

ABSTRAK

Peningkatan kawasan terbangun pada Perumahan Graha Al-Furqan Kabupaten Jember menyebabkan berkurangnya area yang dapat meresapkan air dan meningkatkan limpasan permukaan saat hujan. Kondisi tersebut memerlukan perencanaan sistem drainase yang mampu mengendalikan limpasan dan mengurangi potensi genangan. Analisis dilakukan menggunakan data curah hujan, metode distribusi probabilitas, metode Rasional, serta perencanaan sumur resapan dan kolam tampung. Hasil analisis menunjukkan distribusi Normal memenuhi uji ChiKuadrat dan Smirnov-Kolmogorov dengan curah hujan rencana kala ulang 5 tahun sebesar 97,70 mm. Nilai koefisien limpasan komposit sebesar 0,553 menghasilkan debit rencana yang berbeda pada setiap subcatchment. Sumur resapan yang direncanakan berjumlah 19 unit pada Blok A, 17 unit pada Blok B, dan 8 unit pada Blok C, namun kapasitas resapannya belum mampu menangani seluruh limpasan selama durasi hujan 2 jam. Kolam tampung kemudian direncanakan satu unit pada setiap blok dengan total kapasitas 531,88 m³. Hasil tersebut menunjukkan bahwa kombinasi sumur resapan dan kolam tampung dapat menjadi alternatif pengelolaan limpasan pada kawasan perumahan.

ABSTRACT

The expansion of built-up areas in the Graha Al-Furqan Housing Complex, Jember Regency, has reduced water-permeable surfaces and increased surface runoff during rainfall. This situation necessitates the design of a drainage system capable of controlling runoff and mitigating the risk of inundation. The analysis utilized rainfall data, probability distribution methods, the Rational Method, and designs for infiltration wells and retention ponds. Results indicate that the Normal distribution satisfies both Chi-Square and Smirnov-Kolmogorov tests, yielding a design rainfall of 97.70 mm for a 5-year return period. A composite runoff coefficient of 0.553 resulted in varying design discharge rates across the sub-catchments. The planned infiltration wells—comprising 19 units in Block A, 17 in Block B, and 8 in Block C—were found to have insufficient infiltration capacity to manage the total runoff generated during a two-hour rainfall event. Consequently, a retention pond was designed for each block, providing a combined total capacity of 531.88 m³. These findings demonstrate that a combination of infiltration wells and retention ponds offers a viable alternative for runoff management in residential areas.