

INTISARI

Daerah Irigasi (DI) Cokrobedog dan DI Gamping merupakan kewenangan Dinas Pekerjaan Umum Perumahan Energi Sumber Daya Mineral Daerah Istimewa Yogyakarta (DPUPESDM DIY). DI Cokrobedog memiliki luas layanan 143,51 ha dan DI Gamping memiliki luas layanan 116,24 ha. Kedua DI memanfaatkan aliran Sungai Bedog untuk memenuhi kebutuhan air irigasi. Permasalahan yang muncul di DI Cokrobedog dan DI Gamping adalah terjadinya kekurangan air di petak bagian hilir. Kekurangan air tersebut tidak sesuai dengan surat keputusan (SK) Gubernur DIY yang menyebutkan kebutuhan air di DI Cokrobedog dan DI Gamping lebih rendah dibandingkan dengan debit andalan. Penelitian ini bertujuan untuk mengetahui ketersediaan air, mengetahui nilai efisiensi saluran dan mengevaluasi kebutuhan air DI Cokrobedog dan DI Gamping.

Penelitian dilakukan dengan membandingkan debit andalan dan debit sungai tahun 2019-2022, melakukan analisis efisiensi dan kehilangan air di jaringan irigasi, serta melakukan evaluasi kebutuhan air hasil perhitungan dan kebutuhan air SK Gubernur DIY. Perhitungan efisiensi dilakukan dengan pengukuran langsung di lapangan. Debit andalan Q_{80} dan curah hujan R_{80} dianalisis menggunakan metode *Weibull*. Evapotranspirasi dihitung menggunakan metode Penman Modifikasi. Selanjutnya perhitungan kebutuhan air dilakukan berdasarkan dengan Standar Perencanaan Irigasi KP-01.

Hasil penelitian menunjukkan ketersediaan air di Bendung Cokrobedog dan Bendung Gamping sepanjang tahun 2019 sampai tahun 2022 sangat cukup untuk memenuhi kebutuhan irigasi. Nilai efisiensi total untuk DI Cokrobedog adalah 23,58% dan DI Gamping adalah 16,50%. Efisiensi saluran terendah DI Cokrobedog ada di saluran primer yaitu 29,85% dan efisiensi terendah di DI Gamping ada di saluran sekunder kanan yaitu 12,58%. Evaluasi kebutuhan air irigasi total menunjukkan kebutuhan air irigasi total hasil perhitungan lebih tinggi daripada kebutuhan air menurut SK Gubernur DI Yogyakarta. Faktor yang paling berpengaruh dalam peningkatan jumlah kebutuhan air adalah efisiensi jaringan irigasi. Upaya untuk menghindari kekurangan air di petak bagian hilir dapat dilakukan dengan menertibkan penyadapan liar di sepanjang saluran dan memperbaiki kerusakan saluran untuk meningkatkan efisiensi saluran. Selain itu, pemberian air perlu diperhatikan dan disesuaikan dengan kebutuhan masing-masing lahan.

Kata kunci: irigasi, efisiensi, kebutuhan air, evaluasi.

ABSTRACT

The Cokrobedog and Gamping Irrigation Areas are under the authority of the Department of Public Works, Housing, Energy, and Mineral Resources Special Region Of Yogyakarta (DPUPESDM DIY). Cokrobedog Irrigation Area has a service area of 143.51 ha, and Gamping Irrigation Area has a service area of 116.24 ha. Both irrigation areas utilize water from the Bedog River to fulfill irrigation water requirements. The problem that arises in Cokrobedog and Gamping Irrigation Areas is the occurrence of water shortages in the downstream areas. The water shortage is not in accordance with the decree of the Governor of DIY, which states that water requirements in Cokrobedog and Gamping Irrigation Area are lower than dependable flow. This study aims to determine water availability, determine the channel efficiency and evaluate water requirements in Cokrobedog and Gamping Irrigation Areas.

This study is conducted by comparing the dependable flow and river discharge in 2019-2022, analyzing efficiency and water loss in irrigation networks, and evaluating water requirements based on calculations and water requirements of the Governor's Decree of Yogyakarta. Efficiency calculations are carried out by direct measurement in the field. Dependable flow Q_{80} and rainfall R_{80} were analyzed using the Weibull method. Evapotranspiration were analyzed using the Modified Penman method. Furthermore, the water requirements will be calculated based on the Irrigation Planning Standard KP-01.

The results showed that water availability in the Cokrobedog and Gamping weirs from 2019 to 2022 was sufficient to fulfill irrigation requirements. The total efficiency for Cokrobedog Irrigation Area is 23.58%, and Gamping Irrigation Area is 16.50%. The lowest channel efficiency in Cokrobedog Irrigation Area is in the primary channel at 29.85%, and the lowest efficiency in Gamping Irrigation Area is in the right secondary channel at 12.58%. The evaluation of total irrigation water requirements shows that the total irrigation water requirements of the calculation results are higher than the water requirements of the Governor's Decree of Yogyakarta. The most influential factor in increasing the amount of water demand is efficiency of irrigation networks. Efforts to avoid water shortages in downstream areas can be made by prohibiting illegal tapping along the channel and repairing channel damage to improve channel efficiency. In addition, water distribution need to be considered and adjusted to the needs of each field.

Keywords: irrigation, efficiency, water requirements, evaluation.