STUDY OF GROUND WATER QUALITY IN BADULLA MUNICIPALITY AREA

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by

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ABSTRACT

Groundwater has an important source and the quality being measured by contamination of various parameters. Badulla municipal area has major water source from Badulla Oya, anyhow it was one of the important issues during the dry season, however in some cases people using groundwater for various purpose. The main purpose of this study was to determine current groundwater quality of Badulla municipality area by compare with SLS drinking water standard to determine whether it is portable or not and develop some hydro chemical distribution map of Badulla municipal area for further study. According to that 40 groundwater samples were collected randomly with GPS coordinates and analyzed for physiochemical parameters of EC, TDS, pH, Turbidity, Alkalinity, Total hardness, Chloride, Fluoride, Nitrate, Phosphate, Sulphate, Sodium, Potassium, Calcium, Magnesium, Iron, Manganese, Zinc. The relationship between resultant quality and SLS drinking water standards was compared and discussed. The analyzed quality results were interpreted using Visual MINTEQ to calculate the approximate ion species, precipitation of solid phases and the type of water was classified by plotting piper diagram using Rockware AQ.QA. Hydro chemical distribution maps were developed using ArcGIS. The results was showed almost all the parameters were not exceeded SLS drinking water standard except phosphate and nitrate This study was showed that Badulla municipality area had almost good groundwater quality anyhow the location of badulla central and southern part had some problem of nitrate and phosphate from the results of few wells which was near to municipal dumping and agricultural land. Chemical speciation showed some relationship with phosphate, fluoride and manganese. According to the range and mineral species of fluoride and manganese, it will be an issue of fluoride and manganese in future. The main water type was calcium and non-dominant.

Key words: Water quality, geochemical distribution map, chemical speciation, classification of water