



# Establishment of "Tokyowater Rescue"



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## Conditions of dispatch rescue in a disaster

### 1. Response to disasters

Waterworks utilities in Japan have been dispatching support as much as possible to respond to support disaster-affected waterworks entities through the Japan Water Works Association (JWWA).

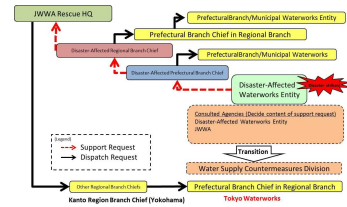


Figure 1. Flow from disaster to rescue request (Mutual rescue system in the JWWA)

Table 1. Overview of disaster dispatch records of the Tokyo Waterworks

Dispatch Period	Disaster	Water Service Suspension Scale (Disaster Scale)	Emergency Water Supply	Emergency Restoration
January - May 1995	Great Hanshin Earthquake	Up to about 1,270,000 households (Magnitude 7.3)	281	852
October - November 2004	Chuetsu Earthquakes	Up to about 130,000 households (Magnitude 6.8)	48	36
July 2007	Chuetsu Offshore Earthquake	Up to about 60,000 households (Magnitude 6.8)	-	76
March - April 2011	Great East Japan Earthquake	Up to about 2,670,000 households (Magnitude 9.0)	61	104
October 2013	Typhoon Wipha	Up to about 3,000 households (254 mm of rainfall in 24 hours)	21	-
September 2015	KantoTohoku Torrential Rain	Up to about 30,000 households (651mm of rainfall in 24 hours)	6	19
April - May 2016	Kumamoto Earthquakes	Up to about 440,000 households (Main Shock Magnitude 7.3)	-	111

### 2. Challenges in disaster-area dispatch

After the Kumamoto Earthquake, emergency dispatch requests came on holidays. This raises such issues as how fast a rescue system can be established after a request is received, and whether a rescue system can be secured for a certain period of time.



Figure 2. Emergency restoration activities after the Kumamoto Earthquake



Figure 3. Emergency water supply activities after the Great East Japan Earthquake

## Overview of the Tokyo Waterworks Disaster Rescue Team

In February, 2017, the Tokyo Waterworks established "Tokyowater Rescue: Tokyo Waterworks Disaster Rescue Team" so as to be able to dispatch rescue teams swiftly and smoothly when it receives rescue requests in the event of a disaster. The team was established with a combination of a "duty system" and a "registration system" (See details below), securing an immediate response system for rescue requests at all times, which is also capable of continued dispatch for a certain period of time according to conditions at the disaster site. The system for rescue dispatch includes an early coordination team that can coordinate with the scale of rescue dispatch with an understanding of the disaster conditions, as well as emergency water supply and emergency restoration in cooperation with related entities.

[Issues thus far]

- Takes time to select members after receiving requests.
- If dispatch requests continue for a certain period of time, it is difficult to build a rescue structure.
- Inadequate awareness of what rescue dispatch members should do at dispatch locations

[Intent of founding]

- Swift response in initial stages of a disaster
- Secure smooth rescue system for continuous dispatch
- Secure quality personnel capable of effective rescue

Figure 4. Intent of founding



Figure 5. Announcement by the Governor of Tokyo when Tokyowater Rescue was established (February 3rd, 2017)

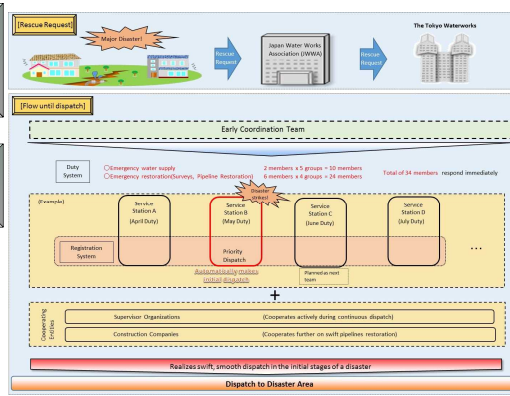


Figure 6. Image of disaster area dispatch after establishment

[Main Roles of Early Coordination Team]

- Establish a command structure in rescue activities
- Support rescue acceptance system
- Coordinate communication between disaster affected waterworks entities and rescue waterworks entities etc

[Standard Structure of Early Coordination Team]

Captain ... Department manager level (clerical/technical according to on-site condition)

Deputy Captain ... Section manager level (same as above)

Coordination Assistant (2 member Waterworks Emergency Team), Communication Personnel (2), Records Personnel

Figure 7. Overview of Early Coordination Team



Figure 8. Collaboration with involved entities

## "Duty system" and "Registration system"

### 1. Duty System

In order to select members faster for rescue dispatch, this system secures a 10 member emergency water supply team consisting of 5 groups of 2 members each (in 5 water supply trucks) to respond to water service suspension and a 24 member emergency restoration team (survey, pipeline restoration) consisting of 4 groups of 6 members, for an initial response team with a total of 34 members. Duty is conducted by month at related service stations.

#### [Features]

- ① Service stations are selected by month in advance
- ② Dispatch members are selected in order from duty members at duty service stations for the month of a request and the following month
- ③ 2 fields: emergency water supply and emergency restoration (survey, pipeline restoration)

	April	May	June	July	August	September	October	November	December	January	February	March
XX Service Station		(12members)				(12members)				(12members)		
△△ Service Station		(12members)				(12members)				(12members)		
□□ Service Station		(12members)				(12members)				(12members)		
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■ Service Station		(12members)				(12members)				(12members)		
◆ Service Station		(12members)				(12members)				(12members)		

\*Construction companies in the jurisdiction of duty service stations are also on standby

Figure 9. Image of initial dispatch team duty table ("Emergency Restoration (Survey, Pipeline Restoration)")

### 2. Registration System

This system recruits Tokyo Waterworks staff who are willing to actively contribute to rescue dispatch, and registers staff who have received training to get the knowledge necessary when they are dispatched. By securing registrants, it is possible to speed up selection of dispatch team members and improve the level of dispatched members.

#### [Features]

- ① Staff registered with the "registration system" periodically attend to prepare them for dispatch work and emergency water supply, making them central to dispatch work.
- ② The following table shows the 7 registration fields.

Table 2. Overview of Registration Fields

Registration Category	Occupation	Registration Qualifications
Emergency water supply	Clerical	None
Emergency restoration (Survey, Pipeline Restoration)	Civil Engineering, Technical	At least 1 year experience in Tokyo Waterworks
Emergency restoration (Large Pipelines)	Civil Engineering	At least 1 year experience in Tokyo Waterworks and experience designing or inspecting construction of pipes of at least φ400
Emergency restoration (Facilities)	Civil Engineering, Technical	At least 1 year experience in Tokyo Waterworks Excludes staff engaged in operation management work
Emergency restoration (Equipment)	Mechanical/Electrical Engineering, Technical	At least 1 year experience in Tokyo Waterworks Excludes staff engaged in operation management work
Water Quality	Environmental Inspection	At least 1 year experience in Tokyo Waterworks
HO Personnel	Assistant Captain	Civil Engineering (Deputy Section Chief Level)
	Contact Accounting Personnel	Clerical

Table 3. Overview of Tokyo Waterworks Registrants (At the end of 2017)

Field	Members	Field	Members	Field	Members
Emergency water supply	206	Emergency restoration (Large Pipelines)	74	HO Personnel (Assistant Captain)	39
Emergency restoration (Survey, Pipeline Restoration)	540	Emergency restoration (Facilities)	50	HO Personnel (Personnel)	30

Total Registrants: 1,126  
Managers and Waterworks Emergency Team Members: 224  
In total, 1,350 members in the immediate response system

## Efforts to improve effectiveness of dispatches

### 1. Registration System Training

• Mandate training for all registrants in a certain period



Figure 10. Seminars by experienced dispatch members

### 2. Practical Training

• On-site training for emergency water supply



Figure 11. Emergency water supply practical training

### 3. Join in disaster prevention training with other entities

• Actively participate in disaster prevention training with other entities, for improving effectiveness of rescue dispatch in the event of a disaster



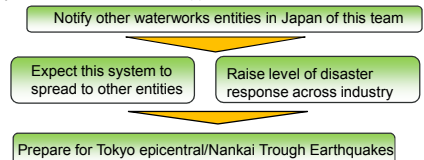
Figure 12. Dispatch activities training (Emergency Water Supply)



Figure 13. Dispatch activities training (Emergency Restoration)

## Future Development

- Priority activities for restoration support of disaster-affected entities -



Enhance crisis response ability of the Tokyo Waterworks  
Figure 14. Image of future development