

APLIKASI SISTEM POLDER UNTUK MENANGGULANGI BANJIR DI JALAN SILIWANGI KOTA TASIKMALAYA

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ABSTRAK

Jalan Siliwangi berlokasi di Kelurahan Kahuripan, Kecamatan Tawang, Kota Tasikmalaya. Jalan Siliwangi ini mempunyai permasalahan pada sistem saluran drainase terutama dimensi saluran yang tidak dapat menampung debit limpasan ketika intensitas curah hujan tinggi dengan rentang 50 – 100 mm/hari. Saluran pembuang dari Jalan Siliwangi tersebut masuk ke saluran Irigasi Cimulu. Tingginya curah hujan dan permasalahan sistem drainase tersebut berpotensi dapat mengakibatkan banjir. Salah satu metode yang dapat digunakan dalam upaya penanganan banjir di Kawasan Jalan Siliwangi dilakukan dengan menerapkan sistem polder. Pemodelan yang digunakan untuk membantu dalam analisis sistem drainase dan sistem polder yaitu *software* EPA SWMM 5.2. Hasil dari simulasi menggunakan *software* EPA SWMM 5.2 dengan periode ulang hujan 5 tahun, terdapat beberapa saluran yang *overflow* pada debit puncak maksimum jam ke-2 sebesar 2,06 m³/det. Sistem polder pertama diterapkan di Jalan Siliwangi tepatnya di perempatan BKR menggunakan box culvert berukuran 5 x 30 x 3 m ditambahkan 1 buah pompa berkapasitas 0,025 m³/det dengan lama pemompaan 6 jam. Sistem polder kedua diterapkan di Jalan Sindang Hurip tepatnya di area pesawahan dekat dengan saluran pembuang menggunakan kolam retensi berukuran 40 x 15 m dengan kedalaman 1,5 m ditambahkan 1 buah pompa berkapasitas 0,025 m³/det dengan lama pemompaan 6 jam. Sistem polder tersebut dapat menurunkan debit maksimum banjir yang masuk ke saluran irigasi Cimulu dari 0,49 m³/det menjadi 0,41 m³/det dengan efektifitas penurunannya sebesar 8%. Dilakukan juga redesain dimensi saluran di Kawasan Jalan Siliwangi agar saluran dititik banjir tidak terjadi *overflow*. Dengan diterapkannya kombinasi sistem drainase yaitu sistem polder dan redesain saluran, bisa menurunkan debit puncak maksimum pada jam ke-2 sebesar 1,70 m³/det.

Kata Kunci: Drainase, Banjir, Sistem Polder, EPA SWMM 5.2.

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APPLICATION OF POLDER SYSTEM TO OVERCOME FLOODING ON SILIWANGI ROAD IN TASIKMALAYA CITY

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ABSTRACT

Jalan Siliwangi is located in Kahuripan Village, Tawang Subdistrict, Tasikmalaya City. This location has problems in the drainage channel system, especially the channel dimensions that cannot accommodate the runoff discharge when the rainfall intensity is high with a range of 50 - 100 mm / day. This condition is exacerbated by the outlet into the Cimulu Irrigation channel. The high rainfall and drainage system problems have the potential to cause flooding. One method that can be used in flood management efforts in the Siliwangi Road Area is by implementing a polder system. The modeling used to assist in the analysis of drainage systems and polder systems is EPA SWMM 5.2 software. The results of the simulation using EPA SWMM 5.2 software with a 5-year rainfall return period, there are several channels that overflow at the maximum peak discharge of the 2nd hour of 2.06 m³/det. The first polder system was applied at Jalan Siliwangi, precisely at the BKR intersection, using a culvert box measuring 5 x 30 x 3 m and 1 pump with a capacity of 0.025 m³/det with a pumping time of 6 hours. The second polder system is applied on Sindang Hurip Road, precisely in the rice field area near the waster channel using a retention pond measuring 40 x 15 m with a depth of 1.5 m added 1 pump with a capacity of 0.025 m³/det with a pumping duration of 6 hours. The polder system can reduce the maximum flood discharge entering the Cimulu irrigation canal from 0.49 m³/det to 0.41 m³/det with an effective reduction of 8%. There was also a redesign of the channel dimensions in the Siliwangi Road area so that the channel at the flood point did not overflow. By applying a combination of drainage systems, namely the polder system and channel redesign, it can reduce the maximum peak discharge in the 2nd hour by 1.70 m³/det.

Keyword: Drainage, Flooding, Polder System, EPA SWMM 5.2

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