

ABSTRACT

ANALYSIS OF THE NEEDS OF IRRIGATION FACILITIES AND INFRASTRUCTURE IN WAY TEMBULIH WATERSHED IN NGARAS DISTRICT PESISIR BARAT REGENCY

By

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Analysis of water availability in previous research for irrigation water needs in the way Tembulih watershed, Ngaras District, West Coast Regency, has not sufficient the optimal land area of 216.76 ha of rice and crops. One form of effort in meeting the availability of water is to build facilities and infrastructure in the form of weirs and channels to drain water for agricultural purposes, and divide the water into rice fields or fields in an orderly manner and sufficient quantities. The purpose of this study is to obtain the need for irrigation water to achieve optimum planting index, as well as obtain the dimensions of weirs and irrigation networks.

The research was conducted with the technical stages of land water balance analysis using SWAT (Soil and Water Assessment and Tools) model, analysis of plant water needs, analysis of irrigation water needs, analysis of Mainstay discharge, analysis of irrigation water neraaca, analysis of Weir needs, and analysis of channel needs in the form of primary, secondary, tertiary and quaternary channels. The results showed that the potential of river water resources in Ngaras district can meet the water needs of rice and crops covering an area of 216.76 ha after the construction of irrigation facilities in the form of weirs, namely with the addition of release of 0.658 m³/sec. The result of Weir dimension analysis obtained width of 153.6 m, peak height of 9.39 m, base elevation of 300 meters above sea level, peak elevation of 350 meters above sea level, and retention pool or pool area of 9.5 Ha, with irrigation requirement of 1.38 m³/sec . Then the water is divided evenly throughout the agricultural area, the results of the dimensions of the primary channel with an area of 202 ha obtained channel cross-sectional area of 10.30 m², the largest secondary area of 54 ha obtained channel cross-sectional area of 3.56 m², the largest tertiary area of 23 ha obtained channel cross-sectional area of 1.82 m², the largest quaternary area of 14 ha obtained channel cross-sectional area of 1.17 m². To maximize irrigation infrastructure more fully need to be built up to the division of water gates or boxes for in order to facilitate the distribution of water evenly throughout the agricultural area.

Keywords: availability of irrigation water, irrigation water needs , channel dimensions, area.

ABSTRAK

ANALISIS KEBUTUHAN SARANA DAN PRASARANA IRIGASI PADA DAS WAY TEMBULIH DI KECAMATAN NGARAS KABUPATEN PESISIR BARAT

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Analisis ketersediaan air pada penelitian sebelumnya untuk kebutuhan air irigasi pada DAS Way Tembulih Kecamatan Ngaras Kabupaten Pesisir Barat belum mencukupi luas lahan optimal seluas 216,76 ha padi dan palawija. Salah satu bentuk upaya dalam memenuhi ketersediaan air tersebut yaitu dengan membangun sarana dan prasarana berupa bangunan bendung dan saluran-saluran untuk mengalirkan air guna keperluan pertanian, dan membagi-bagi air ke sawah-sawah dengan cara teratur dan jumlah yang cukup. Tujuan dari penelitian ini adalah Memperoleh kebutuhan air irigasi untuk mencapai indeks pertanaman optimum, serta mendapatkan dimensi bendung dan jaringan irigasi.

Penelitian dilakukan dengan tahapan teknik analisis neraca air lahan menggunakan model SWAT (*Soil and Water Assessment and Tools*), analisis kebutuhan air tanaman, analisis kebutuhan air irigasi, analisis debit andalan, analisis neraca air irigasi, analisis kebutuhan bendung, dan analisis kebutuhan saluran berupa saluran primer, sekunder, tersier dan kuarter. Hasil penelitian menunjukkan bahwa potensi sumber daya air sungai di Kecamatan Ngaras dapat mencukupi kebutuhan air tanaman padi dan palawija seluas 216,76 ha setelah dibangunnya sarana irigasi berupa bendung, yaitu dengan penambahan release sebesar 0,658 m³/det. Hasil analisis dimensi bendung didapatkan lebar sebesar 153,6 m, ketinggian puncak 9.39 m, elevasi dasar 300 mdpl, elevasi puncak 350 mdpl, dan kolam retensi atau luas genangan sebesar 9.5 Ha, dengan kebutuhan irigasi sebesar 1,38 m³/det. Kemudian air tersebut dibagi secara merata keseluruh areal pertanian oleh jaringan irigasi primer, sekunder, tersier dan kuarter. Hasil dimensi saluran primer dengan luas 202 ha diperoleh luas penampang saluran 10,30 m², sekunder luas terbesarnya 54 ha diperoleh luas penampang saluran 3,56 m², tersier luas terbesarnya 23 ha diperoleh luas penampang saluran 1,82 m², kuarter luas terbesar 14 ha diperoleh luas penampang saluran 1,17 m². Untuk memaksimalkan prasarana irigasi lebih lengkap lagi perlu dibangun sampai ke pembagian pintu-pintu air atau boks-boks bagi dan agar dapat mempermudah pembagian air secara merata ke seluruh areal pertanian.

Kata Kunci: Ketersediaan air irigasi, kebutuhan air irigasi, dimensi saluran, luas.