Rept. Bk. No. 37/91
D.M. 421/53

UNCLASSIFIED

DEPARTMENT OF MINES
SOUTH AUSTRALIA

CLAY DEPOSITS AT SIMMONSTON

INTRODUCTION:

Further sampling and inspection of the clay deposit at Simmonston has been requested. Bulk samples are required for testing by the C.S.I.R.O. Ceramics Research Laboratory to determine their possible use in industry.

NATURE OF THE DEPOSIT:

Clay is exposed for more than ½ mile along the eastern bank of the Willochra creek on section 80 and adjoining stock route, Hundred of Kanyaka, approximately 1 mile N.N.W. of Simmonston town site.

The clay is plastic and varies in colour from greyish white to yellow brown and appears to have resulted from the decomposition of bedrock shales. It is folded into a shallow syncline trending in a north easterly direction. Grey shales and limestone outcropping south of the deposit are repeated to the north.

At the northern end of the exposure the clay is overlain by up to 10 feet of conglomerate. The clay itself is 10 feet thick and generally shows some degree of iron staining especially along fractures. In this area the clay grades downward into partly decomposed grey shale.

Toward the south the thickness of the clay exposed increases to approximately 20 feet and is greenish grey in colour. This colour gradually changes to pale yellow then yellow- brown which persists over a length of 700 feet. The overburden in this area varies in thickness but it is generally of the order of 20 feet and occasionally rises to 25 feet.

It is composed of brown clay and rubble overlying a hard siliceous clay band averaging 3 feet in thickness. This hard band is lying almost horizontal and it extends throughout the deposit as a capping to the plastic clay.

Further south more yellow brown clay occurs in isolated patches while the thickness of overburden varies between 10 and 15 feet. In parts the greyish white clay is slightly sandy and ironstained along fractures.

Near the southern limits of the exposure the clay contains a high proportion of gypsum although the overburden is much less, being generally 6-7 feet. To the east the clay appears to be strongly ironstained with the overburden rising to 20 feet. Further east the overburden is probably less as the land surface falls toward the Kanyaka Creek approximately ¾ mile away.

SAMPLING:

Four bulk samples were collected for testing purposes. Three of these samples were taken along the cliff face as it was not possible to drill through the overburden with a hand auger. The siliceous clay capping could not be penetrated so that channel samples were taken below this horizon to a point where the post hole auger could be effectively used. The position of these samples is shown on the accompanying plan.

Sample No. 3 - Taken over a depth of 17 feet, the upper 10 feet being a channel sample on the face of the cliff and 7 feet drilled by post hole auger. Approximately 50 yards north a small sample (No. 3A) of yellow brown clay was collected by drilling 4 feet.

Sample No. 4- Channel sample over a vertical height of 16 feet and 3 feet of drilling. At the bottom of the hole the colour graded ~~and~~ to pale yellow, probably along a fracture.

Sample No. 5- Depth of hole 11 feet drilled in white clay with a large proportion of gypsum.

Sample No. 6 - Channel sample over a vertical height of 14 feet below the hard band. Superficially the clay is white but it is strongly iron stained in parts. Eastward from this point the clay has formed small aprons which obscure the original beds.

RESERVES:

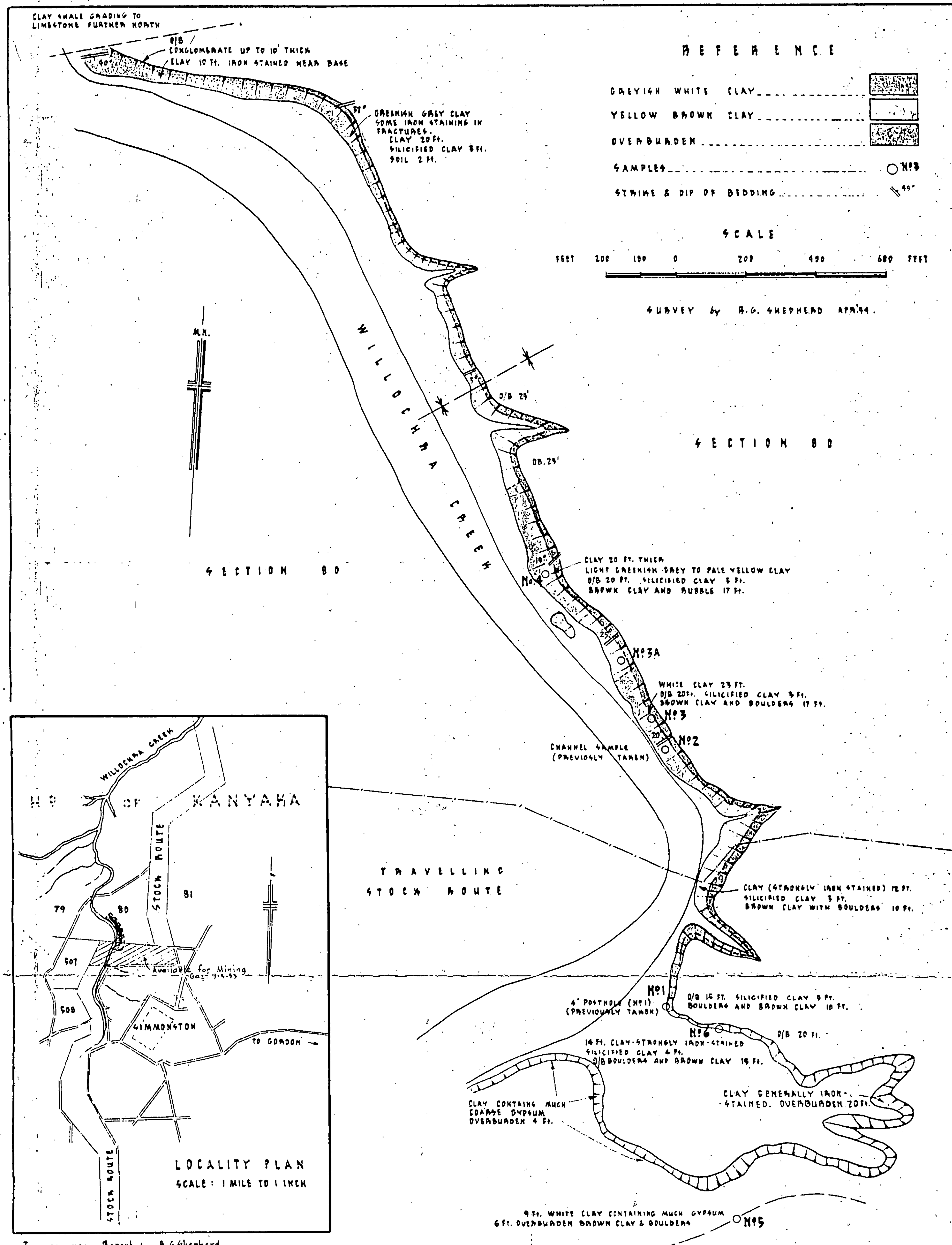
The average depth of clay above creek level is 18 feet and the outcrop extends for approximately 3,600 feet along the creek. Volume of clay available is 7,200 cl yds per horizontal yard over this length. This estimate includes clay of an inferior quality and the figure wouldhave to be reduced by about one third for the higher grade clay.

Overburden averages 15 feet in thickness and volume of overburden to be removed per horizontal yard is 6,000 c. yds.

R. G. Shepherd,
ASSISTANT GEOLOGIST

ENGINEERING GEOLOGY & MINERAL RESOURCES SECTION

RGS:BK
28/4/54



CLAY SHALE GRADING TO LIMESTONE FURTHER NORTH
O/B
CONGLOMERATE UP TO 10' THICK
CLAY 10 FT. IRON STAINED NEAR BASE
GREENISH GREY CLAY SOME IRON STAINING IN FRACTURES.
CLAY 20 FT.
SILICIFIED CLAY 3 FT.
SOIL 2 FT.
REFERENCE
GREYISH WHITE CLAY
YELLOW BROWN CLAY
OVERBURDEN
SAMPLES
No 3
STRIKE & DIP OF BEDDING
SCALE
FEET 200 100 0 200 400 600 FEET
SURVEY by R.G. SHEPHERD APR.'54.
M.N.
WILLOCHRA CREEK
O/B 25'
OB. 25'
SECTION 80
SECTION 80
CLAY 20 FT. THICK
LIGHT GREENISH GREY TO PALE YELLOW CLAY
O/B 20 FT. SILICIFIED CLAY 3 FT.
BROWN CLAY AND RUBBLE 17 FT.
No 4
No 3A
WHITE CLAY 23 FT.
O/B 20 FT. SILICIFIED CLAY 3 FT.
BROWN CLAY AND BOULDERS 17 FT.
No 3
No 2
CHANNEL SAMPLE (PREVIOSLY TAKEN)
TRAVELLING STOCK ROUTE
CLAY (STRONGLY IRON STAINED) 12 FT.
SILICIFIED CLAY 3 FT.
BROWN CLAY WITH BOULDERS 10 FT.
No 1
4' POSTHOLE (No 1) (PREVIOUSLY TAKEN)
O/B 16 FT. SILICIFIED CLAY 6 FT.
BOULDERS AND BROWN CLAY 10 FT.
No 6
O/B 20 FT.
14 FT. CLAY-STRONGLY IRON-STAINED
SILICIFIED CLAY 4 FT.
O/B BOULDERS AND BROWN CLAY 15 FT.
CLAY GENERALLY IRON-STAINED. OVERBURDEN 20 FT.
CLAY CONTAINING MUCH COARSE GYPSUM
OVERBURDEN 4 FT.
9 FT. WHITE CLAY CONTAINING MUCH GYPSUM
6 FT. OVERBURDEN BROWN CLAY & BOULDERS
No 5
WILLOCHRA CREEK
HD OF KANYAKA
STOCK ROUTE
79
80
81
507
508
Available for Mining Gaz. 9-3-53
SIMMONSTON
TO GORDON
STOCK ROUTE
LOCALITY PLAN
SCALE: 1 MILE TO 1 INCH

To accompany Report by R.G. Shepherd.

S. A. DEPT. OF MINES

SIMMONSTON CLAY DEPOSIT

SEC. 80 AND ADJOINING STOCK ROUTE, Hd KANYAKA

SURFACE PLAN

200' to 1 inch

54·104

Fe2

22·4·54