

Study on effective combined sewer overflow monitoring method

Year of Research

2007・2008

(Purpose)

In 2003 enforcement ordinance of sewerage law was revised, in which quality standards of combined sewer overflow(CSO) were set technically for combined sewer system in case there was much influence of rain water. Based on it, it became mandatory to examine the quality of CSO to know if it meets the standards and to monitor the quality on rainy days once or more a year.

However, since monitoring research is time-consuming and expensive, this study focused on 1)an efficient way by establishing BOD presuming method converted from alternative water quality indicator and 2)an efficient way of using cumulative monitoring data to evaluate effects of combined sewer improvement by grasping relationship between features of CSO and influential factors.

(Results)

The followings are contents and results studied on.

(1) Study on efficient monitoring system

In order to select suitable monitors to apply on site experiments (measuring), information of monitors were collected and interviewed makers (manufacturers) about specification and performance and also past results and published research literatures were taken into account. Turbidimeter and UV meter were selected with considering how to set in storm overflow chamber or pump facilities.

Questionnaire survey was done on implementation of monitoring for cities participating in the liaison conference for sewerage technological development and analyzed it. In experience, there were many times of inoperative monitoring (success rate is 20 percent). It turned out that efficient sampling work was desired and it took about JPY300,000 - to conduct a research, as well.

(2) Analysis of water-quality monitoring results

It showed that the load of CSO was high when the total rainfall was small and that there was no definitive relationship with the number of precedence days without rainfall about relationship between rainfall characteristics (features) and CSO. As for relationship between river basin characteristics(features) and CSO, it taught that the less likely CSO is to occur (the more total rainfall to generate overflow we have), the more likely the average water quality(BOD) is to be low.(Figure-1)

Moreover, it was found that there was definitive correlation between CSO from storm overflow chamber (weir-height set) and the load of CSO in case the total rainfall is more than 30mm.

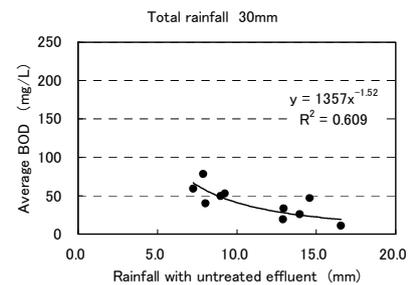


Fig 1 Example of relationship between rainfall with CSO and untreated average BOD

(Future schedule)

This study was carried out in the first year of the two-year program and Study on the above two subjects is carried out in the next year. Targets of the study are as followed;

- (1) To experiment monitor on the spot and to formulate an efficient program for monitoring.
- (2) To detect monitoring problems to be solved, to examine appropriate method and to examine it to reflect a combined sewer improvement plan.

Joint study: Liaison Conference for Sewerage Technological Development (Cities of Sapporo, Sendai, Saitama, Chiba, Tokyo, Kawasaki, Yokohama, Niigata, Shizuoka, Hamamatsu, Nagoya, Kyoto, Osaka, Sakai, Kobe, Hiroshima, Kitakyushu, Fukuoka, Japan Institute of Wastewater Engineering Technology)

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Key words

Combined sewer overflow control, Monitoring of CSO, BOD alternative indicator