

Study of Physico-Chemical Characteristics of Groundwater around Kala Nala basin, Ichalkaranji, Kolhapur, Maharashtra, India

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Abstract: Groundwater is one of the most important natural resource. It is a widely used for drinking in both the rural and urban areas. The groundwater quality, however in recent time has got deteriorated due to the percolation of polluted water in to the soils from the wastewater drains, polluted river sand ponds. The present study reveals the groundwater quality of Kala Nala basin in the Ichalkaranji, Kolhapur. In that, The Piper Trilinear diagram the chemical quality of dug well, bore well and surface water samples of Kala Nala basin, reveals that, 25% samples of pre and post-monsoon seasons represent $HCO_3 + CO_3$ type, 41.67% $Ca(Mg)HCO_3$ type and 33.33% $Na(K)HCO_3$ type of hydro chemical facies. Based on U.S. Salinity diagram groundwater samples of post-monsoon season and pre-monsoon season, 25% samples are fall in $C_4 - S_3$ field, 75% samples are in $C_4 - S_2$ field and 25% samples are fall in $C_4 - S_3$ field, 25% samples are in $C_4 - S_2$ and 50% samples are fall in $C_3 - S_2$ field respectively. The water sample shows result of medium to very high salinity hence water is unsuitable for irrigation purpose. The Gibbs variation diagrams of pre and post-monsoon seasons suggest the chemistry of groundwater is controlled by precipitation dominance

Keywords: Groundwater quality, Social Awareness.

I. INTRODUCTION

Groundwater is one of the prime sources of fresh water. It is an important source of drinking water for the Water pollution is increasing steadily due to rapid population growth, industrial proliferations, urbanize Ground water contamination is generally irreversible i.e. once it is contaminated; it is difficult to restore the original water quality of the aquifer. Excessive mineralization of groundwater degrades its quality and produces an objectionable taste, odour and excessive hardness. Although the soil mantle through which water passes acts as an adsorbent retaining a large part of colloidal and soluble ions with its cation exchange capacity, but ground water is not completely free from the menace of chronic pollution. Therefore, it is always better to protect ground water in the first place rather than relying on technology to clean up contaminated water at a later stage. India is developing country which means infrastructure sector is growing on at a much higher rate, leads to the development of core industries like metals, chemicals, fertilizers, drugs and petroleum etc. and other industries such as plastics, pesticides, detergents, solvents, paints, dyes, and food disposed their effluents and emissions on land and water bodies and polluting our environment.

II. STUDY AREA

The study area is bounded between latitude N 16.685 to N 16.672 & N 16.757 to N 16.663 and longitude E 74.458 to E 74.491 & E 74.478 to E 74.483, in Survey of India Toposheet numbers 47 L/6, on scale 1:50000. The area is covered by Deccan trap of Upper Cretaceous to Lower Eocene in age. The main source of water for drinking, irrigation and industrial purposes is from dug wells, bore wells and surface water.