

DISTRIBUTION OF GROUNDWATER QUALITY IN VALIGAMAM WEST, JAFFNA PENINSULA, SRI LANKA

K.K.R. Thanushan *

Department of Geography, University of Jaffna, Jaffna, Sri Lanka.

The Jaffna peninsula seems to have limestone formed during the Miocene period, and the sedimentary rock that consists of aquifers is the important source of water in the Jaffna peninsula. The Valigamam region of Jaffna is a heavily populated area, and at the same time, the need for water is increasing in accordance with the population growth. The study area included 23 Gramasevaka Divisions: J/157, J/158, /159, J/160, J/161, J/162, J/165, J/166, J/167, J/168, J/169, J/170, J/171, J/172, J/173, J/174, J/175, J/176, J/177, J/178, J/179, J/180 and J/181. In Chankanai, the groundwater is extensively used for agricultural and handicraft purposes in addition to domestic uses. It is learned through previous research that over extraction of groundwater, as well as intensive cultivation of crops, causes severe problems in the quality of groundwater.

Forty four samples were collected and analysed with the help of National Water Supply and Drainage Board (NWS&DB), Jaffna. Electrical conductivity (EC), pH, total hardness, chloride and nitrate were determined and the relationship of their spatial distribution was mapped using ArcMap 9.3 programme. We have observed that, as per the Sri Lankan Standard 614 (1983), 1.5 % water samples have shown high nitrate values, 15.9% have exceeded the total hardness level over the maximum permissible level. The chloride values in Chankanai West, Vaddukoddai North, Vaddukoddai South and Vaddukoddai West, Moolai and Araly vary from 253 mg L⁻¹ - 886 mg L⁻¹. The above problems and variations are due to geographical factors and human activities. The sandy calcareous formation found along the coastline, causes saline intrusion into the ground water and resulting in increased, chloride and electrical conductivity. Intensive cultivation of domestic crops and vegetables with the application of agro-chemicals has caused agrochemical contamination.

The impact of physical factors seems to be unavoidable. The quantity and the quality of groundwater of the Jaffna peninsula could be preserved through the application of advanced techniques of water resource management. It could be implemented in a proper way with the representation of all stakeholders. Such activities will definitely help to prevent the underground water sources of Jaffna getting further polluted.

Keywords: Groundwater, Valigamam west, water quality parameters.

* thanushankkr@gmail.com