

ABSTRACT

*The Modelling of Bribin Underground River in Hargosari Region Gunungkidul
Regency Based On Topography
Corrected VLF-EM Data*

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Hargosari region is located in the Gunungsewu karst area known as an infertile area and less water especially during dry season. Geologically, it is composed by limestones that potentially cause underground river as a result of dissolving process. VLF-EM method is used to know the pattern of underground river associated with the contrast of conductive physical parameter caused by the existence of water in the hole of limestones.

The purpose of this study are to determine Bribin underground river trace and pattern as well as its modelling using the Inv2D VLF software. The data was taken from August 18-25, 2015 in Hargosari Region, Tanjungsari District, Gunungkidul Regency, Yogyakarta.

The qualitative interpretation was done based on the data processing that has been topography corrected using a moving average filter to remove noise. Fraser filter and Karous-Hjelt filter were used to show underground conductive objects anomaly, while the quantitative interpretation using Inv2D VLF program and visualised using Surfer 12 to determine underground river position. Based on the qualitative and quantitative interpretations, it can be concluded that Bribin underground river flows from the east to the west direction through Hargosari region, and it consists of two underground river streams which are interconnected. The width of conductive area was (25 ± 5) m at the depth range about 148-184 m.

Keywords : Bribin underground River, VLF-EM, Karous-Hjelt filter, Fraser Filter, equivalent current density

INTISARI

PEMODELAN SUNGAI BAWAH TANAH BRIBIN DI DAERAH HARGOSARI KABUPATEN GUNUNGKIDUL BERDASARKAN DATA VLF-EM TERKOREKSI TOPOGRAFI

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Desa Hargosari terletak dalam kawasan karst Gunungsewu dikenal sebagai daerah tandus dan kekurangan air terutama saat musim kemarau. Keadaan geologi yang tersusun atas batu gamping berpotensi menghasilkan sungai bawah tanah akibat dari proses pelarutan. Metode VLF-EM digunakan untuk mengetahui pola aliran sungai bawah tanah sesuai dengan kontras parameter fisis konduktivitas akibat keberadaan air dalam rongga batu gamping.

Penelitian ini bertujuan untuk menentukan arah dan pola aliran sungai bawah tanah serta memodelkan Sungai Bawah Tanah Bribin dengan menggunakan software Inv2DVLF. Pengambilan data dilakukan pada tanggal 18 sampai 25 Agustus 2015 di daerah Hargosari, Kecamatan Tanjungsari, Kabupaten Gunungkidul, Yogyakarta.

Interpretasi kualitatif dilakukan berdasarkan pengolahan data yang telah terkoreksi topografi menggunakan filter *moving average* untuk menghilangkan *noise*, filter Fraser dan filter Karous-Hjelt untuk memperlihatkan anomali benda konduktif bawah tanah, sedangkan interpretasi kuantitatif menggunakan program Inv2DVLF yang divisualisasikan dengan Surfer 12 untuk menentukan posisi sungai bawah tanah. Berdasarkan Interpretasi kualitatif dan kuantitatif dapat diketahui bahwa Sungai Bawah Tanah Bribin mengalir dari arah timur menuju arah barat melewati Desa Hargosari, terdiri dari dua aliran sungai bawah tanah yang saling berhubungan. Lebar daerah konduktif (25 ± 5) m dengan kedalaman berkisar (148-184) m.

Kata kunci: Sungai Bawah Tanah Bribin, VLF-EM, filter Karous-Hjelt, filter Fraser, rapat arus ekuivalen