Environmental Engineering and Management Journal xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
http://www.eemj.icpm.tuiasi.ro/; http://www.eemj.eu

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PHYSICAL STATUS OF TORRENT CONTROL STRUCTURES IN ROMANIA

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Abstract

Torrential watershed management actions should be integrated and their results designed to last for a long time. In Romania and in other countries, these actions cover the entire area of the watershed (slopes, banks, and riverbeds). They consist of complex sets of structural and non-structural measures and works designed to control runoffs and erosion, protect social-economic objectives and improve degraded lands.

The most vulnerable structures are the hydrotechnical structures, which are placed on riverbeds in direct contact with torrential flows. Being limited by environmental factors (such as violent flash floods loaded with sediments and woody debris) and isolated conditions, these works should be monitored continuously and systematically. Research- focusing on the deficiencies uncovered during torrent control structure servicing led to a substantiated monitoring system based on repeated inventories (once every 5-10 years).

This paper presents the evolution of the physical states of 192 transverse structures between two successive inventories. It analyses the influence of some features (structure's age, initial condition rate, height, building materials) on a structure's condition rate variation. The results reveal the high influence of a structure's height on the annual decay of the structure. Due to the poor quality of building materials and improper technologies used after 2000, those structures have more damaged between inventories.

The functionality of torrent control structures is affected by various factors that cause unembedding, undermining, cracks, breaks, and abrasions. In order to improve the maintenance of these structures, a substantiated monitoring system is required, as well as a well-trained staff (designers and builders).

Keywords: failure mode, damages, dysfunctionalities, monitoring system, torrent control structures

Received: February, 2019; Revised final: November, 2019; Accepted: December, 2019

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