

Prediksi Usia Layanan Waduk Cirata, Jawa Barat akibat sedimentasi dengan metode kapasitas tampungan mati (*Dead Storage Method*) dan Distribusi Sedimen (*The Empirical Area Reduction method*)

Dewi Actafia L. Hutagaol (2013-21-084)

di bawah bimbingan Ir. Donny Marnanto., Dipl.HE

ABSTRAK

Waduk Cirata berada di Desa Tegal Waru, Kabupaten Purwakarta, Jawa Barat merupakan salah satu bagian dari 3 (tiga) waduk besar kaskade Citarum, yaitu waduk Saguling dibagian hulu dan Waduk Juanda dibagian hilirnya. Waduk Cirata dioperasikan tahun 1988 untuk pembangkitan energi listrik, dengan kapasitas daya terpasang 1008 MW. Waduk Cirata dengan PLTA nya sebagai unit pembangkit yang berperan dalam penyediaan energi listrik melalui sistim interkoneksi Jawa Bali – Madura. Waduk Cirata direncanakan dengan usia layanan 100 tahun. Melihat kondisi Waduk Cirata dari masa pengoperasian sampai saat ini, waduk sudah mengalami penurunan kapasitas tampungan akibat dari sedimen. Dilakukan penelitian menggunakan data pemeruman dari PT PJB BPWC yang bertujuan untuk memprediksi usia layanan Waduk Cirata akibat sedimentasi dengan metode kapasitas tampungan mati (*dead storage method*) dan Distribusi Sedimen (*The Empirical Area Reduction method*). Berdasarkan hasil prediksi dengan laju sedimentasi $3.663 \text{ m}^3/\text{tahun}$ maka usia layanan dengan metode kapasitas tampungan mati (*dead storage method*) adalah 109 tahun dan usia layanan berdasarkan Distribusi Sedimen (*The Empirical Area Reduction method*) adalah 282 tahun.

Kata Kunci : Waduk, Sedimentasi, Usia Layanan, kapasitas tampungan mati (*dead storage method*), Distribusi Sedimen (*The Empirical Area Reduction method*)

Life Time Prediction of Cirata Reservoir, West Java due to the Sedimentation
with Dead Storage Method and The Empirical Area Reduction Method

Dewi Actafia L. Hutagaol (2013-21-084)

Under the Guidance of Ir. Donny Marnanto., Dipl.HE

ABSTRACT

Cirata reservoir is located in Tegal Waru Village, Purwakarta Regency, West Java which is a part of 3 (three) large reservoirs of Citarum cascade, besides Saguling reservoir upstream and Juanda Reservoir downstream. The Cirata Reservoir was operated since 1988 for power generation, with 1008 MW of power capacity. Cirata Reservoir with hydroelectric power plant has a big role in the provision of electrical energy through the Java Bali - Madura interconnection system. Life Time of Cirata Reservoir is planned until 100 years. Looking the condition of Cirata Reservoir from the first operation until now, the reservoir was taking down of storage capacity caused by the sedimentation. This research used data from PT PJB BPWC in order to life time predict of Cirata reservoir due to the sedimentation with dead storage method and the Empirical Area Reduction method. Based on the prediction result with sedimentation rate $3,663 \text{ m}^3/\text{year}$, so the life time prediction based on dead storage method is 109 years and life time prediction based on the Empirical Area Reduction method is 282 years.

Keywords : Reservoir, Sedimentation, Life Time Dead Storage Method, Sediment Distribution (The Empirical Area Reduction method)