

3. Prospecting for talc near Marshall's Creek, Rubicon Estuary

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During October 1969, an area of approximately 20 ha (50 acres) in a leased area of 50 km² (20 mile²) (E.L. 24/69) was examined for Industrial Sands Pty Ltd.

The prospecting area is located immediately north-west of the sand treatment plant on the Rubicon estuary opposite Squeaking Point and occupies a strip 27 m wide parallel to the foreshore.

GEOLOGY

The principal rock types in the area are siltstone, greywacke, phyllite, siliceous dolomite and chert, all of Cambrian age. The rocks are folded on N-S axes. The principal rock type in the prospecting area is the dolomite member which is exposed on the foreshore but is overlain by 3 m or more of fine sand elsewhere. Greywacke and phyllite occupy the high ground on the south-west side of the mapped area.

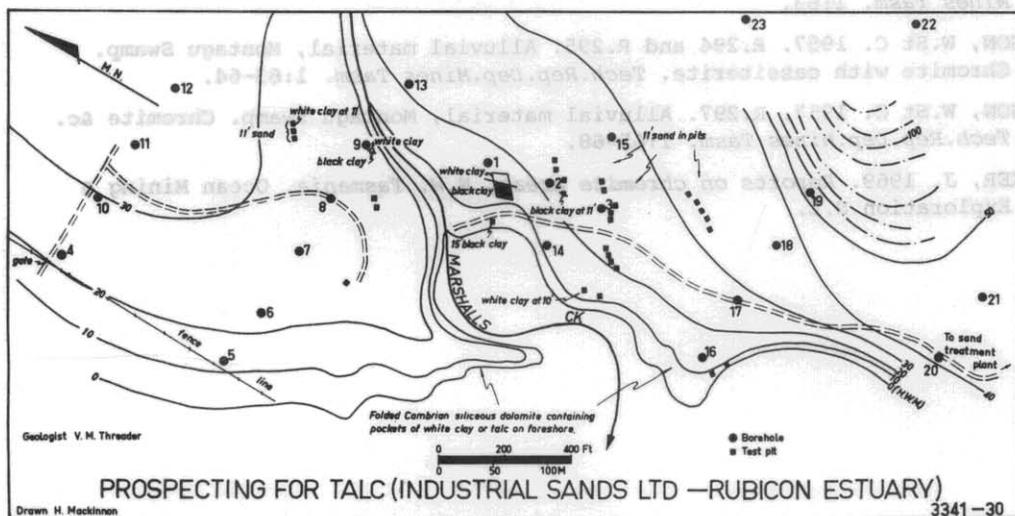
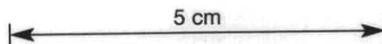


Figure 4.

PROSPECTING

Work by the company consists of 25 pits dug to a depth of 3.4 m (fig. 4). This is approximately the depth of superficial sand over most of the area examined and so that little information was obtained concerning the bedrock.

Departmental work consisted of laying out a drilling grid by plane table and in plotting the positions of the company's prospect pits. Twenty-seven holes were drilled by Proline auger: Bore Holes 1-3 and 22-27 were sited by the company and so do not conform to the grid. In most of the holes water was struck at shallow depth making it difficult to log the hole and to obtain uncontaminated samples. Samples were obtained of the clay fraction where possible and these were tested for MgO content and loss on ignition in the Department's laboratory.



DISCUSSION

Talc is a hydrated magnesium silicate with the composition: MgO 31.7%, SiO₂ 63.5% and H₂O 4.8%.

Recent research indicates that it will form early in the metamorphism of a siliceous dolomite. In the presence of aluminium and/or potassium, however, certain micaceous minerals will form instead of talc. The formation of talc therefore from this reaction requires a siliceous dolomite of high purity. Examining the assay results in the light of the foregoing, it can be seen that in nearly every case the MgO content is too low and the loss on ignition too high for the prospected area to contain a significant amount of talc.

The low MgO figures are in part due to contamination of the sample by sand overburden.

The high ignition losses could be due to the presence of hydrated clay mineral, fragments of hydrocarbons from the dolomite and carbonate from undecomposed dolomite. In one sample only was the result satisfactory. (Bore Hole 6: MgO 26.8% and ignition loss, 5.2%).

Some white clay or talc occurrences were noted in pockets of folded dolomite on the foreshore and also in some of the test pits but these gave low MgO and inconclusive X-ray results.

The highly irregular distribution of the talc may be due to other factors. It is suggested therefore that overburden be stripped from the Bore Hole 6 locality to ascertain the dimensions of the favourable occurrence and the possible presence of a structural control.

Bore Hole No.	Description	Depth of Hole (ft)	Sample Depth (ft)	% Loss on Ignition	% MgO
1	Sand and clay	42	-	-	-
2	Sand and clay	31	-	-	-
3	Decomposed rock (partially bleached dolomite)	39	-	-	-
4	Sand and clay	48	27-48	4.1	1.6
5	Sand and clay	36	30-36	10.6	3.6
6	White clay	36	6-24	5.2	26.8
7	Sand and clay	36	35-36	17.6	4.9
8	Sand and clay	36	33-36	22.4	21.7
9	Sand and clay	30	29-30	28.4	12.6
10	Sand and clay	42	18-42	11.2	5.0
11	Sand and clay	33	18-30	24.4	10.8
12	Sand and clay	30	27-30	16.7	8.2
13	Sand and clay	39	6-39	7.4	3.4
14	Sand and clay	42	6-42	9.9	11.2
15	Sand	48	35-49	7.0	0.9
16	Sand		(Hard rock bottom)	-	-
17	Sand	6	(Hard rock bottom)	-	-
18	Sand	9	(Hard rock bottom)	-	-
19	Sand	48	40-48	7.1	4.5
20	Clay	33	-	11.7	1.9
21	Sand	48	35-48	7.6	2.7
22	Sand	48	29-30	9.7	2.5

Bore Hole No.	Description	Depth of Hole (ft)	Sample Depth (ft)	% Loss on Ignition	% MgO
23	Clay	48	6-15	10.4	0.7
			15-27	8.9	1.3
			27-42	9.9	2.8
24	Clay	48	3-12	7.8	1.5
			24-48	6.0	2.0
25	Sand		-	-	-
26	Sand and clay	18	-	-	-
27	Clay	23	-	-	-