DEPARTMENT OF MINES

SOUTH AUSTRALIA

D.M. 1575/53.

RB 36/49

REPORT ON GROUNDWATER PROSPECTS.

Sec. 58, Hd. Yatala,

B.F. CHANDLER.

This property was inspected in company with Mr. Chandler on 7/9/53.

Location: About 1½ miles N.N.E. of Tea Tree Gully, in the foothills west of the Eden fault scarp.

REQUIREMENTS

Domestic, stock, and irrigation supply for the watering of several acres of almond trees and for possibly 10 acres or more of sown pastures.

GEOLOGY & HYDROLOGY.

The section is on undulating foothill country at an elevation of a little over 700 feet above sea level. The eastern boundary takes in a small section of the lower part of the Eden fault scarp.

In the southwest part of the section, open pasture land exists on which Mr. Chandler desires to establish sown pastures and almond trees, and the soil appears to be largely outwash sand and rubble from the scarp, off which numerous minor watercourses run westward to the plains.

These surface alluvials cover an unknown thickness of Tertiary marine marls, sands and clays, with some minor lignite beds, none of which series is exposed in outcrops. They occur as fill in a bedrock low, a deep embayment extending northwards as far as Golden Grove, and about a mile to a mile and a half in width at the property under discussion. The eastern boundary is the fault scarp, and on the westward flank the sediments unconformably overlie Proterozoic slates, which have been penetrated at various depths by bores in the embayment itself. There is field evidence of quite intense folding in the basement rock, the upper surface of which is probably very irregular.

The Tertiary strata are believed to be very permeable,

and provided they are coarse enough in places to render the mechanical extraction of the contained water possible, should provide supplies of several thousand gallons per hour of good quality water in bores that penetrate them to 150' or more.

The water courses coming down from the hills onto these sediments have been observed to diminish considerably in flow once they cross the fault zone. The fault crush zone is itself actually exposed in one such gully just within the section's eastern boundary, and Mr. Chandler reports that he has at other times noticed a complete cessation of creek flow at this point. It may reasonably be assumed therefore, that a very considerable body of high-quality surface runoff feeds directly into the rocks, and some of this should be recoverable by drilling.

Local bore information is scarce, but records of one bore on Section 57, some half mile west, show that originally a supply of 3,000 gallons per hour of 57 grain water was obtained at 150 feet. Such water would be quite suitable for irrigation.

The one unpredictable factor is the depth to bedrock. Drilling into the bedrock, except to obtain a stock supply, cannot be recommended, and if a bore is sunk and meets the underlying slates before an irrigation supply has been obtained, it would possibly be best to abandon the site and try elsewhere on the property.

Drilling in the sediments should not present difficulty, unless they prove very fine and loosely consolidated, in which case development of the supply may cause trouble. Any bore should be cased for the full depth.

CONCLUSIONS

Subject to bedrock not being too shallow, there are reasonably good prospects of obtaining an irrigation supply of water to a depth of 200 feet or so.

If a first bore meets bedrock, the site should be moved as far north as possible and a second bore attempted.

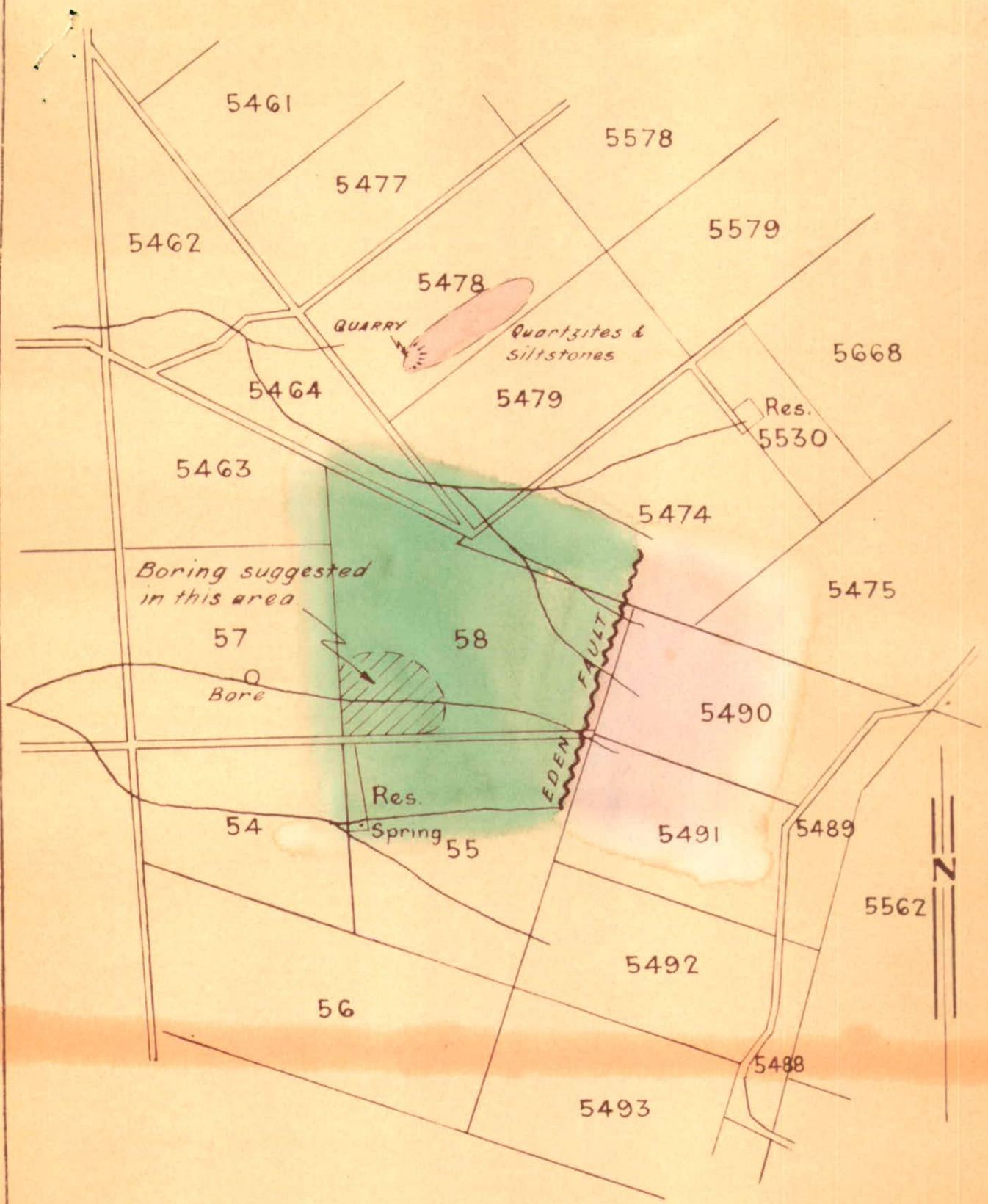
RECOMMENDATION.

A bore be constructed in the S.W. part of the section, as discussed with Mr. Chandler. Assuming a depth of 200 feet, the cost would probably be about £400.

R.O'Driscoll 18/9/53
SENIOR GEOLOGIST

HYDROLOGY.

GPO'D: AK.
17/9/53.



Tertiary sediments masked by outwash material _ _ _ _ _ _ _ _ _ _

Torrensian slates, quartzites and phyllites _ _ _ _ _ _ _ _ _ _ _ _ _ _

To accompany report by E. O'Driscoll

S. A. DEPT. OF MINES

R.R. UNDERGROUND WATER SURVEY

HD YATALA SEC. 58

B. CHANDLER

20 Chains to 1 In.

S 824

Ha 5

17.9.'53