



## Water quality changes according to the midstream weir construction in the Yeongsan River, Korea

Sung Min Cha<sup>a</sup>, Min-Ji Kang<sup>b</sup>, Yongeun Park<sup>a</sup>, Seung Won Lee<sup>a</sup>, Joon Ha Kim<sup>a,\*</sup>

<sup>a</sup>*School of Environmental Science Engineering, Gwangju Institute of Science Technology (GIST), Gwangju 500-712, South Korea, email: [joonkim@gist.ac.kr](mailto:joonkim@gist.ac.kr) (J.H. Kim)*

<sup>b</sup>*Water Environmental Research Department, National Institute of Environmental Research, Incheon 404-708, Republic of Korea*

Received 31 July 2013; Accepted 11 December 2013

---

### ABSTRACT

This paper describes the effects of weir construction on water quality in the Yeongsan (YS) River. In general, weirs affect aquatic environments of rivers and streams by interrupting natural water flow. To identify changes in water quality before and after weir construction, analysis of variance and autocorrelation tests were conducted on data from four monitoring stations. Seasonal variations in suspended solids (SS), biochemical oxygen demand (BOD<sub>5</sub>), chemical oxygen demand (COD), total nitrogen (TN), total phosphorus (TP), and pH were analyzed using data from six years of monitoring. No significant changes in mean BOD<sub>5</sub> or COD followed the construction of weirs. However, mean TN and TP were changed significantly during and after construction. Moreover, SS and pH changed significantly during construction, and TN and TP concentrations were slightly improved after weir construction. However, continuous monitoring and analysis of water quality changes in each weir are required to prevent environmental disasters such as algal blooms.

*Keywords:* Water quality change; Weir construction; Yeongsan River; ANOVA test

---

\*Corresponding author.

*Presented at the 16th International Conference on Diffuse Pollution and Eutrophication (DIPCON), 18–23 August 2013, Beijing, China*