

INTISARI

Waduk Wonogiri merupakan infrastruktur penting di Wilayah Sungai Bengawan Solo Hulu yang berfungsi sebagai penyedia air baku, pengendali banjir, dan sumber energi listrik melalui PLTA. Namun, permasalahan sedimentasi Waduk Wonogiri mengancam kapasitas tampungan waduk, sehingga mengurangi umur rencana dan efektivitas pengelolaannya. Pembangunan *closure dike* sebagai solusi pengendalian sedimentasi memisahkan waduk menjadi *main reservoir* dan *sediment storage reservoir* guna mempertahankan kapasitas utama dan melindungi *intake* air baku.

Penelitian ini mengkaji ketersediaan air baku di Waduk Wonogiri dengan menggunakan dua metode yaitu F.J. Mock dan NRECA, yang diaplikasikan pada data hidrologi dan klimatologi selama 10 tahun terakhir. Selain itu, penelitian mengevaluasi pelaksanaan konstruksi *closure dike* dan dampaknya terhadap kapasitas tampungan waduk serta sedimentasi di sekitar intake.

Hasil analisis menunjukkan debit andalan Q80% sebesar sekitar 33,27 & 36,11 m³/detik, dengan pengurangan volume tampungan akibat sedimentasi mencapai sekitar 388.000 m³. Volume timbunan untuk *closure dike* A tercatat 121.033 m³ dengan estimasi durasi pekerjaan selama 171 hari. Kesimpulan menegaskan efektivitas metode analisis dan peran krusial *closure dike* dalam mitigasi sedimentasi, sekaligus pentingnya *monitoring* dan pengembangan pola operasi waduk untuk menjaga ketersediaan air baku dan kelangsungan fungsi Waduk Wonogiri.

Kata Kunci : Ketersediaan air, *closure dike*, F.J Mock, NRECA, Timbunan.

ABSTRACT

The Wonogiri Reservoir is an important infrastructure in the Upper Bengawan Solo River Basin, serving as a source of raw water, flood control, and electricity through a hydroelectric power plant. However, Wonogiri Reservoir sedimentation problems threatens the reservoir's storage capacity, reducing its planned lifespan and management effectiveness. The construction of a closure dike as a sediment control solution divides the reservoir into a main reservoir and a sediment storage reservoir to maintain the main capacity and protect the raw water intake.

This study examines the availability of raw water in Wonogiri Reservoir using two methods, F.J. Mock and NRECA, applied to hydrological and climatological data over the past 10 years. Additionally, the study evaluates the construction of the closure dike and its impact on reservoir storage capacity and sedimentation around the intake.

Analysis results indicate a reliable flow rate ($Q_{80\%}$) of approximately 33.27 and 36.11 m^3/s , with sedimentation-induced storage volume reduction reaching approximately 388,000 m^3 . The volume of fill material for closure dike A was recorded at 121,033 m^3 , with an estimated construction duration of 171 days. The conclusion emphasizes the effectiveness of the analysis method and the crucial role of closure dikes in sedimentation mitigation, as well as the importance of monitoring and developing reservoir operation patterns to ensure the availability of raw water and the sustainability of the Wonogiri Reservoir's functions.

Keywords :water availability, closure dike, F.Mock, NRECA, Embankment