

## SARI

Keberadaan sumber air tanah pada daerah lereng timur Gunung Sumbing, Kabupaten Magelang dan Kabupaten Temanggung, Provinsi Jawa Tengah berpotensi untuk dapat dijadikan sumber air baku. Penelitian ini dilakukan untuk mengetahui hubungan kondisi geologi dengan sifat fisik dan kimia air tanah pada sumber air khususnya mata air sebagai air bersih dan air minum. Metode yang dilakukan berupa pemetaan geologi dan hidrogeologi kemudian dilakukan pengukuran serta analisis terhadap sifat fisik dan kimia air tanah pada mata air. Pengukuran sifat fisik dilakukan secara langsung berupa suhu, daya hantar listrik (DHL), pH dan jumlah padatan terlarut. Pengukuran sifat kimia berupa ion  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Cl}^-$ ,  $\text{SO}_4^{2-}$ ,  $\text{NO}_3^-$  dan  $\text{HCO}_3^-$ . Hasil pengukuran sifat fisik dan kimia dianalisis menggunakan metode Kurlov, diagram Piper, diagram Stiff, diagram Schoeller, koefisien korelasi dan dibandingkan dengan baku mutu air Permenkes No. 492 Tahun 2010 tentang kualitas air minum dan Permenkes No. 32 Tahun 2017 tentang kualitas air untuk keperluan higiene sanitasi. Daerah penelitian tersusun atas satuan geologi breksi andesit dan satuan breksi piroklastik dan breksi andesit dengan kelurusan struktur geologi berarah barat laut – tenggara. Suhu air tanah berkisar 21,8 – 26,7 °C, pH berkisar 5,8 – 7,3, daya hantar listrik berkisar 75 - 460  $\mu\text{s}/\text{cm}$ . Terdapat hubungan antara daya hantar listrik dan temperatur dengan elevasi. Tipe air tanah daerah penelitian memiliki tipe kalsium-magnesium bikarbonat berasal dari pelapukan mineral silikat olivin, ortopiroksen, klinopiroksen, amfibol dan kalsium-sodium plagioklas. Sampel air tanah memenuhi baku mutu air dan beberapa sampel air tanah tidak memenuhi baku mutu air berdasarkan parameter ion  $\text{NO}_3^-$ , suhu dan pH.

**Kata kunci :** geokimia mata air, geokimia batuan, baku mutu air.

## ABSTRACT

*The existence of groundwater sources on the eastern slopes of Mt. Sumbing, Magelang Regency and Temanggung Regency, Central Java Province has the potential to be developed as a source of raw water. This research was conducted to determine geological relationship with the physical and chemical quality of groundwater, especially on springs as a clean and drinking water. Geological and hydrogeological mapping method was used as well as measuring and analyzing the physical, chemical properties of groundwater on springs. Physical properties tested were temperature, electric conductivity (EC), pH and total dissolved solids. Chemical properties tested were  $\text{Na}^+$ ,  $\text{K}^+$ ,  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{Cl}^-$ ,  $\text{SO}_4^{2-}$ ,  $\text{NO}_3^-$  and  $\text{HCO}_3^-$  ions. The results of the physical, chemical measurement were analyzed using Kurlov method, Piper diagram, Stiff diagram, Schoeller diagram, correlation coefficient and then compared with the water quality as drinking water from minister of health regulation No.492 of 2010 and water quality for hygiene and sanitation purposes from minister of health regulation No. 32 of 2017. The research area consist of andesite breccia unit and pyroclastic breccia and andesite breccia unit with a northwest-southeast trend geologic structure lineament. Groundwater temperature ranges between 21,8 - 26,7 °C, pH ranges between 5,8 - 7,3, electric conductivity ranges between 75 – 460  $\mu\text{S}/\text{cm}$ . There is a relationship between electric conductivity and temperature with elevation. Groundwater chemistry in research area has calcium-magnesium type which comes from weathering of silicate minerals like olivine, orthopyroxene, clinopyroxene, amphibole and calcium-sodium plagioclase. Most of groundwater samples meet the water quality standards and some are not based on  $\text{NO}_3^-$  ion, temperature and pH parameters.*

**Keywords :** spring groundwater chemistry, geochemistry, water quality standards.