

## Survey study on the separation of combined sewer system

Whole term

1998.12-2000.3

### (Purpose)

Generally, it is considered that expense is high for applying separation, which is a measure for the improvement of combined sewer system. However, when influences flood and disadvantages of combined sewer are considered, the highly advanced plan by rising of a probability year and the renewal plan to improve old institutions should be taken into consideration. This can become advantageous measures, if these plans work gradually and intentionally depending on the city conditions. In this research, the applicability of separation in Fukuoka city is examined by advanced surveys about the separation of the combined sewer system, valuation methods, the technical subject and technical measures for separation in the city in 1998 and 1999 fiscal year.

### (Result)

Since reasons, why separation may be examined, are different according to regional conditions and local characteristics, targeted regions were selected and a preliminary examination (basic investigation) was conducted. Examinations were conducted in regions which may be applied separation in two steps, a preliminary investigation and detailed one.

#### (1) The examination matters for implementation determination of separation

##### 1) Regions where separation adopted as targets of examination

- ① Regions where the level of water demand is high and have effects to amenities such as water pollution, the risk to environment and odor
- ② Regions which need to correspond together with measures to flood, renewal of institutions, and where the cost effect is comprehensively high
- ③ Regions where areas which are adopted with combined system was restricted comparatively
- ④ Regions where need coordination with urban renewal projects and other projects

##### 2) The examination method

###### ① Basic investigation

- Arrangement of factors, parts and regional characteristics which become issues, and understanding of measures according to regions
- Detailed investigation when the separate system may be adopted in examination matters

###### ② Detailed investigation

- Adoption of the separation system in measures for the improvement of combined system, list of alternatives, and setting of a target level
- Examination of cost effects
- Examination of other pending issues (conditions of discharge places etc.)

#### (2) The case study in Fukuoka city

As a result of considering adoption of separate system in combined sewer system areas (2,494ha), it was judged that adoption of separate system is effective by establishment of storm sewer in some areas. It is necessary to solve issues in execution projects for advancing gradual maintenance, such as correspondences of treatment plants in a transition period, the change of facilities for drainage, and other aspects, in the future.

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Key words

Combined improvement, Combined sewer system separation making, Cost-effectiveness