

CHEMICAL QUALITY OF GROUNDWATER IN THE
ANDELLA OYA BASIN OF SRI LANKA

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A hydrogeological investigation was carried out within the area belonging to Andella Oya basin of the eastern part of Sri Lanka. As a part of this survey water samples were collected during the dug wells survey before the north-east monsoon rainfall and chemically analysed for major ions at the Water Resources Board laboratory.

The results of these analysis were plotted on PIPER's trilinear diagram. The results reveal that about 1/3rd of the samples fall into bicarbonate type while 2/3rd fall into chloride type. Comparative studies emphasized that all chloride type of water belongs to electrical conductivity (EC) value higher than 500 micromhos/cm and the rest are below the critical value. The pH values of all samples were above 7 and show the water is alkaline. Sodium and calcium are the major cations in high TDS water.

The groundwater from higher lands show high bicarbonate water and when it moves into the lower areas the quality has changed into chloride type. There are few wells in the higher lands with higher chloride content. This may be due to the higher clay content of the area or stagnation of water in structurally controlled basins.

Wells near the lagoon show higher chloride content due to the sea water intrusion. But wells about 1-2 kms away from the lagoon towards land are also showing higher chloride content. This may be due to the mixture of recharging water and salt water. But sea water may not intrude into the shallow areas according to the Gheben-Herzbey relation between fresh water and saline water. Therefore it can be assumed that there are salt water or salt which has been deposited in the subsurface areas due to the percolation of sea water during the Quaternary period marine transgression. This is a very good indication to find the boundary of old beach. The general quality of water is good.

References:

Jayawardena, U.de S., (1984), Geohydrological investigations of the Andella Oya Basin in Sri Lanka, Bangkok, Asian Institute of Technology