

## INTISARI

Waduk Serbaguna Wonogiri mengalami sedimentasi dengan laju sedimentasi rata-rata 3,18 juta m<sup>3</sup>/tahun. Volume tampungan total Waduk Serbaguna Wonogiri pada tahun 1980 adalah 560 juta m<sup>3</sup> dan tahun 2023 hanya tersisa 364,63 juta m<sup>3</sup> atau berkurang 34,89% dari tampungan awalnya. Kemudian dengan kondisi laju sedimentasi yang terus meningkat, dibangun *closure dike* yang memisahkan tampungan waduk menjadi main reservoir (MR) dan *sediment storage reservoir* (SSR).

Penelitian ini dilakukan untuk menganalisis manajemen pengendalian sedimentasi di Waduk Serbaguna Wonogiri pada kondisi setelah dibangun *closure dike*. Kemudian membuat alternatif simulasi pengendalian sedimen yang digunakan untuk mengetahui nilai manfaat waduk dengan mempertimbangkan aspek teknis dan non-teknis, serta nilai ekonominya. Analisis ekonomi dihitung menggunakan metode *Benefit Cost Ratio* (B/C) dan *Net Benefit* (B-C), kemudian dilakukan penilaian menggunakan metode *Simple Additive Weighting* (SAW) untuk mempertimbangkan pemilihan alternatif.

Setelah dibangun *closure dike* dan pengoperasian *sediment storage reservoir* (SSR), laju sedimentasi pada MR waduk berkurang menjadi 1,65 juta m<sup>3</sup>/tahun. Hal tersebut kemudian dibuat enam (6) alternatif pengendalian sedimen dengan nilai B/C >1 dimana alternatif 1 adalah alternatif yang paling layak secara ekonomi dengan nilai B/C 1,79 (>1). Sedangkan alternatif 6 menghasilkan penambahan usia guna waduk paling optimal, yaitu 17 tahun. Jika dinilai dari aspek teknis dan non-teknis menggunakan metode *Simple Additive Weighting* (SAW), maka alternatif 6 paling layak dilaksanakan dibandingkan alternatif lainnya.

**Kata kunci:** analisis ekonomi, *closure dike*, pengerukan sedimen, sedimentasi waduk, Waduk Serbaguna Wonogiri.

## ***ABSTRACT***

The Wonogiri Reservoir is experiencing sedimentation with an average sedimentation rate of 3,18 million m<sup>3</sup>/year. The gross storage volume of the Wonogiri Reservoir in 1980 was 560 million m<sup>3</sup> and in 2023 only 364,63 million m<sup>3</sup> remained or decreased by 34,89% from its initial storage. Then, with the condition that sedimentation rate continuing to increase, a closure dike was built to separate the reservoir into the main reservoir (MR) and sediment storage reservoir (SSR).

This study was conducted to analyze sedimentation control management in the Wonogiri Reservoir under conditions after the closure dike was built. Then create alternatives sediment control simulation used to determine the value of the reservoir benefits by considering technical and non-technical aspects, as well as its economic value. The economic analysis is calculated using the Benefit Cost Ratio (B/C) and Net Benefit (B-C) methods, then an assessment is made using the Simple Additive Weighting (SAW) method to consider alternative selection.

After the construction of the closure dike and the sediment storage reservoir (SSR) was operated, the sedimentation rate in the main reservoir (MR) reservoir was reduced to 1,65 million m<sup>3</sup>/year. Then six sediment control alternatives were made with a B/C value >1 where alternative 1 is the most economically feasible with a B/C value of 1,79 (>1). Meanwhile, alternative 6 resulted the most optimal increase in the useful life of the reservoir, which is 17 years. When assessed from the technical and non-technical aspects using the Simple Additive Weighting (SAW) method, alternative 4 was the most feasible to implement compared to other alternatives.

**Keywords:** economic analysis, closure dike, sediment removal, reservoir sedimentation, Wonogiri Multipurpose Reservoir.