

Study on reduction of pollutant loads from non-point source in urban area

Whole term

1993.8 ~ 1998.3

(Purpose)

Most of the lakes in Japan are important not only as drinking water sources but also as sightseeing and recreational spots. Therefore conservation of lake water quality is a very important issue. However, improvement of water quality is a difficult issue because lakes are closed water bodies.

While pollution load from households, factories and business establishments is decreasing due to ever increasing sewerage coverage, pollutants from the non-point sources such as surface deposit on road and roof is increasing as urbanization advances. Generally, these non-point source pollutants are washed off from urban areas into lakes mainly during the early phase of rainfall event. However investigation on the non-point pollution sources so far has been insufficient, and many issues, namely, characterization of pollutants, elucidation of runoff mechanisms etc. remain to be investigated. This hinders establishing efficient countermeasures.

The survey on runoff behavior of pollutants generated from non-point sources had been being conducted since FY1993, in following four prefectures that have representative lakes; Ibaraki, Chiba, Nagano and Shiga. This comprehensive investigation comprised formulation of survey methods, pollutant characterization, clarification of runoff mechanisms, prediction of runoff loads, and, finally, countermeasures for non-point source pollution.

This article reports the outline of 'the guideline to non-point pollution prevention in urban area (comprehension of actual situation, pollution predicting methods, and countermeasures)' summarized based on the results derived from the aforementioned studies.

(Results)

1. General Statement

The definition of non-point source, principles underlying the countermeasures and their applicability and the configuration of the guideline were summarized.

2. Collection of data

Data necessary for comprehension of runoff behavior and the methods to manipulate the collected data were outlined.

3. Survey of actual situation of non-point source pollution

The purpose of survey, selection of the survey spots, water quality parameters to be monitored, survey method, and method of interpretation of the observed results were summarized.

4. Prediction of runoff loads

Ways to comprehend actual runoff phenomena, methods for estimating stormwater runoff in case of separate sewer system, and runoff load prediction methods based on the regression formula and utilizing actual data, were summarized.

5. Countermeasures for non-point source pollution

Countermeasures for non-point source pollution in case of separate sewer system should be considered separately for each of the distinct runoff processes. In this study, stormwater runoff process was divided into following three phases; surface runoff, flow in stormwater sewer and flow from outlet chamber, and countermeasures specific to each of the phases of runoff were outlined.

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Keywords

countermeasure for pollution from non-point source, closed water body, survey of existing scenario, pollution load prediction