRAIN SIZE (mm)		CLAY : SAND (% Clay)		MOISTURE	ENVIRONMENT & RESOURCES DIVISION	
VF	Very fine sand 0.05-0.15	SA	Clean sand 0-5		DRILL NO. PRIVATE TYPE DRILLER G. JUETT START FINISH	LOGGED J.G. OLLIVER DATE 13.7.73 TCD R.B. CKD.
F	Fine sand 0.15-0.25	SC	Slightly clayey 5-15			
M	Medium sand 0.25-0.50	MC	Moderately clayey 15-30			
C	Coarse sand 0.50-1.00	VC	Very clayey 30-45			
VC	Very coarse sand 1.00-2.00	CS	Clay sand 45-55			
P	Pebbles 2.00-64.00	VS	Very sandy 55-70			
CO	Cobbles 64.00-256.0	MS	Moderately sandy 70-85			
		SS	Slightly sandy 85-95			
		CL	Clay 95-100			

LAT
 LONG
 PURPOSE NON METALLICS
 MINERAL CONSTRUCTION
 SAND
 BORE S/No

DEPARTMENT OF MINES—SOUTH AUSTRALIA
LOG OF PERCUSSION DRILL HOLE
 PROJECT PIONEER CONCRETE PTY LTD.
 PLAN REF S10633 SEC 151 HD WILLUNGA
 D.M. 185/74 REPT. BK.

HOLE NO. B2/73
 RIG S1&LM JUETT
 DEPTH 61.0 m
 ANGLE VERTICAL
 AZIMUTH
 ELEV 68.5 m

AGE FORM ^N	CLASS	DESCRIPTION	LOG	DEPTH m	GRAIN SIZE										CLAY: SAND										SPECIAL COMMENTS	DEPTH FT.
					VF	F	M	C	SC	CP	CO	SA	SC	MC	VC	CS	VS	MS	SS	CL						
NORTH MASLIN SANDS MIDDLE EOCENE	WASTE	Grey sand																								
		Yellow sand		42																						
		White to pale yellow sand		44																		Disseminated	140			
		Brown sand to sandstone		46																		fine	150			
		Finely banded grey clay & Black lignite																				flakes	160			
		White and grey finely banded clay with minor lignitic layers		48																		of	170			
	FINE SAND	White sand		50																						
		White to pale white brown sand		52																		mica	180			
		White sand		54																						
		White sand		56																						
		Finely interbanded white sand and brown to grey clay		58																						
		White sand																								
CONST SAND	Pale yellow & yellow sand		60																							
		End of hole 61.0 metres																				200				

GRAIN SIZE (mm)		CLAY: SAND (% Clay)		MOISTURE	ENVIRONMENT & RESOURCES	
					DIVISION	
VF	Very fine sand	0.05-0.15	SA Clean sand	0-5	DRILL NO. PRIVATE	LOGGED
F	Fine sand	0.15-0.25	SC Slightly clayey	5-15	TYPE	J.G. OLLIVER
M	Medium sand	0.25-0.50	MC Moderately clayey	15-30	DRILLER G. JUETT	DATE 13.7.73
C	Coarse sand	0.50-1.00	VC Very clayey	30-45	START	TCD. R.B.
VC	Very coarse sand	1.00-2.00	CS Clay sand	45-55	FINISH	CKD.
P	Pebbles	2.00-64.00	VS Very sandy	55-70		
CO	Cobbles	64.00-256.0	MS Moderately sandy	70-85		
			SS Slightly sandy	85-95		
			CL Clay	95-100		

LAT		DEPARTMENT OF MINES - SOUTH AUSTRALIA		HOLE NO B3/73	
LONG		LOG OF PERCUSSION DRILL HOLE		RIG SL&LM JUETT	
PURPOSE NON METALLICS		PROJECT PIONEER CONCRETE PTY LTD.		DEPTH 43.4 m	
MINERAL CONSTRUCTION SAND		PLAN REFSIO633SEC 152 HD WILLUNGA		ANGLE VERTICAL	
BORE S/No		D.M. 165/74		AZIMUTH	
		REPT. BK		ELEV 64.5 m	

AGE FORM	CLASS	DESCRIPTION	LOG	DEPTH m	GRAIN SIZE	CLAY: SAND	SPECIAL COMMENTS	DEPTH FT.
SOIL QUATERNARY		Pale brown calcareous silt		2				
BLANCHE PT. SOFT MARL (LATE EOCENE)		Yellow sand		4			Some calcareous fragments	10
		Reddish yellow clay sand		6			Quartz grains up to 5 mm	20
		Mottled, yellow, olive, white & brown clay to claystone		8				30
				10			Rounded boulders of light gray limestone	
		Gray calcareous clay with yellow & brown mottling		12				40
				14				
		Gray to white fossiliferous limestone & marl		16				50
				18				60
				20				
				22				70
		Greenish & yellowish mottling		24				80
				26				
		Mottled Olive, yellow, white & brown marly sand grading to		28				90
				30			occasional blabs of glauconite	100
		Pale brown fossiliferous limestone						
				32				
		Dark yellowish brown sand					Polished limonite grains	110
				34			Rounded quartz grains up to 10 mm	
		Mottled white & brown sand with seams of gray clay		36				120
		Red sand					Rare flakes of mica	
				38				
		Mottled white, brown & yellow sand					Scattered mica flakes	130

GRAIN SIZE (mm)		CLAY: SAND (% Clay)		MOISTURE	ENVIRONMENT & RESOURCES	
					DIVISION	
VF	Very fine sand	0.05-0.15	SA	Clean sand	0-5	
F	Fine sand	0.15-0.25	SC	Slightly clayey	5-15	
M	Medium sand	0.25-0.50	MC	Moderately clayey	15-30	
C	Coarse sand	0.50-1.00	VC	Very clayey	30-45	
VC	Very coarse sand	1.00-2.00	CS	Clay sand	45-55	
P	Pebbles	2.00-64.00	VS	Very sandy	55-70	
CO	Cobbles	64.00-256.0	MS	Moderately sandy	70-85	
			SS	Slightly sandy	85-95	
			CL	Clay	95-100	

DRILL NO PRIVATE	LOGGED
TYPE	J.G. OLLIVER
DRILLER G. JUETT	DATE 13.7.73
START	TCD. R.B.
FINISH	CKD.

SHEET 1 OF 2	DRG. NO. S10805
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LOG OF PERCUSSION DRILL HOLE

LAT

LONG

PURPOSE NON METALLICS

MINERAL CONSTRUCTION
SAND

BORE S/No

PROJECT PIONEER CONCRETE PTY.LTD

PLAN REFSIO633 SEC 152 HD WILLUNGA

D.M. 165/74 REPT BK

RIGSL&L.M.JUETT

DEPTH 43.4 M

ANGLE VERTICAL

AZIMUTH -

ELEV 64.5m

[illegible]

GRAIN SIZE (mm)		CLAY : SAND (%Clay)		MOISTURE	ENVIRONMENT & RESOURCES DIVISION	
VF	Very fine sand	0.05-0.15	SA Clean sand		0-5	DRILL NO. PRIVATE...
F	Fine sand	0.15-0.25	SC Slightly clayey	5-15	TYPE	J.G. OLLIVER
M	Medium sand	0.25-0.50	MC Moderately clayey	15-30	DRILLER G. JUETT	DATE 13-7-73
C	Coarse sand	0.50-1.00	VC Very clayey	30-45	START	TCD. R.B.
VC	Very coarse sand	1.00-2.00	CS Clay sand	45-55	FINISH	CKD.
P	Pebbles	2.00-64.00	VS Very sandy	55-70		
CO	Cobbles	64.00-256.0	MS Moderately sandy	70-85		
			SS Slightly sandy	85-95		
			CL Clay	95-100		
					SHEET 2 OF 2	DRG. NO. S10805a

A P P E N D I X B
SIZE GRADINGS AND GRAPHS

Extracted from Amel Reports by M.D. Ware

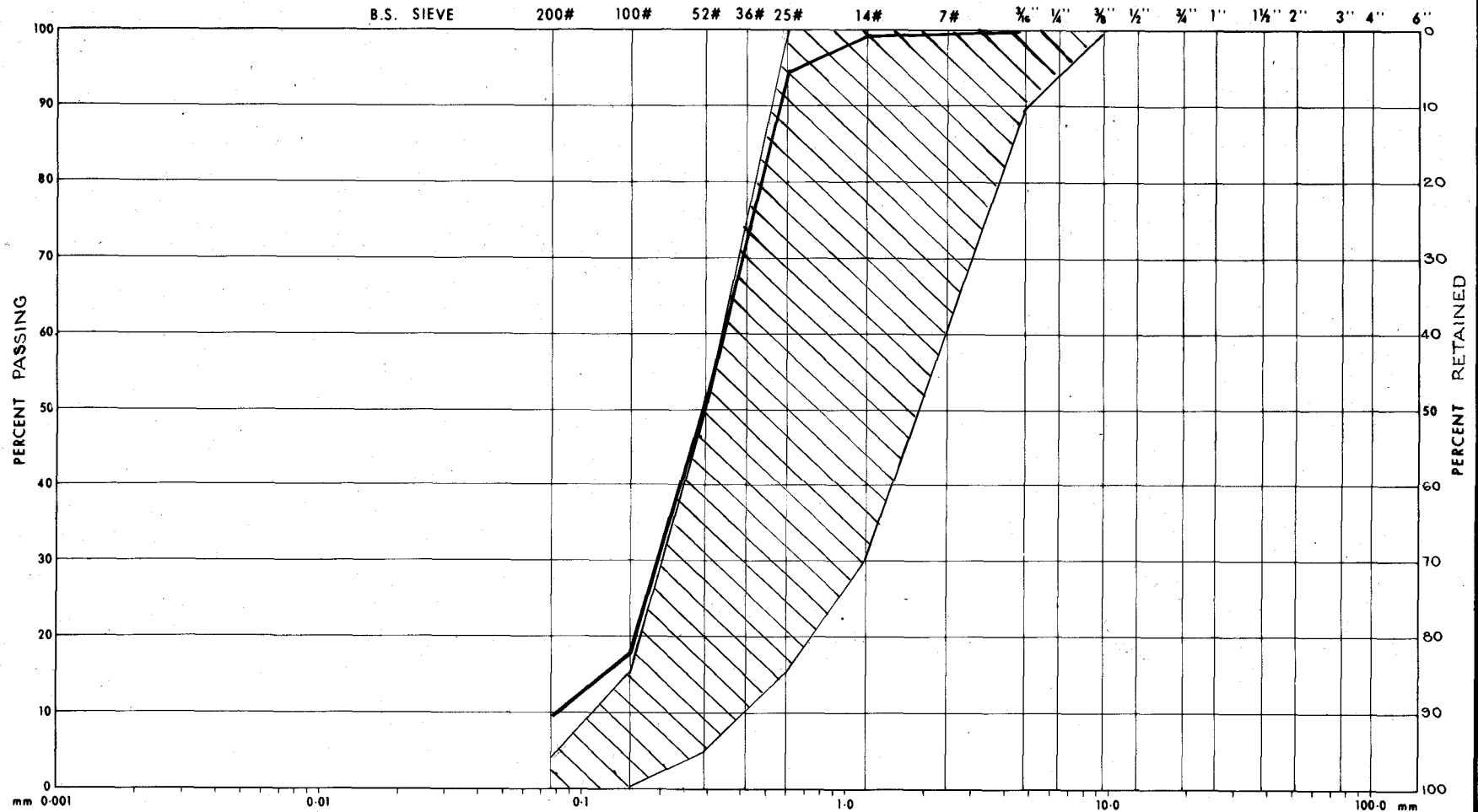
MT293/74 - Construction Sand

MT276/74 - Foundry Sand

EXTRACTED FROM AMDEL REPORT NO. MT293/74

Sample No. A321/73 - Percussion drill hole No. B2/73 58.9 - 61.0 m

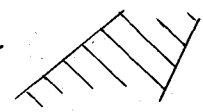
<u>B.S. Mesh No.</u>	<u>Cumulative % Passing</u>
3/16	99.9
7	99.9
14	99.5
25	94.6
52	50.5
100	17.2
200	8.9



CLAY	SILT	FINE SAND	MEDIUM SAND	COARSE SAND	FINE GRAVEL	MEDIUM GRAVEL	COARSE GRAVEL	COBBLES (to 256 mm)
CLAY	SILT	V. FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	V. COARSE SAND	PEBBLES	

Sample A321/73 - Percussion Drillhole B2 58.9m - 61.0m

Limits of Aust. Standard A77 1957
Fine Aggregate



NON-METALLICS
SECTION

Compiled: J.G.O

Dra: R.B.

Ckd: A.F.

DEPARTMENT OF MINES — SOUTH AUSTRALIA

SIZE GRADING — DRILLHOLE B2
PIONEER CONCRETE PTY. LTD.
SEC 151 HD. WILLUNGA

Scale: As shown

Date: 20 DEC. 1973

FIG:

Drg No. S10634
H411

EXTRACTED FROM AMDEL REPORT MT276/74

Sample No.	FS20/73	FS21/73
Dept. Mines No.	A319/73	A320/73
Amel No.	CE4349	CE4350
Drillhole	B2/73	B3/73
Interval (metres)	3.0-16.8	50.3-57.9
Colour	Yellow-brown	Grey to grey-brown
Grain shape	Subangular to subrounded (dominantly subrounded)	Subangular
Major constituents	Well sorted quartz sand with very heavy iron oxide coatings on all grains. Moderately cemented (Fe) quartz- aggregates fairly common. Traces of shelly calcareous material.	Medium to fine grained quartz sand. Numerous quartz aggregates present, firmly cemented by CaCO_3 (Slow reaction to HCl).
Heavy minerals	Trace - opaques or garnet	Trace - opaques dominant with zircon, yellow rutile and staurolite.

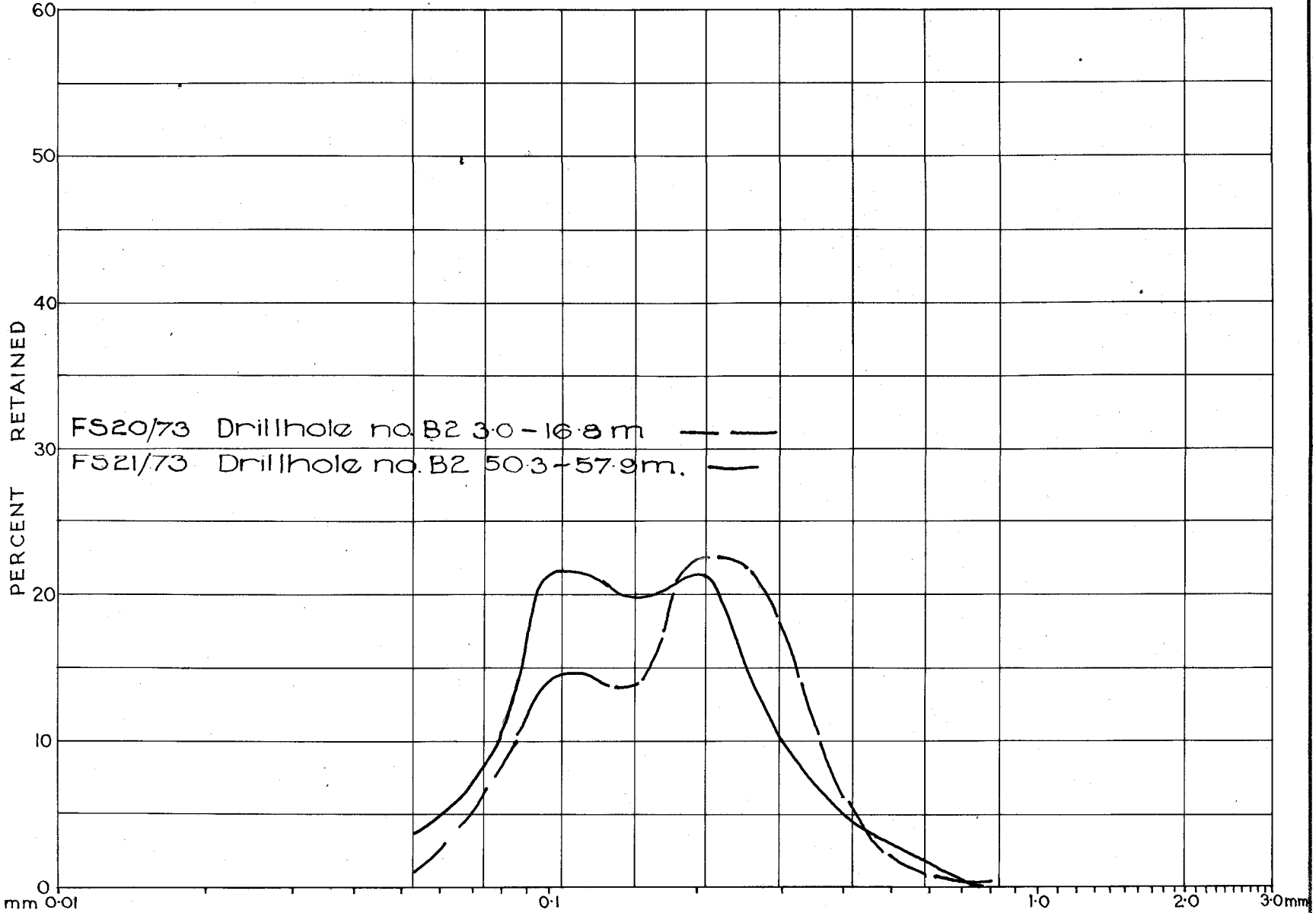
Chemical Analysis

SiO_2	91.3	96.5
Al_2O_3	3.3	1.6
Fe_2O_3	1.9	1.15
CaO	less than 0.1	less than 0.1
MgO	0.13	0.06
Na_2O	0.10	0.03
K_2O	0.4	0.1
MnO	less than 0.02	less than 0.02
TiO_2	0.15	0.21
P_2O_3	less than 0.1	less than 0.1
Cr_2O_3	less than 0.1	less than 0.1
V_2O_5	less than 0.05	less than 0.05
Ignition Loss	2.15	0.65
C	0.05	0.1

Screen Size Analysis**% WT RETAINED****ON A.S.T.M. SCREEN**

6	0.64	-
12	1.04	-
20	0.24	-
30	0.96	2.10
40	5.76	4.90
50	17.94	10.04
70	22.62	21.28
100	13.63	19.70
140	14.42	21.66
200	6.08	7.94
270	0.73	3.50
-270	0.96	3.44
AFS Clay (Average)	15.0%	5.2%
AFS Grain Fineness No.	67	85

BS SIEVE	300	200	150	100	72	52	36	25	18	8
ASTM SIEVE	270	200	140	100	70	50	40	30	20	10



SILT	VERY FINE SAND	FINE SAND	MEDIUM SAND	COARSE SAND	VERY COARSE SAND	PEBBLES
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WENTWORTH SCALE

NON METALLICS
SECTION

Compiled: J.G.O

Drn. R.B Ckd. A.F

DEPARTMENT OF MINES - SOUTH AUSTRALIA

FOUNDRY SAND

SIZE GRADINGS - DRILLHOLE NO. B2
PIONEER CONCRETE PTY. LTD.
SEC. 151 HD. WILLUNGA

Scale:

Date: 20 DEC. 1973

Drg. No.
S10635
HQ 11