

## **KAJIAN KETERSEDIAAN AIR TANAH BEBAS DI KECAMATAN PIYUNGAN, KABUPATEN BANTUL, DAERAH ISTIMEWA YOGYAKARTA.**

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### **INTISARI**

Daerah penelitian terletak di Kecamatan Piyungan, Kabupaten Bantul, Provinsi Daerah Istimewa Yogyakarta. Penelitian ini menitikberatkan pada kajian mengenai akuifer pada satuan bentuklahan dataran kaki Gunungapi Merapi muda. Tujuan penelitian ini adalah: (1) mempelajari karakteristik akuifer di daerah penelitian; (2) mengetahui jumlah ketersediaan airtanah bebas; dan (3) mengetahui hasil aman penurapan airtanah.

Penelitian ini menggunakan adalah metode survei, dengan sampel ditentukan secara *purposive sampling*. Pembuatan kontur dan arah aliran airtanah bebas menggunakan model 2-D (dua dimensi). Nilai permeabilitas akuifer didapatkan melalui Uji pompa dengan menggunakan metode *Slug test*. Pendugaan geolistrik menggunakan metode *Schlumberger* dan interpretasi data menggunakan perangkat lunak "IP2WIN".

Hasil penelitian menunjukkan bahwa pada bentuklahan dataran kaki Gunungapi Merapi muda merupakan akuifer bebas dengan material berupa pasir bertekstur sedang yang memiliki nilai permeabilitas sebesar 6,74 m/hari, tebal akuifer rata-rata sebesar 93,88 meter dan gradien hidrauliknya sebesar 0,01. Pada bentuklahan lereng kaki koluvial merupakan akuifer bebas dengan material materialnya berupa koluvium yang memiliki nilai permeabilitas sebesar 2,5 m/hari, tebal akuifer rata-rata sebesar 15 meter dan gradien hidrauliknya sebesar 0,023. Nilai ketersediaan airtanah bebas dinamis di daerah penelitian pada bentuklahan dataran kaki Gunungapi Merapi muda sebesar 2.675.163.145,48 m<sup>3</sup>/tahun, dan nilai ketersediaan airtanah bebas dinamis pada bentuklahan lereng kaki koluvial sebesar 191.644.627,87 m<sup>3</sup>/tahun. Hasil aman penurapan airtanah pada di daerah bentuklahan dataran kaki Gunungapi Merapi muda sebesar 489.726.734,31 m<sup>3</sup>, sedangkan nilai hasil aman penurapan airtanah pada bentuklahan lereng kaki koluvial sebesar 129.194.482,51 m<sup>3</sup>

**Kata kunci:** Dataran kaki Gunungapi Merapi muda, lereng kaki Koluvial, karakteristik akuifer, ketersediaan airtanah, hasil aman

***INSPECT THE CAPACITY OF THE GROUNDWATER IN THE  
UNCONFINED AQUIFER  
AT PIYUNGAN DISTRICT, BANTUL REGENCY, DAERAH  
ISTIMEWA YOGYAKARTA***

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***ABSTRACT***

*The research area was located at Piyungan Sub District, Bantul Regency, Daerah Istimewa Yogyakarta. The emphasized of this research was aquifer in volcanic foot plain landform of Merapi. The aim of this research are; 1) to studied the characteristic of aquifer in research area; 2) to calculated the capacity of groundwater in the unconfined aquifer, and 3) to calculated the rate of the groundwater safe yield.*

*This research used survey method, with purposive sampling technique. The contoured and flow direction of the groundwater was made by 2-D (two dimensional models). Permeability value of the aquifer was found by Pumping test by slug test method. Geoelectrical sounding prediction by Schlumberger method and "IP2WIN" software was used for data interpretation.*

*The results of this research showed that volcanic foot plain landform of Merapi had categorized as unconfined aquifer that consist of medium sand texture which had permeability value as 6,74 m/day, the average rate of aquifer thickness is 93,88 meter and the hydraulic gradient was 0,01. Aquifer System of Baturagung Foot Slope Hill was categorized as confined aquifer with consist of koluvium material with permeability value was 2,5 m/day, the average rate of aquifer thickness was 15 meter and the hydraulic gradient was 0,023. The Dynamic groundwater capacity value at research area in the volcanic foot plain landform of Merapi was about 2.675.163.145,48 m<sup>3</sup>/year and the Dynamic groundwater capacity value of Baturagung Foot Slope Hill 191.644.627,87 m<sup>3</sup>/year. The safe yield of groundwater at research are in the volcanic foot plain landform of Merapi was about 489.726.734,31 m<sup>3</sup>, and the one of Baturagung Foot Slope Hill was 129.194.482,51 m<sup>3</sup>.*

***Keywords:*** *Volcanic foot plain of Merapi, Baturagung Foot Slope Hill, Aquifer characteristic, Dynamic groundwater capacity, safe yield*