

Collaborative research for the use and application of runoff pollutant load model

Whole term

1997.12-1999.3

(Purpose)

Rational method, modified RRL method, quasi-linear storage model, and tank model are used as methods of runoff analysis in Japan; while the PWRI model is usually used as methods of pollution load analysis in Japan. However, other analysis method, which is quicker to examine and also provide easily understandable results, is required for conservation of water environment in the future.

On the other hand, in abroad, the simulation of a water management system in the drainage district is at any point of time. Hence, the methods of runoff analysis, which are available for quantitative evaluation, are in practical use. The applicability of these models in Japanese situation had been studied and evaluated by our organization from 1994 to 1996, since these models have not been used appropriately in Japan. Three types of model software of “HYDRO WARKS” and “MOUSE” developed in Europe and “XP-SWMM” in US are found to be applicable as support tool for analyzing storm water management, operation management plans and evaluating the facility performance.

In this study, the specification of the model software, their applicability and necessary data are made to be clear. The engineering manual of “Manual for the use and application of runoff pollutant load model (Guideline to apply the use and application of runoff pollutant load model in stormwater management)” was also proposed based on this study. The goal of this study is to provide better condition for utilization of runoff models, which would make sewage works more efficient and laborsaving.

(Result)

1. Contents of Manual

1) Basic theory part

Describing outline and theory of the models, data items, performance, object of works, and applied example.

2) Investigation part

Describing kinds of data and the ways to investigate regarding each works

3) Analysis part

Describing the flowchart of runoff simulations and calibrations and the methods for modeling

4)Application part

Introduction of applied examples categorized by working type

5) References part

Describing the basis for cost estimation according to working type and specifications in using the model for runoff analysis

2. Applied works

The runoff models are applied to the following works as support tools of stormwater management plan and facility operation and maintenance.

1) Analysis and evaluation of the runoff condition

2) Suggestion for countermeasures facility plan for flood control and confirmation of its efficiency

3) Analysis and evaluation of the runoff pollutant load

4) Suggestion for CSO control facility plan and confirmation of its efficiency

5) Effective operation and maintenance plan

6) Others (Making the flood hazard map and making animation to show the effects of installed facilities)

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Keywords

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