

**KAJIAN SEDIMENTASI WADUK IR. H. DJUANDA,  
JATILUHUR, KABUPATEN PURWAKARTA,  
PROVINSI JAWA BARAT**

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Telah dipertahankan di depan Dewan Penguji  
Pada tanggal 14 April 2011

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**ABSTRACT**

Based on 2009 *echosounding*, average sedimentation in reservoir was 20 million m<sup>3</sup>/year (1995 - 2009), larger than initial design that requires a study using other methods for comparison. One of the methods is *USLE* that calculates erosion in *catchment area*, and *suspended load* in *outlets of* Cirata and Ir.H.Djuanda reservoirs. The objective of this study was to analyze and study the erosion, *Sediment Delivery Ratio (SDR)* value and reservoir sedimentation in 1997 and 2009, and to study the sediment compactness and the reservoir service life.

Calculation of *suspended load* from the *outlet* of Cirata and Ir.H.Djuanda reservoirs taken from 1995 to 2000 was carried out by calculating the *TDS and TSS* values or the concentration of water sample. Erosion was calculated by overlaying the maps of erosivity, soil type, slope class and land-use management have become the map of land unit using the *Arc GIS Software*. Calculation of erosion for each land unit was carried out using the *USLE* method in order to obtain annual erosion rate in the *catchment area of* Ir.H.Djuanda reservoir. The 1997 erosion was compared to 2009 *echosounding* data in order to obtain the *SDR* value. The values of erosion and *SDR* were used to predict the 2009 sedimentation volume and to analyze the compactness and the reservoir service life using the *dead storage* method.

Results of this study showed that based on *suspended load* from *outlets of* Cirata and Ir.H.Djuanda reservoirs from 1995 to 2009, the reservoir sedimentation average about 0,41 m<sup>3</sup>/year. Based on 1997 and 2009 land-use maps, the erosion values were 8,72 mm/year and 12,71 mm/year, respectively. The *SDR* values in catchment area of Ir. H. Djuanda reservoir were about 0,47. The *SDR* value 0,47 was used to predict the reservoir sedimentation from land erosion with volume result of 20.533.040 m<sup>3</sup>. Predicted calculation on reservoir sedimentation in 2000 to 2009 from land erosion and outlet Cirata reservoir based on this study was only 24.223.040 m<sup>3</sup>. Having the reservoir classified as type 2 reservoir and based on the analysis of the sediment granule size, it was identified that the sediment materials were 3% sand, 46% silt, and 51% clay, and dry volume weight in the first year was 972,6 kg/m<sup>3</sup>. The reservoir service life calculation using the *dead storage* method, starting from 2009 (the 45th year), showed that Ir. H. Djuanda reservoir service life was 197 years ahead. Then, sediment control was carried out using vegetative means with 50% success level and additional service life from 18 years to 215 ahead.

**Keywords :** *Erosion, SDR, Sediment and sediment compaction of the reservoir, useful life of the reservoir*