

# Research on Formulation of Emergency Improvement Plan for Combined Sewer System in Fukui City

Year of Research

2007 • 2008

**(Purpose)**

Fukui city has 1,410ha of combined sewer service area, in which 2 Wastewater Treatment Plants (WWTP) and 9 Pump Stations (PS) are in operation. The removal measures for floatable dusts has already been completed, because screens are equipped to all pumping stations and there is no storm outfall pit. At the same time, other two problems of “reduction of overflow load” and “reduction by half of combined sewer overflow (CSO) frequency” are remaining to be settled.

On the other hand, "Combined sewer system emergency improvement program" with five year implementation period was founded in 2002 by the Ministry of Land, Infrastructure and Transport. Then, Fukui city formulated “Combined sewer system emergency improvement program for Junka district and other area of Fukui city”, which is a 5-year plan up to fiscal year 2009, and began to operate from March, 2005 with the Ministry’s concurrence. However, operation of the plan doesn’t go smoothly because the importance of anti-inundation program is upgrowing due to the torrential rains like what happened in 2004.

Depending on these conditions, this research aims to revise the present program and prepare an extended program, which deals with the urgent and certain implementation of CSO control measures to be completed by 2013. At the same time, the monitoring study of on-site water quality is also executed in this research.



Figure 1 Target area in Fukui city

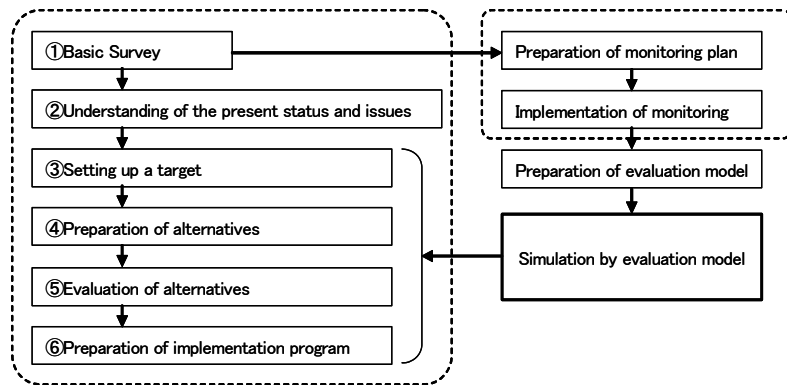


Figure 2 Study flow

**(Results)**

(1) Monitoring study of water quality

Water qualities were monitored at 2 WWTPs and 2 PSs about both dry and wet weather flows.

(2) Runoff analysis for pollution load

Distributed runoff model (InfoWorks) was calibrated by actual rain event and monitored results of water quality, and then runoff analysis for pollution load were carried out.

(3) Preparation of CSO control Program

We prepared the extended plan of “Combined Sewer System Emergency Improvement Program”, based on results of above-mentioned work. The outline of the Program is as follows.

- Outline of revised facilities
  - Rehabilitation of WWTP [Idle primary sedimentation tank (3,300m<sup>3</sup>) → storm-water reservoir]
  - Installation of two by-pass interceptors and a storm-water pipe reservoir
- Reduction plan of annual overflow load
  - 496.8t (without measures) → 367.9t (revised plan)
- Reduction plan to half times of present overflow frequency for untreated water
  - 1,133 times (without measures) → 401 times (revised plan: designated whole area)
- Operation expense
  - 873 million yen (6,062 million yen in the original program)

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Key words

Fukui City, Combined Sewer System, Pollution Load, Overflow Frequency, runoff analysis