

Quality of freak well at Nilavarai, Jaffna peninsula

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Abstract

Freak well of Nilavarai is one of the water sources in Jaffna peninsula for irrigation and water supply. The study was conducted to observe the temporal variation of physical, chemical and bacteriological quality of Nilavarai tube well from January to December 2007 at monthly intervals. The results of quality were compared with Sri Lankan drinking water standard and recommended quality of irrigation water. At the same time the electrical conductivity and pH also were measured at the site itself by portable meters in vertical column of Nilavarai freak well at one meter incremental depth up to the possible depth by special sampler. The measurements were made three times during the period of November 2007 to April 2008. Results showed that all the physical characters were below the recommended level of Sri Lankan standards. The chloride values of Nilavarai water supply wells ranged from 125 to 190 mg/l. The total alkalinity ranges from 250 mg/l to 470 mg/l and it was below the permissible level in all the months except December and November. The total hardness value of water were ranging from 160 mg/l to 400 mg/l. The EC value of water ranged from 650 $\mu\text{s}/\text{cm}$ to 900 $\mu\text{s}/\text{cm}$. The concentration of nitrate – N was ranging from 3.8 mg/l to 8.3 mg/l. The Nilavarai water supply wells had fluoride in the range from zero to 0.25 mg/l. The sulfate, nitrite, phosphate, pH and total iron were below the desirable level of Sri Lankan standards. Concentration of manganese and arsenic were zero. The total coli form and E.coli were not found in all the months of the year because of the continuous chlorination. The result of the fluoride was less than 0.6 mg/l which leads to deficiency of fluoride. All the quality parameters were the recommended irrigation water quality. The electrical conductivity was not changed from the surface to 24 to 25 meters and varies between 800 – 900 $\mu\text{s}/\text{cm}$ during three measurements time. After that there was a sudden increase in the electrical conductivity from 900 to 1400 $\mu\text{s}/\text{cm}$ which reflects that nearly around 25 meters water change as brackish and there is an indication of sea water flow line around 25 meters. Hence, there is a good source of water of Nilavarai freak well. It could be used for drinking water supply and for irrigation without any shortage of water.

Author keywords: Freak well, Quality of groundwater, Jaffna Peninsula

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