

Abstrak

Sungai Ciliwung merupakan sungai yang memiliki dampak besar ketika musim hujan dengan banjir yang sering terjadi karena sungai ini mengalir melalui tengah Kota Jakarta dan menlintasi banyak pemukiman penduduk dan salah satunya pada daerah Kampung Pulo Kecamatan Jatinegara. Pada tahun 2017, Kementrian Pekerjaan Umum dan Perumahan Rakyat (PUPR) bekerja sama dengan Balai Besar Wilayah Sungai Ciliwung Cisadane (BBWSCC) telah melakukan Normalisasi Sungai Ciliwung sebagai solusi banjir di daerah Kampung Pulo. Tujuan dari penelitian ini untuk mengidentifikasi terjadinya banjir di Normalisasi Sungai Ciliwung Kecamatan Jatinegara daerah Kampung Pulo. Dengan alur penelitian dimulai dengan analisis pemilihan data curah hujan tahunan maksimum, analisis curah hujan kawasan DAS dengan poligon Thiessen, analisis frekuensi, uji Chi-Square serta uji Kolmogorov-Smirnov, analisis curah hujan rencana kala ulang (2, 5, 10, 20, 50, dan 100 tahun), dan analisis debit rencana kala ulang (2, 5, 10, 20, 50, dan 100 tahun) dengan Metode Hasper, Melchior serta HSS Nakayasu dilanjutkan dengan analisis tinggi muka air banjir dengan aplikasi HEC-RAS. Diperoleh debit banjir rencana ialah Metode HSS-Nakayasu sebesar $Q_2 = 359.3424 \text{ m}^3/\text{detik}$, $Q_5 = 408.997 \text{ m}^3/\text{detik}$, $Q_{10} = 440.0314 \text{ m}^3/\text{detik}$, $Q_{20} = 464.715 \text{ m}^3/\text{detik}$, $Q_{50} = 504.878 \text{ m}^3/\text{detik}$, dan $Q_{100} = 531.4966 \text{ m}^3/\text{detik}$ dari hasil perhitungan, dengan Normalisasi Sungai Ciliwung daerah kampung pulo pada analisis tinggi muka air aplikasi HEC-RAS di dapatkan hasil mampu menampung ketinggian muka air debit banjir rencana.

Kata kunci: Analisis Banjir, HEC-RAS, Normalisasi Sungai Ciliwung, Kampung Pulo

Abstract

Ciliwung River is a river that has a big impact during the rainy season with frequent floods because this river flows through the middle of Jakarta City and crosses many residential areas and one of them is in the Kampung Pulo area of Jatinegara District. In 2017, the Ministry of Public Works and Public Housing (PUPR) in collaboration with the Ciliwung Cisadane River Basin Agency (BBWSCC) has normalized the Ciliwung River as a flood solution in Kampung Pulo. The purpose of this study was to identify the occurrence of flooding in the Normalization of the Ciliwung River, Jatinegara District, Kampung Pulo area. With the research flow starting with the analysis of the selection of maximum annual rainfall data, rainfall analysis of watershed areas with Thiessen polygons, frequency analysis, Chi-Square test and Kolmogorov-Smirnov test, rainfall analysis of the recurring plan (2, 5, 10, 20, 50, and 100 years), and the discharge analysis of the recurring plan (2, 5, 10, 20, 50, and 100 years) with the Hasper, Melchior and HSS Nakayasu methods was followed by analysis of the floodwater level with the HEC-RAS application. The plan flood discharge obtained is the HSS-Nakayasu Method of $Q_2 = 359.3424 \text{ m}^3/\text{sec}$, $Q_5 = 408,997 \text{ m}^3/\text{sec}$, $Q_{10} = 440.0314 \text{ m}^3/\text{sec}$, $Q_{20} = 464,715 \text{ m}^3/\text{sec}$, $Q_{50} = 504,878 \text{ m}^3/\text{sec}$, and $Q_{100} = 531.4966 \text{ m}^3/\text{sec}$ from the calculation results, with the Normalization of the Ciliwung River in the Pulo village area on the water level analysis of the HEC-RAS application, the results were able to accommodate the flood water level of the planned flood.

Keywords: Flood Analysis, HEC-RAS, Normalization of Ciliwung River, Kampung Pulo