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Groundwater salinity variation in the coastal zone of the Negombo Divisional Secretary's Area

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Coastal fresh water aquifers are considered as highly vulnerable ecosystems for degradation due to salinity intrusion. The groundwater resource in the Western coastal belt of Sri Lanka is one of the regions which is subjected to salinity intrusion due to natural as well as manmade factors. The objective of this study was to identify groundwater quality changes linked to salinity variation in the Negombo Divisional Secretary's area.

The study was conducted with 34 dug wells selected using a 1 km^2 grid base map. Absolute locations of the sampling wells were identified using the Global Positioning System (GPS). *In situ* field testing of Electrical Conductivity (EC), pH and salinity were monitored at monthly intervals in October, November and December, 2012. Data analysis was done using ArcGIS (version 9.3) software package along with Microsoft Excel analytical tools.

Spatial variation of the EC in ground water varies between 154 µS/cm and 3209 µS/cm. The EC of the groundwater was below 3500 µS/cm which is the maximum permissible level according to Sri Lankan standards. However, significant differences were identified when considering the maximum desirable level of EC in water. 44%, 56% and 50% of samples taken respectively in October, November and December were below the maximum desirable level of EC of potable water standards. pH levels of water fluctuated between 6.22 - 9.22. Salinity was highest in Munnakkarai, Udayartoppuwa, Taladuwa, Pitipana, Talahena, Dungalpitiya and Kepunagoda areas throughout the three months period. Changes in groundwater salinity and pH have a strong relationship with precipitation.

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