

## **Boundary Delineation for Regional Groundwater Flow through GIS: A case of Crystalline Rock Area**

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This study was conducted to develop methodologies of boundary delineation for regional groundwater flow systems. Geographic Information System, GIS, was applied using available topographic, geologic and hydrologic data for an area of interest. Data used in this study cover topographic sheets, digital elevation model, satellite imagery, geologic maps, topographic classification maps, soil distribution maps and landuse maps. Through the GIS techniques using these data, thematic maps on topographic features, surface conditions, land coverage, geology and geologic structure and weathered crust were developed, and these thematic maps were further applied to extract four factors affecting the regional groundwater flows: topographic condition, precipitation recharge, fracture characteristics and potential flows.

An area of this study was selected as the area, for the reason of its simple geologic setting formed by crystalline rocks and topographically gentle hills of drainage basin. The present study revealed that, taking the potential groundwater flows and characteristics of fractured zones in the area into consideration, the groundwater flow system in the area of this study drainage basin should be bounded by the highest Mountain in the area and the northern part of neighboring drainage basin. The delineated area is larger than understood before.