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COWANDILLA PRIMARY SCHOOL
COMPLETION REPORT, BORE NO. 1
SECTION 92, HUNDRED OF ADELAIDE

- PUBLIC BUILDINGS DEPARTMENT -

M.A. COBB

Department of Mines
South Australia —

DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY
ENGINEERING DIVISION

COWANDILLA PRIMARY SCHOOL
COMPLETION REPORT, BORE NO. 1.
SECTION 92, HUNDRED OF ADELAIDE

by

M.A. COBB
GEOLOGIST
HYDROGEOLOGY SECTION

25th March, 1974.

Rept.Bk.No. 74/82
G.S. No. 5401
Hyd. No. 2643
D.M. No. 875/72

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DEPARTMENT OF MINES
SOUTH AUSTRALIA

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COWANDILLA PRIMARY SCHOOL
COMPLETION REPORT, BORE NO. 1.
SECTION 92, HUNDRED OF ADELAIDE

- PUBLIC BUILDINGS DEPARTMENT -

LOCATION

General: Cowandilla Primary School

Region : 4

County : Adelaide

Hundred: Adelaide

Section: 92

Bore State No.: 761202196

INTRODUCTION

Following a quotation from this Department to sink a 6 inch water supply bore to a depth of approximately 137 metres (m) at Cowandilla Primary School a letter was received from Public Buildings Department dated 14th February, 1973, requesting the sinking of this bore. The bore was sunk during May 1973 and was subsequently developed and pump tested for six hours.

This report describes the construction details, the hydrogeology of the bore and the results of the pump test. It also contains a resumé of groundwater quality encountered during drilling and the subsequent pump test. The bore location is given on Figure 1.

CONSTRUCTION DETAILS

Drilling commenced on the 30th April, 1973 and was completed by the 1st June, 1973 at a final depth of 126.0 m. A Ruston-Bucyrus Cable Tool Plant (No. 17) was used to drill the hole.

The hole was initially drilled 8 inch, to approximately 77.0 m and then continued 6 inch to a final depth of 126.0 m with casing being kept close behind the drilling bit. The bore was then backfilled to 123.0 m with large shells, with the 6 inch casing shoe being set at 120.0 m below ground level. A 7.3 m by 4 inch "Paringa" type sandscreen was attached to 6.0 m of 5" casing and installed opposite the open-hole section, with a Surescreen rubber packer between the 5" and 6" casing. The screen is constructed of double wrapped stainless steel mesh with 0.016" openings on a 4" galvanised pipe. About 4.3 m of the screen is within the 6" casing

Upon installation the screen was developed by 2 hours of bailing and then 6½ hours of blowing (air lift) at approximately 6.5 litres per second (l/s) with air pipes set at 66.0 m. The lead plug at the base of the screen was then installed and the bore further developed by blowing for 7½ hours.

The 8" casing was then removed and the annulus between the 6" casing and hole wall filled with sand. A Pomona turbine pump was installed to a depth of 75.0 m the bore then being developed by pumping for 9 hours initially at 4.0 l/s and then 10.5 l/s.

A sketch of the bore's construction details is given in Figure 2.

HYDROGEOLOGY

During drilling, sludge samples were collected at 2 m intervals or on a change of lithology noted by the driller. A log combining the driller's log and the lithological log obtained from examination of the sludge samples is given in Appendix A.

The bore ends in Marine Pliocene Hallett Cove Sandstone/Dry Creek Sands?, a calcareous quartz sand to calcareous sandstone containing large shells (*Ostrea*). This is overlain to surface by about 115 m of Hindmarsh Clay, a fluviatile clay or silt with interbedded sands and gravels. This unit contains the water table cut at a depth of 4.0 m below ground level, with a salinity of 1700 mg/l.

Additional water cuts were recorded by the driller at 20.0, 38.0, 60.0, 79.0, 90.0, 115.5 and 119.7 m all of which were under pressure rising to within 30.0 m of the surface (see bore log).

The last recorded water cut was 119.7 m within the Hallet Cove Sandstone, the aquifer under development. This had a salinity of less than 1000 mg/l. Since this aquifer is overlain by interbedded sands and clays it is unlikely to be completely confined but to show leaky characteristics under long term pumping.

WATER SAMPLING

During drilling water samples were taken regularly and subsequently analysed for approximate total dissolved salts. Additional samples were collected during the development and pump testing and subsequently analysed. Selected samples were forwarded to the laboratories of AMDEL for full chemical analyses.

The results of this sampling are given in Appendix B.

PUMPING TEST

A 6 hour pump test was undertaken on the 1st June, 1973 using a 5" x 12 stage Pomona turbine pump set at 75 m.

The nature of the pump test undertaken allows only an approximate analysis of the drawdowns expected for long term pumping and different pumping rates. The values of drawdown encountered in the test are shown on Figure 3. It is obvious from the break in slope of this graph that some form of "discharge boundary" was encountered causing a more rapid rate of drawdown. A useful tool in the simple prediction of anticipated drawdown at different pumping rates is that of the specific capacity (S.C.) or the pumping rate per unit of drawdown (Q/S) in litres/second per metre.

The value chosen for this bore is 0.37 litres/second per metre for 8 hours of pumping. It must be born in mind that this value of S.C. extrapolated to other pumping rates does not allow for turbulent head loss components of total drawdown which vary approximately as the square of the discharge rate. Consequently the anticipated drawdowns for pumping rates higher than 10 litres/second will inherently be a minimum.

A graph of anticipated drawdown against pumping rate for 8 hours pumping is given on Figure 4.

CONCLUSIONS

1. The specific capacity for 8 hours pumping chosen to determine drawdowns for various pumping rates is 0.37 litres/second per metre.
2. The nature of the pump test performed on the bore was not sufficient to adequately determine the operating characteristics of the bore.
3. The anticipated drawdown for different pumping rates is given on Figure 4.

RECOMMENDATIONS

1. The pump setting below ground level for the desired pumping rate may be estimated from Figure 4 by summing the drawdown value read from the graph, 25% of this figure and 8 m (pre-pumping water level below surface).
2. The maximum pumping rate suitable for this bore is 10 l/s.
3. A water sample should be collected each month during the period in which the bore is used. This sample should be submitted to this Department for a test of approximate total dissolved salts. One sample per year should be forwarded to this Department for a full chemical analysis.
4. Water levels must be recorded on a routine basis to provide long term information on the efficiency of the bore and the characteristics of the aquifer. It is suggested that levels be recorded
 - (a) Prior to commencement of pumping and
 - (b) On completion of pumping with length of pumping recorded, and total volume extracted if available.

Measurements should be made relative to ground level and forwarded to this Department for storage and analysis.

M.A. Cobb

MAC:JS
25th March, 1974.

M.A. COBB
GEOLOGIST
HYDROGEOLOGY SECTION

APPENDIX A

HYDROGEOLOGY SECTION

BORE LOG

HIRER PUBLIC BUILDINGS DEPARTMENT

Drill type *Cable Tool*Circulation *Water*Driller *A. Sturak*Start *30-4-73*Finish *1-6-73*Logged by *M.A. Cobb*Date logged *15-1-74*Bore Diameter *6"*DEPTH *126*

A.M.G. Zone

Coords. *E*" *N*

Datum Elev.

(m) Ref. Pt. Elev.

Surface Elev.

HUNDRED *ADELAIDE*SECTION *92*STATE No. *761202196*Project No. *Bore 1*Docket No. *875/72*Bore Serial No. *51/73*

Depth to Water cut (m)	Depth to standing water (m)	SUPPLY		TOTAL DISSOLVED SOLIDS	
		litres/sec.	Method of test	Milligrammes/litre	Analysis W. No.
4.00	3.10	0.6	Estimate	1715	2029/73
20.00	8.20	0.6	"	2030	2031/73
38.00	10.50	1.3	"	1645	2033/73
60.00	12.10	1.3	"	1255	2035/73
79.00	28.40	0.6	"	955	2100/73
90.00	3.10	1.3	"	745	2102/73
115.50	15.40	1.3	"	830	2237/73
119.70	10.50	6.5	"	915	2239/73

REMARKS *Cowandilla Primary School. Completed Water Supply.*

CASING	WATERS CUT	WATER LEVEL	DEPTH (m)	CORE	GRAPHIC LOG	AGE	UNIT	DEPTH (m)		DESCRIPTION
								from	to	
<i>122.3m of 6"</i>			0					0.0	2.0	ARENACEOUS SILT - Brown-grey, organic.
								2.0	5.0	CLAYEY, ARENITE - Grey-brown. About 30% sand size; quartz, chips to rounded, (clear, opaque, iron stained, pink), amphibole (black dark green), mica flakes. Some larger quartz grains to 4mm and calcareous fragments.
			5					5.0	8.0	ARENACEOUS LUTITE - Brown plastic clay with 10-20% sand size grains as above.
								8.0	10.0	CLAYEY ARENITE - Grey brown mottled. Calcretised fragments (quartz sand in calcareous matrix) more common. Quartz, amphibole, mica.
			10					10.0	18.0	LUTITE - Grey-brown. Micaceous, some large quartz grains and grey, hard calcareous fragments. Silty between 13-15 metres.
			15							

Dn: *G.J.T.*Sheet *1* of *6*Date: *22-1-74*

Bore Folder No.

DEPARTMENT OF MINES — SOUTH AUSTRALIA									
CASING	WATERS CUT	WATER LEVEL	DEPTH (m)	CORE	GRAPHIC LOG	AGE	UNIT	DEPTH (m) from to	DESCRIPTION
122.3m of 6"								18.0 20.0	ARENACEOUS-LUTITE-Stringers of grey quartz arenite in a brown mottled silty lutite-micaceous.
								20.0 21.5	RUDITE-Angular to rounded fragments of quartz and metasilstone, average size 2-3mm but some rounded quartz to 4cm.
			20					21.5 33.0	ARENACEOUS-LUTITE-Stringers of grey quartz arenite in a brown mottled silty lutite. Micaceous. Becomes greyer with depth.
			25						
			30						
								33.0 35.0	SILTY LUTITE- Brown with thin grey sand clay stringers.
			35					35.0 37.0	LUTITE- Red-brown grey mottled.
								37.0 41.0	ARENITE- Silty, fine grained. Red-brown silt from 30% near top to 10% at base. Quartz angular-moderately well rounded, average grain size 0.5mm clear to rose coloured. Some opaques. Brownish clay flakes and grains. Some grains to 1.5mm near base
			40						
Borehole State No. 761202196									
								Drn: G.J.T.	Sheet 2 of 6
								Date: 24-1-74	Bore Folder No.

DEPARTMENT OF MINES — SOUTH AUSTRALIA										
CASING	WATERS CUT	WATER LEVEL	DEPTH (m)	CORE	GRAPHIC LOG	AGE	UNIT	DEPTH (m)		DESCRIPTION
								from	to	
122.3m of 6"							Pleistocene - Recent Hindmarsh Clay	66.0	67.0	CLAYEY ARENITE- Pale brown. Fine medium quartz arenite (60%) in a clay matrix. Quartz angular-sub-rounded, average size 0.5mm.
								67.0	71.0	ARENACEOUS LUTITE- Pale grey-brown. About 20% quartz sand, angular to sub-rounded, 0.2-0.5mm.
								71.0	79.0	LUTITE- Brown, plastic, becomes mottled (grey) and sand towards base.
								79.0	81.5	Arenite- Brown-grey fine quartz arenite, 0.2-0.5mm, clear opaque, pale brown. Minor lutite.
								81.5	83.0	LUTITE- Brown-grey mottled, some fine sand stringers.
								83.0	90.0	SILTITE- Orange-brown, micaceous. Dominantly quartz chips, clear and orange stained. Some sand size grains. Grades down to a grey-brown mottled silty lutite.
Borehole State No. 761202196								Dn: G.J.T.		Sheet 4 of 6
								Date: 25.1.74		Bore Folder No.

DEPARTMENT OF MINES — SOUTH AUSTRALIA									
CASING	WATERS CUT	WATER LEVEL	DEPTH (m)	CORE	GRAPHIC LOG	AGE	UNIT	DEPTH (m) from to	DESCRIPTION
122.3 m of 6"								90.0 93.5	RUDITE = Well rounded pebbles up to 3cm. Dominantly quartz, quartzite (buff-dark-grey ferruginous). Finer grained quartz chips and well rounded grains. Some rounded plates of dark metasiltstone.
								93.5 95.0	CLAYEY ARENITE = Brown, Clay (25%) bound quartz arenite, 0.2-0.5mm, dominantly clear quartz, some brown stained.
			95					95.0 100.0	SANDY LUTITE = Pale brown grey. 10-20% quartz sand in a plastic lutite. Becomes mottled and less sandy to base
			100					100.0 100.5	ARENITE = Clear quartz arenite 0.5-1mm. Clear-orange stained, some rose quartz. Angular to sub-rounded. Odd small opaques and rounded metasiltstone plate.
								100.5 110.0	LUTITE = Red-brown-grey mottled. Some sand size grains. Becomes calcareous below 107m.
			105						
			110					110.0 114.0	ARENITE, CALCAREOUS = Pale grey, Dominantly quartz, angular-subrounded, clear-slightly opaque, even grained 0.5mm in a calcilutite.
								114.0 115.5	SILTY LUTITE = Pale brown-grey. Non-calcareous some sand size grains.
			115						

Borehole State No. 761202196.

Drn: G.J.T.

Sheet 5 of 6

Date: 29-1-74

Bore Folder No.

APPENDIX B

SUMMARY OF WATER ANALYSES

Progressive depth of bore (m)	Sampling depth (m)	Water level (m)	Total dissolved solids (Milligrammes/litre)	Analysis W No.	Remarks
5.0	4.0	3.1	1715	2029/73	
23.0	20.0	8.2	2030	2031/73	
42.0	38.0	10.5	1645	2033/73	
64.0	60.0	12.1	1255	2035/73	
64.0	60.0	12.1	1271	2036/73	A.M.D.L. full analysis
81.0	79.0	28.4	955	2100/73	
92.5	90.0	3.1	745	2102/73	
110.0	110.0	6.5	770	2104/73	
110.0	110.0	6.5	781	2105/73	A.M.D.L. full analysis
117.0	115.5	15.4	830	2237/73	
117.0	115.5	15.4	820	2238/73	A.M.D.L. full analysis
122.0	119.2	10.5	915	2239/73	
126.0	119.2	10.5	915	2240/73	
DEVELOPING OF BORE					
126.0	119.7	—	915	2382/73	No time values given from start of developing.
126.0	119.7	—	885	2383/73	
126.0	119.7	—	915	2384/73	
126.0	119.7	—	915	2385/73	
126.0	119.7	—	885	2386/73	
126.0	119.7	—	910	2387/73	A.M.D.L. full analysis
PUMP TEST					
126.0	119.7	—	885	2503/73	After 15 minutes pumping.
126.0	119.7	—	885	2504/73	After 120 minutes pumping.
126.0	119.7	—	885	2505/73	After 400 minutes pumping.
126.0	119.7	—	914	2506/73	After 400 minutes pumping. A.M.D.L. full analysis.
Borehole State No. 761202196				Drn: G.U.T.	Sheet 1 of 1
				Date: 4.4.74	Bore Folder No.



VOL 296

WATER ANALYSIS REPORT

SAMPLE NO.

W 2036/73

JOB NO.

4772/73

CHEMICAL COMPOSITION

		Milligrams per litre mg/l	Milliequivalents per litre me/l
<i>Cations</i>			
Calcium	(Ca)	68	3.4
Magnesium	(Mg)	61	5.0
Sodium	(Na)	330	14.4
Potassium	(K)	10	0.3
Iron	(Fe)		
<i>Anions</i>			
Carbonate	(CO ₃)		
Bicarbonate	(HCO ₃)	485	7.9
Sulphate	(SO ₄)	95	2.0
Chloride	(Cl)	460	13.0
Fluoride	(F)		
Nitrate	(NO ₃)	8	0.1
Phosphate	(PO ₄)		

TOTALS and BALANCE

Cations me/l	Anion me/l
23.1	23.0

diff Δ 0.1 sum Σ 46.1 % ($\frac{\Delta \times 100}{\Sigma}$) 0.22DERIVED AND OTHER DATA

Conductivity (E.C.) μS/cm at 25°C 3255

Milligrams
per litre
mg/l

Total Dissolved Solids:

a. Based on E.C.

b. Calculated (HCO₃=CO₃)

1271

c. Residue on evaporation at 180°C

Total Hardness as CaCO₃

420

Carbonate Hardness as CaCO₃

395

Non-carbonate Hardness as CaCO₃

25

Total Alkalinity as CaCO₃

395

Free Carbon Dioxide (CO₂)

Suspended Solids

Silica (SiO₂)

Boron (B)

Reaction—pH

Turbidity (Jackson)

Colour (Hazen)

Sodium Absorption Ratio

SODIUM/TOTAL CATION RATIO
(EQUIV)

62.3

Name

P. B. D.

Hundred

ADELAIDE

Supply

1000

Section

92

Depth Hole

64.00

Address

COWANDILLA

Hole No.

1

Date Collected

7.5.73

SCHOOL SHED

Water Cut

60.00

Sample Collected by

A. STUART
STUART

Water Level

12.10

Date Received

REMARKS:

For Director



WATER ANALYSIS REPORT

SAMPLE NO.

VOL 296
W 2105/73

JOB NO.

4867/72

CHEMICAL COMPOSITION

		Milligrams per litre mg/l	Milliequivalents per litre me/l
Cations			
Calcium	(Ca)	52	2.6
Magnesium	(Mg)	46	3.8
Sodium	(Na)	195	8.5
Potassium	(K)	5	0.1
Iron	(Fe)		
Anions			
Carbonate	(CO ₃)		
Bicarbonate	(HCO ₃)	330	5.4
Sulphate	(SO ₄)	55	1.1
Chloride	(Cl)	260	7.3
Fluoride	(F)		
Nitrate	(NO ₃)	6	1.0
Phosphate	(PO ₄)		

TOTALS and BALANCE

	Cations me/l	Anion me/l
	15.0	14.8
diff Δ	0.2	
sum Σ	29.8	
% (Δ x 100 / Σ)		0.67

DERIVED AND OTHER DATA

Conductivity (E.C.) μS/cm at 25°C

1610

Milligrams
per litre
mg/l

Total Dissolved Solids:

a. Based on E.C.

b. Calculated (HCO₃=CO₃)

781

c. Residue on evaporation at 180°C

Total Hardness as CaCO₃

320

Carbonate Hardness as CaCO₃

270

Non-carbonate Hardness as CaCO₃

50

Total Alkalinity as CaCO₃

270

Free Carbon Dioxide (CO₂)

Suspended Solids

Silica (SiO₂)

Boron (B)

Units

Reaction-pH

Turbidity (Jackson)

Colour (Hazen)

Sodium Absorption Ratio

SODIUM / TOTAL CATION RATIO
(equiv)

56.7

Name	P. B. D.	Hundred	ADELAIDE	Supply	5.00
		Section	92	Depth Hole	110
Address	COWANDILLA	Hole No.	1	Date Collected	15.5.73
	STRAH SCHOOL	Water Cut	110	Sample Collected by	A. STRAK
		Water Level	65	Date Received	

REMARKS:

for Director

VOL 297

WATER ANALYSIS REPORT

AMDEL COMPUTER SERVICES

SAMPLE NO. W 2238/73

JOB NO. 4957/73

CHEMICAL COMPOSITION				DERIVED AND OTHER DATA		REMARKS
		MILLIGRAMS PER LITRE MG/L	MILLIEQUIVS. PER LITRE ME/L	CONDUCTIVITY (E.C.) MICRO-S/CM AT 25 DEG. C		
				1367.		
CATIONS				TOTAL DISSOLVED SOLIDS	MILLIGRAMS PER LITRE MG/L	
CALCIUM	(CA)	77	3.8	A. BASED ON E.C.		
MAGNESIUM	(MG)	55	4.5	B. CALCULATED (HCO3=CO3)	820	
SODIUM	(NA)	151	6.6	C. RESIDUE ON EVAP. AT 180 DEG. C		
POTASSIUM	(K)	7	.2			
ANIONS						
				TOTAL HARDNESS AS CaCO3	419	
				CARBONATE HARDNESS AS CaCO3	248	
BICARBONATE	(HCO3)	302	4.9	NON-CARBONATE HARDNESS AS CaCO3	171	
SULPHATE	(SO4)	64	1.3	TOTAL ALKALINITY AS CaCO3	248	
CHLORIDE	(CL)	306	8.6	FREE CARBON DIOXIDE (CO2)		
				SUSPENDED SOLIDS		
				SILICA 150.2 (51.2)		
				BORON (B)		
TOTALS AND BALANCE					UNITS	
CATIONS (ME/L)	15.1	DIFF =	.0	REACTION - PH	7.7	
ANIONS (ME/L)	15.1	SUM =	30.2	TURBIDITY (JACKSON)		
				COLOUR (HAZEN)		
DIFF*100.						
----- =		.0 %		SODIUM TO TOTAL CATION RATIO (ME/L)	43.5 %	
SUM						

NAME P.B.D.
ADDRESS COWANDILLA
SCHOOL

HUNDRED ADELAIDE
SECTION 92
HOLE NO. 1
SUPPLY 1000

WATER CUT 115.50
WATER LEVEL 15.40
DEPTH HOLE 117.00

DATE COLLECTED 18- 5-73
DATE RECEIVED 30- 5-73

SAMPLE COLLECTED BY A. STUART

SAMPLE NO. W2387/73

JOB NO. 5017/73

CHEMICAL COMPOSITION

DERIVED AND OTHER DATA

REMARKS

MILLIGRAMS PER LITRE
MG/L

MILLIEQUIVS. PER LITRE
ME/L

CONDUCTIVITY (E.C.)
MICRO-S/CM AT 25 DEG. C 1917.

MILLIGRAMS PER LITRE
MG/L

CATIONS

CALCIUM	(CA)	79	3.9
MAGNESIUM	(MG)	62	5.1
SODIUM	(NA)	177	7.7
POTASSIUM	(K)	7	.2

TOTAL DISSOLVED SOLIDS

A. BASED ON E.C.
B. CALCULATED (HCO3=CO3)
C. RESIDUE ON EVAP. AT 180 DEG. C

910

ANIONS

BICARBONATE	(HCO3)	368	6.0
SULPHATE	(SO4)	43	.9
CHLORIDE	(CL)	342	9.6
NITRATE	(NO3)	19	.3

TOTAL HARDNESS AS CaCO3 452
CARBONATE HARDNESS AS CaCO3 302
NON-CARBONATE HARDNESS AS CaCO3 150
TOTAL ALKALINITY AS CaCO3 302
FREE CARBON DIOXIDE (CO2)
SUSPENDED SOLIDS
SILICA (SiO2)
BORON (B)

TOTALS AND BALANCE

UNITS

CATIONS (ME/L)	16.9	DIFF =	.0
ANIONS (ME/L)	16.9	SUM =	33.8

REACTION - PH 7.6
TURBIDITY (JACKSON)
COLOUR (HAZEN)

DIFF*100.
----- = .1 %
SUM

SODIUM TO TOTAL CATION RATIO (ME/L) 45.5 %

NAME P.B.D.
ADDRESS COWANDILLA SCHOOL

HUNDRED ADELAIDE
SECTION 92
HOLE NO. 1
SUPPLY 5000
SAMPLE COLLECTED BY A. STURAK

WATER CUT 119.70
WATER LEVEL 8.10
DEPTH HOLE 126.00

DATE COLLECTED 25- 5-73
DATE RECEIVED

WATER ANALYSIS REPORT

ANDEL COMPUTER SERVICES

SAMPLE NO. W2506/73

JOB NO. 5168/73

CHEMICAL COMPOSITION

DERIVED AND OTHER DATA

REMARKS

MILLIGRAMS PER LITRE
MG/L

MILLIEQUIVS. PER LITRE
ME/L

CONDUCTIVITY (E.C.)
MICRO-S/CM AT 25 DEG. C 1719.

MILLIGRAMS PER LITRE
MG/L

CATIONS

CALCIUM (CA)	80	4.0
MAGNESIUM (MG)	61	5.0
SODIUM (NA)	176	7.7
POTASSIUM (K)	8	.2

TOTAL DISSOLVED SOLIDS

A. BASED ON E.C.
B. CALCULATED (HCO3=CO3)
C. RESIDUE ON EVAP. AT 180 DEG. C

914

ANIONS

BICARBONATE (HCO3)	374	6.1
SULPHATE (SO4)	38	.8
CHLORIDE (CL)	351	9.9
NITRATE (NO3)	16	.3

TOTAL HARDNESS AS CaCO3 451
CARBONATE HARDNESS AS CaCO3 307
NON-CARBONATE HARDNESS AS CaCO3 144
TOTAL ALKALINITY AS CaCO3 307
FREE CARBON DIOXIDE (CO2)
SUSPENDED SOLIDS
SILICA (SiO2)
BORON (B)

TOTALS AND BALANCE

UNITS

CATIONS (ME/L)	16.9	DIFF =	.2
ANIONS (ME/L)	17.1	SUM =	33.9

REACTION - PH 7.1
TURBIDITY (JACKSON)
COLOUR (HAZEN)

DIFF*100.
----- = .6 %
SUM

SODIUM TO TOTAL CATION RATIO (ME/L) 45.4 %

NAME PUBLIC BUILDING DEPT
ADDRESS COWANDILLA

HUNDRED ADELAIDE
SECTION 92
HOLE NO 1
SUPPLY

WATER CUT
WATER LEVEL
DEPTH HOLE 126.00

STATE NO. 7612021

DATE COLLECTED
DATE RECEIVED

SAMPLE COLLECTED BY

GP PLAN L3.

196 on. Set 92,

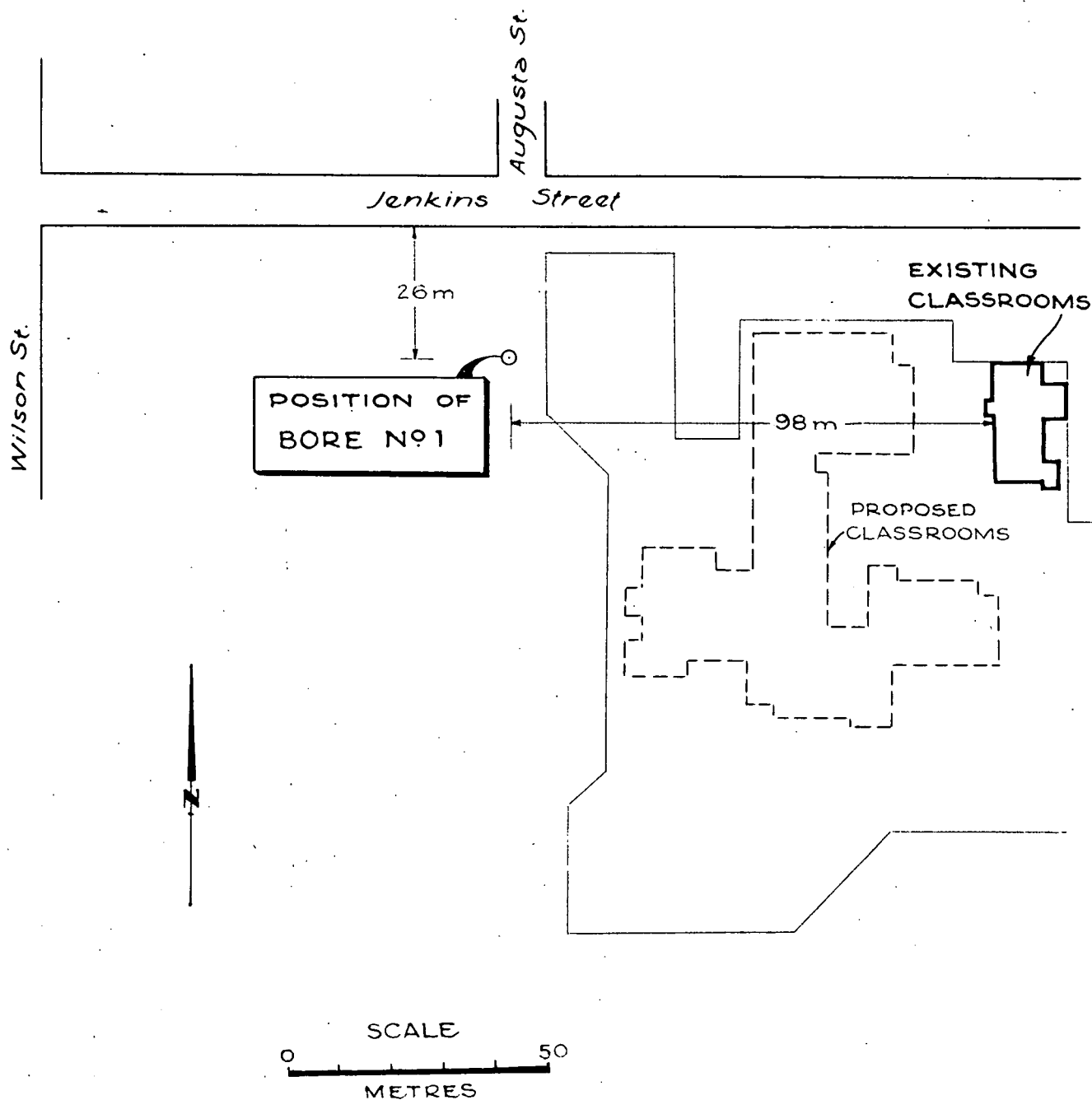


FIG. 1

DEPARTMENT OF MINES — SOUTH AUSTRALIA

Drn. M.C.

Tcd. G.M.

Ckd. LVW

Exd.

COWANDILLA PRIMARY SCHOOL BORE N^o1

PUBLIC BUILDINGS DEPT.

LOCATION PLAN

SCALE: 100 feet to 1"

S 10777

H 6

DATE: 3rd April 1974

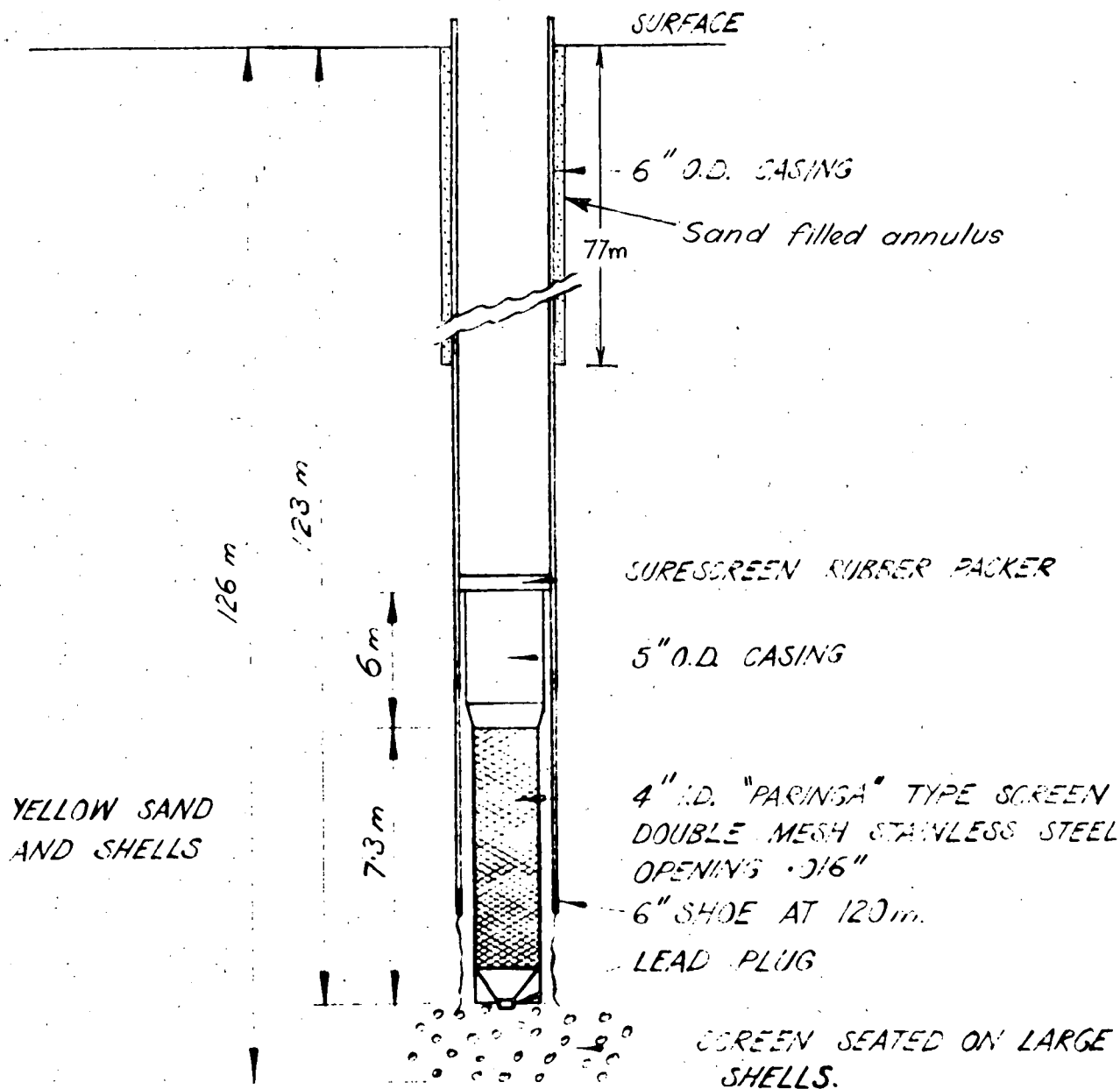


FIG. 2

DEPARTMENT OF MINES - SOUTH AUSTRALIA

Scale: N.T.S.

Compiled:

BORE DETAILS

Date: 7-6-73

Drn. P.W.

Ckd.

COWANDILLA PRIMARY SCHOOL

Drg. No.

SK-718

HYDROGEOLOGY SECTION		DEPARTMENT OF MINES—SOUTH AUSTRALIA		DM.875 /72
COMPILED: M.A.Cobb		COWANDILLA PRIMARY SCHOOL BORE 1 SECT.92 WPADELAIDE		DATE: 26 Mar. 74
DRN. G.M	CHD.	DRAWDOWN vs TIME (PUMPTEST CURVE)		DRG. No. 74-262
		PUBLIC BUILDINGS DEPARTMENT		H26

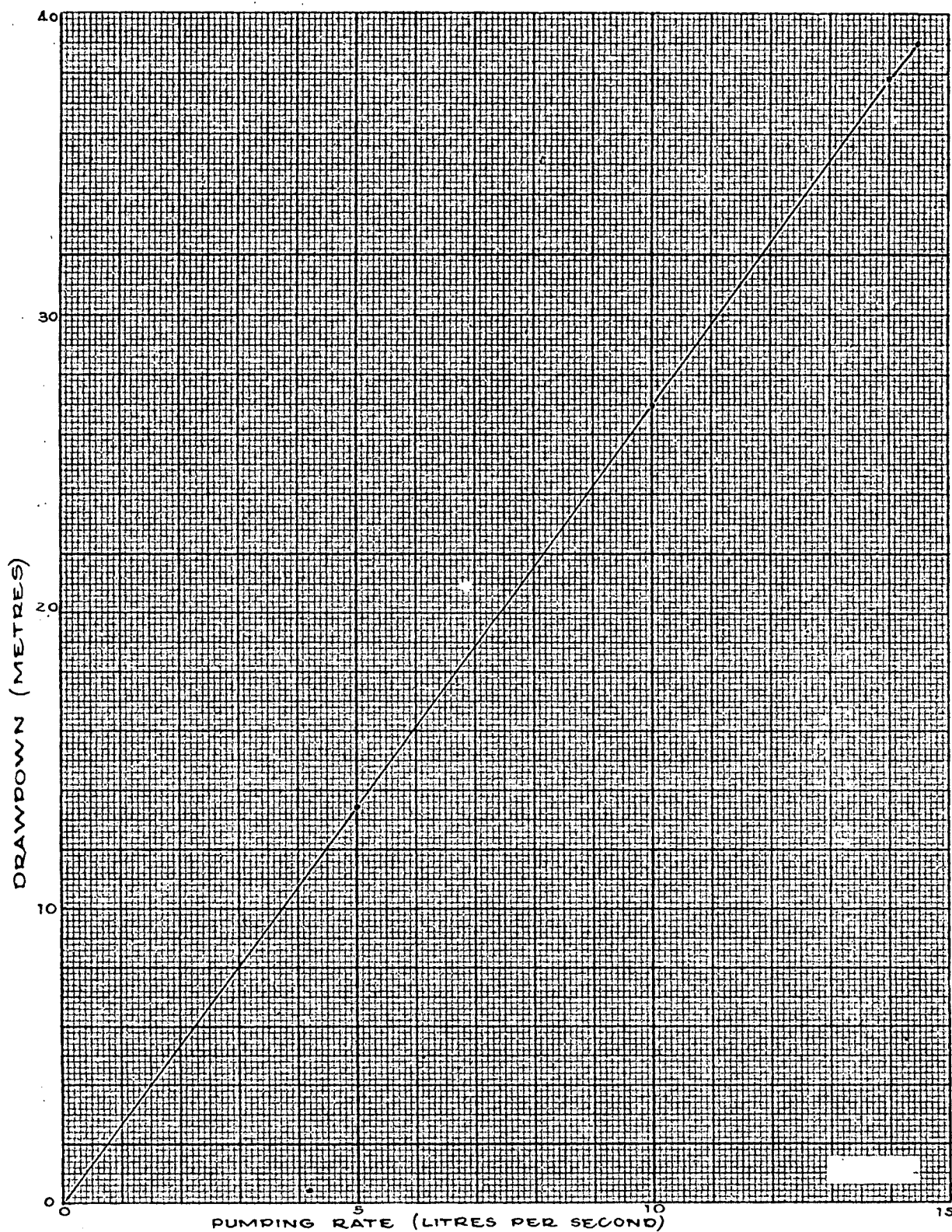


FIG. 4

DEPARTMENT OF MINES – SOUTH AUSTRALIA

COWANDILLA PRIMARY SCHOOL – BOREN^o1
ANTICIPATED DRAWDOWNS
8 HOURS PUMPING

Compiled: *M. Cobb*

Drn. G.M. Ckd.

Scale: Graph

Date: 26 Mar '74

Drg. No. **S10772**

Ha6