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HYDROGEOLOGICAL AND HYDROGEOCHEMICAL STUDIES
IN ANURADHAPURA DISTRICT - SRI LANKA.

THESIS SUBMITTED

BY

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ABSTRACT

The four main aspects under which the study progressed were

- (1) the preparation of hydrogeochemical maps of deep groundwater quality,
- (2) study the influence of the fracture system on groundwater resources
- (3) monitoring groundwater quality
and
- (4) classification of the area with respect to drinking water quality.

The dry zone area of Sri Lanka which is almost covered by the present study, consists more than 90% of flat land with inselbergs at places and five drainage basins. Geologically these areas consist of rock types belonging to the highland series and western vijayan complex. The main joint directions of the rock mass are NW-SE, NE- SW and EW, and the fold axes are towards NW-SE to NNW-SSE, plunging northerly.

Owing to the reasons that, overburden thickness is only 10.0 m and lack of sandy formations, shallow aquifers are limited. Deep aquifers lie below ground level at depth

between 5-75 m, which comprise 2-3 fracture zones.

In the course of the study, standard methods were used in collection and analysis of samples.

The distribution of chemical constituents/ characteristics over the area illustrates mainly a structure and lithology controlled nature. Iron, F⁻ and Cl⁻ are found to be the main constituents present in excessive amounts. Deep aquifer are of semi-confined nature and show a considerable dependence on the overburden water. The quality of deep groundwater is mostly independent of the depth. It was also observed that, shallow groundwater contains more solute ions than deep groundwater while the quality of both deep and shallow water depends greatly on the climate.

The study area can be classified into 3 subdivisions depending on the quality of water - (area extent) 35% good, 53% moderately good, and the rest poor quality. The area labelled as poor quality may not be used for extraction of deep groundwater.

