

INTISARI

Kota Palu yang terus mengalami perkembangan dan pertumbuhan penduduk menyebabkan kebutuhan akan air bersih juga terus meningkat. Berdasarkan observasi lapangan oleh peneliti pada tahun 2024, air tanah di Kota Palu memiliki karakteristik yang bervariasi dan berpotensi mengalami pencemaran. Penelitian meliputi observasi geologi dan hidrogeologi, analisis hidrokimia, dan identifikasi pencemaran air tanah menggunakan analisis AAS, analisis XRD, dan identifikasi tata guna lahan daerah penelitian. Hasil penelitian menunjukkan bahwa air tanah di daerah penelitian terbagi menjadi lima tipe, tipe $\text{Ca}^{2+}\text{-Mg}^{2+}\text{-HCO}_3^-$, $\text{Na}^+\text{-Mg}^{2+}\text{-HCO}_3^-$, $\text{Na}^+\text{-HCO}_3^-$, $\text{Na}^+\text{-SO}_4^{2-}$, dan $\text{Na}^+\text{-Mg}^{2+}\text{-SO}_4^{2-}$. Beberapa pencemaran air tanah teridentifikasi di daerah penelitian. Air tanah mengalami pencemaran Fe di Kecamatan Palu Barat, Mn di Kecamatan Palu Timur dan Palu Barat, NO_3^- di Kecamatan Mantikulore, dan sebagian Kecamatan Ulujadi dan Palu Barat, dan juga pencemaran Cl^- teridentifikasi di satu titik pengamatan di Kecamatan Palu Barat. Dari hasil analisis, pencemaran Fe dan Mn di daerah penelitian bersumber dari sumber alami yaitu keberadaan mineral pembawa Fe dan Mn dalam akuifer. Pencemaran NO_3^- dan Cl^- disebabkan dari sumber antropogenik yang mana NO_3^- bersumber dari limbah kotoran manusia, sedangkan pencemaran Cl^- bersumber dari limbah rumah tangga.

Kata Kunci: Kota Palu, Air Tanah, Hidrokimia, Pencemaran Air Tanah

ABSTRACT

The continuous development of Palu City and its growing population have resulted in an increasing demand for clean water. Based on field observations conducted by the researchers in 2024, groundwater in Palu City exhibits diverse characteristics and shows potential vulnerability to contamination. The research involved geological and hydrogeological observations, hydrochemical analysis, and groundwater contamination assessment using AAS analysis, XRD analysis, as well as land-use identification within the study area. The results indicate that groundwater in the study area can be classified into five types: $\text{Ca}^{2+}\text{-Mg}^{2+}\text{-HCO}_3^-$, $\text{Na}^+\text{-Mg}^{2+}\text{-HCO}_3^-$, $\text{Na}^+\text{-HCO}_3^-$, $\text{Na}^+\text{-SO}_4^{2-}$, and $\text{Na}^+\text{-Mg}^{2+}\text{-SO}_4^{2-}$. Several forms of groundwater contamination were identified across the study area. Fe contamination was detected in West Palu District; Mn contamination occurred in East Palu and West Palu Districts; NO_3^- contamination was found in Mantikulore District and some parts of Ulujadi and West Palu Districts; and Cl^- contamination was identified at one observation point in West Palu District. The analysis indicates that Fe and Mn contamination in the study area originates from natural sources, specifically from Fe and Mn-bearing minerals within the aquifer. In contrast, NO_3^- and Cl^- contamination is attributed to anthropogenic sources, where NO_3^- is derived from faecal source, while Cl^- contamination originates from domestic wastewater.

Keywords: Palu City, Groundwater, Hydrochemistry, Groundwater contamination.