

PERENCANAAN BENDUNG IRIGASI TELUK EMBUN NAGARI PAUH KECAMATAN LUBUK SIKAPING KABUPATEN PASAMAN

NofiaTirenika, NazwarDjali, ZuhernaMizwar

Jurusan Teknik Sipil, Fakultas Teknik Sipil dan Perencanaan, Universitas Bung Hatta, Padang

Email :nikanofiatirenika@gmail.com, nazwardjali@yahoo.com, zuhernamizwar@bunghatta.ac.id

Abstrak

Kabupaten Pasaman memiliki potensi air dan kondisi geografis yang baik, sehingga pertanian sangat dikembangkan didaerah tersebut salah satunya tanaman padi. Di Kecamatan Lubuk Sikaping Kenagarian Pauh terdapat daerah Irigasi Teluk Embun yang menggunakan bangunan pengambilan bebas dengan kontruksi bronjong yang saat ini mengalami kerusakan akibat banjir bandang yang terjadi pada tahun 2018, untuk itu dilakukan perencanaan bendung tetap pasangan batu. Pada perencanaan bendung dilakukan analisa hidrologi, analisa debit rencana, hidrolis bendung, dan stabilitas bendung. Metode yang digunakan pada perhitungan curah hujan yaitu metode Gumbel, untuk debit rencana dengan metode Weduwen, bendung direncanakan dengan mercu tipe bulat dan peredam energi tipe bak tenggelam, serta pengecekan stabilitas terhadap guling, geser dan daya dukung tanah. Diperoleh luas DAS 7,9 Km², debit 50 tahun (Q50) 168,074 m³/dtk, lebar bendung 18 m, tinggi mercu bendung 1,90 m, dan tinggi energi (H1) 2,97 m. Sehingga dapat mengairi areal irigasi seluas 150 Ha. Stabilitas bendung kondisi air normal didapat angka keamanan terhadap guling 1,856, geser 1,711, dan daya dukung tanah 9,099 Ton/m² < 48,525 Ton/m². Pada kondisi air banjir didapat angka keamanan terhadap guling 1,500, geser 3,122 dan daya dukung tanah 14,875 Ton/m² < 48,525 Ton/m². Dari analisa stabilitas tersebut, bendung aman terhadap guling, geser dan daya dukung tanah.

Kata Kunci : bendung, hidrologi, hidrolis, DAS.

PLANNING OF TELUK EMBUN IRRIGATION WEIR OF PAUH IN LUBUK SIKAPING PASAMAN DISTRICT

NofiaTirenika, NazwarDjali, ZuhernaMizwar

Department of Civil Engineering, Faculty of Civil Engineering and Planning, Bung Hatta University, Padang

Email :nikanofiatirenika@gmail.com,
nazwardjali@yahoo.com,zuhernamizwar@bunghatta.ac.id

Abstract

Pasaman Regeency has a lot of water and good geographical conditions, so agriculture is very developed in the region, with rice being one of the most importants crops. There is a Teluk Embun Irrigation area in Lubuk Sikaping District Pauh that uses a Free Intake building with gabion construction that is currently experiencing damage due to Flash Floods that occurred in 2018, for this reason a fixed weir is used. Hydrological analysis, scheduled discharge analysis, weir hydraulics, and weir stability were all completed during the weir planning process. The Gumbel method is used to calculate rainfall, and the Weduwen method is used to plan the discharge, with a round type lighthouse and a sinking type energy damper, as well as checking the stability of rolling, shear, and soil bearing capacity. The basin area is 7.9 km², the discharge 50 years (Q50) is 168.074 m³/sec, the weir width is 18 m, the lighthouse weir is 1.90 m, and the high energy (H1) is 2.97 m. So that it can irrigate a 150 hectare irrigation area. In normal water conditions, the weir had a safety factor of 1.856 against rolling, 1.711 against shear, and a soil bearing capacity of 9.099 tonnes per m² < 48.525 tonnes/m². Rolling safety figures are 1,500, shear 3,122, and soil bearing capacity of 14,875 tonnes/m² < 48,525 tonnes/m² in flood water conditions. The weir is safe against rolling, shear, and soil bearing capacity, according to the stability analysis.

Keywords : weir, hydrology, hydraulic, catchment area.