# PENGENDALIAN BANJIR DENGAN USAHA KONSERVASI AIR UNTUK DAS CIKALONG KOTA CIREBON

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**10/309640/PTK/7188**

Telah dipertahankan di depan Dewan Penguji
Pada tanggal 11 April 2012

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## ABSTRACT

Overflow of water on the Cikalong River is a cause of flooding each year on settlements and agricultural areas in the southern of Cirebon City. Various flood control efforts have been made physically or structural such as elevation levees, dredging or normalization, but the concept of water conservation efforts have not been applied. The concept of flood control based on water conservation in watershed land is intercept, retain, and increase infiltration of runoff from upstream to downstream to reduce the discharge and the number of overflow locations in the river.

Hydraulics and hydrology analysis are used in this study to simulate the existing condition and flood control alternatives based on water conservation concept. There are four alternatives which are simulated in this study : land use changing to be in accordance to Cirebon City's Masterplan (RTRW) 2010-2030 (Simulation 1), utilizing recharge system (Simulation 2) by three methods of calculation, Method I convert the value of drainage coefficient C to CN to calculate losses, Method II assumes the same percentage reduction of flood discharge with an annual percentage increase in the volume of infiltration, Method III uses the assumption that same as Method II but calculated at each flood event, combining Method I and land use changing of 75% area of the grass to conservation forest (Simulation 3), utilizing pond with capacity of 490 000 $m^3$ and an area of 7 ha in the watershed upstream (Simulation 4).

Simulation results showed a successful reduction of the number of overflow locations Cikalong River at each return period. In the 50 years return period design flood, Simulation 1 reduce the amount of overflow locations of 52.04%, Simulation 2 Method I by 38.78%, 31.63% for Method II, Method III of 28.57%, 41.84% for Simulation 3 and Simulation 4 amounting to 15.31%.

**Keywords**:
land use changes, recharge system, ponds.