



GUIDE
OF
AGIGAWA
DAM



阿木川ダム



Overview and History

Agigawa Dam was constructed to develop water resources in the Kiso River System. Agigawa Dam is a rock-fill multipurpose dam with a total storage capacity of 48 million m³, its purposes are flood control, water supply (maximum 4.0m³) and maintenance of river environment.

In 1969, the Ministry of Construction started a

feasibility study on the project and Water Resources Development public Corporation (WRDEC) took over the project in October 1976. WRDEC completed the Agigawa Dam in March 1991 at a total cost of ¥10.8 billion and has been operating and maintaining the dam since then.



Purpose and Statistics

Agigawa Dam was constructed at Agi River that confluent Kiso River at Ena City and Agigawa Dam is located 110 km upstream from the river mouth of Kiso River.

Purpose

(1) Flood control.....

The function of flood control of Agigawa Dam is to reduce design flood discharge of 850m³/sec to 120m³/sec.

To protect Ena City and downstream area around Kiso River from flood damage, during the flood season, Agigawa Dam secures 16 million m³ storage capacity which is equivalent to the one-third total storage capacity for flood control.

(2) Conservation of the river environment.....

Agigawa Dam supplies water to stabilize vested intake in Kiso River and to maintain the river environment.

(3) Supply of new water services.....

By construction of Agigawa Dam, another 4.0m³/sec water is available to use in Tounou Area in Gifu Prefecture (5 cities and 1 town) and Aichi Canal Project benefited Area in Aichi Prefecture as drinking and industrial water.

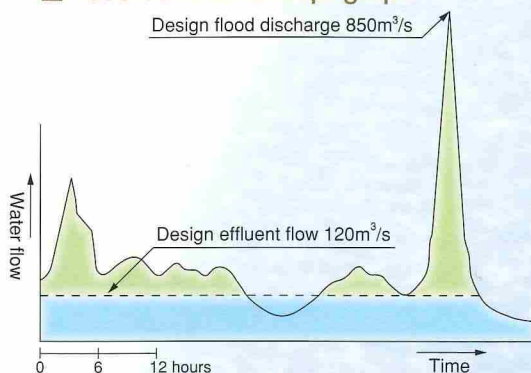
Statistics

Location	Higashino, Ena City, Gifu Prefecture
Name of the river	Agi River, Kiso River system
Type of dam	ECRD (Earth Core Rock-fill Dam)
Total storage capacity	48,000,000m ³
Effective storage capacity	44,000,000m ³
Sediment storage capacity	4,000,000m ³
Flood control capacity	16,000,000m ³
Water utilization capacity	28,000,000m ³ (flood season) 44,000,000m ³ (non-flood season)
Dam height	101.5m
Crest Length	363m
Volume of the dam	4,900,000m ³
Elevation of the dam crest	EL.417.5m
Catchment area	81.8km ²
Reservoir area	1.58km ²
Available Depth	49.0m
Surcharge water level	EL.412.0m
Normal water level	EL.412.0m
Flood season control level	EL.400.5m
Lowest low water level	EL.363.0m
Design flood discharge	850m ³ /s
Design maximum discharge	120m ³ /s
Design flood discharge	2,000m ³ /s

Water supplemented districts	Tap water service	Industrial water service	Total
Tounou Area in Gifu Prefecture	Maximum 0.8 - 0.8	—	0.8
Aichi Canal Project benefited Area in Aichi Prefecture	Maximum 1.102	Maximum 2.098	3.2
Total	1.902	2.098	4.0

Unit: m³/s

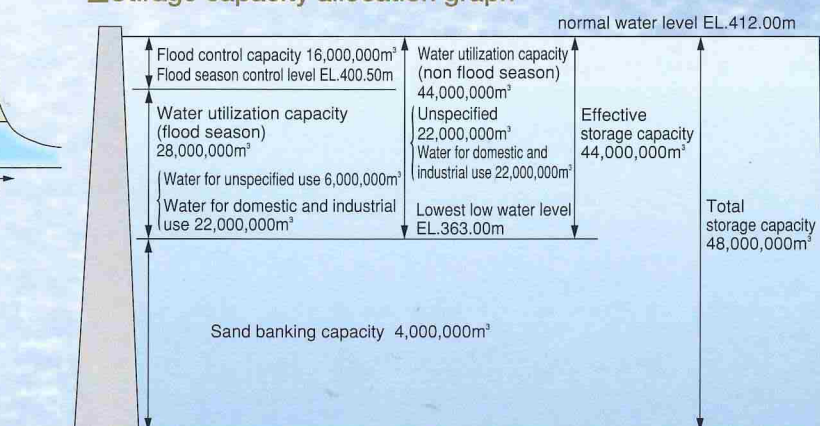
Flood control concept graph



Dam distribution graph(m³/s)

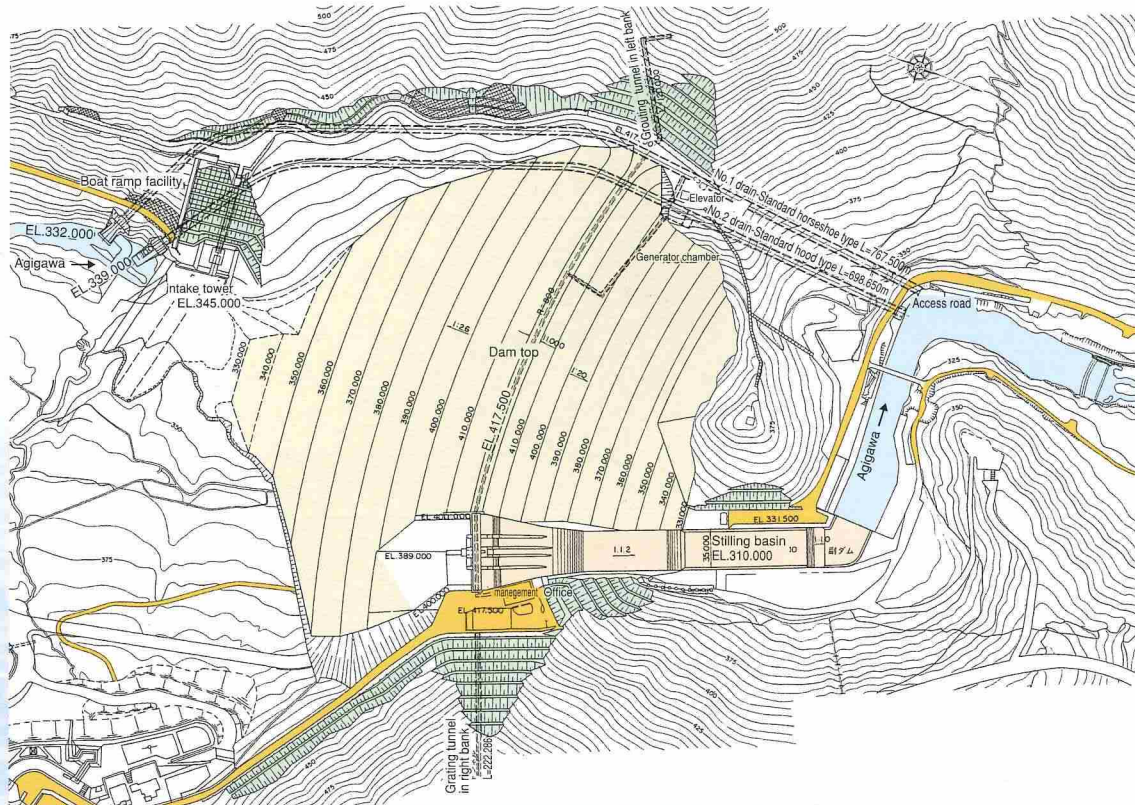


Storage capacity allocation graph

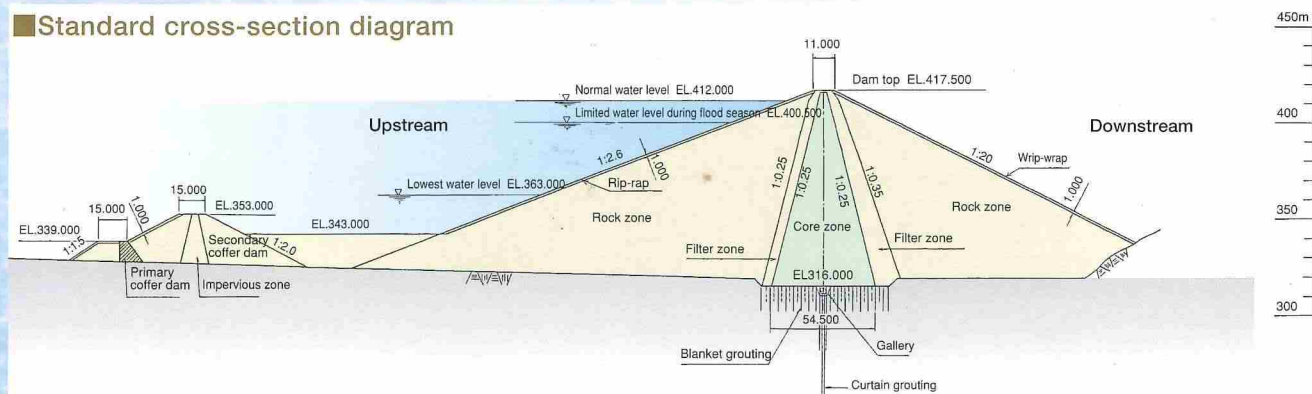


Structure

Top view



Standard cross-section diagram



Flood Control Outlet Works

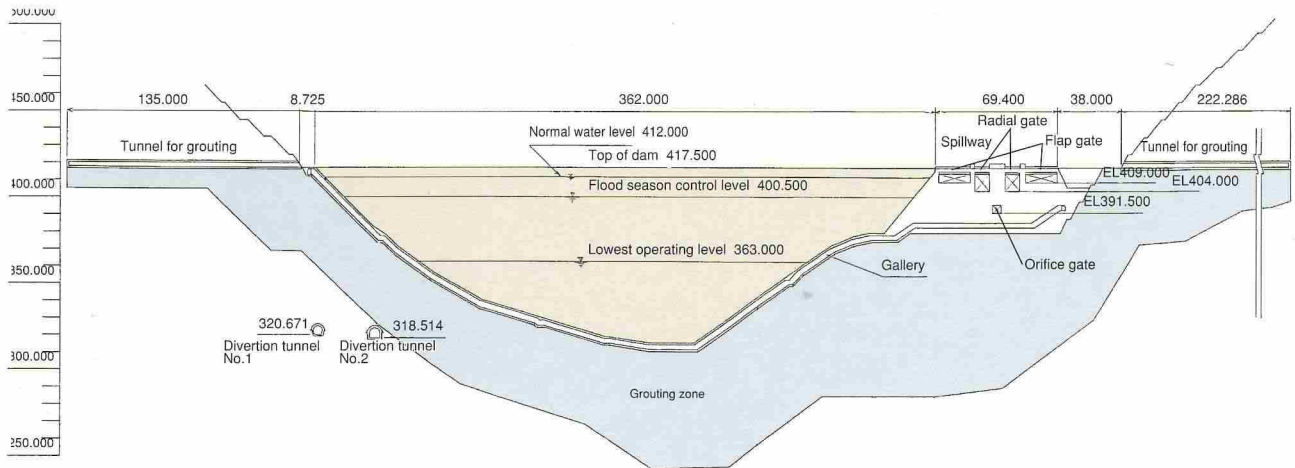
Orifice gate	Type	Sliding type high-pressure radial gate Width 5.0m x Height 5.0 1 gate	
	Water conduit pipe	Width 5.0m x Height 5.0m to 8.23m Pipe length 9.27m	
	Water discharge capacity	Q=195.m ³ /s at Limited water level during flood season of EL.400.5m	
Radial gate	Type	Overflow type radial gate Width 8.2m x Height 9.925m 2 gates	
	Water discharge capacity	Maximum Q=1,060m ³ /s	
Flap gate	Type	Box garter type flap gate Width 18.0m x Height 3.3m 2 gates	
	Water discharge capacity	Maximum Q=746m ³ /s	

Emergency Spillway

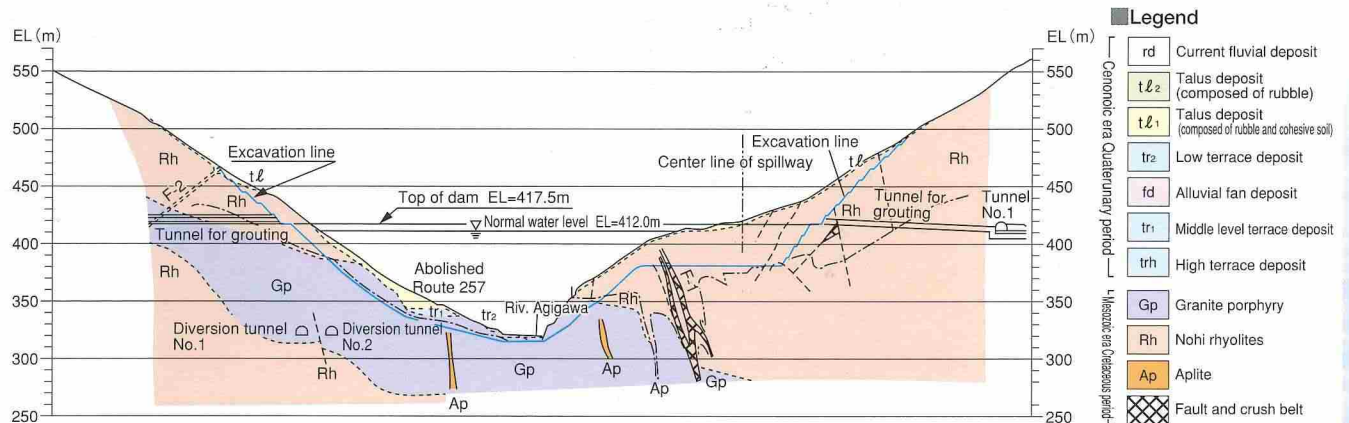
Low water management facility

Selected intake facility	Intake tower	Selective intake (reinforced concrete independent vertical type)	
	Type	Liner multistage roller gate	
	Conduit pipe	3 pipes (1 pipe is for power generation)	
Discharge valve	Type	Fixed cone type Diameter 0.600m 1 valve	
	Emergency discharge valve	High-pressure sliding gate Width 1.25m x Height 1.60m 1 valve	
Emergency discharge valve	Type	High-pressure sliding gate Width 1.25m x Height 1.60m 1 valve	
	Water discharge capacity	Q=48m ³ /s (high pressure + fixed cone) at lowest water utilization level of EL.363.0m	

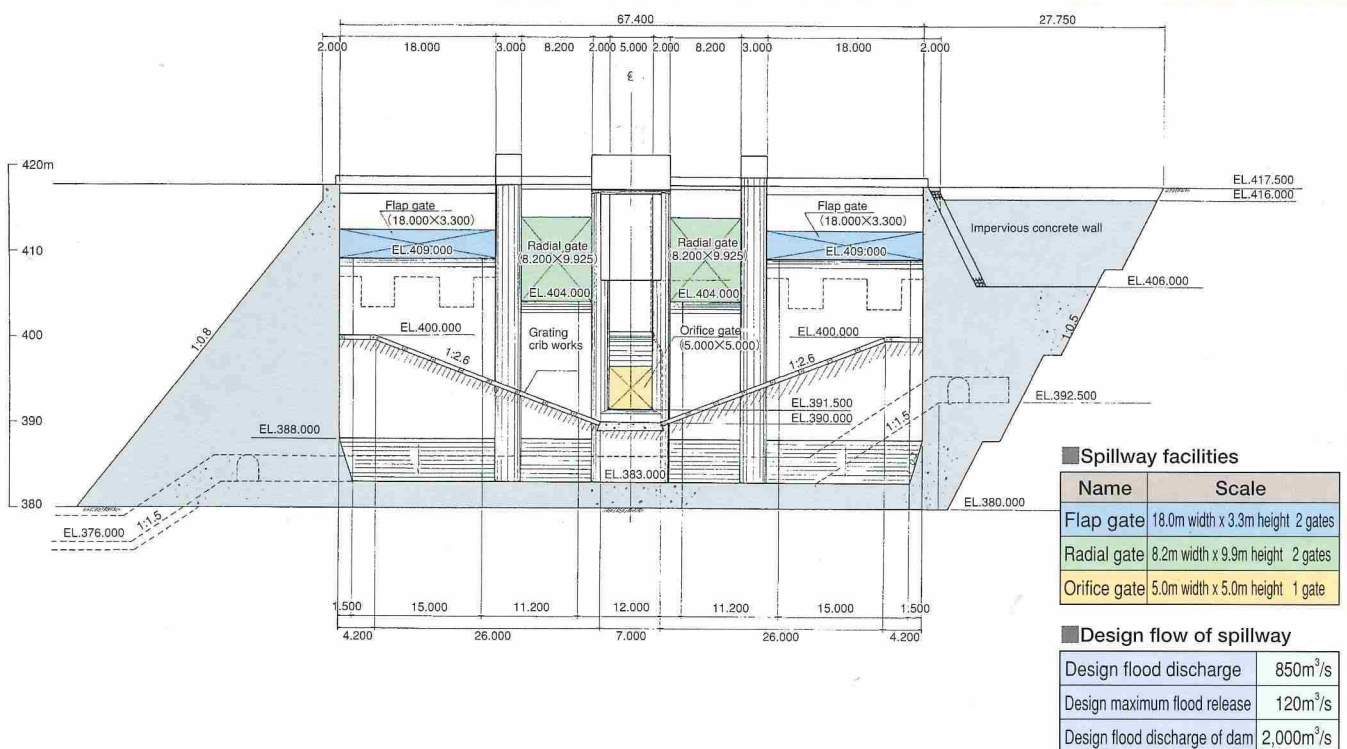
Longitudinal section



Geological section



Spillway front view

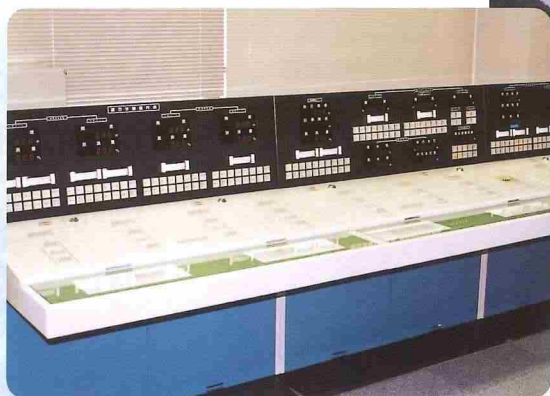


Management system

The dam is equipped with various facilities and equipment to fulfill its functions.

Control center

Dam gate control system



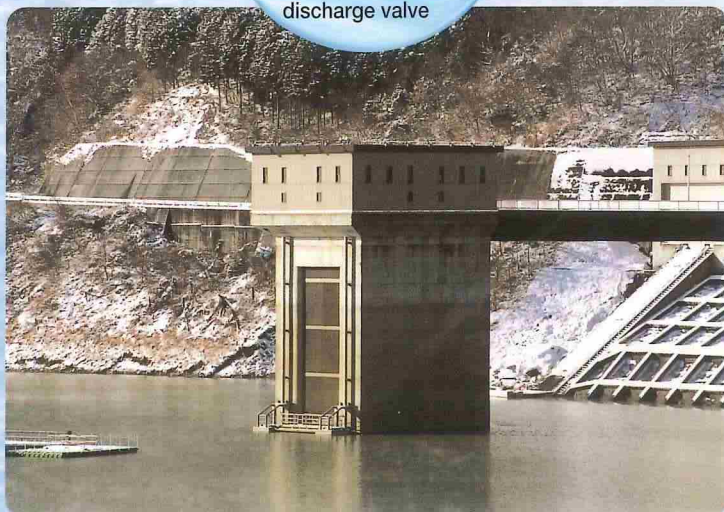
Warning apparatus

- Water discharge warning station
- Electronic display panel



Low water management facilities

- Selected water intake facility
- Water discharge valve
- Emergency water discharge valve



Log boom

Mooring facility

Communication facilities

- Multiplex communication facility
- Mobile radio facility
- Automatic telephone operation facility

Observation facilities

- Telemeter rainfall observation facility
- Telemeter water level observation facility
- Reservoir water gauge
- Weather observation facility
- Radar rain gauge terminal device
- Dam body observation device
- Earthquake measuring device
- Water quality measuring device



Power facilities

- Hydraulic power generation facility for management
- Sub station
- Emergency power facility
- Uninterrupted power facility

Patrol

- Patrol boat
- Workboat
- Warning vehicle



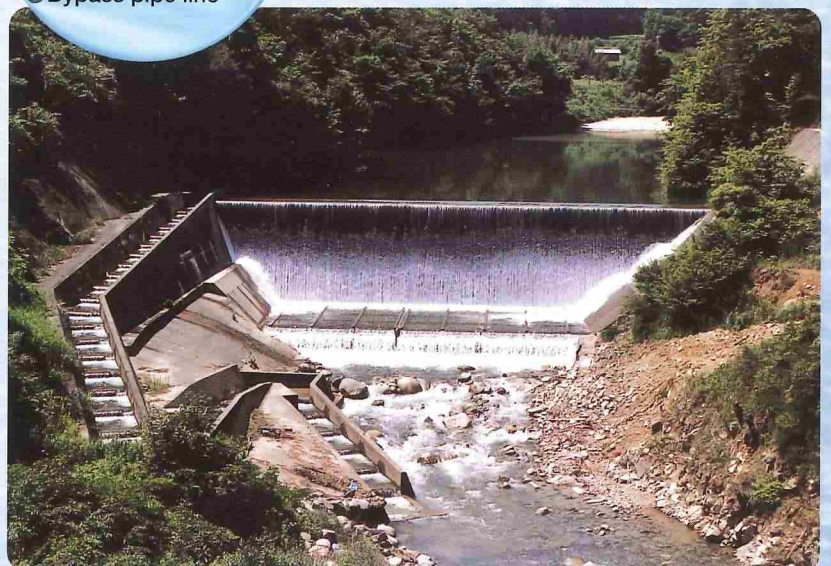
Flood control facilities

- Orifice gate
- Radial gate
- Flap gate



Water quality conservation facilities

- Secondary dam
- Deep layer aeration facility
- Surface layer aeration facility
- Bypass pipe line



Monitoring facilities

- Water discharge alarm station
- Electronic display panel

Management and operation



Flood control operation

Agigawa Dam has three purposes 1) Flood control 2) Maintaining the river environment 3) Water supply.

To carry out these purposes, Agigawa Dam Operation and Maintenance Office is doing three management works below.

Collection of weather information and hydrological data

Checking facilities and equipment

Report to related organizations

Warning discharge and patrolling downstream

Start of discharge from the dam

Start of flood control

Completing flood control

Report to related organizations

Moving on to the low water management

Low water management

- Collect flow data at the lower reference point
- Calculate the amount of water to be supplied to the domestic water and to conserve the river environment.
- Discharge water

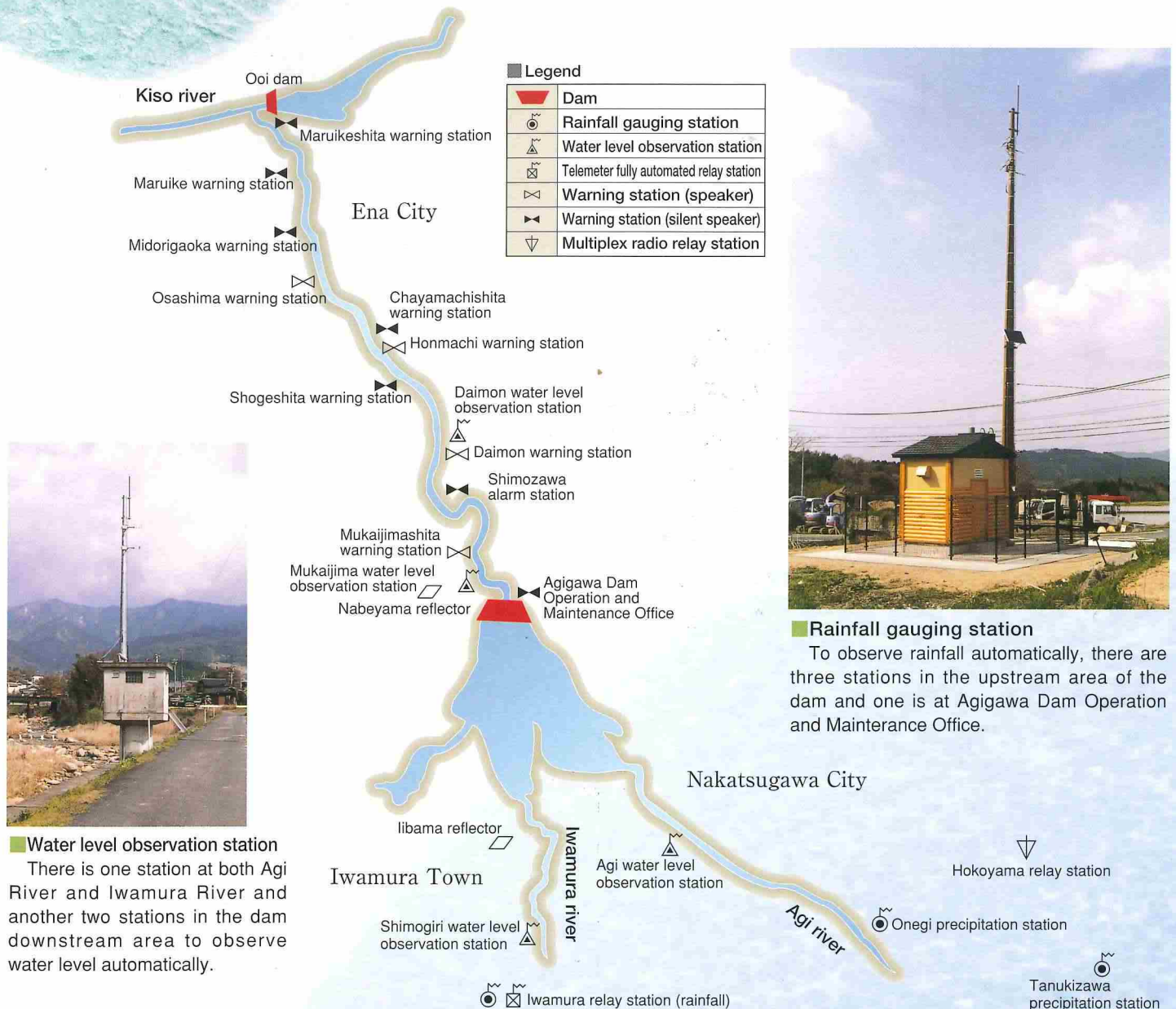


- Maintenance and inspection of facilities
- Data verification, arrangement, and report
- Observation of the dam body behavior
- Patrolling around the reservoir
- Environment maintenance
- Maintenance and improvement construction
- Conservation and examination of water quality
- Management administration
- Public relations work and so on

Facility maintenance



Warning Facilities and Hydrologic Measurement Facilities



Water level observation station
There is one station at both Agi River and Iwamura River and another two stations in the dam downstream area to observe water level automatically.



Rainfall gauging station
To observe rainfall automatically, there are three stations in the upstream area of the dam and one is at Agigawa Dam Operation and Maintenance Office.



Discharge warning station
There are ten stations in the downstream area of the dam to notify discharge from the dam to people who are in or around river.



Patrol and warning vehicle
Before the start of discharge from the dam, vehicles patrol along the river to check the river condition downstream and that nobody is in the river.



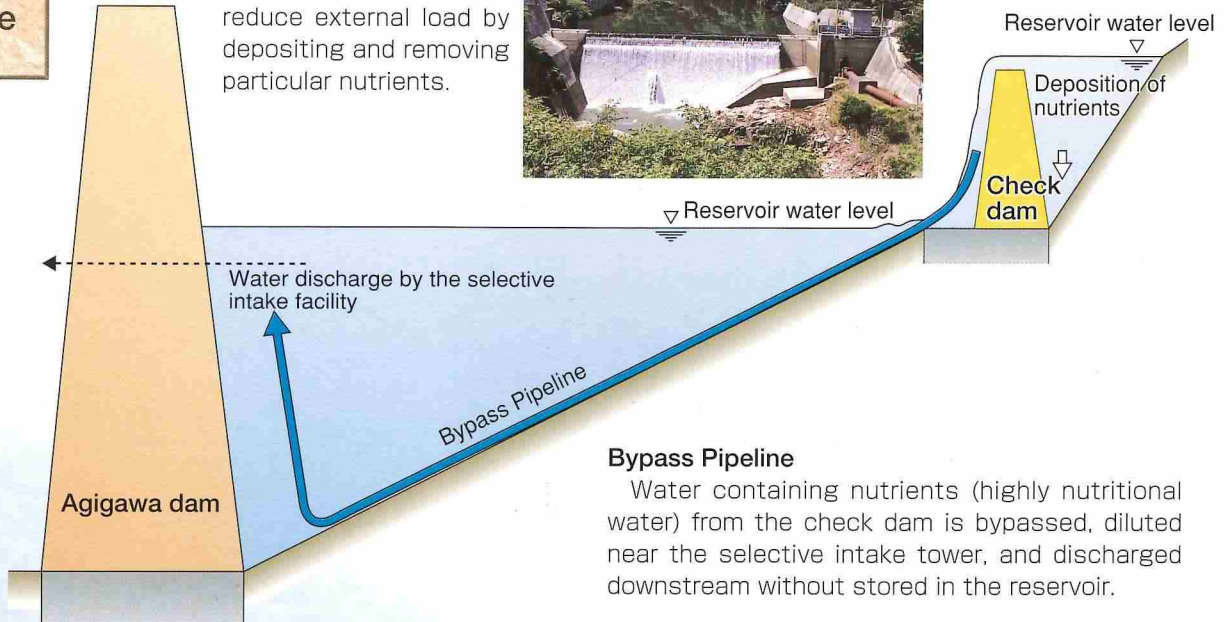
Discharge warning board
These boards are put up at downstream key points before Agi River confluent Kiso River.

Water Quality Conservation

Check dam and bypass pipeline

Check dam

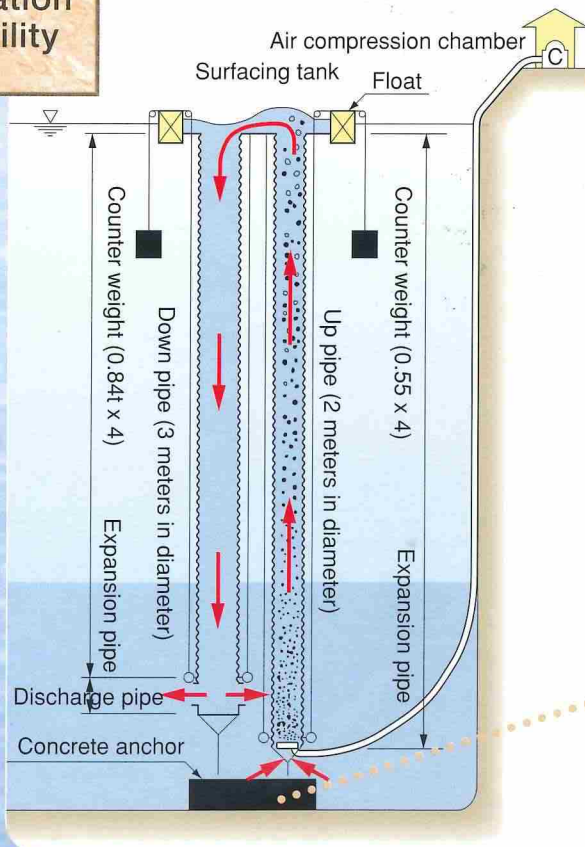
Three check dam at the end of the reservoir reduce external load by depositing and removing particular nutrients.



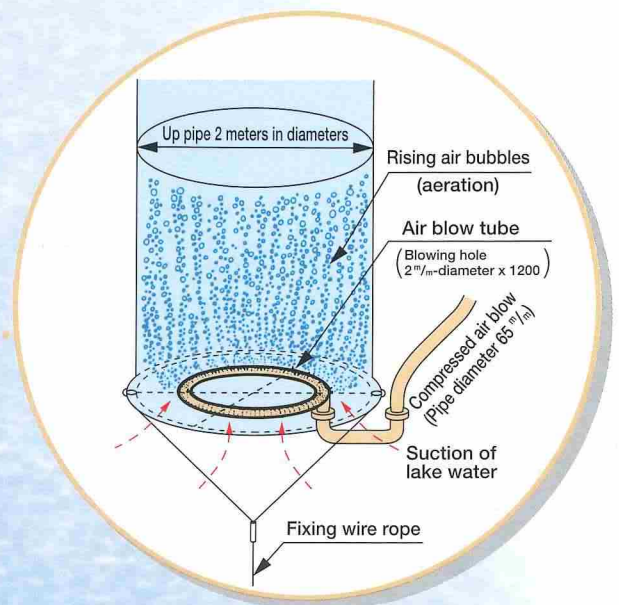
Bypass Pipeline

Water containing nutrients (highly nutritional water) from the check dam is bypassed, diluted near the selective intake tower, and discharged downstream without stored in the reservoir.

Hypolimnetic aeration facility



In the deep layer of a reservoir, concentration of dissolved oxygen tends to drop as a result of decomposition of organic substances and the deep layer aeration facility is used to improve this condition. In the structure, water of the deep layer is raised by blowing air into one of the two vertical cylinders and the water containing oxygen is sent to the deep layer through another cylinder.



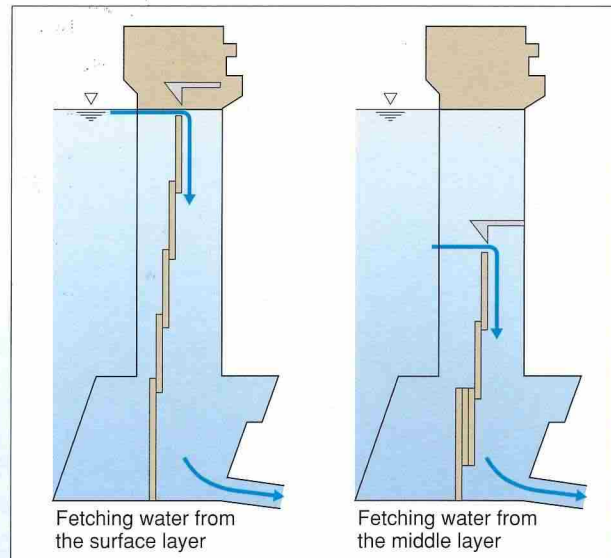
Surface layer aeration facility

In order to control the growth of plankton in the reservoir, this facility aerates surface layer of 50m diameter at the rainfall of 100mm/h.



Selective water intake facility

The reservoir stores warm water in the surface layer and cold water in the lower layer from spring to autumn. Usually, water in the surface layer is fetched and discharged from the reservoir. However, when the water quality in the surface layer deteriorates due to the outbreak of plankton, this facility can fetch and discharge comparatively cleaner water from the middle layer.



Hydraulic power generation facility for management

The hydraulic power generation facility for management of the Agigawa dam generates output power of up to 2,600kW using the water discharged from the reservoir. This power is used for managing the dam and the extra power is sold to the electric power company. This reduces the management cost.

Specification of hydraulic turbine and power generator

Specification of hydraulic turbine	
Type	Horizontal shaft Francis hydraulic turbine
Maximum output	2,700kW
Effective drop	66.98m (at maximum output)
Maximum flow	4.7m ³ /s
Rotational speed	600rpm

Specification of power generator	
Type	3 phase synchronous power generator
Maximum output	2,600kW
Voltage	6,600V
Frequency	60Hz



Improvement of environment around reservoir

There are many places worth visiting around Agigawa Dam such as the exhibition pavilion, Hananashiyama Park, Nakanoshima Park etc. Various kinds of events are held at these places.

Also there are many sightseeing sports not so far from Agigawa Dam such as Ena-kyo (Ena Valley), Iwamura Castle ruin and Taisyo outdoor museum etc. These sightseeing sports are attracting lots of tourist throughout the year.



Dam entry plaza



Hananashiyama park



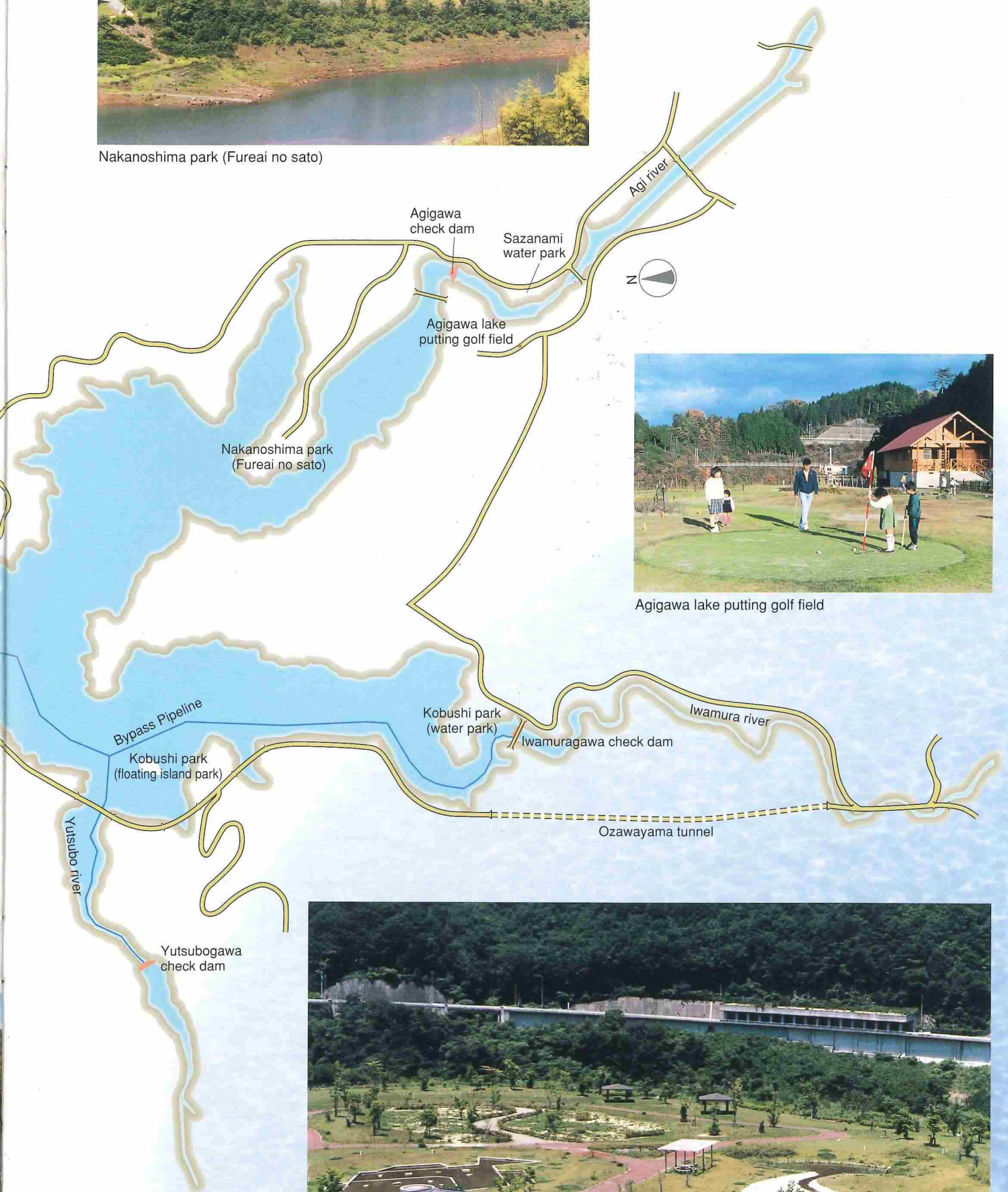
Fishing



Kobushi park (floating island park)



Nakanoshima park (Fureai no sato)



Agigawa lake putting golf field



Kobushi park (water park)

Events

Agigawa Dam Operation and Maintenance Office organize a variety of events. In summer, "Dam visiting tour", "Inspection Gallery visiting tour" and "Reservoir cruse" are held and "One day excursion to Agigawa Dam" is held in autumn for the elementary school students who live just downstream from the Agigawa Dam area. "Memorial March" and "Agigawa Lake Road Race" are also held around Agigawa Dam.

10 Days for Contact with Forests and Lakes / Water Week

grabing fish



Releasing fish

Reservoir cruse



Exhibition Pavilion

Exhibition Pavilion is located at entrane open spece. At the pavilion, visitors can get information on Agigawa Dam and can get a better understanding about the precious water and the importance of water resources development.



Exhibition Pavilion



Model

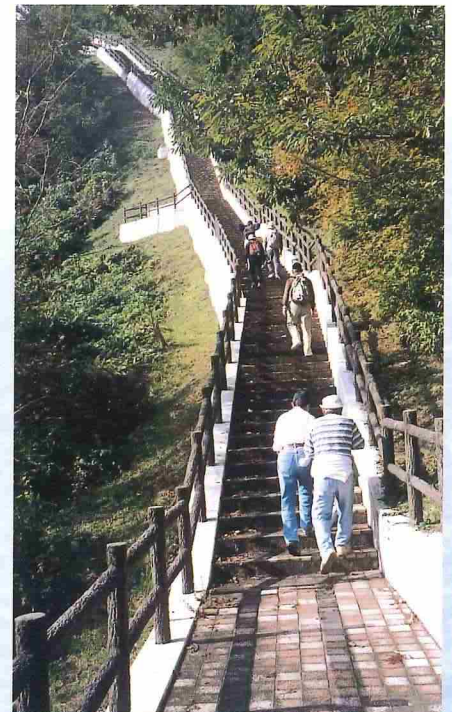
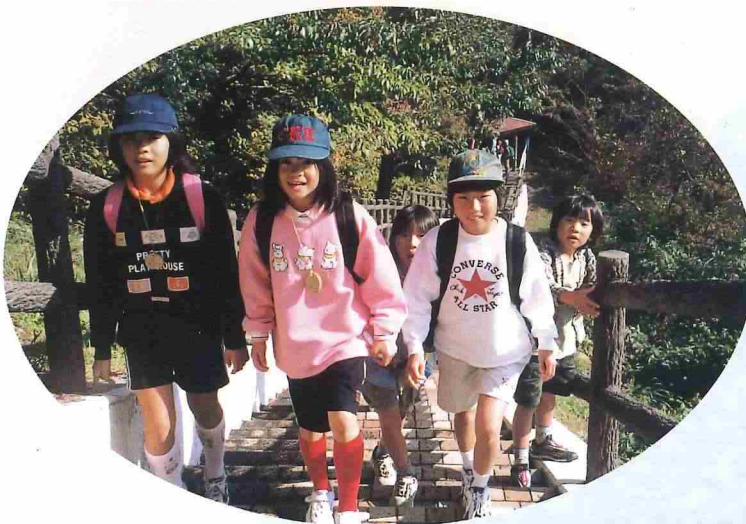
Gadgets for Q & A on water-related matters and Agigawa Dam



One Day Excursion to Agigawa Dam



Memorial March

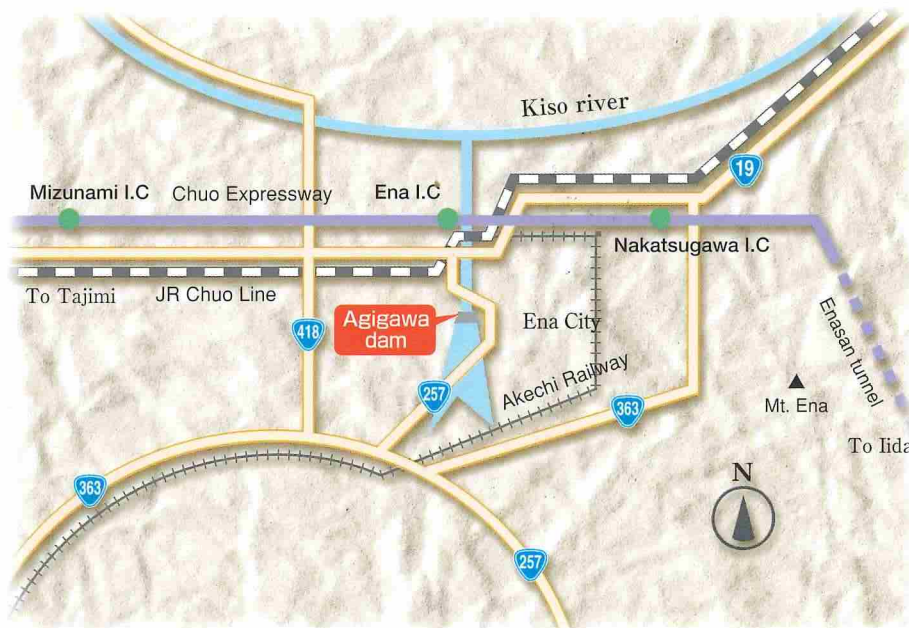


Natural Environment around Agigawa Dam

Agigawa Dam, which is located in the suburb of Ena City, is surrounded by afforested cypress and deciduous broad-leaved forests. They are good habitats for a variety of plants and animals.

Many different kinds of waterfowls such as ducks and mandarin ducks inhabit the reservoir and monkeys, antelopes inhabit the forests around Agigawa Dam.





Incorporated Administrative Agency
Japan Water Agency

Agigawa Dam operation and maintenance office

2201-79 Aza Hananashiyama, Higashino, Ena City, Gifu Prefecture 509-7202

TEL 0573-25-5295 (main)

FAX 0573-25-9221

HP address <http://www.water.go.jp/chubu/agigawa>

E-mail address agigawa@lilac.ocn.ne.jp