

Rept. Bk. No. 53/131
G.S. No. 2169
D.M. 1944/61
N.F.M. 104

ENG. GEOLOGY SECTION



DEPARTMENT OF MINES SOUTH AUSTRALIA

GEOLOGICAL SURVEY
NON-FERROUS METALS SECTION

GEOLOGICAL REPORT ON TANK SITE,
SECTION 4149, HD. MUNNO PARA
(ELIZABETH NORTH H.W.L. 446)
- E. & W. S. DEPARTMENT -

by
W. Johnson
Senior Geologist

9th November, 1961

DM. 1944/61

61-35

53/131

Rept. No. 53/131
G.S. No. 2169
N.F.M. 104
D.M. 1944/61

DEPARTMENT OF MINES
SOUTH AUSTRALIA

RB 53/131

GEOLOGICAL REPORT ON TANK SITE,

SECT. 4149, HD. MUNRO PARA

(ELIZABETH NORTH H.W.L. 446)

- E. W. S. DEPARTMENT -

INTRODUCTION

The test pits were logged on 27/10/61. Refer to E. W. S. Survey Plan 122/1961 for location of the pits.

LOCATION AND TOPOGRAPHY:

The tank site is situated in the north-west corner of Section 4149 approximately 1 mile due east of Smithfield. It is in a very shallow watercourse on the piedmont outwash slope of the Para Fault Scarp. The inclination of the slope is gentle, rising approximately 1 foot in 37 eastwards across the site. According to local information the watercourse carries a moderate volume of water immediately after very heavy rainfall.

ENGINEERING GEOLOGY

The test pits show that the site is underlain by typical piedmont deposits consisting of angular boulders erratically and sparsely distributed throughout a clayey and sandy silt matrix. Rounded coarse to very coarse grains of quartz, coated with iron oxide, and ironstone grains are plentiful. Some of the boulders are concentrated in layers 1½ inches to 4 inches thick.

At a depth varying from 2 feet to 4 feet 9 inches the bouldery silt is impregnated with finely divided limy material in varying proportion and concentration. The proportion of limy material decreases irregularly downwards. In one pit (No. 4) a layer with little lime intervenes between upper and lower lime rich bands. In this pit the bottom is in a lime rich band as it is also in Pit No. 2. In Pit No. 3 the bottom is in clayey silt free of visible limy mottlings.

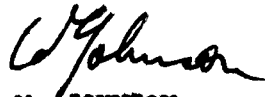
The material in which the tank will be founded will vary from a clayey silt with high ferruginous content to a clayey silt with relatively high visible lime content. Both varieties are liable to seasonal shrinkage and swelling with varying moisture content but there will be a marked variation in behaviour in this respect and in probably also compaction under load.

It would be advisable to run soil tests at foundation level before building the tank.

CONCLUSION AND RECOMMENDATIONS

The tank site on Sect. 4149 will be founded in a soil varying from a highly ferruginous clayey silt, with coarse sand and some ironstone nodules, to a limy clayey silt.

Because of the nature of piedmont deposits this sort of variability will occur wherever the tank is sited at this particular level or at other levels on the piedmont slope. No shift can be recommended but some testing of the foundation soil to determine the range of physical properties would be advisable.



W. JOHNSON
SENIOR GEOLOGIST
NON FERRUGINOUS METALS SECTION

WJ:AGK
9/11/61

ELIZABETH NORTH TANK SITE

(H.W.L. 446)

LOGS OF TEST PITS

Pit No. 1

0'0" to 0'8" Buff brown soil.
0'8" to 1'10" Red brown soil.
1'10" to 6'6" Whiteish buff partly mottled limy clayey silt with sparse pebbles and boulders and coarse to very coarse iron coated quartz sand grains.
6'6" to 6'7½" Brown pebble layer.
6'7½" to 8'10" Buff mid-brown clayey silt some limy mottlings at top decreasing in quantity downwards.

8'10" Bottom of Pit

Pit No. 2

0'0" to 4'9" Chocolate brown silty clayey sand to sandy silt - contains blebs whiteish limy material.
4'9" to 9'10" Whiteish buff mottled slightly pinkish to bright brown silty clay to clayey silt. Damp in bottom - shrinkage cracks prominent in all sides.

9'10" Bottom of Pit

Pit No. 3

0'0" to 1'0" Light buff brown silty soil.
1'0" to 2'0" Darker brown soil.
2'0" to 2'9" Reddish brown silty sandy clay or clayey silt.
2'9" to 5'11" Whiteish buff mottled light buff brown to reddish brown clayey and gritty silt.
5'11" to 10'11" Sparser mottlings of whiteish buff colour in dark red-brown clayey silt with rounded ironstone grains - layer of small quartzite and slate boulders at top.
10'11" to 12'6" Practically no limy mottling from this depth down but contains abundant dark blackish red iron rich nodules or concretions.

12'6" Bottom of Pit

Pit No. 4

0'0" to 1'0" Light buff brown soil.
 1'0" to 2'0" Red brown soil.
 2'0" to 5'9" Whiteish buff mottled buff limy clayey silt.
 5'9" to 5'10½" Boulder band.
 5'10½" to 6'6" Whiteish buff limy clayey silt.
 6'6" to 6'9" Boulder and pebble band.
 6'9" to 7'9" Whiteish buff limy clayey silt.
 7'9" to 9'4" Dark brown ferruginous silty clay to clayey silt
 with ferruginous concretions.
 9'4" to 11'4" Light buff brown limy silty clay.

11'4" Bottom of Pit