

PREDIKSI SEDIMENTASI WADUK WONOGIRI MELALUI ANGKUTAN SEDIMEN DI SUNGAI

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7861/PS/MPBA/01

telah dipertahankan di depan Dewan Penguji
pada tanggal 29 Januari 2003

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ABSTRACT

The Wonogiri dam which has 730 million cubic meters of total storage, 90 square kilometers of water area, and 1260 square kilometers of catchments area, is located in the Wonogiri regency, Central Java province. It was first established in 1981 and began its operation in 1982 with expectation that it would last for about 100 years. Today (2002) the dam has get a serious problem of sedimentation. It is so large that it would decrease the capacity storage of the dam and would shorten the length of operation. Therefore, it is necessary to predict the sediment that comes into the dam. The research would be based on the total sediment calculation of the sedimentation, through some methods, such as *echo sounding* measured data, land erosion (*USLE*), the calculation of the sediment in rivers.

This research calculates the sediment capacities based on the water flow data and the sediment rating curves in rivers ; Keduang, Tirtomoyo, Temon, upstream reach of Bengawan Solo, Alang, and Wuryantoro. The suspended load, is calculated based on the sediment rating curves, where as the bed load is computed as the percentage of the suspended load according to Maddock. The sum of both calculation results would be the total sediment.

The calculation result shows that the total sediment which has come into the dam is 6.68 million cubic meters per year. As a comparison the writer noted that the former researcher using *echosounding* method done by the Faculty of Geography of the Gadjah Mada University in 1985 found (that the total sediment capacity which came into the dam was) 6.60 million cubic meters per year or 5.40 mm per year of sheet erosion. The other research using *echosounding* method done by *JICA* in 2000 found (that the total sediment which had come into the dam was) 4.50 million cubic meters per year or 3.50 mm per year of sheet erosion. Knowing the results of calculation of the total sediment, we can learn that different methods provide different results and it is still uncertain which one is true.

Key Words : sediment, Wonogiri Dam, sediment capacity in rivers