SARI

Identifikasi Zona Potensi Airtanah

Daerah Purwokerto, Kabupaten Banyumas, Jawa Tengah

Nur Fitri Wulandari

Secara keseluruhan air di muka bumi sekitar 98% terdapat di samudera dan hanya 2% berupa air tawar yang terdapat di sungai, danau dan bawah tanah. Berdasarkan Peraturan Mentri Pekerjaan Umum No 14/2010, kebutuhan pokok minimal pemakaian air bersih tiap individu mencapai 60 liter perhari. Tujuan dari penelitian ini adalah membuat zona potensi airtanah serta memperkirakan jumlah imbuhan dan pemanfaatan airtanah di daerah penelitian. Metode yang digunakan yaitu melakukan pengamatan sumur sebanyak 72 titik yang meliputi pengukuran muka airtanah dangkal, pengukuran DHL, TDS, derajat keasaman (pH) dan suhu airtanah. Kemudian menentukan nilai parameter zona potensi, yaitu produktivitas akuifer, kemiringan lereng, curah hujan, kedalaman muka airtanah, kualitas airtanah, tata guna lahan dan kerapatan drainase. Menentukan bobot parameter menggunakan metode AHP (*Analitycal Hierarchy* Process). Satuan geomorfologi daerah penelitian terdiri dari Satuan Dataran Aluvial Purwokerto, Satuan Dataran Aliran Lahar Slamet, dan Satuan Punggungan Kuesta Karangklesem. Urutan stratigrafi dari tua ke muda yaitu Satuan Batupasir, Satuan Endapan Lahar dan Satuan Endapan Aluvial. Sistem akuifer daerah penelitian berupa akuifer bebas-semi tertekan dan akuifer tertekan dengan tipologi vulkanik-aluvial. Lapisan pembawa air berupa breksi, pasir tufan dan tuf pasiran sedangkan lapisan pembatas bersifat impermeabel berupa tuf lempungan. Daerah imbuhan yaitu tinggian Gunungapi Slamet yang berada di utara daerah penelitian menyebabkan arah aliran airtanah relatif utara-selatan. Zona potensi airtanah di daerah Purwokerto terbagi menjadi 3 zona, yaitu Zona I (potensi baik), Zona II (potensi sedang), dan Zona III (potensi buruk). Jumlah imbuhan airtanah di daerah penelitian sekitar sekitar 20.262.601,8 m^3/tahun, dengan debit optimum rata-rata sekitar 10,44 L/dtk/km^2 – 15,66 L/dtk/km^2.

Kata kunci : Sistem Akuifer, Metode AHP, Purwokerto, Potensi Airtanah

ABSTRACT

Identification of Groundwater Potential Zone in Purwokerto Area,

Banyumas Regency, Central Java

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All the water on the earth is about 98% of the oceans and only 2% of fresh water is found in rivers, lakes and underground. Based on the Regulation of the Minister of Public Works Number 14/2010, the minimum basic needs for clean water use per individual reaches 60 liters per day. The aim of the present study is to delineate groundwater potential zone and estimate the amount of groundwater recharge and utilization over the area of Purwokerto. The method used is well observation in 72 wells includes hydraulic head measurements, electrical conductivity measurements, TDS, pH and temperature measurements of groundwater. Then determining the value of the potential zones parameters, namely : aquifer productivity, land slope, rainfall, groundwater depth, groundwater quality, land use/land cover and drainage density. Determine the weights of parameters using AHP metho. This research area consists of 3 geomorphological units including Purwokerto Alluvial Plains, Slamet Lahar Flow Plains, and Karangklesem Cuesta Ridge. Stratigraphy in this research are grouped into 3 units in order from the oldest to the youngest, Sandstone, Lahar Deposit and Alluvial Deposit unit. The aquifers system in the study area consisting of unconfined-semi confied aquifer and confined aquifer in volcano-alluvial tipology. Permeable beds are composed of breccia, tuffaaceous sand and sandy tuff whereas the impermeable beds are composed of silt-tuff. Slamet Mountain as a recharge area located at north of study area, which causes relatively north-south groundwater flow direction. The potential of groundwater zones in the study area is divides into 3 zones, namely good potential, moderate and poor potential. Total amount of groundwater recharge in study area about 20.262.601,8 m^3/year, with optimum discharge among 10,44 L/sec/km^2 – 15,66 L/sec/km^2.

Keywords: Aquifer System, AHP Method, Purwokerto, Groundwater Potential