



## Surrounding of Tamagawa Dam



Mirror-like Water Surface of Hosen Lake - 1



Mirror-like Water Surface of Hosen Lake - 2



**Tamagawa Dam Mascots**  
**Ron and Run**  
 The "Tatsu" siblings who were born in Lake Tazawa.  
 Ron 10 years old  
 He is very kind.  
 A brave boy when he gets into action.  
 Run 9 years old Little sister of Ron who is younger by a year.  
 A kind and fashionable girl.

**Let's learn more!**  
**Tamagawa Dam Archive Room** **Free admission**  
 Open: 9:00~17:00 (Closed on snowy season)

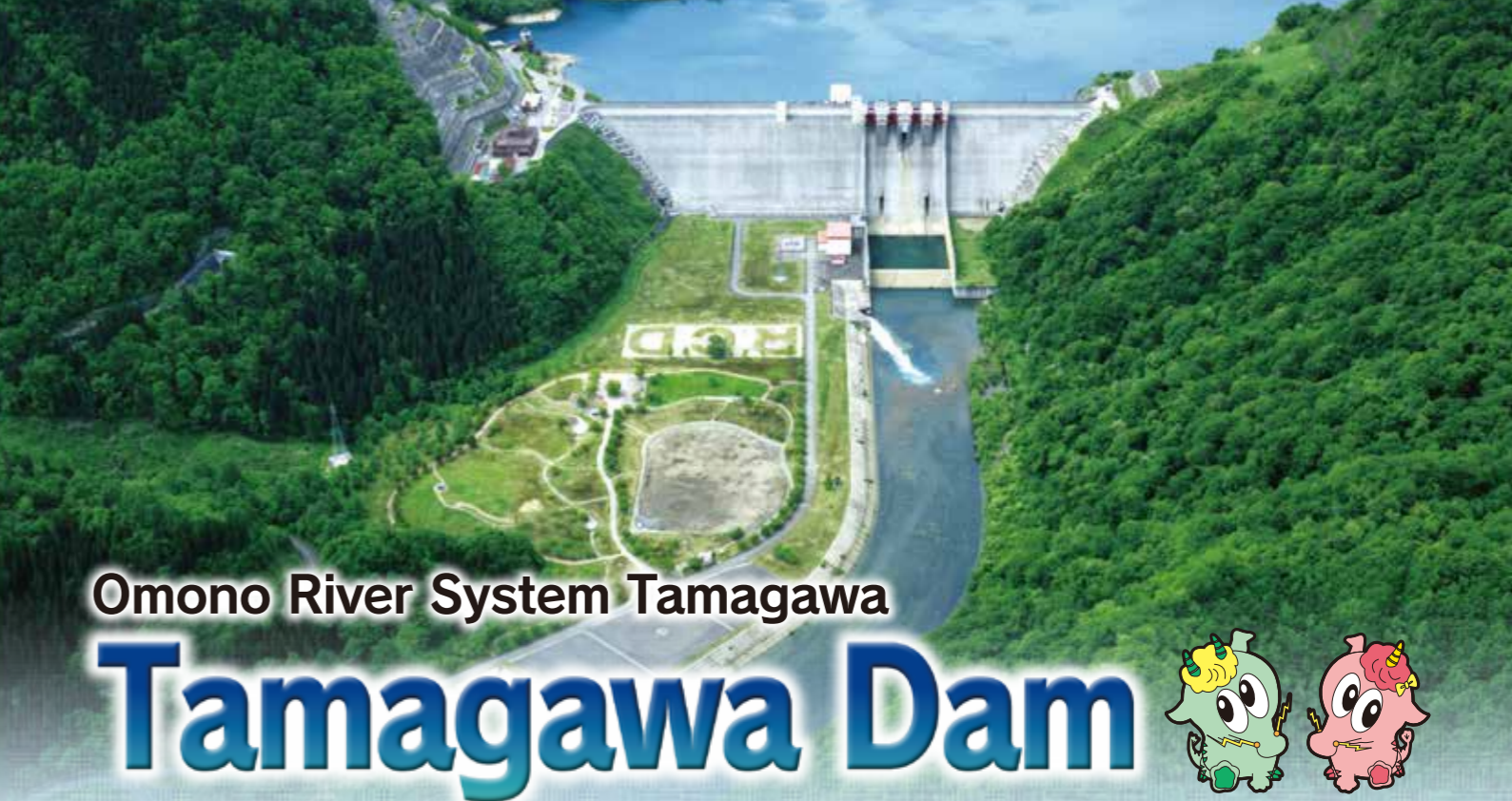
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**Dam Tour Guide**

Tamagawa Dam Exploration Tour

Are you interested in the interior of the dam?  
 We provide a rare opportunity to tour the interior of the dam.

Reception Open on weekdays from 9:00~11:00 and 13:00~15:00 (Closed on snowy season)  
 ※Individual tour is also possible.



## Omono River System Tamagawa

# Tamagawa Dam



### Tamagawa Dam and Tamagawa Acidic Water Neutralization Treatment Facility

Tamagawa Dam is a gravity dam built on the upstream of Tamagawa which is the biggest tributary of Omono River. It was built to control flood, conserve the environment of the river, generate electric power and supply water for agricultural, industrial and residential needs while playing a big role in the development of city industrial and livelihood of people living at cities near Omono River.

The Tamagawa Acidic Water Neutralization Treatment Facility treats the boiling acidic water from Tamagawa Hot Spring's source which is located at the upstream of Tamagawa Dam so that the dam and other structures will not be corroded by the acidic water and also serves the purpose to supply agricultural water to the vast plains of Semboku.

### Functions of Tamagawa Dam

**Flood Control**

Water flowing into the dam during heavy rain is stored to prevent flood.

**Conservation of River Environment**

Water stored in the dam is discharged in the event of water shortage.

**Water Supply**

Water is supplied to around 310,000 residents in Akita City daily.

**Supply of Agricultural Water**

Agricultural water is supplied to approximately 10,000ha of farmlands at the plains of Semboku.

**Supply of Industrial Water**

Water is supplied to the industrial areas at Akita Bay.

**Power Generation**

Tamagawa Power Station generates electricity for about 23,000 households yearly through hydropower.

# Size of Tamagawa Dam

Tamagawa Dam has a height of 100m and length of 441.5m. Hosen Lake was formed as a result of water flow being dammed by Tamagawa Dam and it is the biggest dam lake among the dam lakes managed by the Ministry of Land, Infrastructure, Transport and Tourism.

**Height**  
A 100m tall dam which is approximately the height of a 30-story building.

**Water Capacity**  
The total reservoir capacity of the dam lake is 254 million m<sup>3</sup>, which is equivalent to the capacity of 205 Tokyo Domes.

**Surface Area**  
The surface area of the dam lake is 8.3 km<sup>2</sup> which is about 177 times bigger than that of Tokyo Dome.

**Weight of Dam**  
The weight of the dam concrete is about 2.7 million tonnes which is roughly 9000 times the weight of "Komachi", the Shinkansen running between Tokyo and Akita City.

※Shinkansen "Komachi" (7 cars) About 300 tonnes

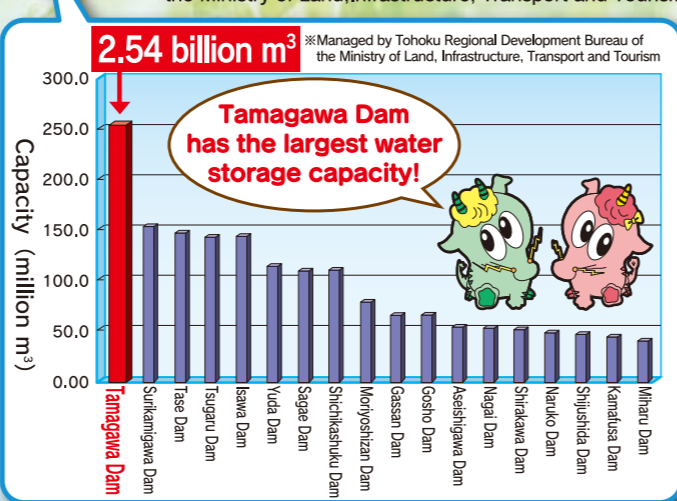
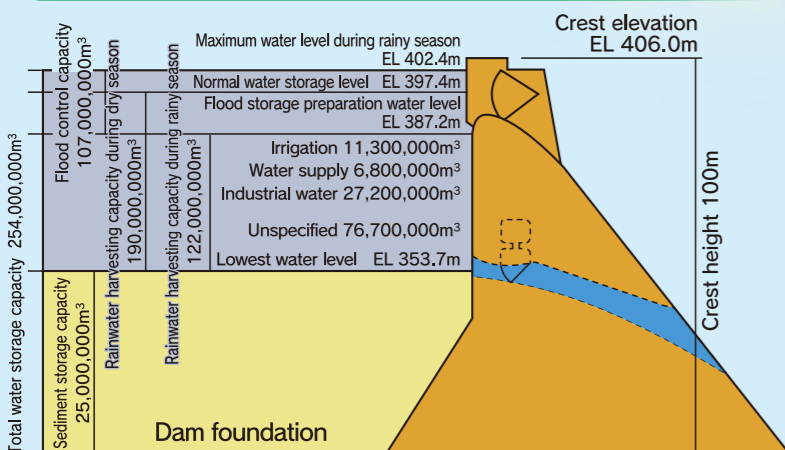
# General Information on Tamagawa Dam

## Specification

Type	Gravity dam	Catchment	287km <sup>2</sup>	(5th among Tohoku's dams)
Height	100.0m (6th among Tohoku's dams)	Reservoir Surface Area	8.3km <sup>2</sup>	(1st among Tohoku's dams)
Length	441.5m (7th among Tohoku's dams)	Total Water Storage Capacity	254 million m <sup>3</sup>	(1st among Tohoku's dams)

※Managed by Tohoku Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism

## Reservoir Capacity Allocation Diagram



※Managed by Tohoku Regional Development Bureau of the Ministry of Land, Infrastructure, Transport and Tourism

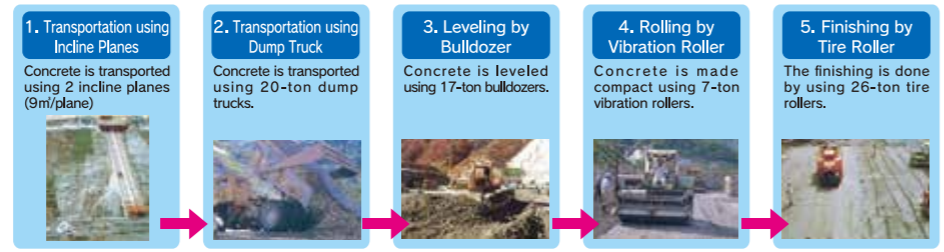
**Tamagawa Dam has the largest water storage capacity!**

## Timeline of Tamagawa Dam & Tamagawa Acidic Water Neutralization Treatment Facility

- April 1973 Survey of dam
- April 1975 Initiation of dam construction
- January 1978 Signing of dam construction-related loss compensation agreement
- August 1980 Construction of main body of dam
- September 1989 Commencement of test operation at Tamagawa Acidic Water Neutralization Treatment Facility
- October 1990 Completion of Tamagawa Dam
- April 1991 Transition to Dam Management Center Commencement of full-scale operation at Tamagawa Acidic Water Neutralization Treatment Facility

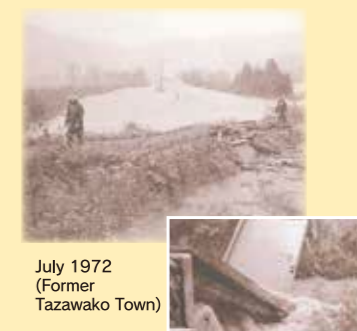
## RCD Construction Method

RCD construction method which was an innovative method developed by the Ministry of Land, Infrastructure, Transport and Tourism (formerly Ministry of Construction) at that time was used for concrete casting to reduce labor and construction period of Tamagawa Dam. RCD concrete method is an effective concrete casting method which uses super-hardened concrete with less joint seams with the utilization of general purpose machines such as dump trucks, bulldozers and vibrating rollers.



## ① Consecutive Flood Damages

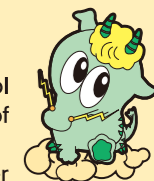
The catchment at Tamagawa has always been damaged by water since long ago. For example, the flood which happened in July 1947 caused damage to the catchment at Tamagawa, affected the whole area of Omonogawa and created several casualties. The flood in July 1972, 25 years after the last flood came about when it started raining with a precipitation of 383mm at Yoroihata, Tazawako of Semboku City and the flood caused heavy damage to Tamagawa and Omonogawa's catchment by destroying structures such as embankments. Tamagawa Dam was then constructed to reduce damages caused by such heavy floods.



July 1972 (Former Tazawako Town)

## ② Creating a Safe Catchment Area

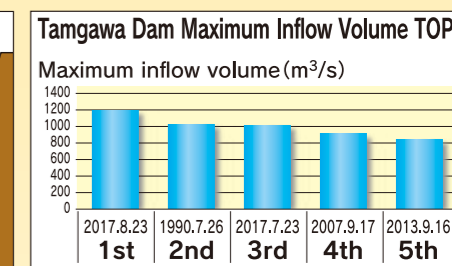
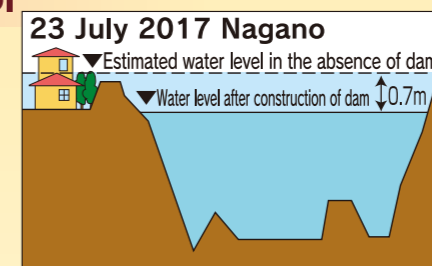
At Tamagawa Dam, efforts are being made to reduce flood damage on the downstream by implementing flood control system capable of discharging water to reduce the originally designed peak flow rate (maximum water discharge rate) of 2,800m<sup>3</sup>/s to 200m<sup>3</sup>/s. The amount of water discharged during the event of water shortage is determined by calculating the amount of water needed by Tamagawa's underground water irrigation, Omonogawa's Nagano and Tsubakigawa in order to ensure sufficient water supply.



Most of the rainwater is stored in Tamagawa Dam to prevent floods.

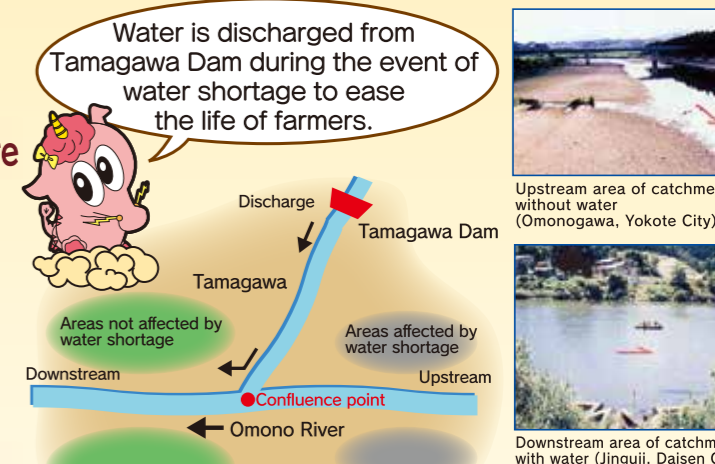
## ③ Effects of Flood Control

Flood control is done at an average of 5 times yearly. During the heavy rain on 23 July 2017, the maximum dam water inflow rate was approximately 1,030m<sup>3</sup>/s (equivalent to 5,150 bathtubs of 200L capacity) and 81% of it was stored in the dam. As a result, it was estimated that the water level at Nagano of Daisen City which is located at the downstream of Tamagawa was reduced to about 0.7m, contributing to damage reduction at the affected area.



## ④ Effects of Water Shortage Countermeasure

During the water shortage in 1994, 44 water facilities experienced water outage or lacked water to be supplied to 19 towns in the prefecture. Furthermore, a total of 29,000ha of paddy fields of 50 towns suffered badly due to the lack of water. In recent years, specifically 2006, 2007, 2009, 2012 and 2015, a stable supply of water was conducted to prevent water shortage.



Water is discharged from Tamagawa Dam during the event of water shortage to ease the life of farmers.



Upstream area of catchment without water (Omonogawa, Yokote City)



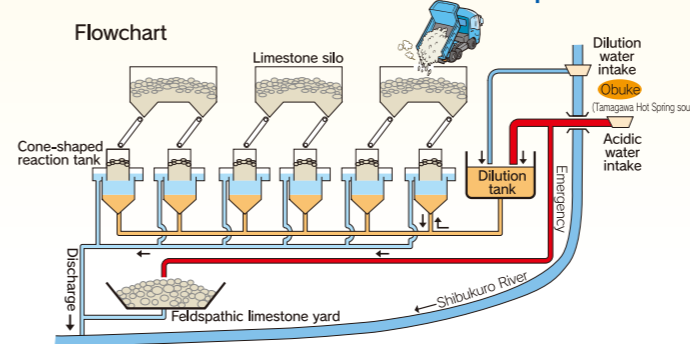
Downstream area of catchment with water (Jinguji, Daisen City)

## ⑤ Neutralizing Acidic Water

The hot spring water at Tamagawa Hot Spring has a pH of 1.2 which is more acidic than lemon and the water flowed throughout Tamagawa. Its acidity caused structural corrosion, was inadequate for fish habitation and unsuitable for drinking and industrial purposes. To solve this problem, the acidic water undergoes neutralization treatment using limestone at the Tamagawa Acidic Water Neutralization Treatment Facility which is a part of Tamagawa Dam's objectives.



### ● Flow of neutralization treatment process



### ● The neutralization treatment has a big influence on the downstream area's ecosystem



- Fishes and plants returned to Tamagawa and Lake Tazawa.
- The acidic level of soils at the downstream was reduced.
- Water quality for industrial usage was satisfactory and more rice was able to be harvested.