Study on the utilization of the technology of high-rate coagulation-precipitation treatment		
Whole term	2000. 8 ~ 2002. 3	

(Purpose)

The objective of this research is to investigate the utilization of the technology of the high rate coagulation-precipitation treatment as a part of the improvement of the combined sewer system of Otsu City. The establishment of design resources including economical (construction and maintenance cost) land-use, efficient surface loading, removal rate, chemical injection ratio and etc. as well as the investigation on operational and management strategies in case of rain were studied.

(Results)

The results of the treatment experiments using a pilot plant located in the Otsu Purification Center.

(1) Basic experiments (inflow wastewater treatment experiment for fine weather)

① The surface loading corresponding each coagulant injection rate was determined.

② The lower limit of the amount of fine sand circulation in the process was discovered.

③ If the treatment capacity has to be increased to the maximum capacity, it should be raised gradually by 20 m^3/h at each step.

(2) Inflow wastewater treatment experiments at the primary settling tank in case of rain

① 80 % removal of SS can be achieved for 3 mg/L of PAC and polymer flocculant dose of 0.6 mg/L, when surface loading is equal to or less than 80 m/h.

② 80 % removal of SS can be achieved for 5 mg/L of PAC and polymer flocculant of 0.8 mg/L, when surface loading is equal to or less than 120 m/h.

(3) Outflow treatment experiments at the primary settling tank in case of rain

① SS removal equal to or less than 20 mg/L can be achieved for 3 mg/L of PAC and polymer flocculant of 0.6 mg/L, when surface loading is 120 m/h and 160 m/h.

② Fine quality in the treated wastewater can be achieved for 10 mg/L of PAC and polymer flocculant of 0.8 mg/L.

(4) Operation, management and design resources

① The system conditions were investigated prior to the operation.

② The long-term (2 months) storage method of dissolved polymer flocculant was investigated.

③ The design resources were summarized based on the experiments, and the master plan was designed so that it could be applied to the Otsu Purification Center.

(Summary)

The characteristics of the treatment technology for wastewater inflow in case of rain and its great potential as an improved counter plan were confirmed by this research, which was performed for 2 years during 2000 and 2001. The utilization of this technology was also addressed in this research, and it is expected to improve this technology in the near future for wider use.

Collaborators: Otsu City
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Keywords	Improvement of the combined sewage system, Simple water treatment, High rate coagulation-precipitation treatment