GROUNDWATER SURVEY
HUNDRED MOOROOROO, PT. SECTION 18

J. D. WATERHOUSE

Department of Mines
South Australia —

DEPARTMENT OF MINES
SOUTH AUSTRALIA

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GEOLOGICAL SURVEY
ENGINEERING DIVISION

GROUNDWATER SURVEY

HUNDRED MOOROOROO, PT. SECTION 18

by

J.D. WATERHOUSE
GEOLOGIST

23.1.73

Rept.Bk.No. 73/23

DEPARTMENT OF MINES
SOUTH AUSTRALIA

Rept.Bk.No. 73/23
G.S. No. 5029
Hyd. No. 2476
D.M. No. 114/73

GROUNDWATER SURVEY

Location

General: 3 km East of Tanunda

Region: 4

County: Light

Hundred: Moorooroo

Section: Pt. Section 18

Owners of Property: H.A. and A.M. Klose

Postal Address: Box 188,
TANUNDA. S.A. 5352.

Telephone: Tanunda 32638
(STD 0857)

Requirements

Water required for: Supplementary supply to storage dam for irrigation of grape vines.

Quantity: 10,000 litres per hour (2,000 g.p.h.) would suffice

Quality: Preferably less than 1500 milligrams per litre

Other factors: Water is required mainly to supplement dam storage in dry years - it is not the intention of the owner to irrigate his vines unless this is necessary to save the crop.

HYDROGEOLOGICAL REPORT

Physiography and Land Use:

The property slopes gently to the west away from hills of moderate relief at the eastern side of the Barossa Valley.

It has been almost entirely cleared of native vegetation and planted with grape vines.

Climate:

Nearest rainfall station: Tanunda

Mean annual rainfall: 557 mm (21.91 inches), averaged over the 97 year period from 1868 to 1964.

Remarks on rainfall pattern:

Month	J	F	M	A	M	J	J	A	S	O	N	D
Points	85	75	93	178	252	298	266	278	237	202	126	101
mm	22	19	24	45	64	74	68	71	60	51	32	25

Rainfall on the property can be expected to be similar to that at Tanunda with most rain falling between April and October. Rain is less reliable at the time the crop is ripening.

Surface Hydrology:

Creek name: Unnamed

Characteristics: An ephemeral tributary of the Tanunda Creek crosses the property. This creek is reported to have been seasonal in the past, but the flow has been decreased by a diversion upstream.

Springs: None were observed on the property.

Surface storage: Two earth dams have been constructed. The larger (western) one has a capacity of about 13,000 cubic metres (3 m gallons), the eastern dam being considerably smaller.

Geology:

Soil Cover: The property is covered with a light grey brown sandy soil with abundant fragments (1-2 cm, rarely larger) of weathered metamorphic rock and vein quartz. Some brown clayey soil has been introduced to reduce sand drift.

Rock Units: To the east the property is underlain directly by metamorphic rocks of the Kanmantoo Group; to the west an increasing thickness of Quaternary-Tertiary sediments.

Lithology: Kanmantoo Group: Well layered, fine to medium grained quartzo-feldspathic rock with varying amounts of biotite.

Basin Deposits: Lenticular sands, clays and gravels with lignitic facies at depth.

Direction and Amount of dip:

Kanmantoo Group: 75° towards 045.

Basin Deposits: A gentle dip (0-5°) towards the west is anticipated.

Structural Features: The metamorphic rocks appear poorly jointed where exposed.

Other: The basement rocks are found within 1 m of the surface at the eastern end of the property, and are known to be

at least 25 m deep near the western dam from private drilling by post-hole digger.

The scarp to the east suggests the possibility of basement faulting near the property.

Aquifer Assessment:

Type: Free water table, with some pressure effects. Water supplies are obtained from coarser grained sediments in the basin, and vary considerably over quite small distances as a result of the lenticular nature of these sediments.

Water in the basement may be confined, and varies in terms of quality and quantity according to the lithology involved.

Extent: Water in the basin sediments will be restricted to the western portion of the property, but will be found throughout the property in the basement rocks.

Potential Recharge: Recharge will occur from runoff concentrated in drainage lines, and the potential is therefore quite good throughout the property. The recharge to deeper basin aquifers is often restricted by overlying sediments, and conditions may be better along the margin of a basin - the location of this property.

Borehole Site Location:

General: At the western end of the property near the drainage

line. Drilling to the east failed to yield a good supply from basement rocks (see Appendix A for driller's log)

Reason for location: The suggested location should penetrate a maximum thickness of sediments in a position of maximum recharge.

Proposed Depth: About 75 m (200-250 ft.)

Expected Yield: Probably in the range 0.6 to 6.5 litres per sec (500-5000 g.p.m.)

Expected Quality: Probably 1,000-2,000 mg/l

Probable Log: Drilling should intersect a sequence of clays, sands and gravels, lignitic in part. Basement rocks may be encountered, but no estimate of their depth is possible.

Drilling and Testing Recommendations:

Drilling Hazards: An upper saline aquifer is suspected, and this must be adequately cased off, and preferably cemented.

Sampling: All waters cut should be sample and tested for salinity before drilling further to assess their suitability for grape vines.

Pump Test: A water of suitable quality should be tested for supply of a minimum of 1-2 hours, and longer if possible.

Summary: A supply of suitable quantity is expected from drilling, but the quality of any water is hard to predict in terms of suitability for irrigation. Testing of water for supply and quality is essential before the use of the water is planned. Drilling into basement rock is not recommended unless a suitable supply is not obtained from the overlying sediments.

It would be appreciated if this Department could be informed of the results of any drilling, as this will assist in current investigations in that area.

JDW

23.1.73
JDW:AM

J.D. WATERHOUSE
GEOLOGIST

Survey Date: 18.1.73

APPENDIX A

H.A. & A.M. Klose,
Box 188,
TANUNDA. S.A.

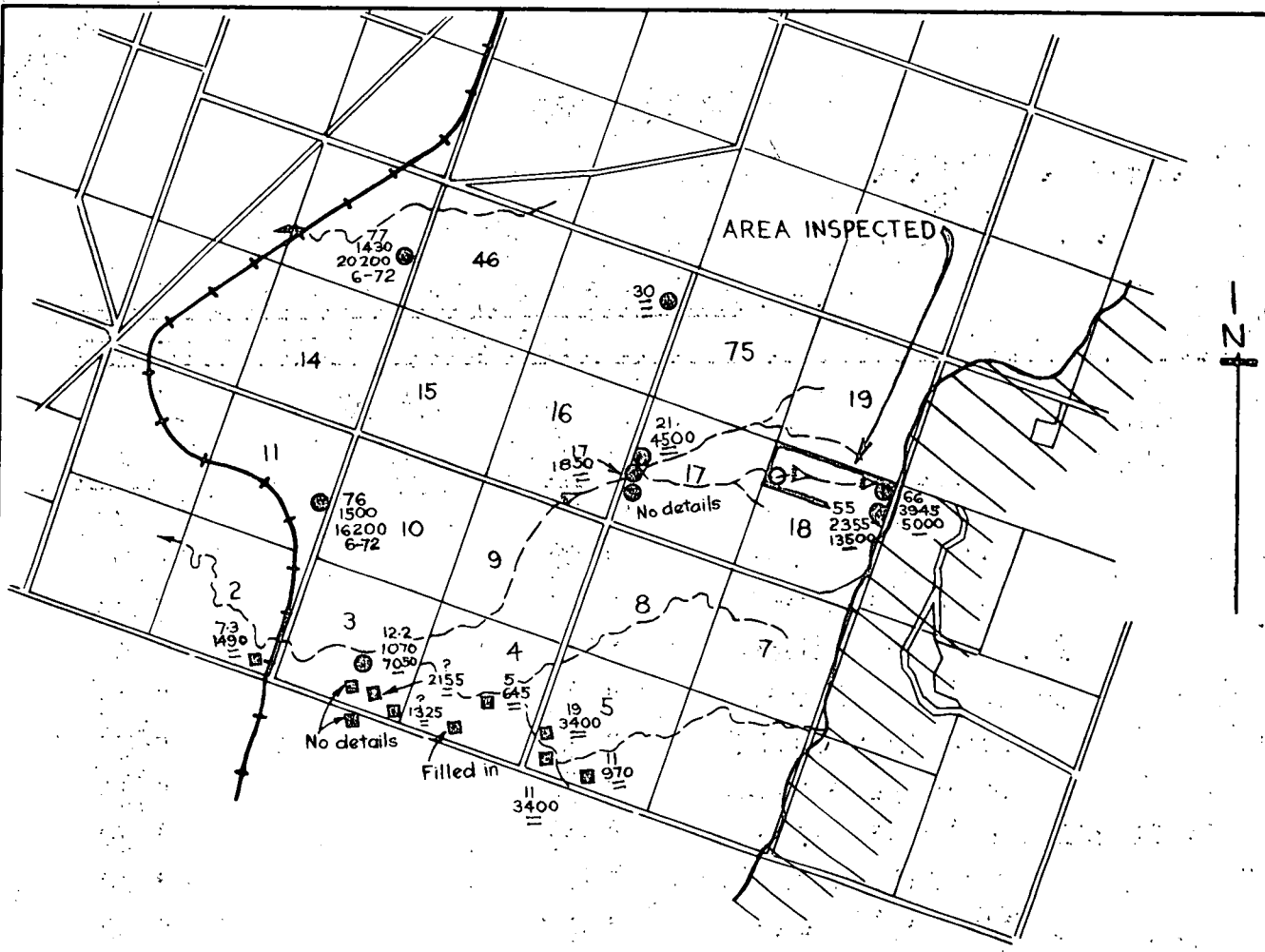
DRILLER'S LOG OF "HOMESTEAD" BORE NO. 1.

COMMENCED 8TH JANUARY, 1968 COMPLETED 19TH JANUARY 68

STRATA

FROM	TO	REMARKS
0 Ft	6 Ft	Grey soil
6 "	40 "	Grey silky clay
40 "	44 "	Hard sandstone
44 "	50 "	Sandstone & gravel
50 "	55 "	Gravel in silky clay
55 "	65 "	Light sandstone
65 "	75 "	Hard dark stone
75 "	94 "	Sandstone with white fleck
94 "	98 "	Soft sandstone
98 "	105 "	Soft white stone
105 "	106 "	Soakage salt water
106 "	131 "	Hard stone
131 "	133 "	Softer stone with water
133 "	145 "	Soft grey stone
145 "	158 "	Hard grey stone
158 "	159 "	Break with water
159 "	180 "	Stone with white fleck
180 "	183 "	Hard stone & break
183 "	189 "	Softer stone
189 "	192 "	Hard rock
192 "	201 "	Hard rock
201 "	202 "	Break with water
202 "	212 "	Hard rock & break
212 "	216 "	Hard rock

DEPTH OF BORE.....216 feet
DEPTH CASED.....111 Ft with 6" Casing
SHOE.....One 6"
WATER RISES TO.....116 Ft
TESTED 1200 G.P.H.....227 grains [3240 mg/l]



SCALE

METRES 1000 0 1000 2000 METRES

LEGEND

BASIN DEPOSITS — Sandy and clayey soil overlying Tertiary sands, gravels clays and lignites.

KANMANTOO GROUP — schists, quartzites and marbles.

Existing borehole — 160 - Depth in metres; 2015 - Salinity in milligrams per litre; 5000 - Supply in gallons per hour; 2-72 - Month, year

Well

Spring

Abandoned borehole

Proposed borehole

Strike and dip of bedding

Strike and dip of schistosity

Strike and dip of foliation

Strike and dip of cleavage

Geological boundary

Fault line

Drainage lines

Surface storage

DEPARTMENT OF MINES - SOUTH AUSTRALIA

HYDROGEOLOGY SECTION	GROUNDWATER SURVEY PT SEC 18 HD MOOROOROO H.A. & A.M. KLOSE	Date 26 Jan 1973
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