Desalination and Water Treatment
www.deswater.com

38 (2012) 389–394
January

doi: 10/5004/dwt.2012.3594

Taylor & Francis
Taylor & Francis Group

Investigation of stormwater runoff strength in an agricultural area, Korea

Sung Min Cha[a], Seung Won Lee[a], Lee-Hyung Kim[b], Kyung Suk Min[c], Seungyoon Lee[d], Joon Ha Kim[a,e,*]

[a]*School of Environmental Science and Engineering, Gwangju Institute of Science and Technology (GIST), Gwangju, 500-712, Korea*
[b]*Department of Civil and Environmental Engineering, Kongju National University, 275 Budaedong, Seobukgu, Cheonan, Chungnamdo 331-717, Korea*
[c]*Department of Environmental Engineering, Kyungpook National University, 1370 Sangyeok-dong, Buk-ku, Daegu 702-701, Korea*
[d]*K-water Institute, Korea Water Resources Corporation, Daejeon, 305-730, Korea*
[e]*Sustainable Water Resource Technology Center, GIST, Gwangju 500-712, Korea*
Tel. +82 62 970 3277; Fax: +82 62 970 2434; email: joonkim@gist.ac.kr

Received 14 October 2011; Accepted 24 December 2011

ABSTRACT

To manage and control the nonpoint source (NPS) pollution and to improve the water quality of impaired streams, rivers and lakes, practices including constructed wetlands, permeable pavement, swales and others are being attempted in the world. Before applying these techniques, an analysis of stormwater runoff characteristics should be understood due to the complexity in estimating system design factors for best management practices (BMPs). This study investigates the stormwater discharge from an agricultural area in Korea. Based on this investigation, pollutant and flow coefficient of variation (PFCoV) values were developed in an attempt to explain the stormwater runoff in the agricultural area. Four field studies categorized by rainfall type were then employed to assess the PFCoV values. The results show that the physical meaning of PFCoV values indicates the variation of NPS pollutants during a storm event. As such, this simple and meaningful result can be applied to a wide range of stormwater management designs or water quality controls in agricultural areas.

Keywords: Water quality management; Stormwater runoff; Agricultural area; Runoff strength; Coefficient of variation; Nonpoint source pollution

*Corresponding author.

First Academic Workshop on Non-point Source Pollution Research, 2011, Korea