

PREFACE

Over-exploitation of groundwater and marked changes in climate over the years have imposed immense pressure on the global groundwater resources. As demand of potable water increases across the globe for human consumption, agriculture and industrial uses, the need to evaluate the groundwater potential and productivity of aquifers also increases. In the recent years, geographic information system-based studies have gained much prominence in groundwater exploration because it is rapid and will provide first - hand information on the resource for further developments. Therefore, the present study has been undertaken with an objective to delineate the groundwater potential Zone in Vidisha, Madhya Pradesh. A combination of geographical information system and analytical hierarchical process techniques (AHP) was used in the present study. A total of 12 thematic layers such as Geology, Geomorphology, Land Use/Land Cover, Lineament density, Drainage density, Rainfall, Soil, Slope, Roughness, Topographic Wetness Index, Topographic Position Index and Curvature were prepared and studied for groundwater potential zone demarcation. Weights assigned to each class in all the thematic maps are based on their characteristics and water potential capacity through AHP method. The accuracy of the output was cross-validated with information on groundwater prospects of the area and the overall accuracy of the method comes to around 85%. The groundwater potential zone map thus obtained was categorized into five classes-very good, good, moderate, poor and very poor. The study reveals that about 65% of the river basin is covered under moderate groundwater potential zone. The low and high groundwater potential zones are observed in 14% and 43% respectively. Area under very high and very low potential zones are recorded only in very limited areas in the basin.