

# Chapter 4-11

## Water Damage and Flood Control

### Abstract

Many of the first class rivers in the prefecture are “high-bedded” or “impeded downstream” types, and initiatives are underway to resolve the situation. At the present time, goals for improvement in the near future have been set and, as well as countermeasures carried out in rivers (normal river improvements), comprehensive implementation of measures performed out of rivers (“accumulation,” “blockage” and “preparation” measures) are being promoted.

**Keywords:** Water damage, Basin flood control

### 1. Water Damage

Shiga Prefecture experiences heavy rainfall during the rainy season (June – July) and the typhoon season (September) as well as heavy accumulations of snow in the north in winter.

In addition, because Shiga Prefecture is positioned at the narrowest part of the nation’s main island where Wakasa, Osaka and Ise Bays are located, and is a basin surrounded by mountains in the 1,000 m class, wind directions change depending on the season, producing complex atmospheric currents. For these reasons, rain and snowfall patterns vary from year to year, facilitating the occurrence of localized downpours, resulting in countless past natural disasters such as flooding.

### 2. River Flood Control Projects

Efficient and effective projects are implemented based on comprehensive determination of indexes such as river size, the population, area and assets of regions where possible flooding is envisaged, at the same time taking into consideration the reliability of flood control across the entire prefectural land area.

In more concrete terms, as a goal for improvements for the time being, river improvements are implemented to ensure the safe downstream flow of flood waters on the scale of the largest floods since the Second World War in rivers with a basin area of 50 km<sup>2</sup> or more and on the scale of floods due to rainfall occurring once in a decade (Hourly rainfall: 50 mm equivalent) in rivers with a basin area of 50 km<sup>2</sup> or less.

Moreover, the Shiga Prefectural Government has established the “Basic Policy for Basin Flood Control in Shiga Prefecture” to implement not only measures in rivers (riverside measures), but also “accumulation,” “blockage” and “preparation” measures (landside measures).

Studies are underway into comprehensive flood control measures taking regional characteristics into consideration to achieve the two main goals set out below.

(1) Prevention of the loss of human life irrespective of the nature of floods (Top priority)

(2) Prevention of damage that renders resettlement difficult such as inundation above floor level

(River Basin Policy Bureau,  
Shiga Prefectural Government)



**Fig. 4-11-1** Relationship between topography and atmospheric currents

**Table 4-11-1** Main post-Second World War disasters

Name of Disaster	Typhoon No. 13	Typhoon No. 7	Ise Bay Typhoon	Super Typhoon Nancy	Typhoon No. 24	Seasonal Rain Front	Typhoon No. 19	Typhoons Nos. 7 & 8	Typhoon No. 23	Short-term Rainfall	Typhoon No. 18	
Date of occurrence	Sep. 25, 1953	Aug. 13, 1959	Sep. 26, 1959	Sep. 16, 1961	Sep. 17, 1965	Jul. 14, 1987	Sep. 19, 1990	Sep. 21, 1998	Oct. 20, 2004	Jul. 18, 2008	Sep. 16, 2013	
Total rainfall	261mm Suijo	528mm Mando-koro	523mm Mando-koro	279mm Mando-koro	515mm Mando-koro	300mm Otsu	366mm Shimoga-hara	214mm Suijo	378mm Kimiga-hata	109mm (84mm/h) Naga-hama	635mm Katsuragawa	
Human damage	Fatalities, etc.	47	4	16	3	3	1	1	3	1	0	1
	Injuries	497	18	114	438	19	0	2	24	1	0	9
Damage to homes (No. of houses)	Total destruction	522	18	357	610	63	0	0	0	0	0	8
	Partial damage	1,198	72	1,309	3,388	329	2	174	404	6	0	704
	Flooding of floors	9,390	2,434	5,920	250	1,162	13	180	1	0	11	58
	Under-floor flooding	29,284	7,081	19,816	557	12,282	766	0	26	41	203	495
Public works damage (No. of locations)	Bridge destruction	298	253	316	5		5	21	0		0	5
	Road destruction	715	952	782	69		55	470	121	27	0	96
	Embankment destruction	1,364	4,460	3,330	117		93	321	63	41	0	196
Main water damage	Collapses at the Ato, Yasu Rivers, etc.	Collapses at the Ane, Amano Rivers	Collapses at the Echi, Hino Rivers		Collapses at the Hino River		Collapses at the Echi River				Collapses at the Kamo, Konze Rivers, etc.	



**Fig. 4-11-2** Omihachiman City after the Ise Bay Typhoon of 1959  
(Source: Shiga Prefectural Government River Basin Policy Bureau HP)



**Fig. 4-11-3** Takashima City after the Typhoon No. 18 in 2013  
Collapses at the Kamo River

**Impeded downstream river:** Compared to the upstream, the downstream river width is extremely narrow, or the downstream is divided into countless small water channels, resulting in an unusual river formation.