Water Service: Since Dec.1, 1898

Served Population: About 12,500,000

Maximum Capacity: 6,860,000m³/Day

Average Distributed Amount: 4,390,000m³/Day

Total Length of Distribution Pipes: 25,652km

Total Number of Customers: 6,800,000
The chart illustrates the transition of leakage rate over time. The leakage rate was highest during the war end in 1945, reaching 80%. Following the implementation of Ductile Iron Pipes, the leakage rate decreased dramatically to 12.6% in 1960. Further improvements were made with the implementation of Stainless Steel Service Pipes, reducing the leakage rate to 9.9% by 1993. The leakage rate continued to decrease to 3.3% by 2007.
Water Leakage Prevention Measures of Tokyo

Leakage Prevention Measures

Corrective Measure
- Mobile
- Planned
- Patrol Investigation
- Screening/Measurement

Preventive Measure
- Old Distribution Pipes → Ductile Iron Pipes
- Lead Service Pipes → Stainless Steel Service Pipes

Technology Development / Training
Water Leakage Prevention Measures of Tokyo

Leakage Prevention Measures

Corrective Measure
- Mobile
- Planned

Preventive Measure
- Patrol Investigation
- Screening/Measurement

Technology Development/Training

Old Distribution Pipes → Ductile Iron Pipes

Lead Service Pipes → Stainless Steel Service Pipes
Mobile Operation

- Repair Leakage
- Immersion Damage
Planned Operations
Screening/Measurement method

Dist. Pipe
About 2.5km

【Water Meter for the Block】
Patrol Investigation
House-to-House Investigation using the Acoustic Bar

I hear leakage!
Electronic Leak Decector

This is it!
**Water Leakage Prevention Measures of Tokyo**

**Leakage Prevention Measures**

- **Corrective Measure**
  - Mobile
  - Planned
  - **Patrol Investigation**
  - **Screening / Measurement**

- **Preventive Measure**
  - **Old Distribution Pipes** → **Ductile Iron Pipes**
  - **Lead Service Pipes** → **Stainless Steel Service Pipes**

- **Technology Development / Training**
Renewal of Old Distribution Pipes

Shift to the Ductile Iron Pipe
Transition of Service Pipes

- Corrugated Stainless Steel Pipe
- Stainless Steel Pipe + Expandable Joints
- Elbow
- Lead Pipe

Graph showing:
- Rate of stainless pipe vs. Leakage rate vs. Rate of lead pipe over years (1980-2005)

Legend:
- Rate of stainless pipe
- Leakage rate
- Rate of lead pipe

Key:
- 1980
- 1998

Improvement of Service Pipe Materials
Water Leakage Prevention Measures of Tokyo

Leakage Prevention Measures

Corrective Measure
- Mobile
- Planned
- Patrol Investigation
- Screening / Measurement

Preventive Measure
- Old Distribution Pipes → Ductile Iron Pipes
- Lead Service Pipes → Stainless Steel Service Pipes

Technology Development / Training
Time Integral Leak Detector

- Mater box
- Sensor
- Public road
- Mater
- Leak point
- Distribution
Pipeline Submersible Camera

- Control Stick
- Video Recording Apparatus
- Monitor
- Gate Valve for Air Valve
- Non-suspension water investigation equipment
- Cable (100m)
- Video Recording Apparatus
- Power Control
- Control Stick
- Pipe Investigation Device (φ80×730mm)
- Dist. Main (φ800mm~)
- Storage Pipe Main Unit
- (φ100mm, φ150mm)
Training & Development Center
Training on the Use of Leak Detectors
Training on the Dist. Pipe Laying Construction
SUMMARY

- Acknowledge the causes of leakage to address them properly
- Proper maintenance and renewal pipelines
- Development of technologies responding to the changing times
- Passing of waterworks-related skills and development of human resources
- Fulfill the above commitments in a systematic and organized manner
Thank you for your attentive listening.

Bureau of Waterworks, Tokyo Metropolitan Government