Analysis of Potential Groundwater Availability Using Euclidean Distance in Yogyakarta Suburban City

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Both the process of infrastructure development of settlements in suburban areas will have various impacts on changes in natural resources. Physically, the changes that occur are the reduction in open areas and the existence of various types of vegetation that may influence the availability of groundwater in the future. In that matter, three elements greatly determine the potential for groundwater availability. Firstly, the ecological function of open areas is used as an area of groundwater input. Secondly, the presence of vegetation acts as a driver of the infiltration rate, and lastly, the rainfall as a source of water that enters the earth. This study aims to determine the potential availability of groundwater in Yogyakarta Suburban City as a preventive effort for the upcoming groundwater issues in the future. This study uses spatial analysis of research by the Geographic Information System with temporal (time series) data from high-resolution satellite imagery from 2006 - 2019 and using the principle of Euclidean Distance. The results showed that the area that has the potential for good shallow groundwater availability is in areas that are located away from urban boundaries with an average distribution of 11.5% of the village area and it is proven from the results of the analysis of well J with an open area and bush vegetation covering an area of 84, 2%, the increase in groundwater level is 2.17 m. Whereas areas that have low groundwater availability are located closer to the urban boundary with a spread of 29.3% of the village area and this is evidenced by the results of the analysis of wells D and E, with a building area of 75.5%, so the increase in groundwater level is 0.725 m.

Awards Won:

China Association for Science and Technology (CAST): Award of $1,200