

ANALISIS KUALITAS AIRTANAH UNTUK AIR MINUM DAN IRIGASI DI KAPANEWON PLERET, KABUPATEN BANTUL

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INTISARI

Airtanah digunakan untuk memenuhi kebutuhan manusia dan seluruh makhluk hidup lain. Airtanah digunakan untuk keperluan domestik seperti air minum serta untuk keperluan non-domestik di sektor pertanian seperti irigasi. Kapanewon Pleret terletak di Kabupaten Bantul yang sebagian wilayahnya termasuk dataran fluvio Gunungapi Merapi Muda (CAT Yogyakarta-Sleman), sedangkan sebagian wilayah lainnya termasuk perbukitan struktural Baturagung. Penelitian ini bertujuan untuk mengidentifikasi kualitas airtanah, menganalisis kualitas airtanah untuk air minum berdasarkan *Water Quality Index* (WQI), serta menganalisis kualitas airtanah untuk irigasi di Kapanewon Pleret. Sampel airtanah diambil dari 13 sumur yang tersebar di seluruh daerah penelitian. Pengujian sampel airtanah mencakup berbagai parameter fisik, kimia, dan biologi seperti suhu, warna, bau, rasa, DHL, TDS, pH, besi (Fe), fluorida (F^-), klorida (Cl^-), nitrat (NO_3^-), bikarbonat (HCO_3^-), sulfat (SO_4^{2-}), natrium (Na^+), boron (B), kalium (K^+), magnesium (Mg^{2+}), kalsium (Ca^{2+}), dan total *coliform*. Hasil pengujian kemudian dibandingkan dengan baku mutu air minum yang terdapat pada PP Nomor 22 Tahun 2021, Permenkes Nomor 492 Tahun 2010, Permenkes Nomor 2 Tahun 2023, dan WHO. Analisis kualitas airtanah untuk air minum juga dilakukan dengan metode WQI. Sementara itu, analisis kualitas airtanah untuk irigasi dilakukan dengan menggunakan beberapa metode, yaitu *salinity hazard*, *sodium hazard* (SAR), *residual sodium carbonate* (RSC), *ion toxicity*, *sodium percentage* (%Na), *magnesium hazard* (MHR), *kelly's ratio*, dan *permeability index*. Peta persebaran kualitas airtanah dari setiap metode kemudian dibuat pada ArcGIS. Hasil analisis menunjukkan bahwa beberapa parameter seperti warna, rasa, DHL, pH, klorida, nitrat, kesadahan, kalium, dan total *coliform* masih tidak memenuhi standar baku mutu. Kualitas airtanah untuk air minum berdasarkan WQI menunjukkan sebagian besar sampel airtanah mempunyai kualitas yang sangat baik. Sementara itu, kualitas airtanah untuk keperluan irigasi menunjukkan sebagian besar sampel airtanah memiliki nilai yang sangat baik. Secara spasial, sumur yang berada di dataran fluvio gunungapi memiliki kualitas airtanah yang lebih baik daripada sumur yang berada di perbukitan struktural. Oleh karena itu, secara keseluruhan kualitas airtanah di Kapanewon Pleret masih layak dimanfaatkan sebagai sumber air minum dan irigasi. Akan tetapi, airtanah tersebut harus melalui proses pengolahan terlebih dahulu sebelum dimanfaatkan sebagai air minum.

Kata kunci : Kualitas Airtanah, WQI, Irigasi, Pleret

GROUNDWATER QUALITY ANALYSIS FOR DRINKING WATER AND IRRIGATION IN KAPANEWON PLERET, BANTUL REGENCY

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ABSTRACT

Groundwater is used to meet the needs of humans and all other living things. Groundwater is used for domestic purposes such as drinking water and non-domestic purposes in the agricultural sector such as irrigation. Kapanewon Pleret is located in Bantul Regency, part of the area includes the fluvio plains of the Young Merapi Volcano (GWB Yogyakarta-Sleman), while part of the other area includes the structural hills of Baturagung. This research aims to identify the quality of groundwater, analyze the quality of groundwater for drinking water based on the Water Quality Index (WQI), and analyze the quality of groundwater for irrigation in Kapanewon Pleret. Groundwater samples were taken from 13 wells scattered throughout the study area. Groundwater sample testing includes various physical, chemical, and biological parameters such as temperature, color, odor, taste, EC, TDS, pH, iron (Fe), fluoride (F⁻), chloride (Cl⁻), nitrate (NO₃⁻), bicarbonate (HCO₃⁻), sulfate (SO₄²⁻), sodium (Na⁺), boron (B), potassium (K⁺), magnesium (Mg²⁺), calcium (Ca²⁺), and total coliform. The test results are then compared with drinking water quality standards contained in PP Number 22 of 2021, Minister of Health Regulation Number 492 of 2010, Minister of Health Regulation Number 2 of 2023, and WHO. Analysis of groundwater quality for drinking water was also carried out using the WQI method. Meanwhile, groundwater quality analysis for irrigation is carried out using several methods, namely salinity hazard, sodium hazard (SAR), residual sodium carbonate (RSC), ion toxicity, sodium percentage (%Na), magnesium hazard (MHR), Kelly's ratio, and permeability index. A map of the distribution of groundwater quality from each method is then created in ArcGIS. The analysis results show that several parameters such as color, taste, EC, pH, chloride, nitrate, hardness, potassium, and total coliform still do not meet quality standards. The quality of groundwater for drinking water based on WQI shows that most of the groundwater samples are of very good quality. Meanwhile, the quality of groundwater for irrigation purposes shows that most of the groundwater samples have very good value. Spatially, wells located in volcanic fluvio plains have better groundwater quality than wells located in structural hills. Therefore, overall the quality of groundwater in Kapanewon Pleret is still suitable for use as a source of drinking and irrigation water. However, groundwater must go through a processing process first before being used as drinking water.

Keyword : Groundwater Quality, WQI, Irrigation, Pleret