

ABSTRACT

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The Ciujung irrigation area is located in Pamarayan District, Serang Regency, Banten, and consists of three agricultural regions: West, East, and North. The flow supplied by the Ciujung River is generally sufficient to irrigate all rice fields. However, in reality, the downstream part of this irrigation network frequently lacks water due to channel dimensions that do not meet the needs. The objectives of this study are to determine the irrigation water requirements, the dimensions of the irrigation channels, the channel structures, and the budget plan. Hydrological calculations are performed using the Modified Penman method, while hydraulic calculations are done using the Strickler method. The rainfall and climate data used for irrigation channel planning are based on a 10-year period. The cropping pattern used in the West Ciujung irrigation area is the Nedeco/Prosida superior variety, with planting starting in November. Maximum evapotranspiration occurs in September at 13.8 mm/day, and the maximum water requirement for land preparation is 10.40 mm/day. The design discharge for the entire western area is 26.6 m³/s, which is used for the design of the primary irrigation channel. The dimensions of the primary irrigation channel using the Strickler method are a bottom width of 9 m, a water surface height of 2.9 m, a bank height of 1 m, with a side slope of 1:1. Stability calculations show a stability factor for overturning of 2.4 (safe) and a sliding stability factor of 12.2 (safe). The budget for this irrigation network redesign is estimated at Rp. 354,718,900,000.

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