KAJIAN HIDROGEOMORFOLOGI MATAAIR DI DAERAH ALIRAN SUNGAI (DAS) TINGAL HULU KABUPATEN TEMANGGUNG

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INTISARI

Mataair merupakan sumber air baku yang dimanfaatkan masyarakat di DAS Tingal Hulu untuk memenuhi kebutuhan sehari-hari. Hal ini disebabkan karena airtanah di lokasi kajian relatif sulit didapat akibat muka airtanah yang dalam bahkan langka. Penelitiaan ini mengkaji tentang pemunculan dan potensi mataair yang dikaitkan dengan kondisi geomorfologi di DAS Tingal Hulu Kabupaten Temanggung. DAS Tingal Hulu berada di Perbukitan Struktural Terdenudasi yang memiliki topografi yang bergelombang hingga bergunung dengan litologi batuan yang beragam. Tujuan dari penelitian ini yaitu: (1) Menemukenali pola persebaran dan karakteristik hidrogeomorfologi mataair di DAS Tingal Hulu; (2) Mengetahui potensi mataair di DAS Tingal Hulu berdasarkan kajian hidrogeomorfologi; dan (3) Menentukan faktor-faktor hidrogeomorfologi yang mempengaruhi pemunculan dan persebaran mataair di DAS Tingal Hulu.

Metode penelitian yang digunakan adalah metode survei yaitu dengan melakukan pengamatan mataair dan lingkungan sekitar lokasi pemunculan mataair untuk menentukan sifat pengaliran dan tenaga pemunculan mataair serta melakukan pengukuran debit mataair dan pengujian kualitas air secara insitu dengan parameter suhu, pH, TDS dan DHL. Metode lainnya yaitu dengan melakukan pengolahan data sekunder berupa data DEM, Peta RBI, dan Peta Geologi untuk pembuatan peta hidrogeomorfologi. Hasil dari pengolahan data dilakukan analisis secara deskriptif kuantitatif mengenai debit, parameter kualitas air dan potensi mataair, deskriptif asosiatif menegani hubungan karakteristik geomorfologi dengan pola persebaran dan karakteristik mataair, dan analisis deksriptif komparasi spasial mengenai faktor geomorfologi yang mengontrol pemunculan dan karakterstik mataair baik kuantitas maupun kualitas mataair.

Hasil dari penelitian yaitu peta hidrogeomorfologi mataair menunjukkan bahwa mataair tersebar di 8 bentuklahan yaitu 3 mataair muncul di bentuklahan Dataran Koluvial Formasi Kaligetas (DG), 1 mataair di Dataran Koluvial Formasi Penyatan (DP), 13 mataair di Pegunungan Struktural Formasi Kaligetas (SG1), 55 mataair di Pegunungan Struktural Formasi Penyatan (SP1), 3 mataair di Pegunungan Struktural Formasi Kerek, 18 mataair di Perbukitan Struktural Formasi Kaligetas (SG2), 12 mataair di Perbukitan Struktural Formasi Penyatan (SP2) dan 9 mataair di Perbukitan Struktural Formasi Kerek (SK2). Potensi mataair di DAS Tingal Hulu memiliki kelas potensi II dan III. Debit mataair di DAS Tingal Hulu terdapat mataair dengan kelas III (10-100 liter/detik), kelas IV (1-10 liter/detik) dan kelas V (<1 liter/detik) dengan tenaga pemunculan mataair secara gravitatif yaitu mataair depresi, mataair retakan, dan mataair kontak. Sifat pengaliran mataair di DAS Tingal Hulu yaitu mataair *perennial*. Mataair banyak muncul pada pertemuan antara bentuklahan serta sejalur dengan tekuk lereng dan pola kelurusan morfologi. Faktor hidrogeomorfologi yang mengontrol pemunculan dan karakteristik mataair adalah perubahan lereng berombak (8-15%) hingga bergelombang (15-30%) dan relief bergelombang (15-30%) hingga berbukit (30-45%), struktur retakan pada batuan Batulempung, Batupasir, dan Breksi Vulkanik, serta kontak batuan Batulempung dan Batupasir.

Kata Kunci: Hidrogeomorfologi, mataair, potensi mataair, DAS Tingal Hulu

THE HYDROGEOMORPHOLOGY STUDY OF SPRINGS IN TINGAL HULU WATERSHED, TEMANGGUNG REGENCY

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ABSTRACT

Springs are a source of water that is used by the people in the Tingal Hulu Watershed to fulfill their daily needs. This is because groundwater in the study area is relatively difficult to obtain due to the deep groundwater surface even scarce. This study examines the emergence and potential of springs associated with geomorphological conditions in the Tingal Hulu watershed, Temanggung Regency. The Tingal Hulu Watershed is located in Structural Denudational Hills which has a bumpy to mountainous topography with various rock lithology. The objectives of this study are: (1)to identify the distribution patterns and hydrogeomorphological characteristics of springs in the Tingal Hulu Watershed; (2)determine the potential of springs in the Tingal Hulu Watershed based on hydrogeomorphological studies; and (3)determine hydrogeomorphological factors that influence the occurence and distribution of springs in the Tingal Hulu Watershed.

The method used in this research is survey which was done by observing springs and its surrounding environment around the location of springs to determine the type of spring and the occurence of springs as well as measuring spring discharge and water quality with parameters of temperature, pH, TDS and DHL. Besides, this research also done by processing secondary data in the form of DEM data, Google Earth satellite image, RBI maps, and geology maps for making hydrogeomorphological map. The results of the data processing were analyzed with a descriptive quantitative analysis of the discharge, water quality parameters and spring potential, descriptive associative method handling the relationship of geomorphological characteristics with the distribution patterns and characteristics of springs, and descriptive analysis of spatial-comparative method for geomorphological factors that control the spring occurence and characteristics both quantity and quality water springs.

The results of the study are the spring hydrogeomorphology map showing that springs are spread in six landforms namely 3 springs appear in the form of the Coluvial Plains of the Kaligetas Formation (DG), 1 spring in the Koluvial Plain of the Penyatan Formation (DP), 13 springs in the Structural Mountains of the Kaligetas Formation (SG1), 55 springs in the Structural Mountains of the Penyatan Formation (SP1), 3 springs in the Structural Mountains of the Kerek Formation, 18 springs in the Structural Hills of the Kaligetas Formation (SG2), 12 springs in the Structural Hills of the Penyatan Formation (SP2) and 9 springs in the Structural Mountains of the Kerek Formation (SK2)). Potential springs in the Tingal Hulu watershed have potential classes II and III. Springs discharge in the Upper Tingal Watershed are springs with class III (10-100 liters / sec), class IV (1-10 liters / sec) and class V (<1 liter / sec) with gravitational spring springs, namely depressed springs, crack springs, and contact springs. The occurrence of springs in the Upper Tingal Watershed is perennial springs. Many springs appear at the meeting between landforms and tend to be in line with break of slope and morphological lineament. Hydrogeomorphological factors that control the occurence and characteristics of springs are changes in choppy slopes (8-15%) to undulating (15-30%) and corrugated relief (15-30%) to hilly (30-45%), crack structures in Claystone, Sandstone, and Volcanic Breccia, as well as contact with claystone and sandstone.

Keywords: hydrogeomorphology, spring, potential spring, Tingal Hulu Watershed