Geophysical Research Abstracts, Vol. 5, 09293, 2003

A MULTICRITERIA APPROACH FOR THE SUSTAINABLE MANAGEMENT OF THE PLASTIRAS RESERVOIR, GREECE

A. Efstratiadis (1), D. Koutsoyiannis (1), K. Hadjibiros (1), A. Andreadakis (1), A. Stamou (1), A. Katsiri (1), G.-F. Sargentis (1), A. Christofides (1)

(1) Department of Water Resources, School of Civil Engineering, National Technical University of Athens, Greece (andreas@itia.ntua.gr /Fax: +30 210 7722832)

The Plastiras reservoir, sited in Western Thessaly, Greece, is a multipurpose project used for irrigation, water supply, hydropower, and recreation; the importance of the latter is continuously increasing as the reservoir landscape becomes attractive to tourists. These uses are competitive and result in a particularly complex problem of water management. Recently, a multidisciplinary analysis was attempted, aiming at determining a rational and sustainable management policy for the Plastiras Lake. This consists of establishing a minimum allowable water level for abstractions, in addition to a proper release policy. Until now, the reservoir level has had a 16 m fluctuation range, affecting negatively both the landscape, due to the exposure of the dead (no-vegetation) zone and the water quality. Three types of analyses were employed, to determine the variation of the corresponding criteria as a function of the allowable minimum level. The first one was the annual safe yield for various reliability levels, derived through a stochastic simulation model for the reservoir operation. The second criterion was the average summer concentration of chlorophyll-a (as indicator of the eutrophic regime of the lake), estimated through a one-dimensional eutrophication model. The final criterion was the aesthetics of the landscape; the relative study was focused on the effects of level variation and determined five fluctuation zones to characterise the quality of the landscape. After multiobjective analysis, and in cooperation with the local authorities and the public, a specific value of the minimum allowable level and a release policy were selected, which are currently on the way to be formally legislated.