

SARI

Pesatnya pertumbuhan penduduk di abad ke-21 salah satunya disebabkan urbanisasi. Dari urbanisasi berdampak terjadinya Perubahan alih fungsi lahan karena pesatnya pembangunan infrastruktur dan pemukiman yang menuntut adanya ketersediaan lahan. Hal ini menyebabkan terjadinya degradasi lahan yang dapat terjadinya kurangnya tingkat air meresapkan ke dalam tanah pada saat hujan. Dari kondisi ini dilakukan penelitian tentang tingkat kekritisian daerah resapan air pada Kecamatan Gunungpati bagian utara, guna mengetahui kondisi kawasan resapan air hujan yang berada pada Kecamatan Gunungpati bagian utara. Penelitian ini menggunakan 5 parameter berupa tata guna lahan, laju infiltrasi, kemiringan lereng, litologi, kedalaman muka air tanah. semua data parameter tersebut diolah menggunakan dua metode *Analytical Hierarchy Process* dan Permen LHK No. 10 Tahun 2022 dari hasil dua metode tersebut akan didapatkan peta tingkat kekritisian daerah resapan air kecamatan Gunungpati bagian utara yang kemudian nanti akan dibandingkan dua metode tersebut dengan cara verifikasi kelapangan dan menggunakan analisis *Receiver Operating Characteristic* (ROC). Tata guna lahan yang memiliki laju infiltrasi cepat berupa hutan dan Perkebunan sekitar 35 %, laju infiltrasi yang memiliki laju infiltrasi sedang sekitar 19 %, kemiringan lereng curam-sangat curam sekitar 24%, litologi penyusun yang memiliki potensi permeabilitas tinggi adalah endapan aluvium dengan pasir – krakal 2%, satuan batupasir sisipan konglomerat 16% dan kedalaman muka air tanah yang memiliki kemampuan meresapkan air paling tinggi adalah kedalaman 10m - 20m sekitar 55%. Maka dari hasil tersebut didapatkan data luas zona tingkat kekritisian resapan air pada 2 metode tersebut adalah metode AHP didapatkan hasil luas kondisi daerah setiap klasifikasi tingkat kekritisian resapan air dengan kondisi baik 2,53 km² dengan persentase 9%, normal alami 2,78 km² dengan persentase 10%, mulai kritis 6,43 km² dengan persentase 23%, agak kritis 10,48 km² dengan persentase 38%, kritis 5,36 km² dengan persentase 19%, sangat kritis 0,35 km² dengan persentase 1%. metode Permen LHK No 10 tahun 2022 didapatkan hasil luas kondisi daerah setiap klasifikasi tingkat kekritisian resapan air dengan kondisi baik 1,85 km² dengan persentase 7%, normal alami 6,45 km² dengan persentase 23%, mulai kritis 10,14 km² dengan persentase 36%, agak kritis 7,14 km² dengan persentase 26%, kritis 2,14 km² dengan persentase 8%, sangat kritis 0,35 km² dengan persentase 1%. Hasil perbandingan dari kedua metode *Analytical Hierarchy Process* dan metode Permen LHK No tahun 2022 dengan menggunakan validasi *Area Under Curve* (AUC) dengan nilai metode AHP 0,725 masuk kategori *Fair Classification* dan metode Permen LHK No tahun 2022 dengan nilai performa 0,624 masuk kategori *poor classification*. Maka dari hasil validasi *Area Under Curve* (AUC) dapat disimpulkan bahwasanya metode AHP lebih baik dari metode Permen LHK No 10 tahun 2022.

Kata kunci : Urbanisasi, Resapan air, *Analytical Hierarchy Process*, Permen LHK No tahun 2022, *Receiver Operating Characteristic* (ROC)

ABSTRACT

One of the reasons for rapid population growth in the 21st century is urbanization. Urbanization has the impact of changes in land use due to the rapid development of infrastructure and settlements which demands land availability. This causes land degradation which can result in a decrease in the level of water seeping into the soil when it rains. From this condition, research was carried out on the criticality level of water catchment areas in the northern part of Gunungpati District, in order to determine the condition of rainwater catchment areas in the northern part of Gunungpati District. This research uses 5 parameters in the form of land use, infiltration rate, slope slope, lithology, depth of ground water table. All parameter data is processed using two methods Analytical Hierarchy Process and Minister of Environment and Forestry Regulation No. 10 of 2022, from the results of these two methods, a map of the criticality level of the water catchment area of the northern Gunungpati sub-district will be obtained, which will then be compared between the two methods by verifying the area and using analysis. Receiver Operating Characteristic (ROC). Land uses that have a fast infiltration rate are forests and plantations of around 35%, infiltration rates that have a moderate infiltration rate of around 19%, steep-very steep slopes of around 24%, constituent lithologies that have high permeability potential are alluvium deposits with sand - gravel 2%, sandstone units with conglomerate inserts 16% and the depth of the groundwater table which has the highest water absorbing capacity is 10m - 20m depth, around 55%. So from these results, we obtained data on the area of the critical level of the water catchment zone using the 2 methods, namely the AHP method. The results showed that the area of the area for each classification of the level of criticality of water catchment was in good condition, 2.53 km² with a percentage of 9%, the natural normal is 2.78 km² with a percentage of 10%, critical start at 6.43 km² with a percentage of 23%, a rather critical 10.48 km² with a percentage of 38%, critical 5.36 km² with a percentage of 19%, very critical 0.35 km² with a percentage of 1%. The method of Minister of Environment and Forestry Regulation No. 10 of 2022 shows that the area conditions for each classification of water catchment criticality level are 1.85 km in good condition.² with a percentage of 7%, the natural normal is 6.45 km² with a percentage of 23%, starting to be critical at 10.14 km² with a percentage of 36%, a rather critical 7.14 km² with a percentage of 26%, critical 2.14 km² with a percentage of 8%, very critical 0.35 km² with a percentage of 1%. Comparative results of the two methods Analytical Hierarchy Process and the method of Minister of Environment and Forestry Regulation No. 2022 using validation Area Under Curve (AUC) with AHP method values 0.725 falls into the category Fair Classification and the method of Minister of Environment and Forestry Regulation No. 2022 with a performance value of 0.624 is included in the category poor classification. So from the validation results of Area Under Curve (AUC) it can be concluded that the AHP method is better than the method of Minister of Environment and Forestry Regulation No. 10 of 2022.

Keywords : Urbanization, water infiltration, Analytical Hierarchy Process, environment and forestry Ministerial Decree no. 10 of 2022, Receiver Operating Characteristic (ROC)