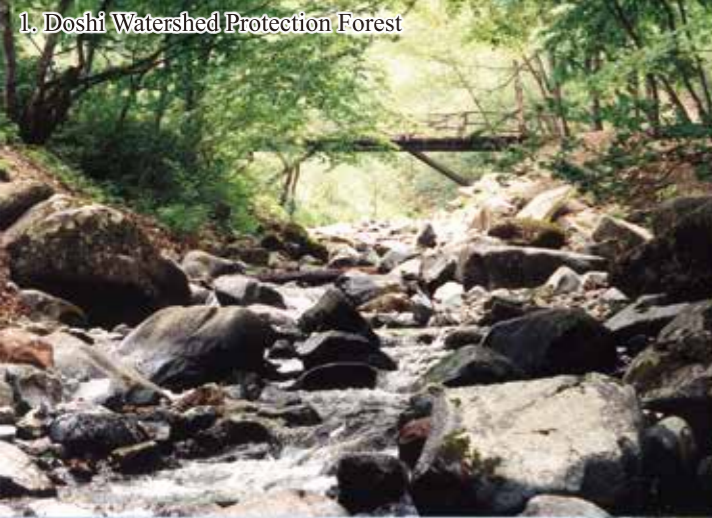


Providing 24-hour lifeline for All Citizens

1. Doshi Watershed Protection Forest



2. Girl Drinking Tap Water at the Park



3. Wastewater treatment plant



4. Stream where treated wastewater is discharged



Source of Photos: Waterworks Bureau, City of Yokohama (1,2), Environmental Planning Bureau, City of Yokohama (3,4)

From the Source to the City

Emerging cities face challenges to facilitate necessary infrastructure in a short period to cope with the rapid population growth. Water is one of the essential infrastructures to meet basic human needs.

Lacking water could cause serious damage to citizens' lives and low quality of water affects people's health. In addition, an excessive use of well water by households and companies could cause land subsidence resulting in serious flooding paralyzing city functions.

Since the City started a water supply system in 1869 and in 1887, respectively,

as the first modern system in Japan, the City committed steady development even amid rapid population growth, dramatically increasing the reach of both the water supply and sewer system.

Currently, the water supply and the sewer system have coverage of 100% and 99.8%, respectively. During the course of network development, Yokohama realized that to ensure not only a stable supply but also high-quality water, it is important to return to the basic principle and protect well springs.

Yokohama continues to preserve the Doshi Watershed Protection Forest (see Pic 1), about 2,800 ha of water source land in Doshi Village, which is about 70

km from Yokohama. This provides confidence for Yokohama and enables us to develop a long-term plan of providing high-quality water.

Phasing Approach to Ensure Implementation

In order to meet a rapid demand increase, Yokohama took a phasing approach and expanded its water supply network eight times during 120 years. The water supply population has been increased steadily according to the population increase of the City.

On the other hand, the development of a wastewater system had lagged behind the population increase.

Managing a Network of Service and Environmental Impact

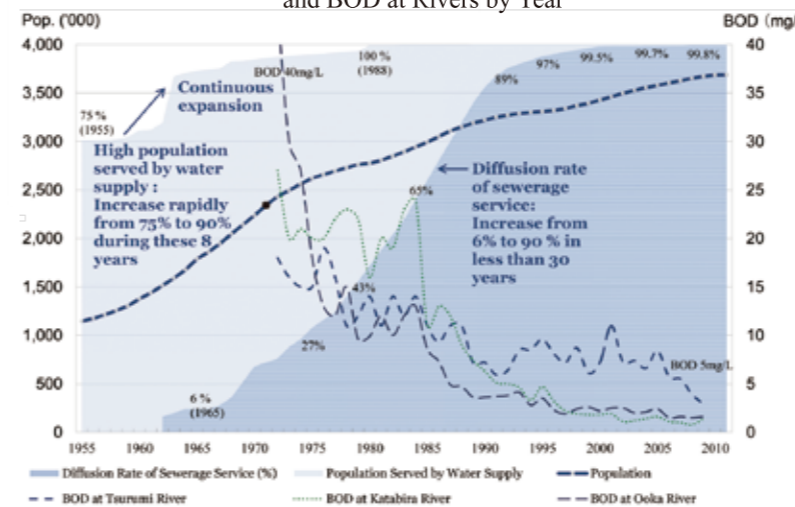
The City adopted a phasing approach with two methodologies to install sewer systems, the combined system and the separate system. In the early stage, the City applied the combined system collecting wastewater and rain water together in order to install the system rapidly and cost-efficiently at a city center; during the expansion period, the separate system was adopted to be implemented in the rest of the city, partly utilizing private funds.

Rivers in the Past



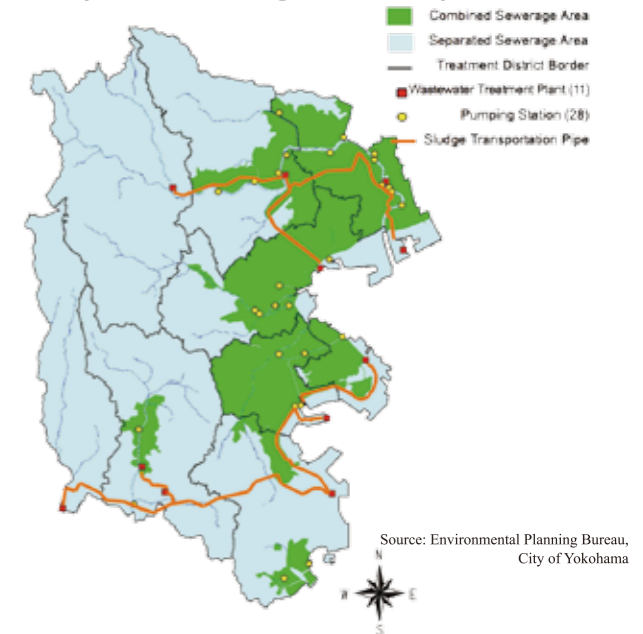
Source: Environmental Planning Bureau, City of Yokohama

Service Coverage of Sewerage and Water Supply and BOD at Rivers by Year



Source: Environmental Planning Bureau and Waterworks Bureau, City of Yokohama

Coverage of Combined/Separated Sewerage Areas



Source: Environmental Planning Bureau, City of Yokohama

Environmental Friendly Management of the Water Cycle

Rapid urbanization put pressure on the environment. Sewage contamination and factory effluent deteriorated river water quality and exuded a bad smell. Expanding the sewage system and wastewater treatment plant together with appropriate factory effluent control and guidance, Yokohama achieved dramatic reduction of BOD of rivers (see Pic 3). Discharged water is regularly inspected to assure a satisfactory level of quality (see Pic 4).

Well-Functioning Infrastructure as a Network

Developing a modern water supply and sewer facilities system is one step, however, providing secure and safe operation and maintenance during a life cycle is another key factor to maintaining high-quality water (see Pic 2).

Water source land in Doshi Village, Yamanashi Prefecture is about 70 km from Yokohama and the total length of the pipes from the water intake to the water supply is about 9,200 km. Despite the considerable length, the rate of leakage is about 5%, which can be only achieved by continuous maintenance and

operational management. Moreover, the low rate of leakage enabled efficient expansion of the water supply network with a minimum of funds.

System of User Pay

Financing of infrastructure development is another challenge for emerging cities. Yokohama, as other cities in Japan, introduced the principle of user-pay on water and wastewater charge and the city government successfully disseminated the concept. With a matured water supply and wastewater system in recent Yokohama, user charges contribute to cover operation and maintenance for assuring 24-hour service of the system.