

STUDY OF PHYSICOCHEMICAL CHARACTERISTICS OF GROUNDWATER QUALITY IN ATIGRE VILLAGE, KOLHAPUR, MAHARASHTRA, INDIA

A. A. Lole¹, S. B. Kore¹, A. C. Varute¹, A. K. Chougule¹, A. R. Kutre¹, A. S. Ambi¹

Department of Civil Engineering,

Sanjay Ghodawat Institutes, Atigre Maharashtra, India

Abstract – The study of physicochemical characteristics of groundwater quality in Atigre, Kolhapur District (lat. 16° 74' 26" N to 16° 74' 07" N and long. 74° 35' 41" E to 74° 37' 05" E) was carried out and 25 samples were collected. The physicochemical analyses of water samples reveals that 100% samples of pre and post-monsoon seasons represent Ca + Mg > Na+K (alkaline earths exceed alkalies) hydro chemical facies. Similarly, 100% water samples belongs to HCO₃ + CO₃ > Cl+SO₄ (weak acid exceed strong acid) hydro chemical facies in pre and post-monsoon seasons. On the basis of U. S. Salinity diagram, water samples of pre and post-monsoon seasons (100%) belong to C2-S1 type suggesting good water quality for irrigation purposes. The Gibbs variation diagram suggests the chemistry of groundwater is controlled by rock dominance.

Key Words: Groundwater quality, Hydro-chemical facies.

1. INTRODUCTION

Water is the source responsible for life is survived on the Earth. The 97% of total water is available in ocean or sea as saline water bodies. The 2% of fresh water is in icecaps and glaciers of the remaining 3%. For drinking, agriculture and industrial sector groundwater is the major source in both rural and urban areas. Piper [8] developed a tri-linear diagram for the characterization of the hydrochemical facies. Todd [12], Karanth [5] discussed the various aspects of groundwater chemistry. Tiwari [11], Pawar [7], Shenoy and Lokesh [10], Sawant and Joshi [9], Ahmed et al. [1], Panaskar et al. [6], Yadav et al. [16], Yadav and Sawant [17] and Yadav and Sawant [18] have worked on the chemical aspect of groundwater from urban areas. In the present paper authors have made an attempt to study the groundwater quality and its suitability for drinking and irrigation purposes.

2. STUDY AREA

The study area is bounded between latitude 16° 74' 26" N to 16° 74' 07" N and longitude 74° 35' 41" E to 74° 37' 05" E, 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.

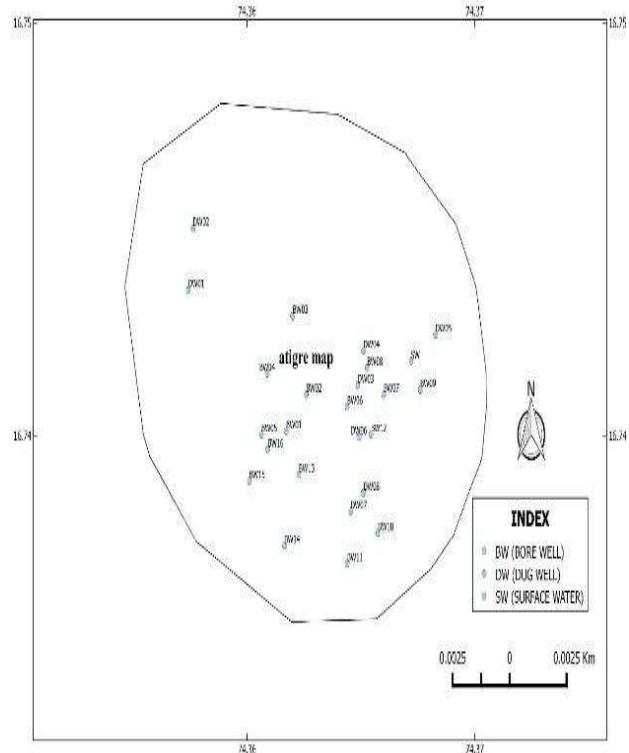


Fig.1: Study area with Sample Location Map.

3. METHODOLOGY

For the appraising of groundwater quality, representative 25 water samples were collected in pre-monsoon and post-monsoon seasons. The samples were collected in one liter plastic bottles. The various physico-chemical parameters were analyzed by following the standard procedures given in standard methods for the examination of water and waste water (APHA, AWWA, WPCF [2]; Trivedy and Goel [13]) Table No. 1 and 2.