1976/59. Groundwater investigations near Hamilton

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Mr R. Sproule owns a 4 ha property [DN894878] at Clyde Hill, near the junction of the Hamilton Plains Road and the Lyell Highway, 4 km east of Hamilton. The Department of Mines was requested to advise on groundwater possibilities. Surface water is at present trapped in two small dams, and in roof tanks. However, the dams have recently dried up, and the owner requires a small additional water supply for gardening purposes.

The property is situated on the north-eastern edge of the Hamilton Plains plateau, at an elevation of about 300 m. The country is undulating and dissected to the north, and the property slopes north-east at about 10°.

GEOLOGY

The farm is underlain entirely by medium-grained Jurassic dolerite, which crops out at many places on the property, along the Hamilton Plains Road, and in a nearby quarry. The dolerite is very finely jointed and in places deeply weathered.

Dolerite underlies all the land - including Clyde Hill - north-east of the property. The rock has intruded upper Lower Parmeener sandstone and mudstone, and an inclined igneous contact between the two is exposed on the Lyell Highway at Clyde Hill.

South-west of, and above the farm, Tertiary basalt forms an elevated, gently undulating surface (the Hamilton Plains). The basalt extends from Hamilton south-east to Gretna, and has controlled the course of the Derwent River.

No contacts between dolerite and basalt were observed, and the basalt rarely crops out. At least two flows, separated by baked Tertiary clay, are present (Hughes, 1954). The Tertiary sequence is at least 40 m thick, and the basalt is generally deeply weathered. Abundant boulders of basalt in the area reveal considerable variation in appearance - from scoriaceous and vesicular to massive. Some differentiated varieties are coarse grained, and even pegmatitic.

HYDROLOGY

A number of water bores were recommended (Hughes, 1954) and later drilled (Matthews, 1963) by the Department of Mines in the basalt on Hamilton Plains. Each was successful, obtaining (surprisingly) low yields of about 10-20 *l*/min from depths of about 30-40 m. All holes bottomed in weathered basalt, in which water levels occurred at about 15 m.

Other holes have been drilled in sandstone and mudstone near Hamilton. Some were failures, but successful bores showed yields of about 5-15 *l*/min. The dolerite in the area has not been drilled for water, and generally the rock is found to be a very low yielding aquifer.

CONCLUSIONS

Topographically and geologically, the property is not well suited to obtain groundwater. Usually, in such situations, drilling is not recommended, but the owner would be satisfied with a bore yielding 3-4 *l*/min. Such low yielding bores are generally considered failures, but yields of the same order have been obtained from dolerite elsewhere in Tasmania, and are likely to be obtained on Mr Sproule's property.

If drilling is attempted, the hole should be sited adjacent to the owner's house, and should not exceed 30 m in depth.

REFERENCES

HUGHES, T.D., 1954. Underground water possibilities in the Hamilton Municipality. *Unpubl.Rep.Dep.Mines Tasm.* 1954:112-120.

MATTHEWS, W.L.; 1963. Results of drilling for water, 1962. *Tech.Rep.Dep. Mines Tasm.* 7:107-110.

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