Research on Initial Road Pollution Load（Nitrogen, Phosphorus, etc.）

Whole term	2005.9 ～ 2007.3	

（Purpose）

　　In order to create favorable water environments, it is important to analyze the pollution load into public water areas, including final effluent of combined sewage systems and separate rainwater systems. Pollution load items that are required for analysis include BOD, COD, nitrogen, and phosphorus；however, the initial residual road surface load data necessary for analysis cover only BOD, COD, and SS（as is typified by survey data of the Public Works Research Institute）. Unified data on other water quality items are not available. In the case of nitrogen and phosphorus, in particular, data are insufficient despite their being important indicators in advanced sewage treatment. The fact is that the degree to which load arising from city streets impacts on public water areas has not been adequately studied.

　　Given this situation, we decided to survey an initial residual road surface load and study of runoff pollution load into public water areas over a two-year period from 2005 to 2006. Furthermore, we decided that, along with efforts to sample data at numerous locations, the correlation characteristics of water quality items would be studied. This is based on a desire to ascertain the appropriateness of water quality item analogies drawn from simplified measurement of water quality items.

（Outline）

　　This study will largely focus on the following three items：

　1．Initial road surface residual load study

　　Initial surface residual load of roads will be investigated for three types of land-use area（residential, commercial, and industrial）in terms of not only BOD, COD, and SS but also nitrogen and phosphorus. Simulated rainmaking devices will be used. It should be noted that roofs will not be included in this study.

　2．Ascertainment of the correlation characteristics of water quality items

　　At the same time that the road surface load study is being conducted, a study of turbidity, electrical conductivity, etc., will be conducted to ascertain the correlation characteristics of water quality items.

　3．Calculation of runoff pollution load into public water areas

　　Using conventional models, newly obtained initial road surface load will be verified. At the same time, examples of calculation（case studies）of total runoff pollution load to public water areas that are based on new initial road surface load will be presented.

　　This report will primarily present a general picture of how the initial road surface pollution load study of Item 1 will be conducted, as well as the results of a preparatory sprinkling study that were obtained in 2005.

（Results）

　　The results of the preparatory sprinkling study verified that the sprinklers operate properly and that nearly uniform sprinkling occurs throughout the entire study area. Furthermore, the following conditions were set for the sprinkling study going forward.

①　The sprinkling quantity was set at 30㎜／hr. This was because, even when quantity was set at 50㎜／hr, there was no major increase in runoff load compared to 30㎜／hr.

②　Runoff load approached nearly zero through 40 minutes of continuous sprinkling. Thus, for safety's sake, runoff load was set at 60 minutes.

③　It was confirmed that the amount of water collected was significantly lower than the amount of water sprinkled due to road surface penetration. This situation will be confirmed point-by-point in future sprinkling study conditions. At the same time, how reflect this situation should be reflected when looking at all data conditions will be studied.

（Study schedule）
　　Based on results obtained from the preparatory sprinkling study, industry-specific data will be sampled in four cities and initial road surface residual load data will be compiled.　At the same time, the correlation characteristics of water quality items will be ascertained and runoff pollution load to public water areas will be calculated.

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| key words | Initial road surface pollution load, Public water area, Separate rainwater system |