

# Morphometric Analysis of Alate Nala Basin, Kolhapur District, Maharashtra, India

Mr. A.A. Lole<sup>1</sup>, Mr. S.V. Bhosale<sup>2</sup>, Mr. S.S. Kamble<sup>3</sup>, Mr. V.V. Jagadhane<sup>4</sup>, Mr. A. J. Gaikwad<sup>5</sup>

<sup>1, 2, 3, 4, 5</sup>Department of Civil Engineering, Sanjay Ghodawat Group of Institutes, Atigire-416118, Maharashtra, India.

**Abstract:** Watershed development and management is the key factor for surface and ground water conservation. To prepare a watershed development plan, it becomes important to know the topography, lithology, erosional status and drainage pattern of the area. In the present investigation various morphometric parameters of the Alate Nala basin are outlined. The Alate Nala basin is 4th order and its different morphometric parameters are found to be useful for the proper land use planning and water resources management studies in the basin. The area consists of homogeneous rock material, which is structurally undisturbed based on dendritic drainage pattern in the area.

**Keywords:** Morphometric parameters, Alate Nala.

## I. INTRODUCTION

Morphometry is defined as the measurement of the shape and mathematical analysis of drainage (Clarke, 1996). Morphometric studies in the field of hydrology were first initiated by Horton (1940) and Strahler (1950). Pawar and Raskar, (2011) has carried out morphometric analysis of Panchaganga river basin of Kolhapur district. Yadav and Sawant, (2011) has carried out morphometric parameter estimation of Sheri Nala basin, Sangli district. Jangle and Patil, (2010) has done morphometric parameter estimation of Nalganga river, Buldhana, Maharashtra. Nageswara and et. al., (2010) has carried out morphometric analysis of Gostani river basin in Andhra Pradesh. Geo-spatial technologies, such as Geographic Information Systems (GIS) and Remote Sensing (RS), are efficient tools in delineation of watershed and drainage network for the water resources planning and management. In the present study attempt has been made to analysis the nature and structure of Alate Nala basin by applying various morphometric techniques. The morphometric analysis of the drainage basin and channel network play a important role for understanding the hydrological behavior of drainage basin and to analyze flood, geological and geo morphological structure. The morphometric parameters have been used in various studies of geomorphology and surface water hydrology, such as flood characteristics, sediment yield and evolution of basin morphology. The watershed management studies have a special importance in the field of research, due to the increasing demand of water.

## II. STUDY AREA

The Alate Nala basin bounded between latitude  $16^{\circ} 74' N$  to  $16^{\circ} 80' N$  and longitude  $74^{\circ} 36' E$  to  $74^{\circ} 43' E$  in Survey of India Toposheet numbers 47 L/5 and 47 L/6 and having area of about 31.474 km<sup>2</sup> ( Fig. 1). The Alate Nala is the tributary of the Panchaganga River. The study area is covered by Deccan volcanic basalt of Upper Cretaceous to Lower Eocene age. The soil cover of the study area is fertile and important for agriculture purpose. The Alate Nala basin shows well developed dendritic to sub dendritic type drainage pattern. (Fig.1). In the present paper the authors had made an attempt to morphometric analysis of Alate Nala basin.

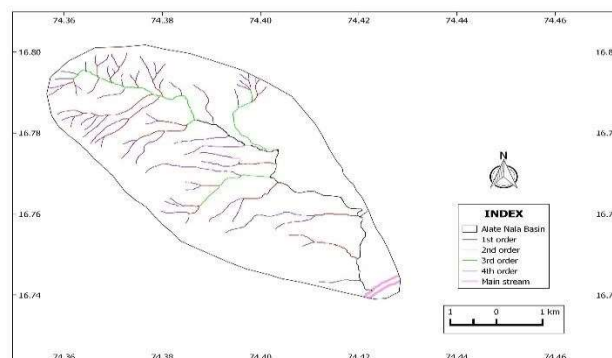


Fig. 1: Map of study area with drainage system