Iwaki River system
Iwaki River

Tsugaru Dam

Tsugaru Dam
Mascot
Pecker-kun

History of Tsugaru Dam

- April 1988
  Implementation plan survey begins
- April 1991
  Tsugaru Dam Research Office opens
  Tsugaru Dam Construction Office opens
- August 2000
  Concluded agreement on general compensation
- November 2008: Construction of main dam structure begins
- May 2010
  Concrete casting begins
- August 2014
  Concrete casting of main dam structure is completed
- February 2016: Trial flooding begins
- September 2016: Trial flooding is completed
- October 2016: Construction is completed
- April 2017: Transition made to management and operations

The Tsugaru Dam is a concrete gravity dam constructed as a redevelopment of the Meya Dam completed in 1960.
This is a “multipurpose dam” that has six different roles: flood control, river ecosystem conservation, agricultural water supply, municipal water supply, industrial water supply, and power generation.
Concrete casting was performed using the cruising roller compacted dam (RCD) method_only the third such example in Japan (the first in Tohoku).

Tsugaru Dam’s functions

Mitigating flood disasters

Planned flood discharge at dam site:
Adjusted from 3,100 m^3/sec
to 160 m^3/sec

Maintaining proper waterflow functions

Providing consistent replenishment for existing water supplies, and conserving the river’s ecosystem.

Supplying municipal water

Additional water supply to Hirosaki city:
14,000 m^3/day

Replenishing irrigation water

Replenishes irrigation water for roughly 9,600 ha of farmland on the left bank of Iwaki River.

Generating power

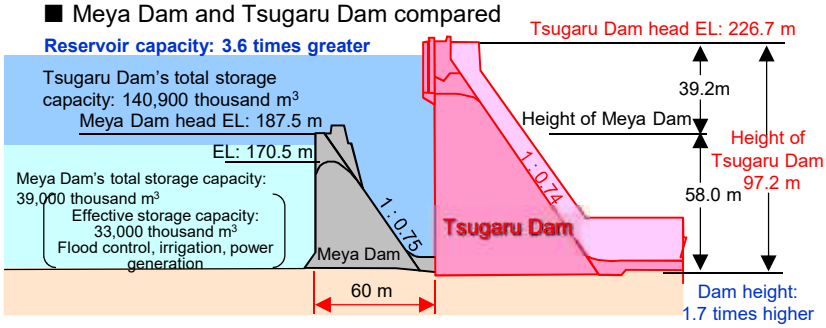
Maximum generation output: 8,500 kW

Supplying industrial water

Additional water supply to
Goshogawara city: 10,000 m^3/day

Tsugaru Dam and Reservoir Specifications

■ Meya Dam and Tsugaru Dam compared



■ Lowest stored water level since management transition (Aug 16, 2019)

■ Tsugaru Dam and "Tsugaru Shirakami Lake" Reservoir Specifications

River		Iwaki River, Iwaki River system, Class-A River
Reservoir	Watershed area	172.0 km²
	Flooded area	5.1 km²
	Total storage capacity	140,900,000 m³
Dam	Type	Concrete gravity dam
	Dam head elevation	EL: 226.7 m
	Dam height	97.2 m
	Dam head length	342.0 m
	Dam head width	9.0 m
	Dam volume	759,000 m³
	Water intake facilities	Selective water intake (multiple gate)
	Water releasing facilities	Regular spillway Width 4.3 m x Height 4.4 m x 2 gates Conduit gate Width 3.9m x Height 3.6m (outlet)
Total project cost		Approx. 162 billion yen

■ Water releasing facilities

Principal spillway
This is where water spills out naturally when the water level in the dam lake rises from snowmelt or heavy rains.
There are two gates (openings) at a height of 75.4 meters.

Conduit gate

The water in the dam becomes turbid whenever heavy rain causes a flood.
This conduit gate is used to let this turbid water out at an early stage to keep the water clean.

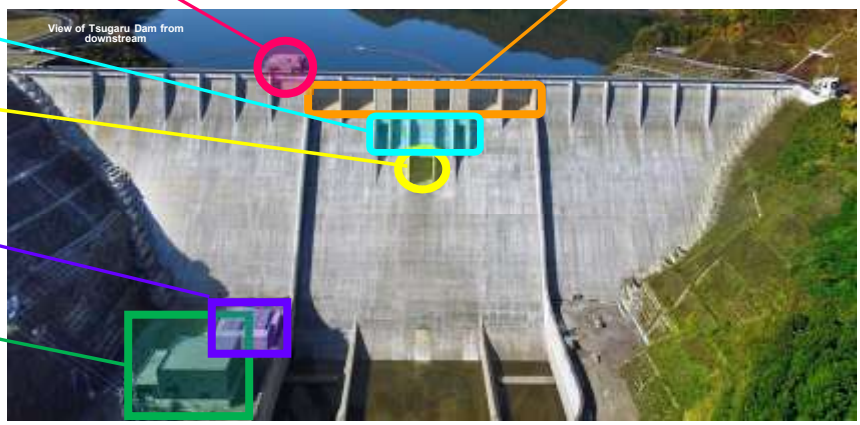
Service water release gate (Jet flow gate)
Water taken in at the intake tower flows through a channel to the release gates and then on to the power plant. Water for regular services is released here.
Diameter: 1,100 mm, Max release rate: 15m³/sec

Tsugaru Power Plant (Tohoku Electric Power Company)
Hydropower is generated using water that comes flowing through the dam, and then the water is released into Iwaki River.

Intake tower

This facility is used for taking water in from the dam lake. To take in water from the dam lake, it opens its gate at a specific location (height) so that the water temperature roughly matches the water temperature in the Iwaki River. From this intake tower, the water passes through the dam to the water release valve room and generator, finally flowing out into Iwaki River.

Emergency flood spillway
This is where water spills out naturally when there is a major flood. There are six gates (openings) at a height of 86.8 meters.



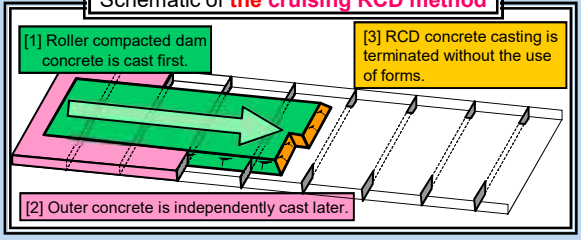
■ Cruising RCD Method

Because there were concerns that processes might be delayed due to cement supplies being cutoff and quarry sites suffering rock-slides in the aftermath of the Great East Japan Earthquake, we decided to use a high-speed construction method called "cruising roller compacted dam (RCD)" method of construction so that we can stay on schedule as defined in our basic project plan (to be completed in FY 2016).

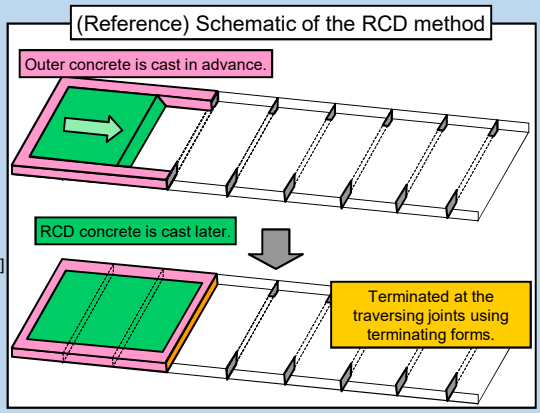
Features of the cruising RCD method

[1] Roller compacted dam concrete is cast first.
[2] Outer concrete is independently cast later.
[3] RCD concrete casting is terminated without the use of forms.

Schematic of the cruising RCD method



(Reference) Schematic of the RCD method

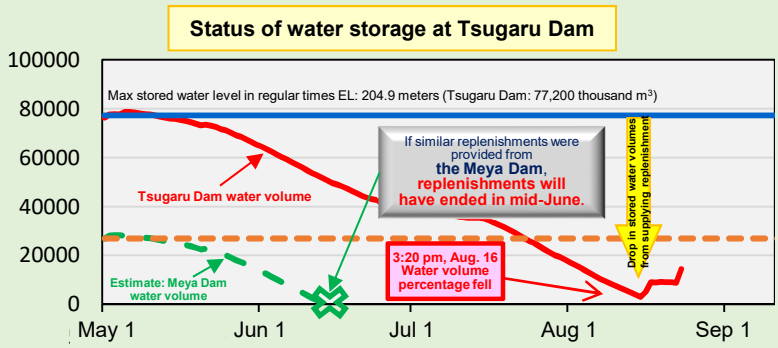


[Revision prepared by referencing "Technical reference on the execution of the cruising roller compacted dam method"]

Dam's effect during droughts

Rainfall in the watershed areas of Tsugaru Dam in 2019 tended to be light, with the cumulative rainfall for May thru July reaching only roughly 53% of the average. This was the lowest level on record since management of this dam began in April 2017.

While the water volume percentage at the Dam fell to 2.6% due to sparse rainfall, we were able to make good use of our water volumes and weather this drought by working and coordinating with relevant organizations, and fine tuning our day-to-day management tasks.



Dam management

Flood response

Whenever flooding is expected, we prepare forecasts on potential inflow volumes into the dam, and conduct reviews on flood control and projected release volumes based on weather information, as well as data on rainfall amounts, water levels, and other data from different observatories. Before we perform a release, we alert river users and residents downstream who live near the river through public loudspeakers and sirens, conduct patrols on alert cars, and notify all relevant organizations.

Response during normal times

We monitor flow rates on a daily basis, and adjust the volumes we release from the dam to ensure that water flowing in rivers downstream of the dam maintain their proper functions, as well as for supplying irrigation replenishments, and municipal water.

Managing our surroundings

We keep an eye out for any anomalies or changes to the dam lake and its bank slopes, as well as for any illegal waste disposal.

Water quality studies

At the Tsugaru Dam, we conduct water quality studies in rivers that flow into our reservoirs and dam, as well as rivers downstream.

These studies are performed using four automatic water quality observation devices and four regular water sampling points installed at the reservoirs and rivers downstream.

Environmental Studies

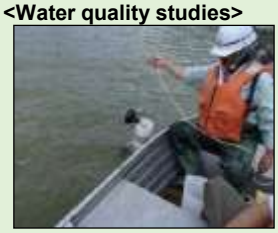
We perform national wetlands surveys that include studies of water quality, flora and fauna, as well as rare raptors and other animals to understand the impact the completed dam has on the environment, and the effectiveness of the different environmental conservation actions being taken.

<Hydrological monitoring>

<Lake surface patrols>

<Measuring dam distortion>

<Water quality studies>



Dam Light-Up Events

We hold regular light-up events as part of our effort to help vitalize our neighboring communities.

Spring

View from the "Shirakami Ga Furusato Bashi Park"

Summer

View from the "Imoritai district"

Fall

View from the "Tsugaru Dam Park"

Winter

Huge snowman lit up with the dam crown

Around Tsugaru Shirakami Lake

What-to-see MAP

白神の郷に遊ぶ

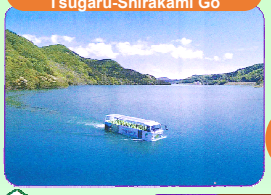
Giant buna (beech) tree Fureai no Michi

Tsugaru Pass

To Fukaura

Nature observation trail

Come and see huge old-growth trees roughly 300 years old.



Amphibious bus, Tsugaru-Shirakami Go

Takanosu Nature Trail

Meya Ravine

Tsugaru-Shirakami Go amphibious bus route

Mikaeri-zaka

Niogataki Fall

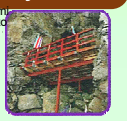
Green Park Mori no Izumi (Muraichi no Yu hot springs)

白神と遊ぶ

Come see us first!

Unpaved road

Shirakami Ga Furusato Bashi Park



Iwaki River

Iwaya Kannon

To Shirakami Ga Furusato Bashi

Tsugaru Dam

Tsugaru Shirakami Lake

Second Falls

Aqua Green Village ANMON (Anmon no Yu hot springs)

317

Yunosawa River

To Fujisato

Anmongawa River

Anmon no Taki (First Falls)

Third Falls

The "World Heritage Trail — Buna (Beech) Forest Walking Trail" is the only trail in the World Heritage area for an easy stroll. This is a beginners' trail where you take a leisurely stroll on a well-maintained walkway and maybe even break out a refreshing sweat. Please come an enjoy this World Heritage forest.

Legend: Nature-oriented tourist destinations; Facility-based tourist destinations; Other tourist destinations; Buildings; Barrier-free restrooms; Parking; Meals; Souvenirs, etc.; Hot spring (day trip visitors welcome)

World Heritage Trail Buna (Beech) Forest Walking Trail

Okawa River

Osawa River

World Heritage area (buffer zone)

Tsugaru Shirakami Lake Park

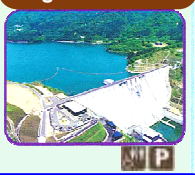
Fushiki no To Tower

Dam Lake View Park

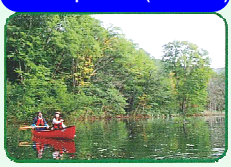
Tsugaru Dam Park

Miyama Lake Park

Kotaiji Temple



Canoe Experience (A'GROVE)



Rafting Experience (A'GROVE)

Come see us first!

Roadside station, Tsugaru Shirakami

Beech Nishimeya

- Farmers market
- Shirakami Roasters
- BeFavo Shirakami Winery

Here you can find local produce, wild vegetables, mushrooms and other Nishimeya specialties. Also enjoy Shirakami Honey, gelato, and charbroiled coffee from Shirakami Roasters.

- Restaurant "Mori no Door"

Tsugaru Dam curry and our winter-special: Meya tofu!

Tsugaru Dam curry
Ever-popular, large-portion dish mimics the dam's shape.

Meya tofu
Available only in this locale limited from winter thru spring.

Soba made from 100% buckwheat from Meya village topped with wild vegetables.

Information

Visit us for information on Nishimeya village, the Shirakami Mountains, and other tourist destinations. You will also find the "Tsugaru Shirakami Tour" travel agency's office in this building, as well as the amphibious bus tour registration counter where you can check their tour status.

Aji na Kobo

Register here for the Soba Dough Kneading and Meya Tofu-Making Experience programs (by reservation).
* Meya Tofu-Making Experience program available during winter months only.

* All information current as of March 2020.

Tohoku Regional Development Bureau, Ministry of Land, Infrastructure, Transport and Tourism

Iwaki River Dam Central Management Office (Aseishigawa Dam / Tsugaru Dam)

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