

Groundwater Quality and Suitability of PG2 Watershed, Chandrapur District, Maharashtra: An Appraisal of Hydrogeochemical Behavior

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Abstract

Groundwater samples were studied to understand the concentrations of cations and anions, rock-water interaction as well as groundwater suitability from PG2 watershed of Chandrapur district, Maharashtra. The samples were collected from the phreatic aquifers where in, $Ca^{2+} > Mg^{2+} > Na^+ > K^+$ is the dominance sequence with Ca^{2+} as dominant cation. The geogenic processes like dissolution of calcium rich minerals are responsible for increase of Ca^{2+} content in groundwater. HCO_3^- and SO_4^{2-} are the prevailing dominant anions, with the dominance sequence as $HCO_3^- > SO_4^{2-} > NO_3^- > Cl^-$. The mixed sectional types suggest the geogenic as well as anthropogenic sources of cations and anions; and the combinational water type. The interrelationship of HCO_3^- and Ca^{2+} divulges negative correlation also, the scatter diagram of Na^+ vs Cl^- interpret the rock-water interaction, which points out towards the silicate weathering as well as sources of calcium and bicarbonate. The groundwater is marginally suitable for drinking purpose. However, it is not appropriate for the intolerant crops which are vulnerable to anions of Cl^- and SO_4^{2-} .

Keywords: Rock-water Interaction, Phreatic Aquifers, Groundwater Quality, Silicate Weathering, PG2 Watershed, Chandrapur District

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