INTISARI

Penelitian dengan judul Analisis Hidrograf Satuan Sintetik DAS Sitelogo Kecamatan Kajoran Kabupaten Magelang Jawa Tengah ini bertujuan untuk menganalisis dan menetapkan model hidrograf satuan sintetik yang paling sesuai untuk digunakan di DAS Sitelogo. Penelitian ini dilakukan dengan menyusun hidrograf satuan sintetik model Snyder, Clark dan GAMA I yang selanjutnya model hidrograf satuan sintetik tersebut dibandingkan terhadap hidrograf satuan utama sebagai hasil pengukuran lapangan yang dilaksanakan tahun 1999.

Analisis perbandingan dilakukan dalam dua tahap yaitu ; menghitung dan membandingkan tiga parameter hidrograf satuan (Tp,Qp dan Tb) dari tiga hidrograf satuan sintetik terhadap hidrograf satuan utama. Tahap kedua adalah dengan menyusun hidrograf aliran dari ketiga model hidrograf satuan sintetik dan dari hidrograf satuan utamadengan menggunakan data hujan tanggal 3 Juli 1999, selanjutnya ke tiga hidrograf aliran sintetik tersebut dihitung rerata persentase penyimpangannya. Dengan kedua tahap analisis terseut dapat ditentukan model hidrograf satuan sintetik yang paling sesuai untuk digunakan di DAS Sitelogo dengan melihat rerata persentase penyimpangan terkecil terhadap hidrograf satuan utamanya.

Hasil analisis ketiga parameter hidrograf satuan (Tp,Qp dan Tb) diperoleh hasil yang menunjukkan model Snyder memiliki penyimpangan Tp = 60% , Qp = 11,75% dan Tb = 55,6%. Sedangkan model Clark memiliki penyimpangan Tp = 50%, Qp = 68,95% dan Tb = 238,9%. Model GAMA I memiliki penyimpangan Tp = 50% , Qp = 57,25% dan Tb = 50%. Sedangkan utuk analisis hidrograf alirannya model Snyder memiliki rerata penyimpangan = 75,595% model Clark memiliki rerata penyimpangan = 334,533% dan GAMA I memiliki rerata penyimpangan = 56,0922%. Hasil tersebut menunjukkan bahwa ketiga model memiliki penyimpangan yang relatif besar terhadap hidrograf satuan utamanya.

Dari perhitungan rerata penyimpangan hidrograf aliran ketiga model hidrograf satuan sintetik dapat ditentukan bahwa model hidrograf satuan sintetik GAMA I menghasilkan rerata penyimpangan terkecil dibanding dua modelainnya (Snyder dan Clark). Dari kedua tahap analisis tersebut ditetapkan bahwa GAMA I merupakan model yang paling mendekati hidrograf satuan utama jika dibanding model hidrograf

ABSTRACT

The present research entitled Analysis on Synthetic Unit Hydrograph of Sitelogo River Basin at Kajoran sub-district, Magelang regency, Central Java was aimed to analyze and identify the best-suited synthetic unit hydrographto apply in Sitelogo river basin. The research was carried out by developing models, and then those models were compared to main unit hydrograph based on 1999 field measurement.

Comparative analysis was performed on two stages. The first was to calculate and compare three unit hydrograph parameters (Tp, Qp and Tb) of three synthetic unit hydrograph to main unit hydrograph. Second stage was to develop direct runoff hydrograph of three synthetic unit hydrograph models and of the main unit hydrograph using rainfall data of July 3, 1999. Then, deviation percentage averages of the three synthetic direct runoff hydrograph were calculated. Through the two analysis stages, the best-suited synthetic unit hydrograph model to apply in Sitelogo river basin presumably was obtained by identifying smallest deviation percentage average on main unit hydrograph.

Based on analysis result of the three hydrographic unit parameters (Tp, Qp and Tb), deviation of Tp = 60%, Qp = 11.75% and Tb = 55.6% were detected in Snyder model. While in Clark model, deviation of Tp = 50%, Qp = 68.95% and Tb = 238.9% were found. In GAMA I model, it was detected deviation of Tp = 50%, Qp = 57.25% and Tb = 50%. Based on direct runoff hydrograph analysis, deviation averages of Snyder, Clark and GAMA I model were 75.595%, 334.533% and 56,0922%, respectively. These results indicated relatively higher deviation toward main unit hydrograph in the three models.

By calculating deviation averages of direct runoff hydrograph in the three models of synthetic unit hydrograph, it was found that GAMA I model provided smallest deviationaverage compared two others models (Snyder and Clark). Based on the two analysis, it was showed that GAMA I was the closest model to main unit hydrograph compared to Snyder and Clark models.