

Emergency Activity during a Disaster by the Public-Private Cooperation in Nagoya City

MINORU SAKAGUCHI



***Nagoya City
Waterworks & Sewerage Bureau***

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- ◆ *Nankai Trough Earthquake*
- ◆ *Emergency Water Supply Activity System*
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the Bureau and Meisuikyo
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Nagoya City's Waterworks



Start of water supply	1914
Population served	Approx. 2.4 million people (2016)
Water supply ratio	100.0 % (2016)
Daily average water supply volume	Approx. 760,000 m ³ /day (2016)
No. of staff members	Approx. 2,300 people (2016)
Managed by	Local governments



Nagoya City's Waterworks



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- Intake point (2)
- Purification plant (3)
- Service reservoir (8)
- Pump station (3)



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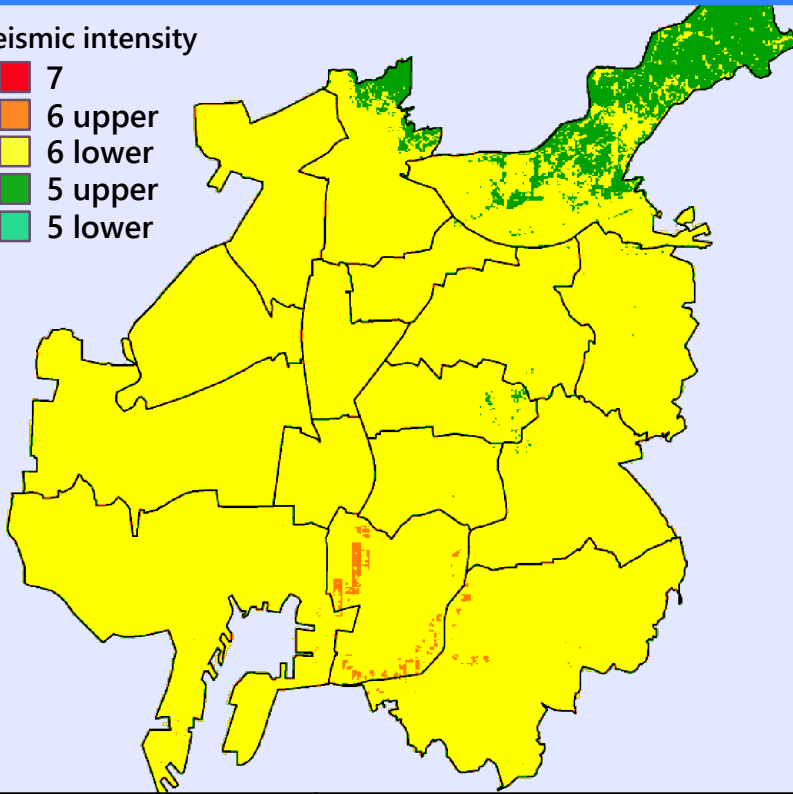
Nankai Trough Earthquake

2014.2 : Damage assumption was announced by Nagoya city
(Based on the assumption of the Cabinet Office)

Maximum class considering
past earthquakes

Seismic intensity

- 7
- 6 upper
- 6 lower
- 5 upper
- 5 lower



Frequency

Once in
100~200 years

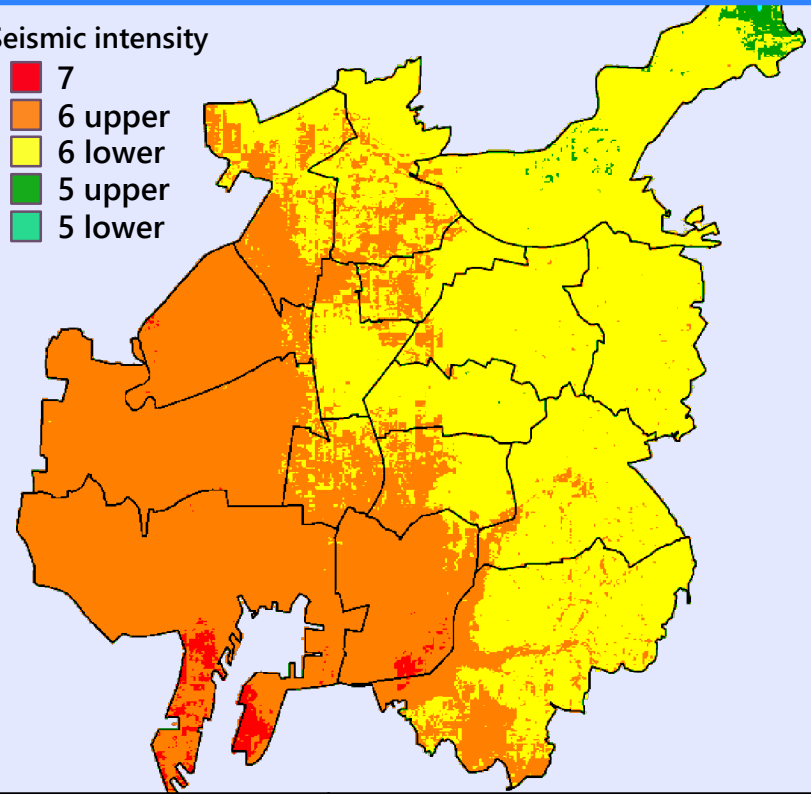
Highest tsunami water level

3.3m

Maximum class considering
all possibilities

Seismic intensity

- 7
- 6 upper
- 6 lower
- 5 upper
- 5 lower



Frequency

Once in
1000 years over

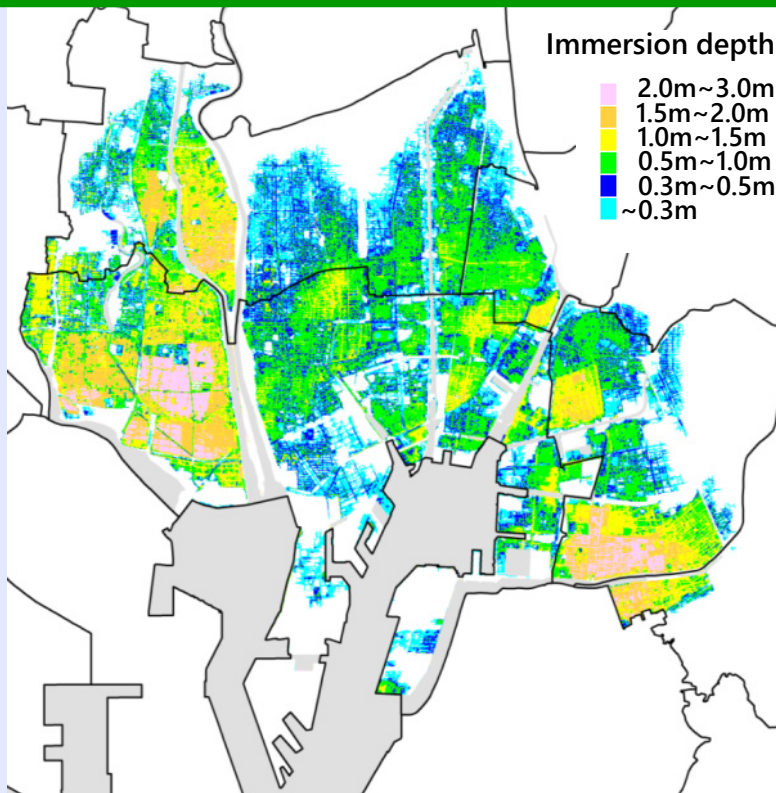
Highest tsunami water level

3.6m

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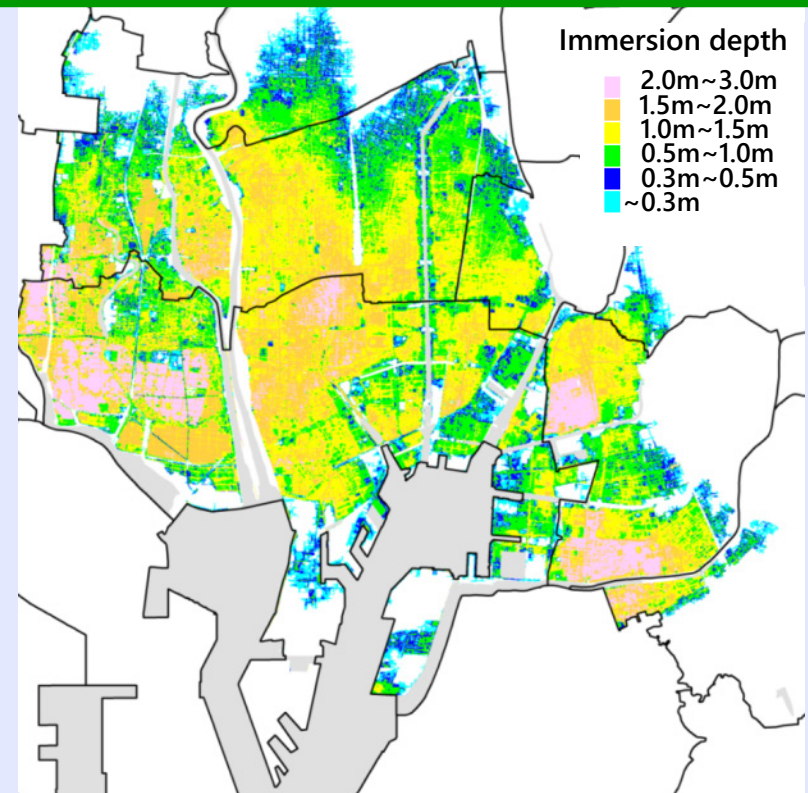
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Highest tsunami water level

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Maximum class considering
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Frequency

Once in
1000 years over

Highest tsunami water level

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Emergency Water Supply Activity System

- ◆ Bureau's Business Continuity Plan
(earthquake countermeasure version)

A plan aimed at the quick recovery of water supply and sewerage functions and a quick response to disaster.

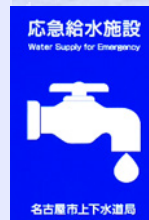
- ◆ Emergency Activity Manual

A manual for emergency activity during a disaster by each department.

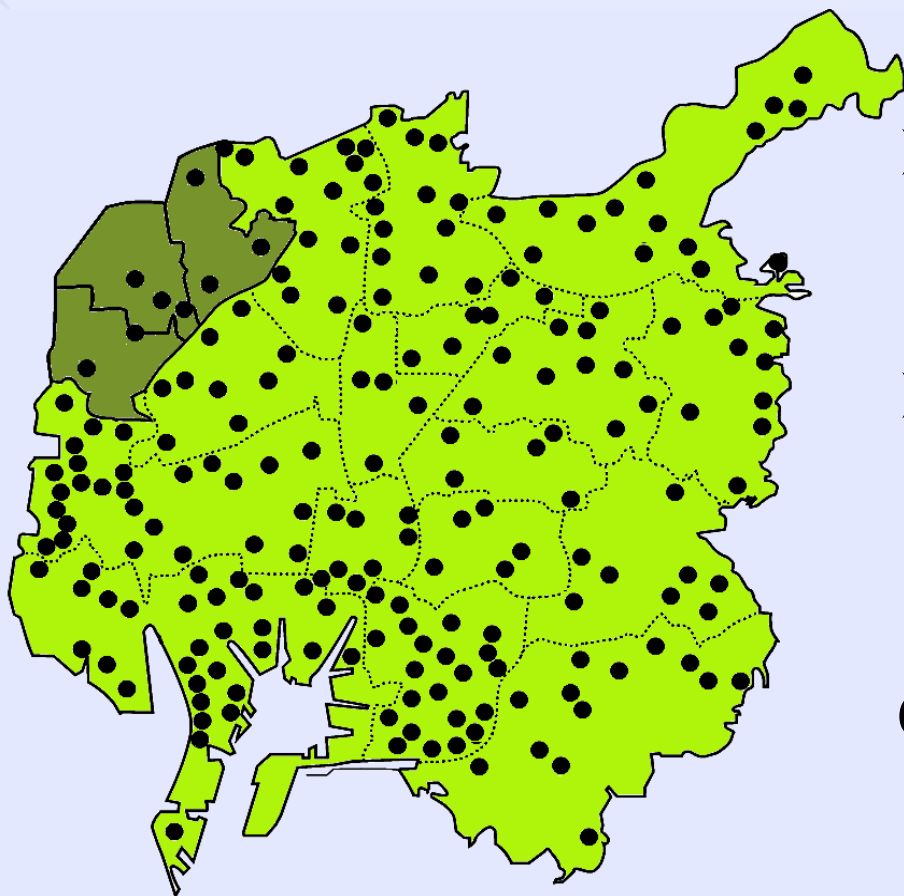
- ◆ Emergency Water Supply Facilities



Emergency Water Supply Facilities



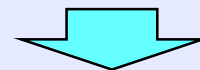
207 facilities in the water supply area



● Emergency water supply facility

➤ At intervals of approximately 1 km or less

➤ Occurrence of an earthquake that seismic intensity of **lower 6 or stronger**

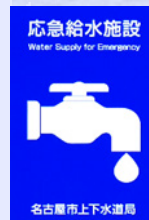


Opening all of emergency water supply facilities



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Emergency Water Supply Facilities



◆ Permanent type

Hiranishi Emergency Water Supply Center

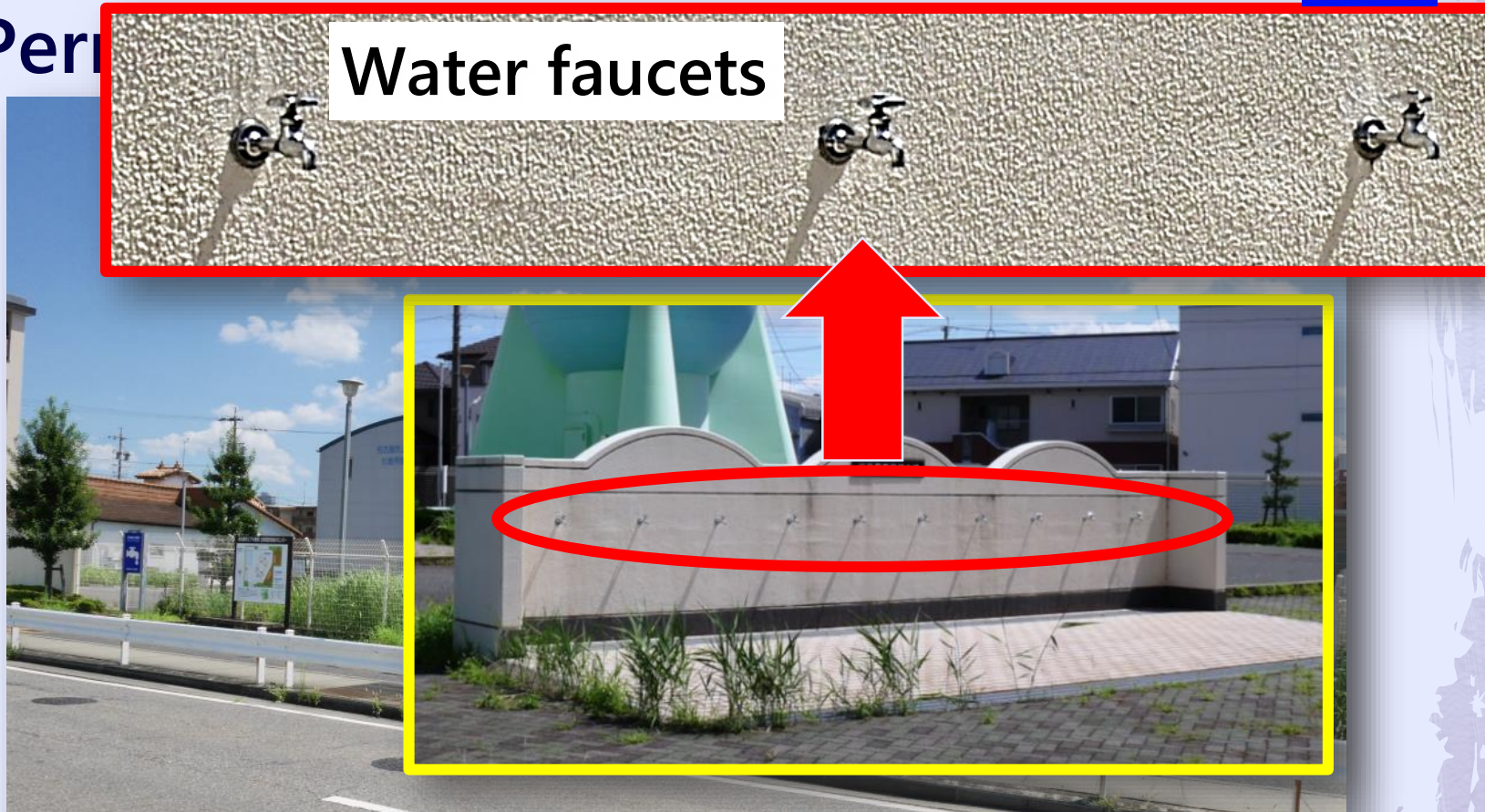


During a disaster, the Bureau staff member open the facilities and supply water.

Emergency Water Supply Facilities

◆ Per

Water faucets

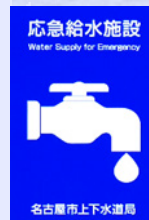


During a disaster, the Bureau staff member open the facilities and supply water.



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Emergency Water Supply Facilities



◆ Temporary type



During a disaster, temporary water faucet is installed at the facility and supply water.

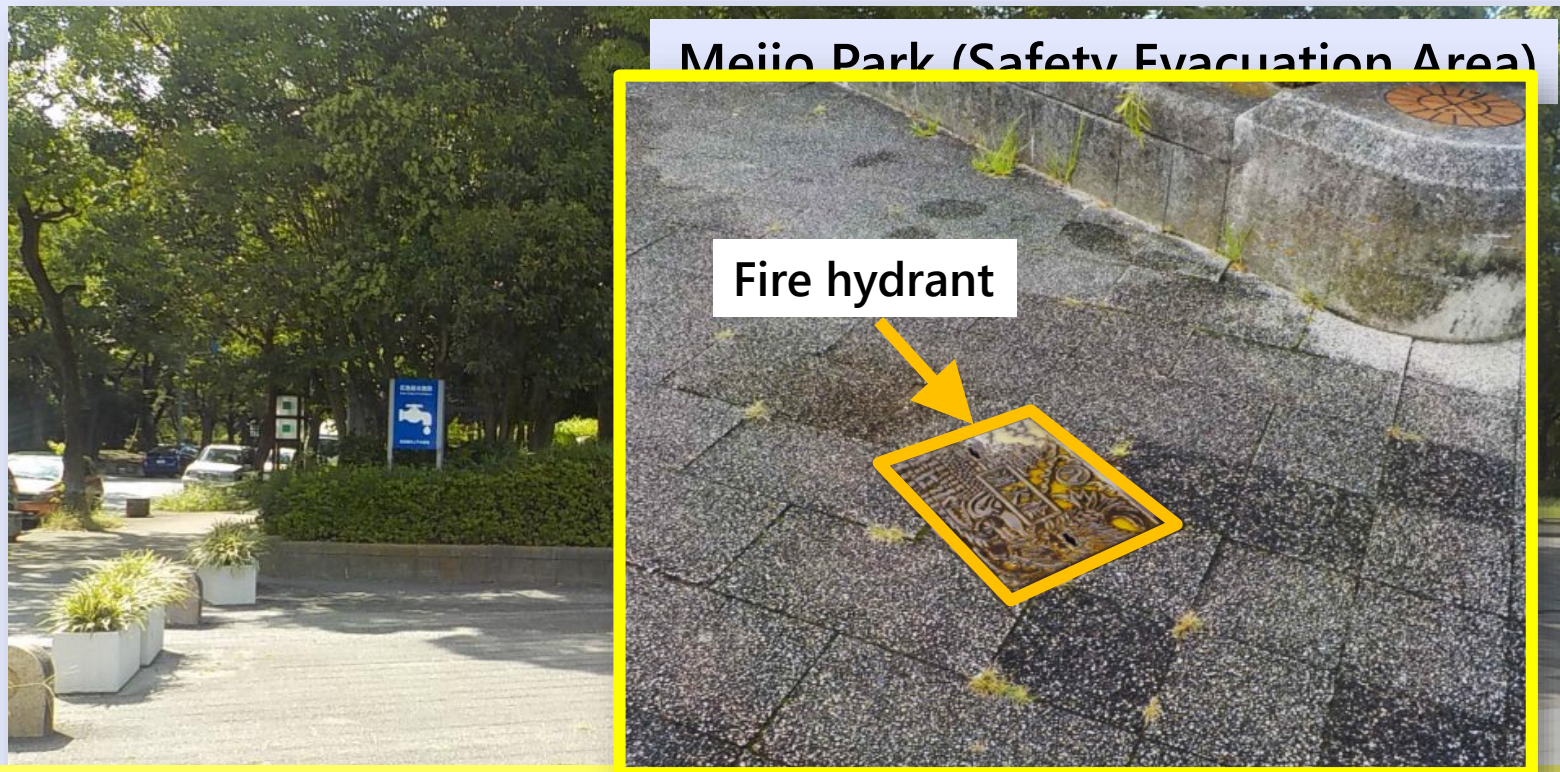


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Emergency Water Supply Facilities



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Emergency Water Supply Facilities



◆ Temporary type

Temporary Water Faucet

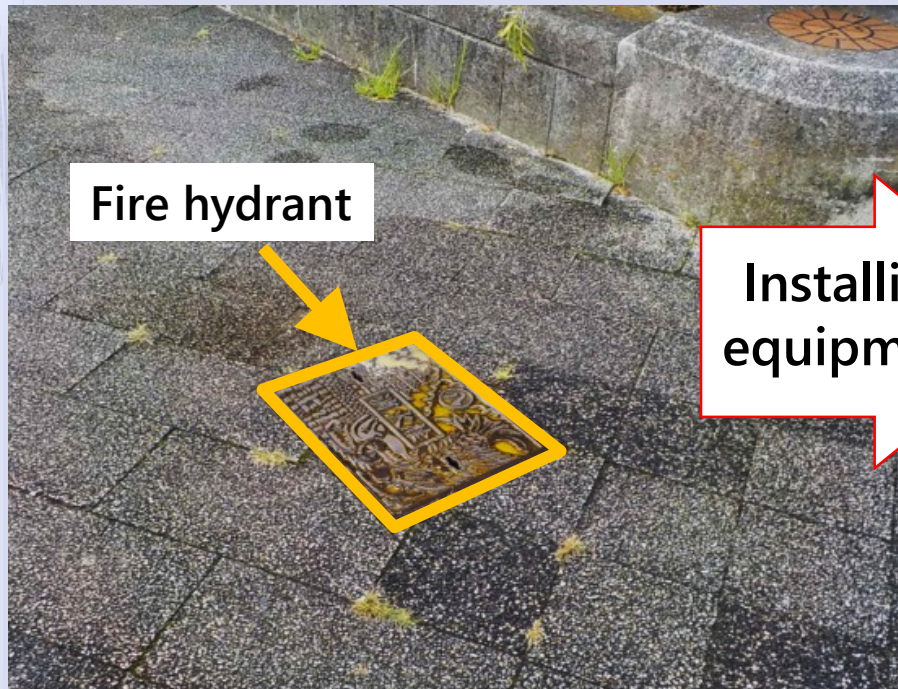


- A manual for installing equipment
- Reagent (Residual chlorine test)

Emergency Water Supply Facilities

◆ Temporary type

During a disaster, temporary water faucet is installed at the facility and supply water.



Installing
equipment



Cooperative Framework between the Bureau and Meisuikyo



Meisuikyo

A organization consist of Nagoya City designated company for water supply equipment work.

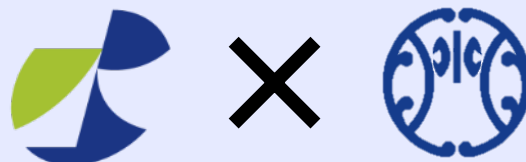
(305 member companies)

The designated construction shop of Meisuikyo member has excellent technology of waterworks construction, and has activities closely related to the area from everyday.



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Conclusion of the Disaster Mutual Aid Agreement in Dec. 2012



"Agreement on cooperation for emergency restoration work etc. during disaster"

overview

At the time of a disaster such as a large-scale earthquake, we can request cooperation on the following points

- Emergency restoration work
- Emergency water supply activity
- Emergency water stop activity



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Cooperative implementation of disaster reduction drills

We have held cooperative emergency water supply activity training with Meisuikyo for the purpose of strengthening our cooperation with Meisuikyo during a disaster.

- Training of loading a vehicle with a 1 m³ water supply tank
 - Training of installing temporary water faucets
- etc.



Cooperative implementation of disaster reduction drills

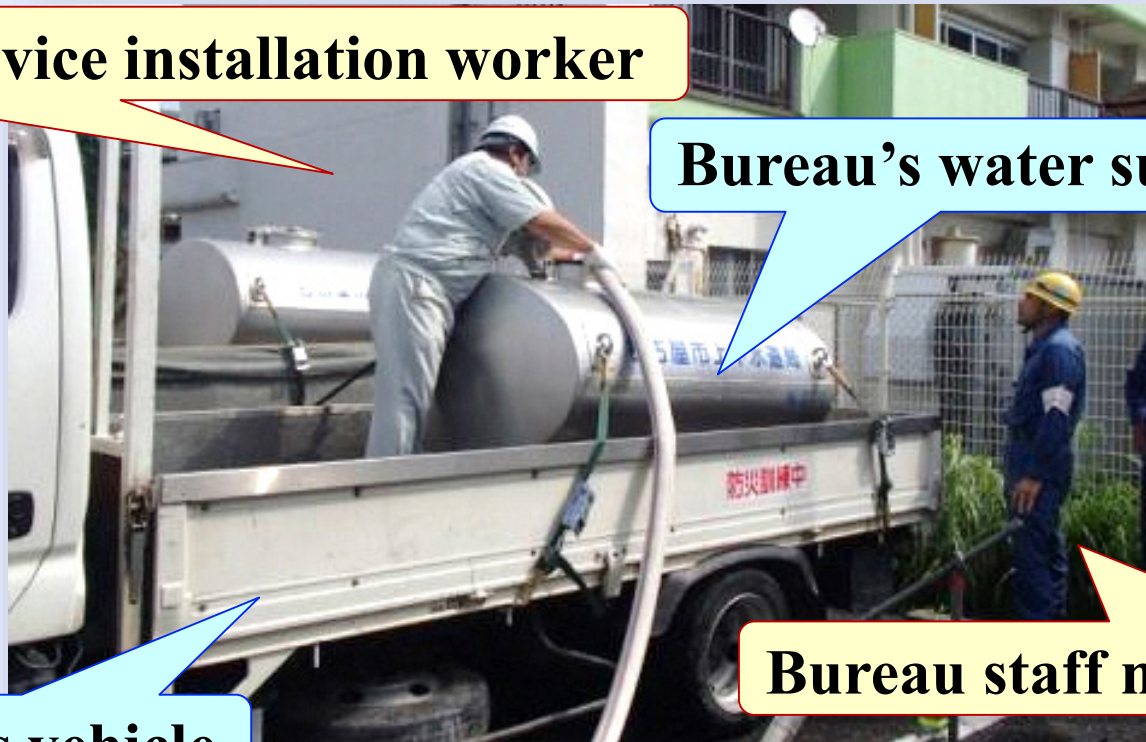
- Training of loading a vehicle with a 1 m³ water supply tank

Water service installation worker

Bureau's water supply tank

Installer's vehicle

Bureau staff member



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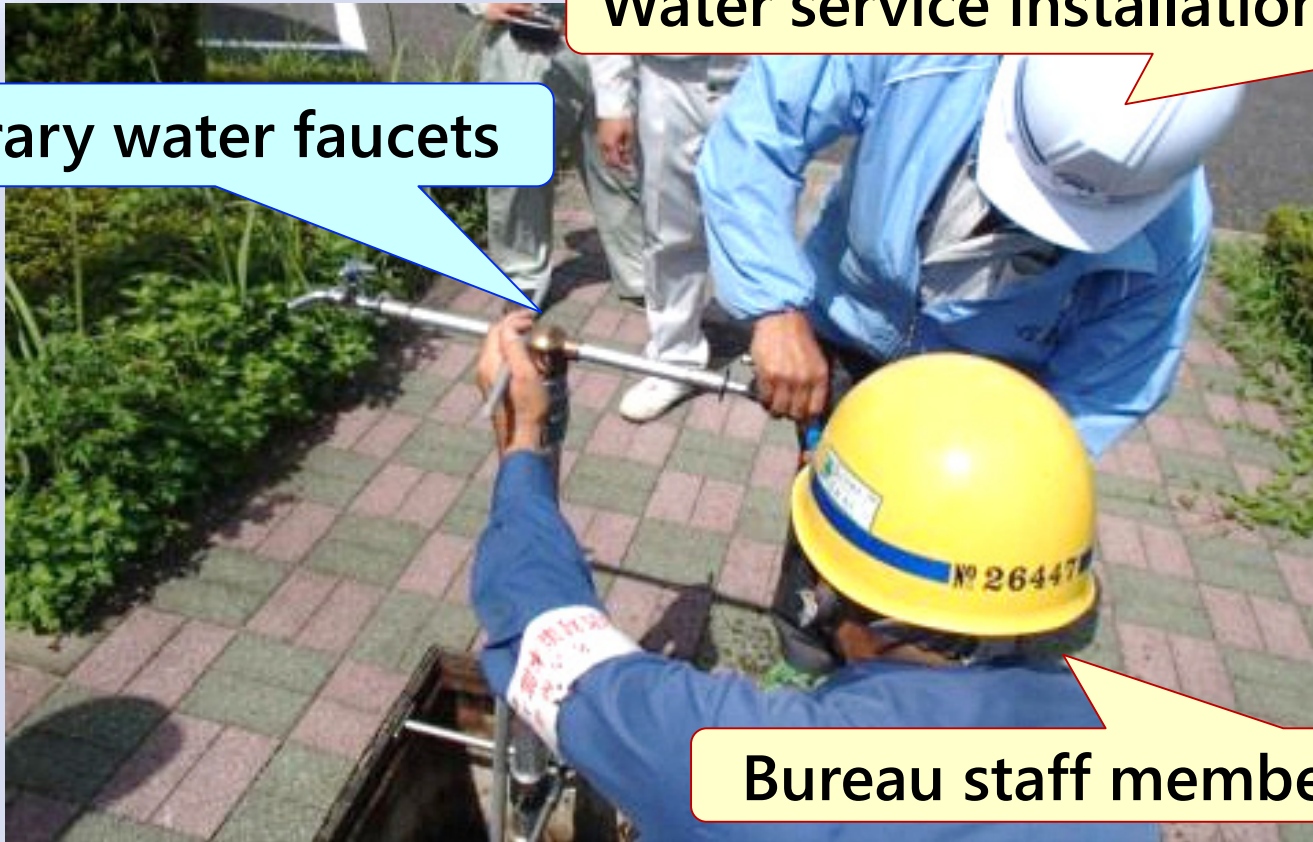
Cooperative implementation of disaster reduction drills

- Training of installing temporary water faucets

Water service installation worker

Temporary water faucets

Bureau staff member



In disaster reduction drills held in a local community

Previously, our Bureau had participated alone in disaster reduction drills held in the local community. Currently, however, our Bureau and Meisuikyo are jointly participating in these drills.



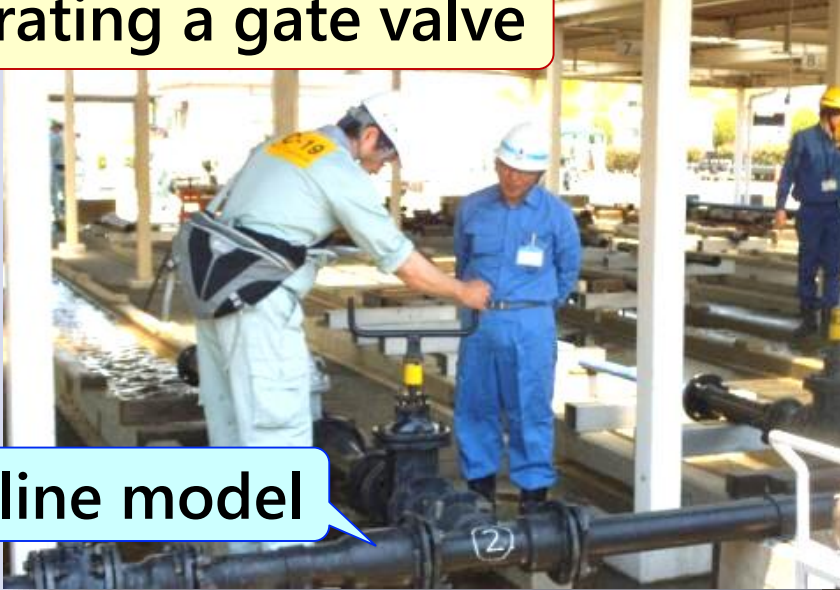
Large-scale disaster reduction drills

Because there are many companies with little experiences in large-scale disasters, practical disaster reduction drills were conducted to raise the effectiveness of emergency activities.



Large-scale disaster reduction drills

Operating a gate valve



Emergency stopping water



Pipe line model

Installing temporary water faucet



Instruments for stopping water



Entrustment of temporary water faucets

The Bureau and Meisuikyo concluded an agreement concerning the installation of temporary water and related matters at the time of disaster.



“Agreement on installation of temporary water faucet during disaster”



Entrustment of temporary water faucets

~ Main point of the agreement ~

[Point 1]

Entrustment of the Bureau's temporary water faucets to Meisuikyo

[Point 2]

Designation of emergency water supply facilities for which Meisuikyo will install temporary water faucets.

[Point 3]

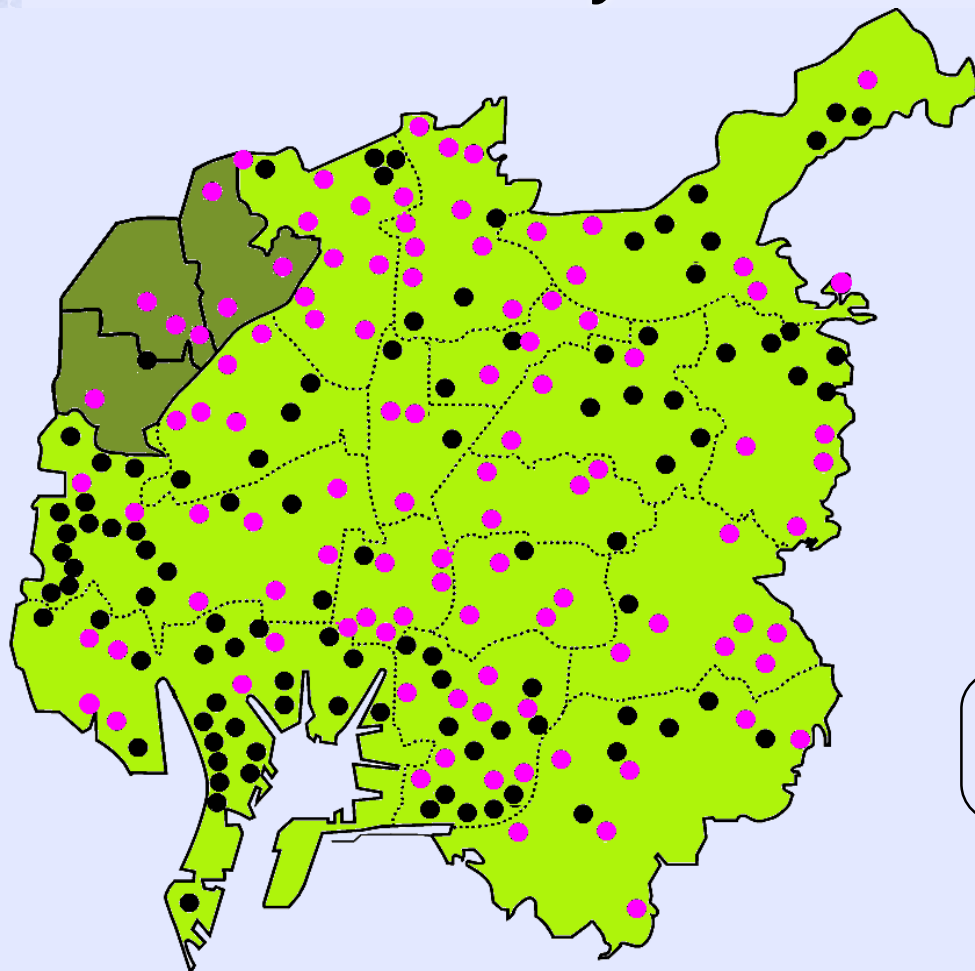
Specification of actions based on observed seismic intensity



Entrustment of temporary water faucets

[Point 2]

Designation of emergency water supply facilities for which Meisuikyo will install temporary water faucets.



● 105 / 207 facilities

● Meisuikyo ● The Bureau

However, if Meisuikyo is difficult to respond, the Bureau staff will respond.

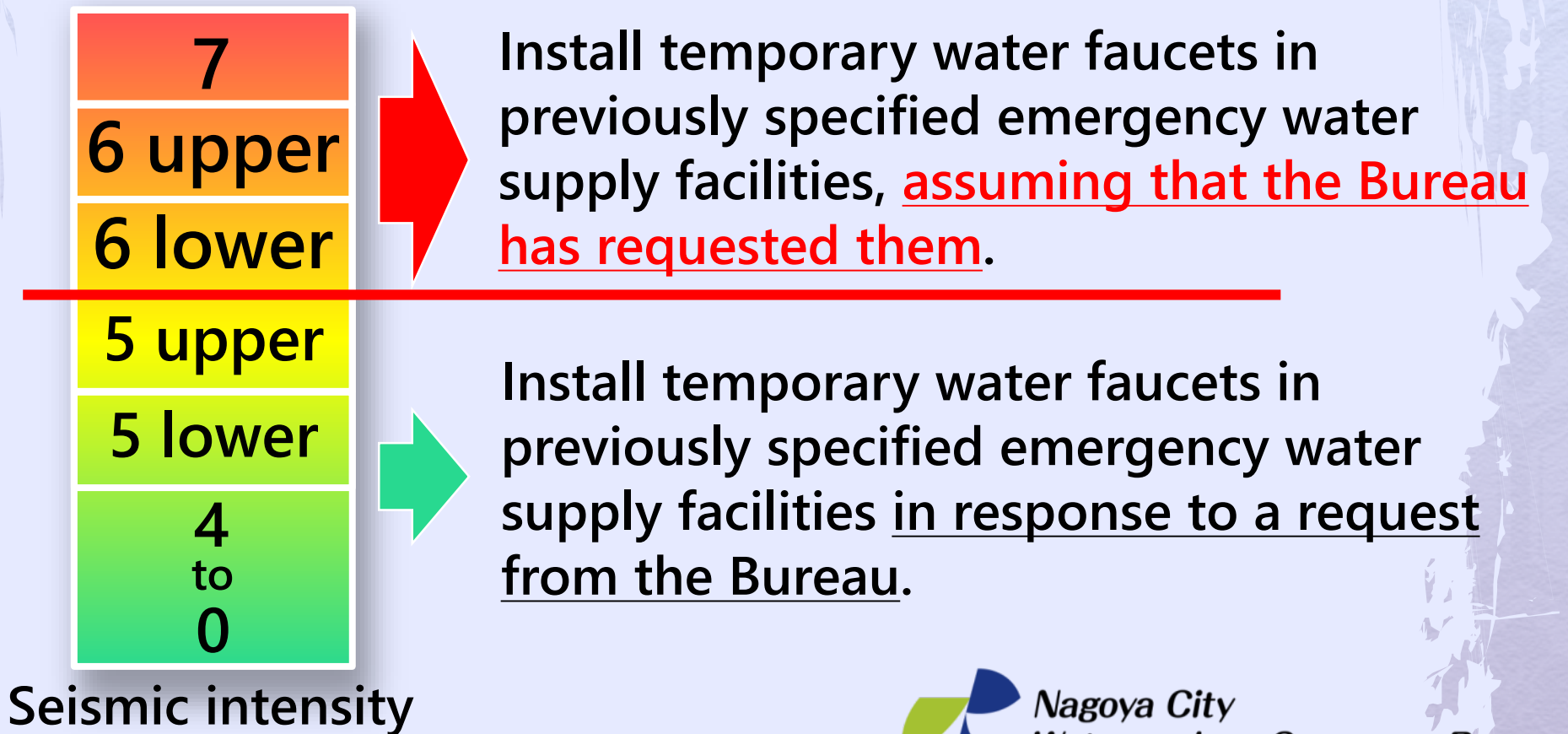


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Entrustment of temporary water faucets

[Point 3]

Specification of actions based on observed seismic intensity

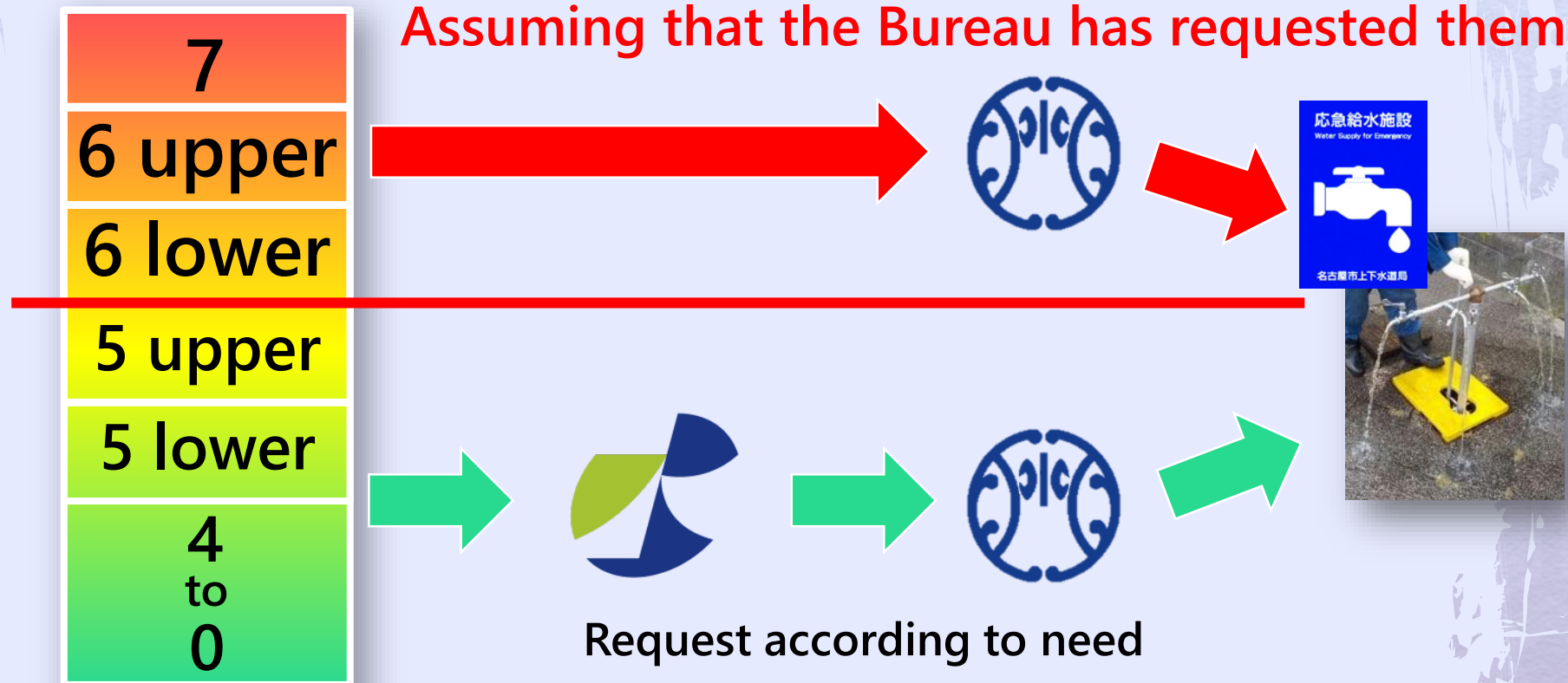


Entrustment of temporary water faucets

[Point 3]

Specification of actions based on observed seismic intensity

Assuming that the Bureau has requested them



Seismic intensity



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SUMMARY

We have enhanced the cooperation with Meisuikyo and aimed for quick and effective emergency activities during disaster.

- *Conclusion of the agreement*
- *Disaster reduction drills*
- *Entrustment of temporary water faucets*

To implement emergency activities more effectively and continuously supply safe and secure drinking water after occurrence a disaster, we will strengthen our public-private cooperation with various collaborators such as Meisuikyo and develop a town that can respond strongly during a disaster.



Thank you for your kind attention.



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