

# Gunma Canal Working with Local Communities



## Aiming to Make Gunma Canal Work with Local Communities

In the forty odd years that have passed since its establishment on April 2, 1963, Gunma Canal Land Improvement District has continued contributing toward the local communities, at the same time accommodating changes in agricultural situations.

We are determined to continue giving all our efforts for supporting members and other people of the local communities.

As it has always been said that "agriculture is the foundation of a nation," we hope to promote regional development by continue supplying irrigation water.

### People of local communities help upkeep Gunma Canal

Local residents taking part in weeding at a regulating pond



Local residents taking part in cleaning of a regulating pond



### Utilizing Gunma Canal for local communities

Local residents taking part in a fire drill



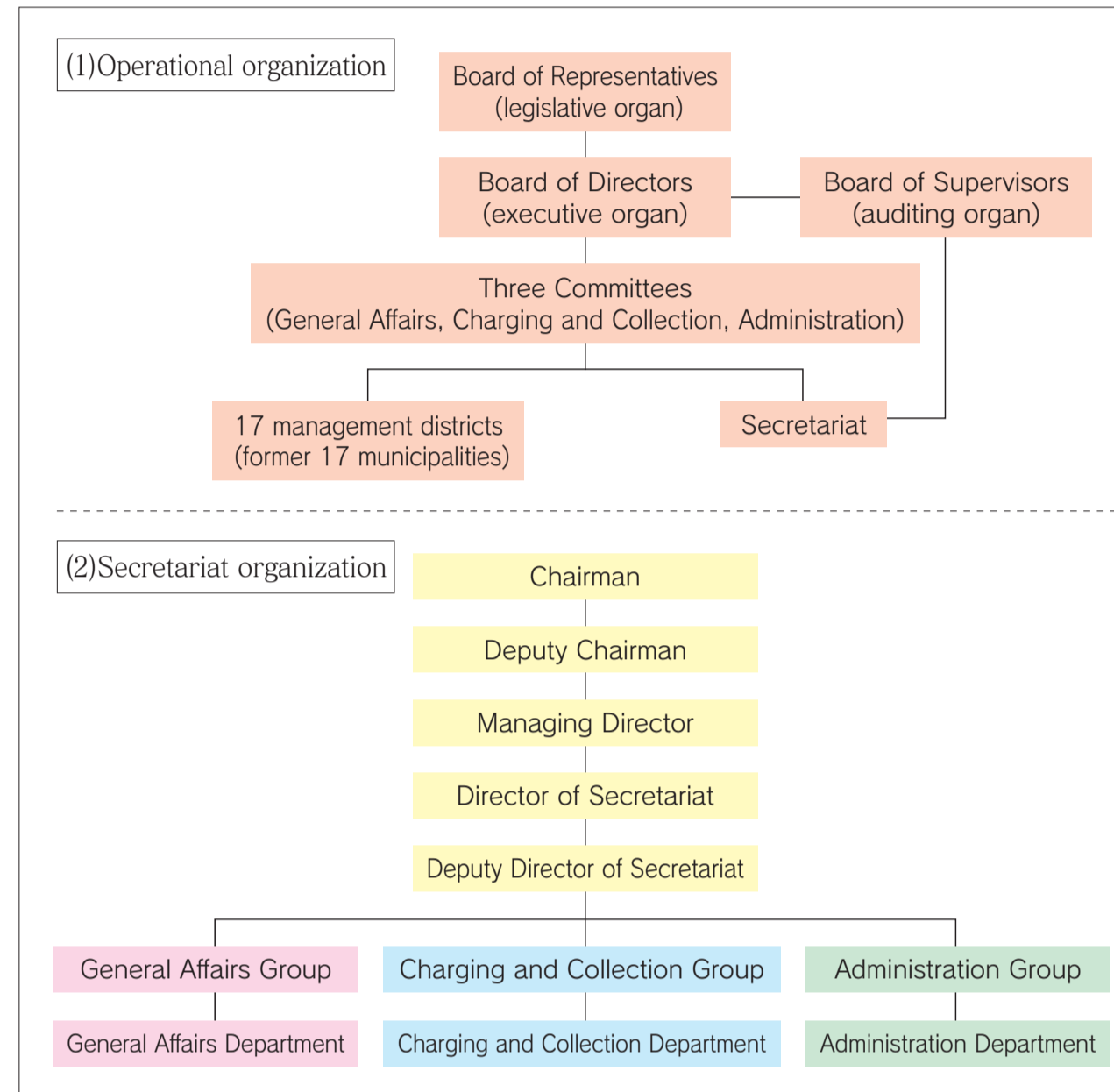
A feed valve of Gunma Canal used for fire extinguishing



## Outline of the Land Improvement District

- Date of establishment: April 2, 1963
- Benefiting land area: 6,304 ha
  - Breakdown Irrigated farmland: 3,449 ha
  - Irrigated rice paddies and fields: 225 ha
  - Partially supplied: 2,285 ha
  - Wholly supplied: 345 ha
- Water rights:
  - Greatest annual intake: 114,600 thousand m<sup>3</sup>
  - Greatest intake in summer: 12,442 m<sup>3</sup>/s (May 16 to September 25)
  - Greatest intake in winter: 2,754 m<sup>3</sup>/s (September 26 to May 15)
- Number of members: 13,236 (as of March 31, 2011)
- Organization: 100 representatives; 29 directors; 5 supervisors

## Organization Chart



## Farm operations

In August 1972, the Gunma Canal Operational Measures Committee and its subordinate organization the Gunma Canal Regional Water Usage Improvement Groups Liaison Committee were established, for the following purposes: effectively utilizing agricultural facilities developed through the Gunma Canal project for establishing the agricultural technology system enabled by advanced water usage of the Canal; trying to increase agricultural income and stabilize farm operations through the improvement; and developing the region as an agricultural production ground. Also, in December 1978, the Gunma Canal Farm Operation Promotion Committee was established for providing guidance to benefiting farm families, in collaboration with prefectural, JA and other relevant guidance organizations.

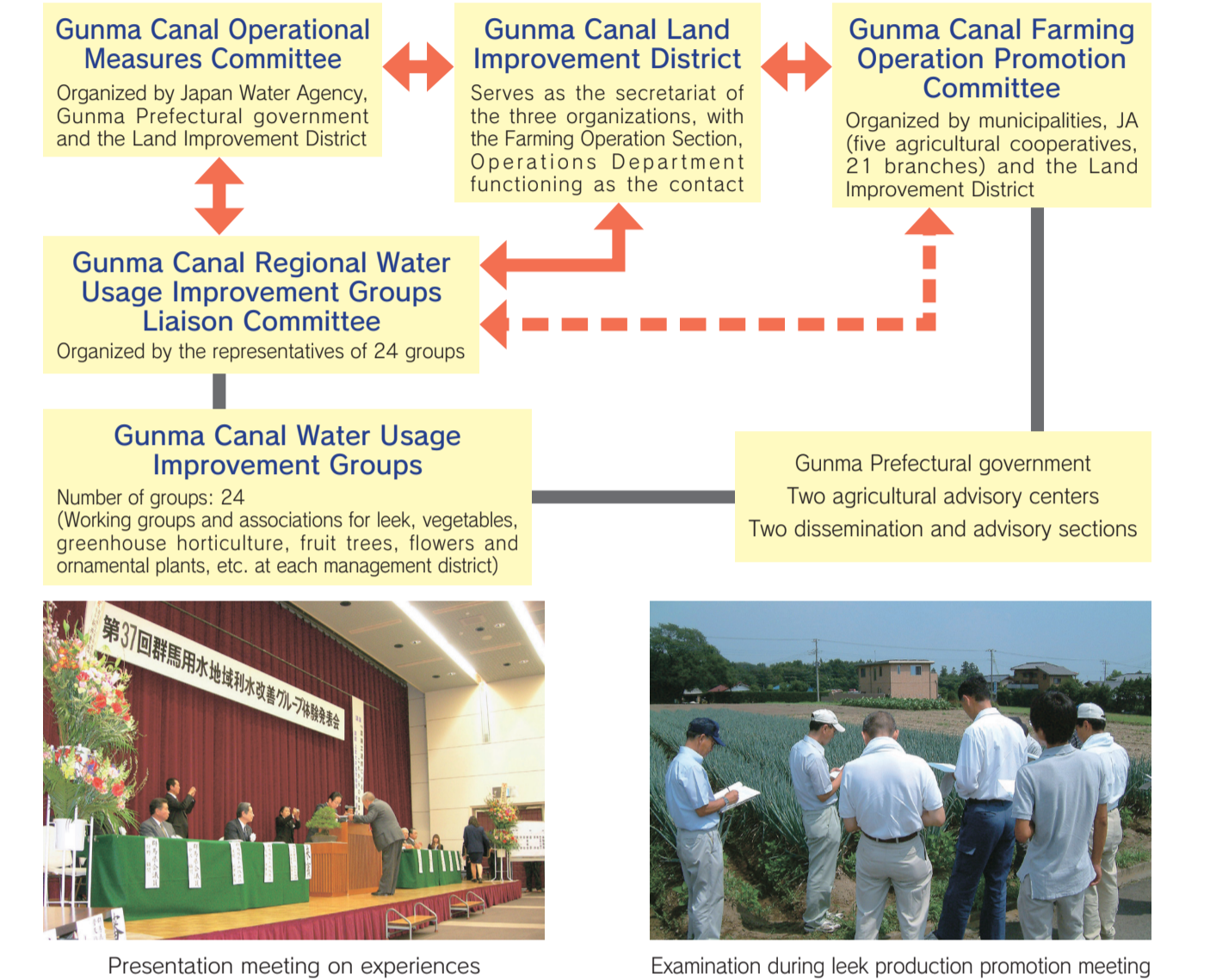


Eggplant production promotion meeting

## Outline of farm operation improvement measures

Farm operation improvement measures are being implemented at the Gunma Canal Land Improvement District, with an aim of establishing modern farm administration, stabilizing revenues of farming households, and playing a part in the food supply base for the Tokyo metropolitan area.

## Farm operation improvement organization



## Overview on Gunma Canal

The Gunma Canal project was pursued for irrigating about 10,205 hectares of farmland at altitudes between 120 m and 530 m, by the southern foot of Mount Akagi and the eastern foot of Mount Haruna, with the ardent hope of our predecessors to utilize the clear water of the Tone River for constantly productive farming. Thus, the area was designated as a district to be surveyed under the national land improvement project, and the survey started in 1955. Then, the project plan was finalized in FY1959, and the Gunma Canal Land Improvement District was established on April 2, 1963. The project was started in 1964 as that of the Water Resources Development Corporation (Japan Water Agency today). The intake ports, main water-leading canals, Akagi Main Canal, Haruna Main Canal, measuring 60 km in total, as well as six irrigation pumping stations and 19 km of branch canals, were completed in 1970.

Ancillary irrigation drainage projects operated by Gunma Prefecture were implemented between FY1964 and FY1978, through which 109 km of branch pipelines, 49 regulating ponds, and five irrigation pumping stations were constructed. These projects started being implemented in FY1966 as agricultural structural reform projects undertaken by each municipality. Since the projects cover extensive area, they started being implemented as large-scale field improvement projects in FY1967, and continued until FY1989. Overall, 1,000 km of terminal pipelines, 117 irrigation pumping stations and 28 regulating ponds were constructed, including those developed through association-operated projects.

In the Land Improvement District, management organizations started functioning at areas where the project was completed, after the water was supplied through the Corporation-operated main canal in June 1969. However, the District alone was unable to establish sufficient management organizations due to the extensive land area that benefit from the projects. Thus, with cooperation by relevant municipalities, management districts were established in each municipality in September 1970 as subordinate organizations of the Land Improvement District, and they have been in charge of maintenance and management to this day.

The benefiting land area decreased due to changes in the agricultural situations. In 1980, the water utilization improvement plan was formulated, in which the benefiting land area was set to 7,449 hectares and excess water that was available in summer was diverted to tap water supply. At the time of water rights renewal in FY2011, the benefiting land area was changed to 6,304 hectares. Today, Gunma Canal not only irrigates fields and rice paddies, but also supplies water to one million people living at the central part of the prefecture, and is functioning as an important lifeline in central Gunma.

## Outline of Managed Facilities and Construction Work

### Managed Facilities in the Land Improvement District

Regulating ponds:	77 locations (Prefecture/association-constructed: 74, Corporation-constructed: 3)
Branch canals (Corporation-constructed):	21km (φ300mm~φ1100mm)
Branch canals (Prefecture-constructed):	117km (φ150mm~φ900mm)
Total:	138km
Terminal canals (Prefecture/association-constructed):	1,000km (φ50mm~φ450mm)
(High-pressure) Irrigation pumping stations (Prefecture/association-constructed):	13 locations
(Low-pressure) Booster pump stations (Prefecture/association-constructed):	109 locations

### Project description

- Branch canal work: Prefecture-operated irrigation drainage project**
  - Work period: 1964 (started) to 1978 (completed)
  - Project cost: 3.5 billion yen (national government: 50%, Prefecture: 25%, local communities: 25%)
- Terminal canal work**
  - Prefecture-operated large-scale field improvement projects (land readjustment, irrigation facilities)**
    - Work period: 1967 (started) to 1989 (completed)
    - Estate composition: 8 estates, 5,593 hectares
    - Project cost: 16.6 billion yen (national government: 45%, Prefecture: 25-27%, local communities: 28-30%)
  - Agricultural structural reform projects (land readjustment, irrigation facilities)**
    - Work period: 1966 (started) to 1977 (completed)
    - Benefiting land area: 708 hectares of 8 municipalities, in 10 districts
    - Project cost: 1.1 billion yen (national government: 50%, Prefecture: 20%, local communities: 30%)
- Modification projects**
  - Prefecture-operated irrigation drainage projects (facility improvement, repair of main irrigation facilities)**
    - Work period: 1986 (started) to 2009
    - Project cost: 2.3 billion yen (national government: 50%, Prefecture: 25%, local communities: 25%)
  - Prefecture-operated farmland disaster prevention projects**
    - Work period: 1981 (started) to 2010
    - Project cost: 2.8 billion yen (national government: 50%, Prefecture: 25%, local communities: 25%)
  - Small-scale land improvement projects**
    - Work period: 1986 (started) to 2010
    - Project cost: 900 million yen (Prefecture: 40-45%, local communities: 55-60%)
  - Maintenance and management optimization projects**
    - Work period: 1980 to 2010
    - Project cost: 1.1 billion yen (national government: 30%, Prefecture: 30%, local communities: 40%)

### Facilities Managed by Japan Water Agency

Intake ports, backup intake ports, Sekishin diversion works	3.9km
Main water supply canals:	32.8km
Akagi Main Canal:	23.6km
Haruna Main Canal:	60.3km
Total:	60.3km
Irrigation pumping stations:	6 locations

### Work description

- Water source work (Yagisawa Dam construction work): Japan Water Agency**
  - Work period: FY1959 (started) to FY1967 (completed)
  - Purposes of dam: Flood control, power generation, irrigation, tap water supply
  - Location: Aza Yagisawa, Oaza Fujiwara, Minakami-cho, Tone-gun, Gunma
  - Type: Non-overflow domed arch concrete dam
  - Capacity: 175,800 thousand m<sup>3</sup> (water usage: 85,500, flood control: 22,100, power generation: 38,200, unspecified: 30,000)
  - Project cost: 11.9 billion yen
- Main canals: Japan Water Agency**
  - Work period: FY1964 (started) to FY1969 (completed)
  - Project cost: 11.5 billion yen (national government: 58%, Prefecture: 28%, municipalities: 10%, local communities: 4%)
- Backup intake port work: Japan Water Agency**
  - Work period: FY1980 (started) to FY1983 (completed)
  - Project cost: 2.2 billion yen (national government: 50%, Prefecture: 50%)

### Gunma Canal facilities emergency renovation projects

Work period:	FY2002 to FY2009
Project cost:	24.4 billion yen
Work outline	
Intake facilities	Intake ports: Seismic reinforcement of intake ports: Complete set
	Access canal: Renovation of siphons: L=2.1km
	Installation of ancillary canals: L=2.2km
Main canals	Renovation of conduits, siphons, and open canals: L=6.6km
	Installation of ancillary canals: L=6.3km
	Reinforcement of canal bridges and water-pipe bridges: 23 locations
	Renovation of regulating ponds: Complete set
Irrigation pumping stations	Renovation of pump equipment, etc.: 6 pumping stations
	Seismic reinforcement: 6 pumping stations
Branch canals	Renovation of pipelines: L=16.5km
Administrative facilities	Renovation of operation facilities, etc.: Complete set

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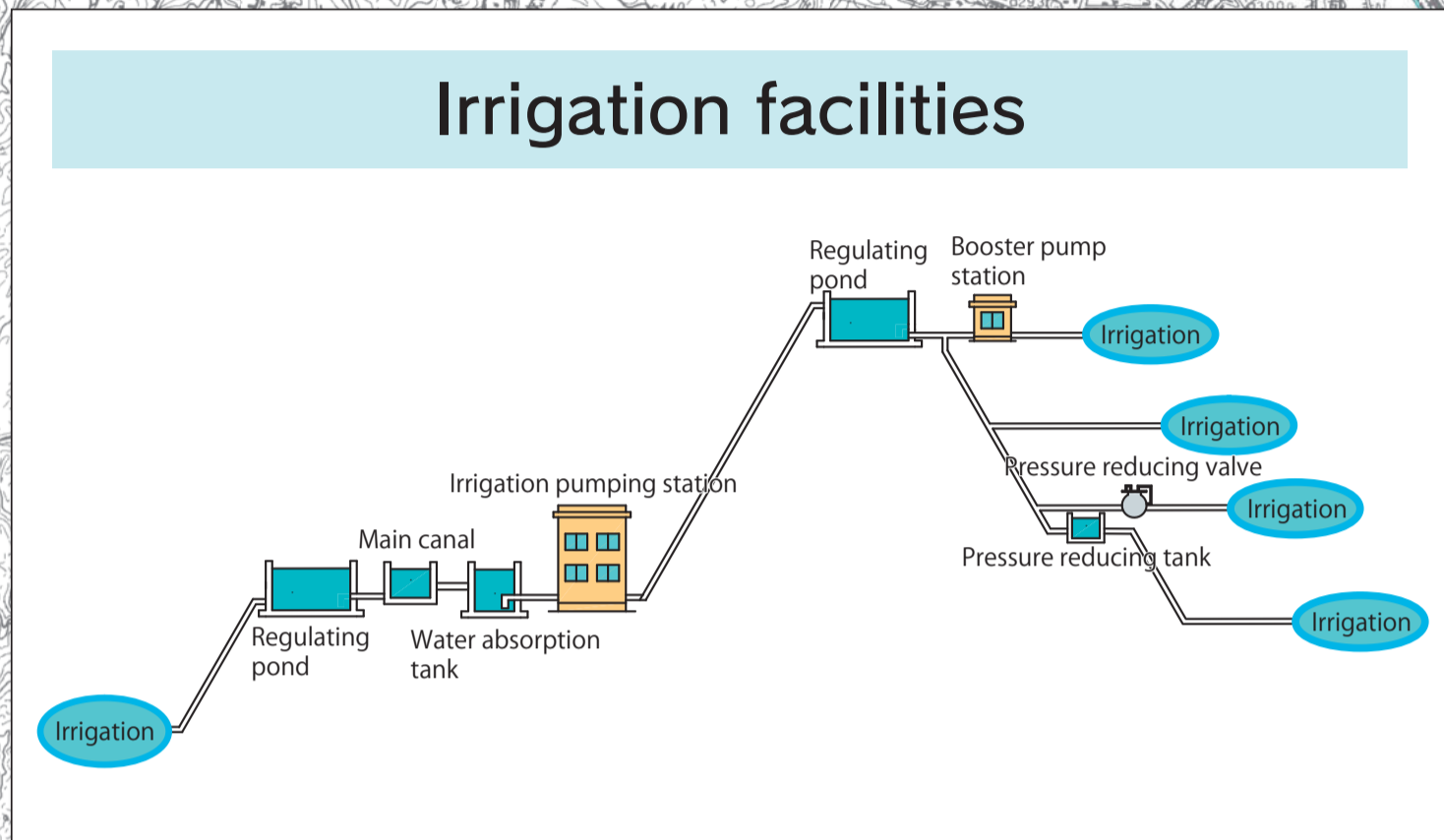

## Farm Products in Gunma Canal Area



# Schematic of Gunma Canal Facilities

**Legend**

- Main canals of the Public Corporation
- Prefecture-operated branch canals
- Regulating ponds
- Irrigation pumping stations
- Irrigation pumping stations
- Irrigation pumping stations
- Benefiting fields
- Benefiting rice paddies

**Pressure reducing valve**

This is a facility that adjusts the pipeline pressure, for ensuring stable pressure and volume of the water supplied to irrigated areas. There are O-reducing valves and secondary reducing valves.




**Regulating pond**

Regulating ponds have been built (at 77 locations) where the main canals are branched. Their capacity is between 200 m<sup>3</sup> and 10,000 m<sup>3</sup>. These facilities secure irrigation water for ensuring stable supply to branch canals.




**Branch canal**

It is a pipeline facility for supplying canal water from regulating ponds to benefiting areas. Along each pipeline have been installed water regulating valves for adjusting the flow volume, air valves for letting out the air inside of pipelines and other devices.



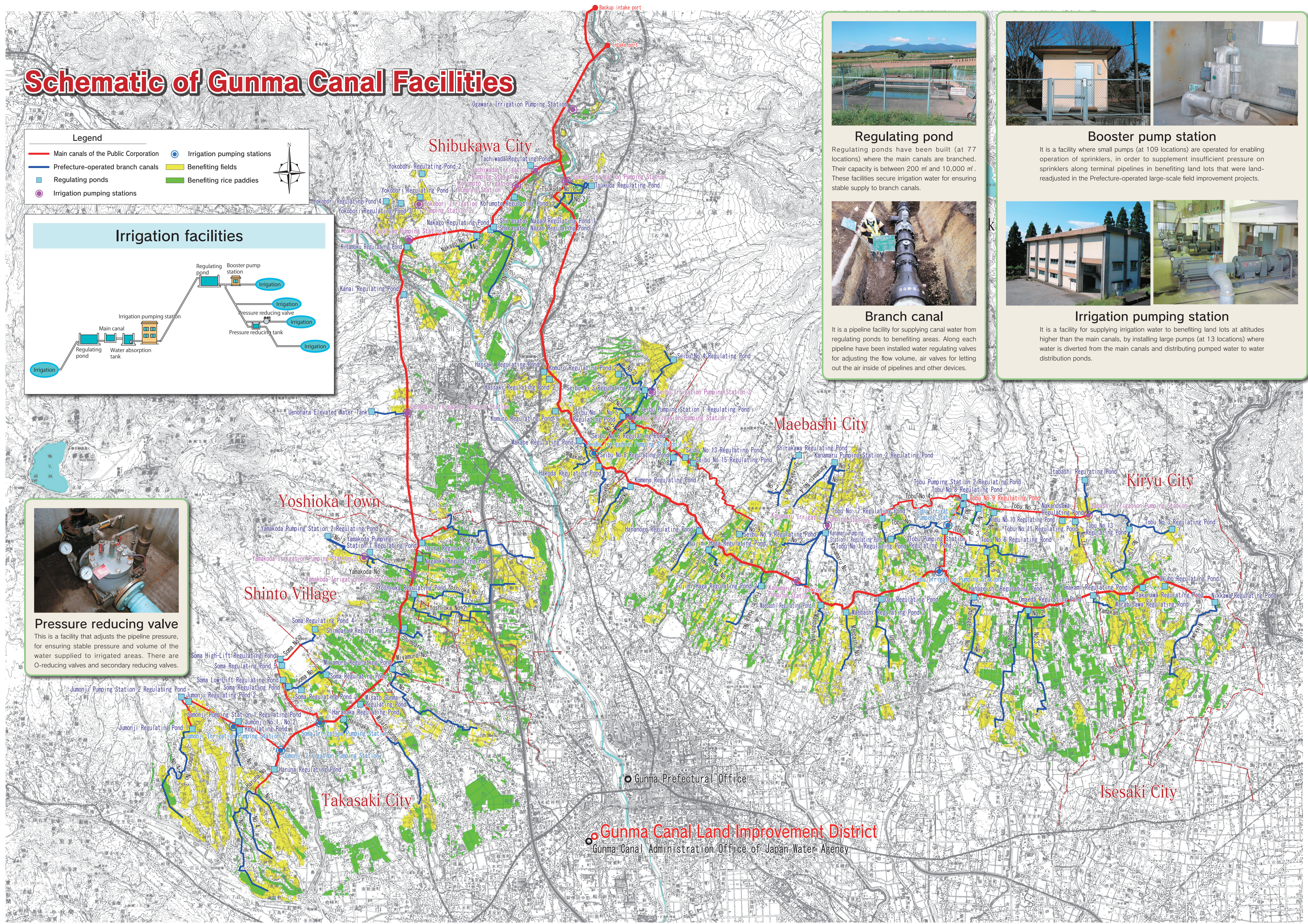
**Booster pump station**

It is a facility where small pumps (at 109 locations) are operated for enabling operation of sprinklers, in order to supplement insufficient pressure on sprinklers along terminal pipelines in benefiting land lots that were land-readjusted in the Prefecture-operated large-scale field improvement projects.



**Irrigation pumping station**

It is a facility for supplying irrigation water to benefiting land lots at altitudes higher than the main canals, by installing large pumps (at 13 locations) where water is diverted from the main canals and distributing pumped water to water distribution ponds.



This map is a duplicate of a topographical map of 1/50,000 scale, made with an approval of the Director General of Geospatial Information Authority of Japan. (Approval No. Heisei 21-889 for institutional-purpose duplicate)