

# Joso City Local Disaster Management Plan

2013, March

Joso City Disaster Management Committee

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## Table of Content

Wind and Water	The Damages Disaster Measure Plan
<b>Chapter 1</b>	<b>General rule</b>
<b>Section 1</b>	<b>Objective</b>
<b>Section 2</b>	<b>Structure of the plan</b>
<b>Section 3</b>	<b>Natural condition of the city</b>
<b>Section 4</b>	<b>Social condition of the city</b>
<b>Section 5</b>	<b>Records of past disaster damage</b>
<b>Section 6</b>	<b>Broad outline of affairs or operations that should be dealt with by disaster managers</b>
<b>Chapter 2</b>	<b>Disaster management plan</b>
<b>Section 1</b>	<b>Flood management plan</b>
<b>Section 2</b>	<b>Plan for sediment disaster prevention</b>
Section 3	Traffic system plan
Section 4	Urban planning
Section 5	Educational area plan
Section 6	Plan for agricultural region and agriculture
Section 7	Implementation plan on communication tools
Section 8	Implementation plan on check of materials and equipment for disaster damage
Section 9	Fire prevention plan
Section 10	Plan for promotion of knowledge on disaster prevention
Section 11	Emergency drill plan
Section 12	Plan on establishment volunteer disaster prevention organization
Section 13	Implementation plan on volunteer activity system
Section 14	Plan for persons needing assistance in a disaster condition
Section 15	Fuel management plan
<b>Chapter 3</b>	<b>Plan for disaster response measure</b>
<b>Section 1</b>	<b>Organization plan</b>
Section 2	Staffing plan
<b>Section 3</b>	<b>Weather information plan</b>
<b>Section 4</b>	<b>Plan for collection and communication of disaster information</b>
Section 5	Communication plan

- Section 6 Publication plan
- Section 7 Fire extinguishment plan
- Section 8 Water Disaster Management Plan
- Section 9 Transportation system
- Section 10 Application plan for the Disaster Relief Act
- Section 11 Evacuation plan
- Section 12 Food supply plan
- Section 13 Supply plan on clothes and daily products
- Section 14 Water supply plan
- Section 15 Response plan for ensuring safety for persons needing assistance in disaster condition
- Section 16 Plan for construction of emergency temporal houses and emergency restoring work for houses
- Section 17 Plan for medical service and service for the perinatal period
- Section 18 Plan for rescuing activity
- Section 19 Epidemic prevention plan
- Section 20 Plan for cleaning
- Section 21 Plan for investigation of corpse and processing, and burying
- Section 22 Plan for removing disturbing objects
- Section 23 Transportation plan
- Section 24 Plan for employment
- Section 25 Plan on response for education
- Section 26 Plan for request on a disaster relief deployment of Self Defence Force
- Section 27 Plan for support request
- Section 28 Plan for agricultural region and agriculture
- Section 29 Plan for volunteer activity support
- Section 30 Plan on request on an emergency helicopter
- Section 31 Fuel management plan
- Section 32 Plan on response for persons difficult to returning home
- Chapter 4 Disaster recovery plan
  - Section 1 Disaster recovery plan on public facilities
  - Section 2 Plan on financial aid and support for disaster recovery activity
  - Section 3 Plan for fund for disaster recovery
  - Section 4 Founding plan on necessary finance and others for disaster recovery activity
  - Section 5 Other protection plan

- Chapter 5            Response plan for air craft disaster
  - Section 1    Prevention of disaster
  - Section 2    Measure for emergency response for disaster
- Chapter 6            Response plan for train disaster
  - Section 1    Prevention of disaster
  - Section 2    Measure for emergency response for disaster
- Chapter 7            Response plan for road disaster
  - Section 1    Prevention of disaster
  - Section 2    Measure for emergency response for disaster
- Chapter 8            Response plan for dangerous substance disaster
  - Section 1    Prevention of disaster
  - Section 2    Measure for emergency response for disaster
- Chapter 9            Response plan for large scale fire disaster
  - Section 1    Prevention of disaster
  - Section 2    Measure for emergency response for disaster
- Chapter 10           Response plan for forest fire
  - Section 1    Prevention of disaster
  - Section 2    Measure for emergency response for disaster
- Chapter 11           Response plan for nuclear disaster
  - Section 1    Prevention of disaster
  - Section 2    Measure for emergency response for disaster

**The earthquake response measure plan**

- Chapter 1            General rules
  - Section 1    Outline of the earthquake response measure plan
  - Section 2    Natural condition of Joso city
  - Section 3    Social condition of Joso city
  - Section 4    Prediction of damage from earthquake
  - Section 5    Outline of administrative work or task for the responsible person for disaster prevention
- Chapter 2            Earth quake prevention plan
  - Section 1    Organization establishment plan
  - Section 2    Implementation plan for interactive support system
  - Section 3    Establishment plan on volunteer organization for disaster prevention
  - Section 4    Implementation plan on volunteer activity system
  - Section 5    Implementation plan on communication tools
  - Section 6    Implementation plan on urban planning for disaster prevention

- Section 7 Promotion plan for fire proofing and earthquake resisting of buildings
- Section 8 Promotion plan for the earthquake resisting of civil structure
- Section 9 Prevention plan for lifeline facilities
- Section 10 Plan for prevention measure of ground foundation disaster.
- Section 11 Prevention plan for dangerous substances
- Section 12 Implementation plan for emergency transportation
- Section 13 Fire prevention plan
- Section 14 Implementation plan for medical and rescue activities
- Section 15 Implementation plan for support system for affected persons from disaster
- Section 16 Response plan for persons needing assistance in a disaster
- Section 17 Plan for promotion of knowledge on disaster prevention
- Section 18 Emergency drill plan
- Section 19 Fuel management plan
- Chapter 3 Response measure plan for earthquake
  - Section 1 Staffing plan for organization
  - Section 2 Plan for collection and communication of disaster information
  - Section 3 Communication plan
  - Section 4 Publication plan
  - Section 5 Plan for request on a disaster relief deployment of Self Defence Force
  - Section 6 Plan for support request
  - Section 7 Evacuation plan
  - Section 8 Transportation plan
  - Section 9 Traffic system plan
  - Section 10 Plan for fire extinguish activity
  - Section 11 Plan for medical service and service for the perinatal period
  - Section 12 Plan for emergency protection of dangerous substances
  - Section 13 Plan for volunteer activity support
  - Section 14 Supply plan on foods and necessary products for daily life
  - Section 15 Water supply plan
  - Section 16 Response plan for ensuring safety for persons needing assistance in disaster condition
  - Section 17 Plan on response for education
  - Section 18 Application plan for the Disaster Relief Act
  - Section 19 Emergency recovery plan for building
  - Section 20 Emergency recovery plan for civil structure

Section 21	Emergency recovery plan for lifeline facilities
Section 22	Plan for rescuing activity
Section 23	The plan for cleaning
Section 24	The epidemic prevention plan
Section 25	The plan for removing disturbing objects
Section 26	The plan for investigation of corpse and processing, and burying
Section 27	The plan on request on emergency helicopter
Section 28	The fuel management plan
Section 29	The plan on response for persons difficult to returning home
Chapter 4	The plan for response measure recovery and reconstruction after earthquake
Section 1	The disaster recovery plan on public facilities
Section 2	The plan on financial aid and support for disaster recovery activity
Section 3	The plan for fund for disaster recovery
Section 4	The founding plan on necessary finance and others for disaster recovery activity
Section 5	The other protection plan
Section 6	The earthquake recovery plan
Appendix	The plan on response measures for the case of the official warning of Tokai earthquake is issued
Chapter 1	General rules
Section 1	Objective of the establishment of this plan
Section 2	Principle of the establishment of this plan
Chapter 2	Outline of administrative work or task for the responsible person for disaster prevention
Chapter 3	Duration from the announce of the earthquake advisory on Tokai earthquake to the official warning for Tokai earthquake
Chapter 4	The response measure after issuing of the official warning for Tokai earthquake
Section 1	Dissemination of the official warning, the information on prediction of Tokai earthquake, and the withdrawal of the official warning of warning
Section 2	Establishment of precaution system
Section 3	Implementation of response measures for earthquake
Section 4	Measures shall be implemented by citizens

## Reference

# Chapter 1 General Rule

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## Section 1 Objective

When implementing disaster control measures involving the area of Joso City based on the provisions of Article 42 of the Basic Act on Disaster Control Measures (Act No. 223 of 1961; hereinafter referred to as “DCM Act”), this plan provides matters for the city and disaster-related organizations to demonstrate all of their functions to protect residents from disasters, thereby expending all possible means to prevent disasters.

**1 Broad outline of affairs or operations that should be dealt with by the city, the prefecture, designated local administrative organs, designated public institutions, designated local public institutions, public organizations and managers of other facilities that are important for disaster prevention**

**2 Construction or improvement of disaster-prevention facilities, research and study, education, training and other plans for disaster prevention**

**3 Plans for emergency disaster control measures**

- (1) Plan for disaster-prevention organizations
- (2) Plan for disaster prevention
- (3) Plan for rescue and protection of disaster victims
- (4) Plan for requesting disaster relief deployment from the SDF
- (5) Plan for other emergency measures in time of a disaster

**4 Plan for disaster recovery**

**5 Other necessary plans**

## **Section 2 Structure of the Plan**

### **I Structure of the Plan**

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The Joso City Local Disaster Management Plan was formulated with the aim described above as a basic and comprehensive plan to respond to various disasters that might hit the city.

The Local Disaster Management Plan is composed of “Part 1: Measures Against Storms and Floods,” “Part 2: Earthquake” and references. The plan serves as a guideline for disaster-prevention activities in the city and is also intended for organic operation as the situation demands when a disaster strikes. This plan was formulated by systematizing disaster countermeasures for the area of the city to serve as “Part 1: Measures Against Storms and Floods” of the Joso City Local Disaster Management Plan. The plan is to be reviewed every year, and supplemented or corrected when it is required to enhance or rationalize the plan with a change in disaster-prevention conditions

### **II Terms used in the plan**

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In this plan, the meanings of the terms listed in the following items are as prescribed respectively in those items:

- 1 Prefecture: Ibaraki Prefecture
- 2 City: City of Joso



## Section 3 Natural Conditions of the City

### I Location and topography

Located in the southwestern part of the prefecture and within 55 kilometers from the heart of Tokyo, Joso City is bordered by Tsukuba and Tsukubamirai cities to the east, Bando City to the west, Moriya City to the south, and Yachiyo Town and Shimotsuma City to the north.

It has an area of 123.52km<sup>2</sup> stretching approximately 20km north to south and 10km east to west at altitudes between 5 and 24m.

The Kinugawa River is a first-class river and flows approximately through the center of the city. There are broad paddy fields in the low-lying eastern part, while the hilly western part has settlements, dry fields and plain forests, but housing complexes, industrial parks and golf courses have been also developed there to enhance the urban functions of the Suburban Consolidation Zone.

### II Climate

As the city is on Japan's Pacific coast, the climate there is mild in all seasons.

District		Temperature			Humidity			Wind speed				Rainfall	
		Max.	Min.	Mean	Max.	Min	Mean	Mean speed	Max. wind speed				Monthly mean
									Under 7m	7m and over	10m and over	15m and over	
Year													
'96	Mitsukaido	38.0	-6.4	13.8	98.3	12.4	70.8	2.6	65	139	109	55	86.6
'97	Mitsukaido	36.9	-4.7	14.8	98.1	12.5	70.2	2.7	76	109	116	64	78.7
'98	Mitsukaido	36.7	-6.4	14.5	99.0	13.3	76.9	2.7	93	118	113	41	127.7
'99	Mitsukaido	36.2	-7.3	15.2	99.2	9.6	69.7	2.7	59	132	110	64	89.6
'00	Mitsukaido	37.1	-4.9	15.0	98.9	9.2	67.8	2.8	71	117	109	68	111.3
'01	Mitsukaido	38.2	-6.2	14.6	95.8	13.6	67.9	2.6	68	108	131	58	99.1
'02	Mitsukaido	37.5	-4.4	14.9	97.8	12.9	70.1	2.7	57	134	110	64	85.1
'03	Mitsukaido	36.0	-5.7	14.3	97.9	14.6	72.2	2.4	77	136	103	49	117.0
'04	Mitsukaido	38.2	-4.8	16.0	98.8	11.9	69.9	2.8	62	102	117	55	122.5
'05	Mitsukaido	35.8	-5.3	14.3	95.5	10.8	66.0	2.7	67	125	122	51	86.5
	Ishige	35.9	-5.3	14.4	99.5	13.6	67.1	2.6	—	—	—	—	109.7
'06	Joso	34.6	-7.5	14.2	—	14.0	77.0	2.4	—	—	—	—	134.7
'07	Joso	37.7	-5.3	14.6	—	13.0	75.0	2.4	—	—	—	—	94.8
'08	Joso	35.9	-7.3	14.1	—	11.0	74.0	2.3	—	—	—	—	114.4
'09	Joso	33.2	-5.9	14.4	—	12.0	74.0	2.3	—	—	—	—	111.3

## **Section 4 Social Conditions of the City**

### **I Industry**

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#### **1 Agriculture**

Suburban agriculture—growing rice, Chinese cabbages, water melons, melons, spinach, green onions and other products for shipment to mass-consumption areas—is flourishing, taking advantage of the vast and flat farmland. Particularly cucumbers grown in the former Western Ishige district was designated as a brand of growing districts of Ibaraki Prefecture in 1987 and is popular as “Sengoku Cucumber.”

#### **2 Commerce**

There are commercial clusters including individual stores in the central urban areas around Mitsukaido and Ishige Stations as well as along arterial roads, but mass merchandisers in the city and neighboring cities/towns are the major players in terms of commerce.

#### **3 Industry**

There are diverse industry sectors centering on general machinery, food, and metal products. As many as 10,000 employees are working in the four industrial parks in the city (Onogo, Uchimoriya, Sakate, and Hanashima) and other places. In terms of the number of employees, the city is the sixth industrial town following Hitachi, Hitachinaka, Furukawa, Chikusei and Kamisu cities.

### **II Transportation**

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#### **1 Railway**

The Kanto Railway Joso Line runs north-south through the city, connecting Toride and Shimosuma/Chikusei areas. There are Mitsukaido, Tamamura, Ishige, Minami-ishige, Mitsuma, Nakazuma and Kitamitsukaido Stations in the city.

#### **2 Road**

Route 294 runs through the city from north to south while Route 354 runs from east to west. There are also principal local roads and other prefectural roads. In addition, the Metropolitan Inter-City Expressway is planned to run approximately through the center of the city as a part of a wide-area road network.

### **III Population**

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According to the 2010 Census, the city’s population is 65,320, down by around 200 from 2005. The young population (aged from 0 to 14) accounts for 13.6% of the cities total population, similar to the

share of the total population in Ibaraki Prefecture (13.5%), while the old population (over 65) accounts for 23%, which is higher than the share of the prefecture's total population (22.5%).

Year	1970	1975	1980	1985	1990	1995	2000	2005	2010
Population	55,152	58,040	60,809	63,247	64,344	66,029	66,245	66,536	65,320

## Section 5 Records of past disaster damage

The city has experienced damage from fire, hail, droughts and other disasters in addition to floods due to typhoons, etc. Its disaster history is as follows:

Year and month of occurrence	Type of disaster	Damage
September 1927	Flood	Due to a collapse of the Kokaigawa River bank, 289 houses were flooded above floor level and all crops were destroyed in a 200ha paddy field and 100ha dry field. 1,200 people were affected.
July 1938	Flood	Toyodamura bank in the upper reaches of the Kokaigawa River collapsed. There was a flood in the former Mitsukaido town and Onogoka/Mitsuma district. In Mitsukaido 1,233 houses were flooded above floor level and 163 houses below floor level, leaving 6,533 people affected.
February 1954	Fire	Houses for 22 households were burnt down near the Sakaecho Street
March 1955	Fire	Main hall of Ganzandaishi Anrakuji temple and other buildings were burnt down.
August 1959	Flood	An overflow bank of the Tonegawa River collapsed at Sugao-machi Chisaki and all the crops were destroyed in 165ha.
February 1960	Fire	13 buildings that comprise 9 houses were burnt down around Sakaecho Street
June 1961	Flood (Typhoon No. 6)	Torrential rain accompanying Typhoon No.6 caused overflow at three locations along the Hakkenbori River and 4 locations along the Higashinire River, leaving 33 houses flooded above floor level and 267 houses flooded below floor level; 1,198ha of paddy fields (all crops were destroyed in 500ha of them) and 96ha dry fields were submerged, and 195ha flooded. A disaster countermeasure headquarters was set up.  In the former Ishige district, the Higashinire River and the Yoshida irrigation canal overflowed and traffic was paralyzed because prefectural roads and town roads were submerged.
June 1966	Flood	A 10m section of the banked slope at Tategata Chisaki

Year and month of occurrence	Type of disaster	Damage
	(Typhoon No. 4)	collapsed.
July 1976	Hail damage	Hail in Sugao Town caused damage to tobacco (26ha), green onions, and other crops.
August 1978	Drought	Damage to 186ha across the former Mitsukaido City. All the crops were destroyed in 48ha of mostly upland rice fields.
August 1986	Flood (Typhoon No. 10)	Torrential rain accompanying Typhoon No. 10 caused a collapse of Ishige-cho bank in the upper reaches of the Kokai River, flooding Goka/Ono district. 43 houses were flooded above floor level, 105 houses below floor level, and 684ha of paddy fields were submerged. A disaster countermeasure headquarters was set up.  A bank collapsed also in the former Ishige district, killing 473 pigs and causing damage to public and other facilities with total damage costing 860 million yen. A disaster countermeasure headquarters was set up. The Disaster Relief Act was applied.
September 1991	Flood (Typhoon No. 18)	Damage to public and other facilities in the former Ishige district. Total amount of damage was 110 million yen.
August 1993	Flood (Typhoon No. 11)	Road surface was swept away at 7 locations in the former Ishige District.
September 1996	Flood (Typhoon No. 17)	Four buildings were damaged and two unoccupied houses were completely ruined in the former Ishige district.
September 1998	Flood (Typhoon No. 5)	Observation stations along the Kokai River observed a rise over the warning water level.
July 1999	Flood (Seasonal rain front)	Observation stations along the Kokai River observed a rise over the planned water level.
July 2002	Flood (Typhoon No. 6)	Flood above floor level in the section without a bank in the lower course of the Kinugawa River (Toyooka Town, etc.)
October 2004	Flood (Typhoon No. 22)	Observation stations along the Kokai River observed a rise over the dangerous water level.
August 2008	Flood (Seasonal rain front)	Kokai River Mitsukaido observation station observed a rise close to the level at which an evacuation advisory should be issued.

Year and month of occurrence	Type of disaster	Damage
March 2011	Great East Japan Earthquake	Intensity 6 lower in the city, with one death, four minor injuries, 70 half ruined and 7,895 partially ruined houses, etc.
September 2011	Flood (Typhoon No. 15)	The Kinugawa River rose, flooding four buildings above floor level and 8 buildings below floor level.
May 2012	Tornado	Tornados caused damage in the area from Osawashinden of the city to Hirasawa of Tsukuba City on May 6. Twelve dwellings and sixteen unoccupied houses were partially ruined in Joso City.

## **Section 6 Broad outline of affairs or operations that should be dealt with by disaster managers**

### **I City**

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- 1 Matters related to the Joso City Disaster Management Council and the Joso City Disaster Control Headquarters
- 2 Development of facilities and organizations for disaster control and emergency drills
- 3 Surveys, reports, information gathering/communication, and public information on damage caused by disaster
- 4 Prevention of occurrence or escalation of a disaster
- 5 Rescue and protection of victims, including prevention of epidemics
- 6 Securing of materials for disaster recovery
- 7 Loans and other measures for afflicted industries
- 8 Emergency measures for damaged municipal facilities
- 9 Educational measures in time of a disaster
- 10 Mobilization and employment of personnel for disaster response
- 11 Securing of transportation in time of a disaster
- 12 Recovery of damaged facilities
- 13 Coordination of emergency disaster responses, etc. conducted by concerned bodies within the jurisdiction

### **II Prefecture**

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- 1 Matters related to the Ibaraki Prefecture Disaster Prevention Council and the Ibaraki Prefecture Disaster Control Headquarters
- 2 Development of facilities and organizations for disaster control and emergency drills
- 3 Surveys, reports, information gathering/communication, and public information on damage caused by disaster
- 4 Prevention of occurrence or escalation of a disaster
- 5 Rescue and protection of victims, including prevention of epidemics
- 6 Securing of materials for disaster recovery and ensuring of price stability
- 7 Loans and other measures for afflicted industries
- 8 Emergency measures for damaged prefectural facilities
- 9 Educational measures in time of a disaster
- 10 Maintaining social order in time of a disaster

- 11 Mobilization and employment of personnel for disaster response
- 12 Securing of transportation in time of a disaster
- 13 Recovery of damaged facilities
- 14 Guidance, instruction, mediation, etc. of affairs or operations that are dealt with by municipalities
- 15 Mutual support and cooperation with neighboring prefectures concerning disaster control

### **III Police (Joso Police Station)**

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- 1 Matters related to guidance/coordination of police units within the jurisdiction concerning policing against natural disasters and mutual support
- 2 Matters related to coordination with the Prefecture Police Headquarters, etc.
- 3 Matters related to coordination with disaster-related organizations within the jurisdiction
- 4 Matters related to information gathering from, reporting to, and communication with police units, disaster related organizations, etc. within the jurisdiction.
- 5 Matters related to securing and control of police communication

### **IV Designated local administrative organs**

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#### **1 Kanto Finance Bureau (Mito Local Finance Office)**

- (1) Matters related to attending sessions for assessment of expenses for disaster recovery projects
- (2) Matters related to (short-term) loans of relief funds
- (3) Matters related to (long-term) loans for disaster recovery projects
- (4) Matters related to free lending operation of national properties
- (5) Matters related to financial measures

#### **2 Ibaraki Labor Bureau (Joso Labor Standards Inspection Office)**

- (1) Matters related to prevention of industrial accidents at factories and business places
- (2) Matters related to wage payment in time of a disaster
- (3) Matters related to extension of working hours and work during holidays in time of a disaster
- (4) Matters related to payment of labor insurance benefits
- (5) Matters related to employment measures including placement and unemployment benefits

#### **3 Kanto Regional Agricultural Administration Office (Ibaraki District Agriculture Office)**

- (1) Matters related to implementation of and guidance for inspection and maintenance of dams, banks, sluiceways and other facilities of importance for disaster control
- (2) Matters related to improvement of flood control dams, reservoirs, shores, river structures for



agricultural use and other facilities for prevention of mass failure, ponding, farmland erosion, etc.

- (3) Matters related to securing of seed rice and other farming materials in time of a disaster
- (4) Matters related to adjusting supply and demand for essential foods in time of a disaster
- (5) Matters related to supply of perishable foods in time of a disaster
- (6) Matters related to guidance on management of crops, livestock, etc. and control of damage from disease and harmful insects in time of a disaster
- (7) Matters related to grasping the situation of land improvement machines, engineers, etc. and their lending/mobilization
- (8) Matters related to loaning funds to affected agricultural/forestry/fishery workers

#### **4 Kanto Bureau of Economy, Trade and Industry**

- (1) Matters related to securing of supplies of necessities, materials for recovery work and other disaster- related goods
- (2) Matters related to ensuring normal operation of commerce, mining and manufacturing industries
- (3) Matters related to promotion of affected small and medium-sized firms

#### **5 Kanto Tohoku Regional Industrial Safety and Inspection Department**

- (1) Matters related to maintenance of explosives, high-pressure gas, liquefied petroleum gas, electricity, gas and other dangerous goods
- (2) Matters related to disaster prevention and emergency measures involving mines in time of a disaster

#### **6 Kanto Regional Development Bureau (Shimodate Office of River, Tonegawa Upper Stream Office of River)**

- (1) Matters related to education and drills necessary for disaster prevention
- (2) Matters related to improvement of public facilities, etc.
- (3) Matters related to notification to relevant organizations in disaster risk areas, etc.
- (4) Matters related to collection of disaster information and transmission of forecasts/warnings
- (5) Matters related to flood protection, sediment disaster prevention, evacuation guidance, etc.
- (6) Matters related to securing of materials for recovery work in time of a disaster
- (7) Matters related to emergency work in time of a disaster
- (8) Matters related to implementation of disaster-relief work

#### **7 Tokyo Civil Aviation Bureau**

- (1) Matters related to measures necessary for ensuring safety of air transport in time of a disaster
- (2) Matters related to search and rescue of aircraft in distress
- (3) Matters related to air-traffic regulation over designated areas and its dissemination

#### **8 Tokyo District Meteorological Observatory (Mito Local Meteorological Observatory)**

- (1) Matters related to observation, collection and announcement of information concerning meteorological, terrestrial and hydrological phenomena
- (2) Matters related to accurate and timely transmission of forecasts, warnings and advisories concerning meteorological, terrestrial (limited to ground motion in terms of earthquake) and hydrological phenomena and information on typhoon, heavy rain, tornado, flurry, etc. to disaster-prevention organizations as well as dissemination of the information, etc. to residents through the organizations and news media
- (3) Matters related to dissemination and publicity of early earthquake warnings (emergency earthquake alerts) issued by the Japan Meteorological Agency
- (4) Matters related to technical support and cooperation concerning preparation of manuals for decision/communication of evacuation advisories made by the head of the municipality, development of hazard maps, etc.
- (5) Matters related to explanation, etc. of changes and forecasts of weather conditions provided to the prefecture and its municipalities when a disaster occurrence is anticipated or in time of a disaster
- (6) Matters related to promotion of understanding of weather information for disaster prevention and activities of dissemination and enlightenment of disaster-prevention knowledge in cooperation with the prefecture, municipalities, and other disaster-related organizations

## **9 Mito Atomic Energy Office**

- (1) Matters related to regulation for safety of nuclear facilities, radiation facilities, etc.
- (2) Matters related to monitoring of the environmental radiation level in areas adjacent to nuclear facilities, radiation facilities, etc.
- (3) Matters related to information gathering and transmission in time of a nuclear disaster

## **V Designated public institutions**

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### **1 Japan Post Co., Ltd. (post offices in the city)**

- (1) Matters related to free issuance of postcards, etc. to disaster victims
- (2) Matters related to exemption of charges for mail sent by victims
- (3) Matters related to exemption of charges for rescue mail sent to affected areas
- (4) Matters related to maintenance of post office counter services in time of a disaster

### **2 Japan Red Cross Society (Ibaraki Prefecture Branch)**

- (1) Matters related to formation of relief parties and provision of relief including medical care and midwifery
- (2) Matters related to securing and supply of blood products in time of a disaster
- (3) Matters related to cooperation for disaster relief and liaison and coordination of service

groups

(4) Matters related to collection and distribution of donation money and other articles

**3 Japan Broadcasting Corporation (Mito Broadcasting Station)**

(1) Matters related to publication of weather forecasts, warnings, etc.

(2) Matters related to setting up of a disaster status/restoration office

(3) Matters related to collection and distribution of donation money and other articles through social work, etc.

**4 Nippon Telegraph and Telephone East Corporation (Ibaraki Branch)**

(1) Matters related to maintenance and inspection of telecommunication plants

(2) Matters related to handling of emergency phone calls in time of a disaster

(3) Matters related to emergency measures and restoration of damaged telecommunication plants

**5 Nippon Express Co., Ltd.**

Matters related to cooperation with transportation of relief supplies and evacuees

**6 Tokyo Electric Power Company, Incorporated (Ibaraki Branch Office)**

(1) Matters related to power supply in time of a disaster

(2) Matters related to emergency measures and restoration of damaged facilities

**7 KDDI Mito Branch Office**

(1) Matters related to maintenance and inspection of telecommunication plants

(2) Matters related to emergency measures and restoration of damaged telecommunication plants

**8 NTT DOCOMO Ibaraki Branch Office**

(1) Matters related to maintenance and inspection of telecommunication plants

(2) Matters related to emergency measures and restoration of damaged telecommunication plants

**9 Japan Atomic Energy Agency, Japan Atomic Power Company (Tokai Power Station)**

Matters related to radiation hazard prevention, emergency countermeasures, etc.

**VI Designated local public institutions**

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**1 Ibaraki Prefecture Federation of Agricultural Land Improvement Associations**

Matters related to guidance for recovery of agricultural land/facilities in the respective land improvement districts and creation of recovery plans

**2 Ibaraki Prefecture Council of Social Welfare**

(1) Matters related to acceptance of volunteers in time of a disaster

(2) Matters related to loan of living welfare fund

**3 Associations of medical profession (Ibaraki Prefectural Medical Association, Ibaraki Prefectural Dental Association, Ibaraki Prefectural Pharmacist Association, Ibaraki Prefectural Nursing Association)**

Matters related to emergency medical care in time of a disaster

**4 Flood control management organization (Iinuma Sorimachi Dike Flood Prevention Cooperative)**

(1) Matters related to improvement of flood prevention facility materials

(2) Matters related to creation of flood prevention plans and flood prevention drills

(3) Matters related to flood prevention activities

**5 Transportation organizations (Kanto Railway Co., Ltd., Ibaraki Prefecture Trucking Association, Ibaraki Prefecture Bus Association)**

Matters related to cooperation in transportation of evacuees, relief supplies and other goods in time of a disaster

**6 Ibaraki Prefecture High Pressure Gas Safety Institute (Joso Branch)**

(1) Matters related to establishment of an emergency mobilization system of high pressure gas businesses

(2) Matters related to voluntary inspection, survey and patrol of high pressure gas facilities

(3) Matters related to supply of high pressure gas

(4) Matters related to cooperation in high pressure gas disaster countermeasures by administrative organs, public institutions, etc.

**7 News media (Ibaraki Shimbun, Co., Ltd, Ibaraki Broadcast System)**

(1) Matters related to diffusion of disaster-prevention knowledge and publication of warnings, etc. to residents

(2) Matters related to publication of disaster emergency measures to residents

(3) Matters related to cooperation with disaster information activities conducted by administrative organs, public institutions, etc.

**VII Japan Self Defense Force**

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1 Matters related to basic research of disaster-prevention materials

2 Matters related to creation of disaster relief operation plans

3 Matters related to implementation of disaster drills in accordance with the Ibaraki Prefecture Regional Disaster Management Plan

4 Matters related to emergency relief or emergency recovery urgently needed for protection of human life or property

5 Matters related to free lending or transfer of articles in the control of the Ministry of Defense for

the purpose of disaster relief

## **VIII Fire Defense**

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Ibaraki Southwestern Large Municipal Area Administration Association Fire-defense Headquarters and Joso Large Municipal Area Administration Association Fire-defense Headquarters (“Fire-defense Headquarters”)

- (1) Matters related to improvement of fire control services
- (2) Matters related to research studies for disaster control
- (3) Matters related to education and training for disaster control
- (4) Matters related to disaster prevention, precaution and protection
- (5) Matters related to evacuation, rescue and first-aid of residents in time of a disaster

## **IX Managers of public organizations and other facilities that are important for disaster prevention**

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### **1 Industrial/economic organizations (JA Joso Hikari, Joso Society of Commerce and Industry)**

- (1) Matters related to damage investigation
- (2) Matters related to securing of supplies of goods, materials, etc. and price stability
- (3) Matters related to coordination, mediation, etc. for finance requesters

### **2 General clinics/hospitals, Kinu Medical Association**

- (1) Matters related to securing of medical care for patients in time of a disaster
- (2) Matters related to medical relief of injured people, etc. in time of a disaster

### **3 General carriers**

Matters related to securing of emergency transportation in time of a disaster

### **4 Managers of facilities handling hazardous materials**

Matters related to security measures for hazardous materials in time of a disaster

### **5 Joso City Council of Social Welfare**

- (1) Matters related to acceptance of volunteers in time of a disaster
- (2) Matters related to loans of living welfare fund

References ○ Contact List of Disaster-prevention Organizations
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## Section 3 Weather information plan

### I Planning Policy

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Promptly and surely convey weather/flood control warnings, advisories and information for disaster prevention, gather disaster information and convey orders necessary for emergency disaster responses so as to minimize damage.

### II Weather warnings, advice, etc.

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On May 27, 2010, the system was revised so that the relevant municipalities will announce warnings, advice, etc. based on the Meteorological Service Act. Broadcasting through television is mostly over a broad area as before in order to concisely convey important content. The city's standard for announcements is as follows:

#### Joso City's standard for announcement of warnings, advice, etc.

Warning	Heavy rain	(Flood damage)	Amount of rainfall	Amount of rainfall per hour: 60mm
		(Sediment disaster)	Soil water index	133
	Flood		Amount of rainfall	Amount of rainfall per hour: 60mm
			Basin precipitation index	Higashiniregawa Basin = 8; Hakkenborigawa Basin = 8
			Composite basis	—
	Strong wind		Mean wind speed	20m/s
	Blizzard		Mean wind speed	20m/s accompanied by snow
Heavy snowfall		Depth of snowfall	Depth of snowfall in 24 hours: 30cm	
Advisory	Heavy rain		Amount of rainfall	Amount of rainfall per hour: 30mm
			Soil water index	79
	Flood		Amount of rainfall	Amount of rainfall per hour: 30mm
			Basin precipitation index	Higashiniregawa Basin = 6; Hakkenborigawa Basin = 5
			Composite basis	—

Strong wind	Mean wind speed	12m/s
Snowstorm	Mean wind speed	12m/s accompanied by snow
Heavy snowfall	Depth of snowfall	Depth of snowfall in 24 hours: 10cm
Thunderstorm		When damage by lightening, etc. is anticipated
Dense fog	Visibility	100m
Dry air		Minimum humidity: 40%; effective humidity: 60%
Low temperature		Summer: minimum temperature below 15 degrees C continuing for 2 days or longer Winter: minimum temperature below -7 degrees C
Frost		Minimum temperature 3 degrees C or lower during early/late frost season
Ice/snow accumulation		When significant ice/snow accumulation is anticipated
Information about a record-breaking deluge in a short period	Amount of rainfall per hour	100mm

Soil water index: indicates the degree of risk of sediment disaster based on the estimation of rainwater accumulation in soil.

Basin precipitation index: indicates the degree of risk of a flood in a basin based on the amount of rainfall, flow time, etc. in the area.

In addition to advice and warnings, Mito Local Meteorological Observatory releases information on typhoons, rapidly record-breaking deluges, tornadoes, and other weather.

Information about rapidly record-breaking deluges is promptly and concisely reported when record-breaking rainfall per hour has been observed (the city's criterion is 100mm.) It is reported while a heavy rain warning is in effect.

Tornado caution information raises an alarm about a tornado under cumulonimbus or strong gusts due to a downburst, etc. Such information is provided by individual meteorological observatories to their respective districts (usually at the prefectural level) supplementing a thunderstorm advisory. The caution information is effective for an hour after announcement. If the situation requiring

caution continues, the tornado caution information is announced again.

The Japan Meteorological Agency announces volcanic eruption warnings/forecasts concerning 100 active volcanoes in Japan (including Mt. Fuji, Mt. Hakone, Mt. Asama, and Mt. Nasutake in the vicinity).

### Examples of tornado caution information announcement

Prefecture X, tornado caution information No.1

April 20, 20YY 10:27, announced by local meteorological observatory Z: “A tornado may occur in prefecture X!”

Tornadoes usually occur accompanying cumulonimbus clouds. If there is thunder, a sudden change in wind direction or other signs of approaching cumulonimbus clouds, move into a rigid building, etc. to ensure safety. This information will remain effective up to 11:30 today.

### III Fire weather report

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Based on the Fire Service Act, when Mito Local Meteorological Observatory finds meteorological conditions to be dangerous from a fire prevention point of view, it is to report the conditions to the governor. The criteria for making a fire weather report are as follows:

Criteria
(1) Effective humidity is 60% or lower and minimum humidity is expected to drop to 40% or lower
(2) Mean wind speed is expected to become 12m/s or higher. However, a report may not be made if the wind is expected to be accompanied by rain or snow.

### IV Flood forecast

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1 Mito and Utsunomiya Local Meteorological Observatories, Hitachi Office of Rivers and National Highways, Kasumigaura and Shimodate Offices of Rivers jointly announce flood forecasts (advisory, warning or information) for the rivers listed below.

The flood forecasts are reported by the relevant Office of Rivers (and National Highways) to the Prefecture (Public Works Department, Rivers Division) and transmitted by the prefecture to the city through Civil Engineering Offices.

Mito Local Meteorological Observatory reports this to the Prefecture (Department of Living Environment, Disaster Prevention and Risk Management Division), disaster related organizations (Nippon Telegraph and Telephone East Corporation [NTT East] receives only warnings) and news media. Only the titles of flood warnings are transmitted to the city through



the communication system of NTT East.

River	Office in charge	
Kinugawa River	Shimodate Offices of Rivers	Mito and Utsunomiya Local Meteorological Observatories
Kokaigawa River		

- The Meteorological Agency and MLIT Kanto Regional Development Bureau jointly announce flood forecasts (advisory, warning or information) for the rivers listed below. The flood forecasts are reported by the relevant Offices of Rivers (and National Highways) to the prefecture (Public Works Department, Rivers Division) and transmitted by the prefecture to the city through Civil Engineering Offices.

Mito Local Meteorological Observatory reports this to the prefecture (Department of Living Environment, Disaster Prevention and Risk Management Division), disaster-related organizations (Nippon Telegraph and Telephone East Corporation [NTT East] receives only warnings) and news media. Only the titles of flood warnings are transmitted to the city through the communication system of NTT East.

River	Office in charge	
Tonegawa River (upper, middle and lower stretches)	MLIT Kanto Regional Development Bureau	Japan Meteorological Agency Forecast Department
Kokaigawa River		

## V Information on river water levels that is to be made public

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- When the water level of a river under the management of the Hitachi Office of Rivers and National Highways, or Kasumigaura or Shimodate Offices of Rivers reaches a level at which evacuation is required, and such river's water level is to be made public, the relevant office reports the water level or flow rate of the river to the prefecture (Public Works Department Rivers Division). The prefecture transfers the information to the municipalities involved through the relevant Civil Engineering Office.
- In this case, the prefecture (relevant civil engineering offices) reports the water level or flow rate of the river to the municipalities involved.

## VI Sediment disaster alerting information

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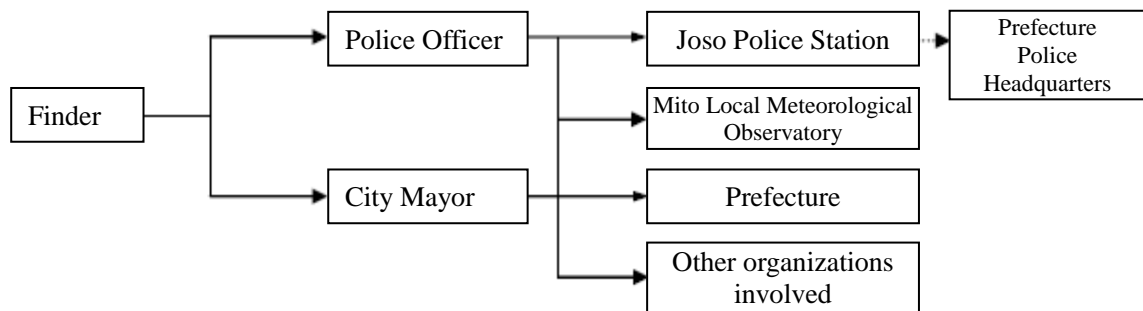
With the aim of preventing/reducing damage from sediment disaster, if the risk of sediment disaster

due to heavy rain is increased while a heavy rain warning is in effect, Ibaraki Prefecture and Mito Local Meteorological Observatory will jointly announce information on sediment-disaster alerts.

## VII Report of phenomena and measures against them

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- 1 A person who has found an abnormal phenomenon that could lead to a disaster should report it to the City Mayor or a police officer. All people should cooperate to ensure the most expeditious transmission of reports.
- 2 A police officer who has received a report is to convey it to the City Mayor as soon as possible.
- 3 Upon receiving a report, the Mayor is to convey it to the prefecture (Department of Living Environment, Disaster Prevention and Risk Management Division), Mito Local Meteorological Observatory and other disaster-related organizations without delay, while at the same time making it known to residents and other bodies concerned.



## **Section 4 Plan for collection and communication of disaster information**

### **I Planning Policy**

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Because disaster information including damage reports is indispensable as the basic requirement for emergency response, the city is to gather accurate disaster information quickly in close contact with the prefecture and organizations involved.

#### **2 Damage situations to be grasped intensively**

Survey teams are to carry out search and reporting paying special attention to the following:

- (1) Flood damage
- (2) Fire situation (destruction of the building, spread of the fire, and arrangement of the fire-fighting team)
- (3) Damage to buildings
- (4) Damage to roads
- (5) Landslide situation
- (6) Road congestion situation

### **III Collection and transfer of damage/response information**

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#### **1 Types of damage/countermeasure information**

##### **(1) Damage information**

Concerning dead and missing people, people in need of rescue, destruction of buildings, flooding, damage to roads/railroads, public facilities, etc.:

- a. Time of occurrence
- b. Area of the damage (place)
- c. Aspects (degree) of the damage
- d. Cause of the damage

##### **(2) Response information**

- a. Status of establishment of disaster headquarters
- b. Major emergency measures (implemented or to be implemented)
- c. Measures for implementation of emergency measures
- d. Need for support
- e. Need for application of the Disaster Relief Act

#### **2 Activities to gather and transfer damage information**

- (1) When a situation that falls under any of the items below arises within its area, the city will

immediately collect information on the damage situation and implementation of emergency measures, and report the information to the disaster headquarters of the prefecture and other institutions that need the information through a disaster-prevention information system, etc. based on the Ibaraki Prefecture Damage Information Procedure. However, time-critical information is to be conveyed by phone, etc., and immediately followed by reporting. Even in a situation where it is impossible to grasp damage, the city is to try to quickly report relevant information.

Situations where

- a. the city's disaster headquarters has been set up
  - b. the disaster damage fits the criteria for application of the Disaster Rescue Act
  - c. the disaster damage is minimal at first but might increase later
  - d. an earthquake of intensity 4 or higher occurred
  - e. a report is found necessary based on the disaster situation and its social impact
- (2) Outline of confirmed damages and measures in response to them is to be reported using a "damage situation report" within 10 days after completing disaster emergency measures.
  - (3) The city is to make the first report of fire, disaster, etc., to the extent of its knowledge, that should be reported as soon as possible and in principle within 30 minutes after it comes to know of the occurrence, then successively report what comes to be known about the items specified in the relevant prompt report form. If it is impossible to report to the prefecture, the City is to directly report to the National Government (the Fire and Disaster Management Agency) and communicate the content to the prefecture soon after reporting.
  - (4) When an earthquake stronger than intensity 5 upper or other disaster to which the criteria for a direct, prompt report apply, the city is to make an initial report to the National Government (the Fire and Disaster Management Agency), in addition to the prefecture, based on the Fire and Disaster Prompt Report Procedure. In such case, when requested by the commissioner of the agency, the city is to make subsequent reports also to the national government (the Fire and Disaster Management Agency).
  - (5) If a large-scale disaster significantly reduces the city's ability to gather information, the city will inform the prefecture and other disaster-related organizations accordingly and ask for support in gathering damage information.
  - (6) When there is an avalanche of reports to the 119 emergency phone line from local residents, the city will immediately report both to the prefecture and the national government (the Fire and Disaster Management Agency).

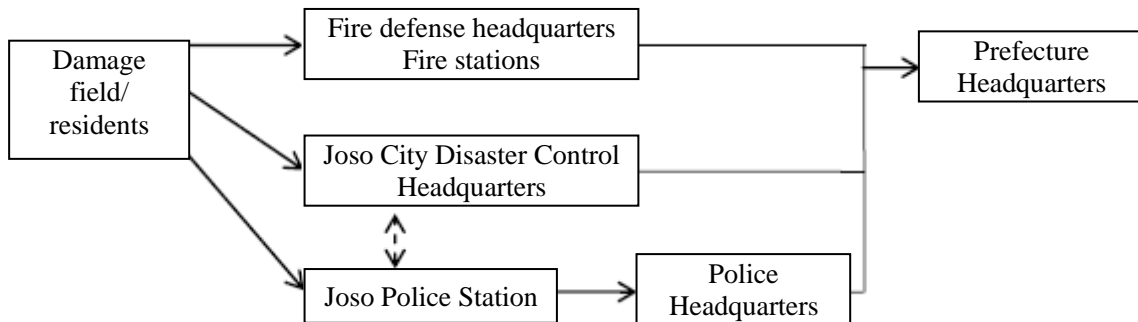
**Contact Numbers at the National Government (Fire Defense Agency)**

Line	Contact	Weekdays (9:30–18:15) *Emergency Measure Office	Other days/hours *night duty room
	NTT line	Phone	03-5253-7527
Fax		03-5253-7537	03-5253-7553
Firefighting and disaster management radio communication	Phone	90-49013	90-49102
	Fax	90-49033	90-49036
Regional satellite communication network	Phone	TN 048-500-90-49013	TN 048-500-90-49102
	Fax	TN 048-500-90-49033	TN 048-500-90-49036

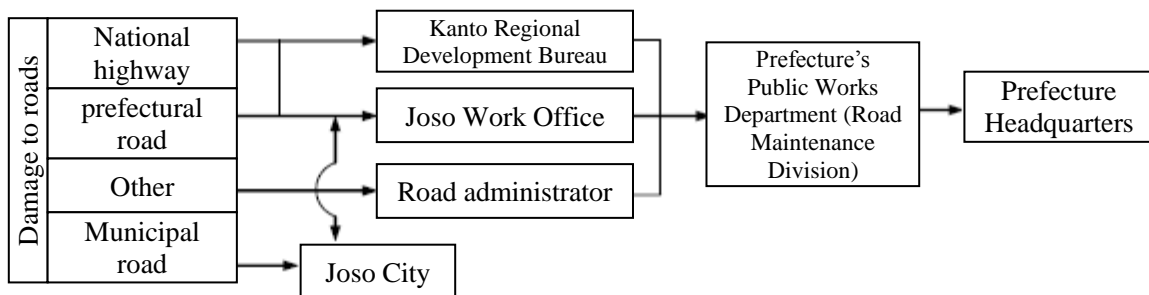
**3 Information gathering/communication methods by damage type**

Because the relevant institutions and communication channel vary depending on the type of damage, information will be gathered and communicated in the following ways:

(1) Information gathering/communication system 1 (death, injury, damage to building and others)



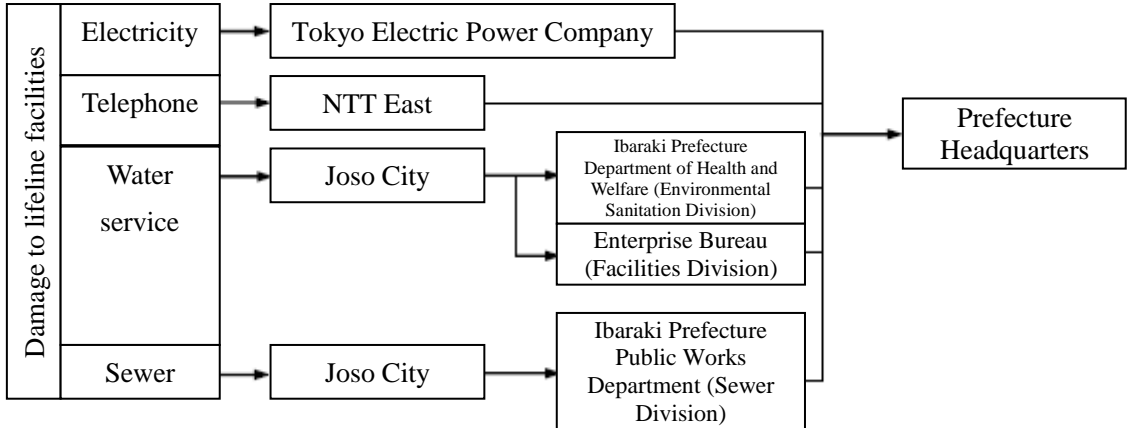
(2) Information gathering/communication system 2 (damage to roads)



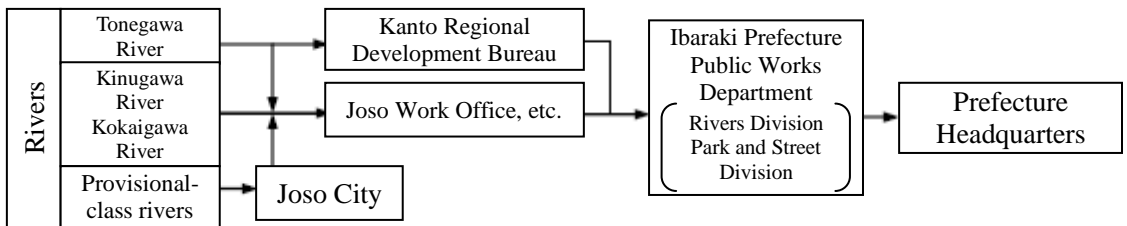
(3) Information gathering/communication system 3 (damage to railroads)



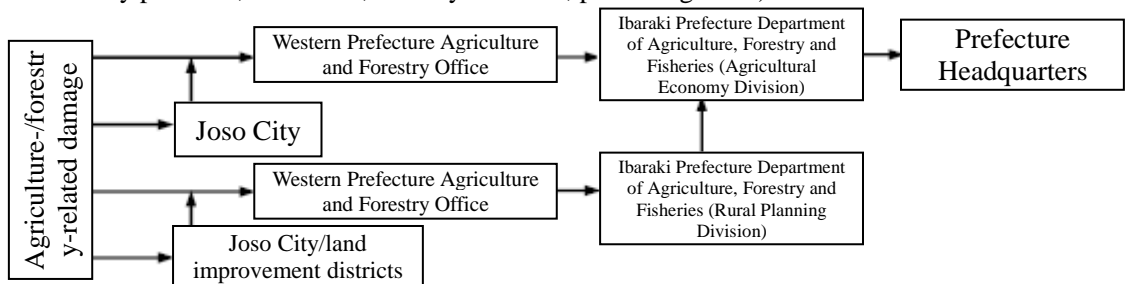
(4) Information gathering/communication system 4 (damage to lifeline facilities)



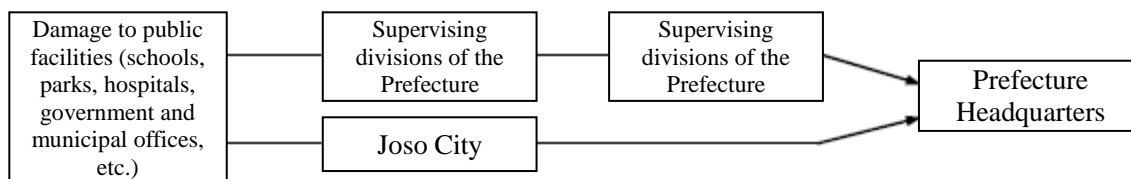
(5) Information gathering/communication system 5 (river)



(6) Information gathering/communication system 6 (farm products, farmland, agricultural facilities, forestry products, woodland, forestry facilities, producing areas)



(7) Information gathering/communication system 7 (Other public facilities)



#### 4 Damage level judgment criteria

Refer to the criteria table below for judgment of the damage level.

##### Damage level judgment criteria

Damage category		Criteria
Damage to people	Killed	People who died as a result of the disaster and their corpses were confirmed, or their corpses were not confirmed but they are sure to have died.
	Missing	People who are missing as a result of the disaster and are suspected to have died
	Injured	People who were injured as a result of the disaster and received or need to receive medical treatment Seriously injured: people who are expected to require more than one month of treatment Slightly injured: people whose treatment is expected to be completed in less than one month *If it is not known whether injuries are serious or minor, report them simply as “injured” tentatively.
Damage to dwellings		A “dwelling” refers to a building that is actually used as a residence regardless of whether it is a socially-accepted residence; warehouses and huts in which people actually live are also considered to be dwellings.
	Completely ruined	The dwelling has lost its basic function as a dwelling, namely the entire dwelling collapsed, or was washed away, buried or burnt down; or it has been damaged too seriously to be used again by repairing it, specifically, the floor area of the destroyed, burnt down or washed away part is 70% or more of the total floor area, or; the loss percentage (economic damage to major components of the house expressed as a percentage) is 50% or more.
	Almost ruined	It is difficult to live in the dwelling without major repairs, including repair of parts important for structural resistance. Specifically, the floor area of the damaged part is 50% or more but less than 70% of the total floor area of the house, or; the loss percentage (economic damage to major components of the house expressed as a percentage) is 40% or more but less than 50%.
	Half ruined	The dwelling has lost a part of its basic functions for dwelling, namely, it has been seriously damaged but can be used again with repair. Specifically, the floor area of the damaged part is 20% or more but less than 70% of the total floor area of the house, or; the loss percentage (economic damage to major components of the house expressed as a percentage) is 20% or more but less than 50%.
	Partially destroyed	Damage to the dwelling is less than total, or is almost or half

		ruined but requires repair.
	Inundation above floor level	The house is neither totally nor partially ruined but inundated above floor level and temporarily not livable due to deposition of earth, sand, wood, etc.
	Inundation below floor level	The house is inundated but not above floor level.
Damage to non-residential buildings		A “non-residential building” refers to a building other than a residential building. When a person lives in such a building, the living space is treated as a dwelling.
	Public building	Government office buildings, community centers, public nursing schools and other buildings for public use
	Other	Buildings other than dwelling houses, including shrines, temples, warehouses, garages, and barns
Other	Swept away or buried paddy fields	Cultivation of the paddy field has become impossible due to soil loss or deposition of gravel, etc.
	Water-covered paddy field	The paddy field is covered with water making the tip of ears invisible
	Swept away or buried fields Water-covered fields	They are to be dealt with according to the examples of the paddy fields above.
	Educational facilities	Facilities used for education of an elementary school, a junior-high school, a high school, a university, a technical college, a school for the blind, a school for the deaf, a special support school or a kindergarten
	Roads	Roads described in Article 2, Paragraph (1) of the Road Act (Act No.180 of 1952) excluding bridges
	Damage	National, prefectural or municipal roads are made impassable or subject to traffic restriction and need emergency measures due to damage to or slipped soil on a part or all of them.
	Water-covered	The road is water-covered and made impassable or subject to traffic restriction
	Impassable	The road needs emergency repair due to damage or flooding
	Bridges	Bridges that are constructed over a river, canal, lake, etc. and all or part of which is washed away or needs emergency repair due to damage
	Rivers	Rivers to which the River Act (Act No. 167 of 1964) applies or applies mutatis mutandis and other rivers; dikes, shore protection, hydraulic structures, ground sill and other facilities necessary for the maintenance of the rivers above, and; river banks that require protection in order to maintain coasts
	Collapse of embankment	Collapse of an embankment of first-, second- and provisional-class rivers, other rivers, reservoirs or irrigation canals, which require repair work
	Overtopping	The embankment, etc. is not damaged but water flowed over it into the dam
	Other	There is neither embankment collapse nor overtopping but damage to a bank slope which requires emergency work
	Harbors, fishing ports	Damage to the port transport facilities necessary for use and management of waterways and basins, the protective facilities for harbors, or the harbors and fishing ports prescribed in Article 2, Paragraph (5) of the Harbor Act (Act No.218 of 1950) and Article 3 of the Fishing Port Act (Act No. 137 of 1950)
	Erosion control	Damage to erosion control facilities prescribed in Article 1 of the



		Erosion Control Act (Act No. 29 of 1897), facilities for erosion control to which Article 3 of the act applies mutatis mutandis, or damage to a natural river bank to which Article 3-2 of the act applies mutatis mutandis.
	Slope failure	A disaster caused by a failure of a steep slope (including so-called slope failure) and facilities to prevent such failure as prescribed in Article 2 of the Act on Prevention of Disasters Caused by Steep Slope Failure (Act No. 57 of 1969), resulting in loss of human life or damage to a human habitation or public building
	Landslide	A disaster, caused by a landslide with damage to landslide prevention facilities prescribed in Article 2 of the Landslide Prevention Act (Act No. 30 of 1958), loss of human life or damage to a human habitation or public building
	Debris avalanche	Loss of human life or damage to a human habitation or public building caused by earth and stones, their flowing, or so-called mud flow
	Water service	Damage to water storage/purification facilities, conduit, etc. making water supply impossible or repair work necessary
	Cleaning facility	Damage to waste or excreta treatment facilities
	Railway blockage	Damage to operating facilities/equipment, station building, etc. caused by the disaster has made the operation of trains impossible or repair work necessary
	Telephone	The number of telephone lines through which calls are impossible due to failure caused by the disaster
	Electricity	The peak number of households that experienced a power outage due to the disaster
	Water service	The peak number of households that experienced an outage of water from city water or the simple water-supply system
	Gas	The peak number of households that experienced an outage of gas supply from a general or community gas utility
	Concrete-block walls	The number of locations of collapsed concrete-block and stone walls
People affected	Households affected	Households sharing living expenses and made unable to maintain ordinary life due to damage to their houses (ruined, almost ruined, half ruined or flooded above floor) caused by the disaster
	People affected	Members of the households affected
Damage amount	Public education facilities	Refer to public education facilities
	Agricultural, forestry, fisheries and joint facilities	Facilities eligible for the subsidies based on the Act on Temporary Measures for Subsidies from National Treasury for Expenses for Project to Recover Facilities for Agriculture, Forestry and Fisheries Damaged by Disaster (Act No. 169 of 1950); specifically farmland and agricultural, forestry, fisheries and joint facilities
	Public works facilities	Facilities eligible for the National Treasury's sharing of expenses based on the Act on National Treasury's Sharing of Expenses for Project to Recover Public Civil Engineering Works Damaged by Disaster (Act No. 97 of 1951); specifically rivers, seashores, erosion control, forest dilapidation prevention, landslide prevention and steep slope failure prevention facilities, roads, harbors, fishing ports and sewers

	Other public facilities	Facilities other than public education facilities, agricultural, forestry, fisheries and joint facilities and public works facilities; ex. government office buildings, community centers, children's houses, urban facilities and other facilities for public use
	Damage to agriculture	Damage to agriculture other than that to agricultural, forestry and fisheries facilities; damage to plastic greenhouses or crops, for example
	Damage to forestry	Damage to forestry other than that to agricultural, forestry and fisheries facilities; damage to trees or seedlings, for example
	Damage to animal husbandry	Damage to animal husbandry other than that to agricultural, forestry and fisheries facilities; damage to livestock or barns, for example
	Damage to fisheries	Damage to fisheries other than that to agricultural, forestry and fisheries facilities; damage to seaweed laver, fishing gear or fishing boats, for example
	Damage to commerce and industry	Damage to commerce and industry other than that to buildings; damage to industrial raw materials, goods or production machines/instruments, for example

## Chapter 2 Disaster Management Plan

This plan is aimed for prevention of disasters before their occurrence and mitigation of the damage in the disaster occurrence. This plan states the measures to be implemented in time of normal circumstance.

### Section 1 Flood management plan

#### I Plan for prevention forest adjustment

Forests have the effect to mitigate the flood due to heavy rain or to prevent disaster including the sediment discharge or collapse. There is no designated forest as a prevention forest in the City. However, the City conducts survey and inspection shall be conducted for the prone area for mountain disaster, and the City requests the designation of a prevention forest or a district equipped with prevention facility.

#### II River improvement

##### (1) Outline of the rivers

Among nine rivers flow through the City, two large scale rivers, the Kinu River and the Kokai River, have the water sources in other prefectures, so that those rivers have long river channel and the extremely large amounts of flow discharge flow through the City in the flood condition. The current circumstance is that the whole amount of the flow discharge in the upper region flows into the City.

Name of River	Width of River (m)	Length in the City (km)	Classification	Note	
Kinu River	Mean 350	22.0	Class A	Water Source	Nikko City, Tochigi Pref.
				River Mouth	Confluence with Tone river, Moriya City
Kokai River	Mean 260	18.6	Class A	Water Source	Nasukarasuyama City, Tochigi Pref.
				River Mouth	Confluence in Tone Town, Ibaraki Pref.
Higashinire River	Mean 30	14.5	Class A	Water Source	Shimotsuke City, Tochigi Pref.

				River Mouth	Confluence with the Iinuma River, Bando City, Ibaraki Pref.
Hakkenbori River	Mean 25	8.5	Class A	Water Source	Shimotsuma City, Ibaraki Pref.
				River Mouth	Mitsukaido, Joso City, Ibaraki Pref.
Iinuma River	Mean 30	6.0	Class A	Water Source	Koga City, Ibaraki Pref.
				River Mouth	Confluence with Tone River, Kitasoma Gun, Ibaraki Pref.
Chiyodahori River	Mean 8	1.4	Class A	Water Source	Joso City
				River Mouth	Confluence with the Kinu River, Joso City.
Toyosaka River	Mean 20	3.3	Class A	Water Source	Joso City
				River Mouth	Confluence with the Kinu River, Joso City.
Kamayabori River	Mean 8	0.7	Class A	Water Source	Joso City
				River Mouth	Confluence with the Kinu River, Mitsukaido, Joso City.
Shin Hakkenbori River	Mean 30	1.2	Class A	Water Source	Joso City
				River Mouth	Confluence with the Kinu River, Mitsukaido, Joso City.
Shomon River	Mean 25	4.5	Class A	Water Source	Joso City
				River Mouth	Confluence with the Kinu River, Joso City.

## (2) River improvement work

### 1 River improvement work by Ministry of Land, Infrastructure, Transport and Tourism (MLIT)

Although the improvement works have been implemented for the Kokai River since 1933, the ratio of completed embankment construction is still low, the cross section area of the river is narrow among the whole river channel, and the river has barren soil. Additionally, since the river has mild slope that induces the high risk condition due to the reverse flow of the Tone River, the progress of the improvement work is expected.

### 2 Improvement work for the small-medium rivers

The improvement work (i.e. raising) has been implemented in the Higashinire River since 1988. Regarding the Hakkenbori River, the raising, widening, and bank protection has been implemented by prefectural activities since 1963. Additionally, the improvement work of Fuchigashira sluice pipe had completed in June, 1994. Regarding the Toyosaka River, improvement work has been implemented since 1993 due to insufficient discharge capability.

### **III Measures against flood based on the Flood Control Act**

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#### 1. Designation of inundation predicted area

Regarding a river that is designated as the flood forecast river or the flow level information dissemination river, the national government and the prefectures designate an area, where predicted the inundation in the case of flood inundation of the river with the rainfall amount that is used as basis for the plan in relation to the flood prevention of each river, as an inundation predicted area. The upper region of the Tone River, the Kinu River, and the Kokai River are designated in the City.

#### 2. Provision of evacuation system

(1) Regarding the inundation predicted area, the City established and provides for residents the flood hazard map that clearly indicate the information on flood prediction, location to evacuate, evacuation path, and facility for the persons need assistance in the disaster condition in the inundation predicted area. The enlightening of the awareness for flood among residents shall be conducted through this flood hazard map or other means.

(2) The City Mayor shall establish a manual that clearly state the area requires evacuation, the judgment criteria, and dissemination method, which include evacuation order, evacuation advisory, information on evacuation preparation (i.e. evacuation of persons need assistance in disaster condition) (the information that call for preparation for evacuation of general residents as well as call for evacuation action in early phase for the persons need assistance in disaster condition and especially persons require longer time for evacuation action), in collaboration with the persons in charge for the flood control in the national government and the prefecture based on the characteristics of disaster events or information that can be gathered.

Additionally, the City designates the location to evacuate and evacuation path to facilitate proper notification for residents in time of normal circumstance. Furthermore, the City discusses with the volunteer flood fighting organization to establish the plan on evacuation guidance in the disaster occurrence, and implement the drill.

(3) The City shall improve the contents of information to be disseminated to utilize information on rainfall and water level efficiently to provide an information dissemination system for general residents through mass media in collaboration with the relevant organization including the prefecture.

Additionally, the City shall provide the system for information dissemination that facilitate easy understanding with consideration for the persons need assistance in disaster condition including elderly and persons with disability.

## **Section 2 Plan for sediment disaster prevention**

### **I Measures based on the sediment disasters prevention Act**

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The City provides the Necessary measures in addition to the monitoring and evacuation system based on the sediment disaster countermeasures for sediment disaster prone areas Act (hereinafter referred to as “the sediment disasters prevention Act”) to prevent disaster in the area with the risk for collapse of steep slope, debris flow, or land slide.

#### 1. Designation of the sediment disaster prone area and the special sediment disaster prone area

The prefecture designates the sediment disaster prone area for the area that is recognized to induce hazard for life or body of resident in the case of collapse of steep slopes and require to provide the monitoring and evacuation system to prevent the sediment disaster. Additionally, the prefecture proceeds designation of the special sediment disaster prone area for the area that is recognized to induce significant hazard for life or body of resident due to damage of buildings in the case of steep slope collapse so that the area will be applied the limit for the developing activity and structure of buildings among the sediment disaster prone area.

In the City, 14 locations had been designated on March 17, 2011 (13 of these locations are also designated as the special sediment disaster prone area).

#### 2. Provision of the monitoring and evacuation system

(1) The City established and provides the sediment disaster hazard map of the sediment disaster prone area that clearly indicate the information on location to evacuate, evacuation path, and facility for the persons need assistance in the disaster condition in the sediment disaster prone area. The enlightening of the awareness for sediment disasters among residents shall be conducted through this flood hazard map or other means.

(2) Regarding evacuation order, evacuation advisory, information on evacuation preparation (i.e. evacuation of persons need assistance in disaster condition), the City shall establish a manual that clearly state the area required evacuation, judgment criteria, and dissemination method in collaboration with the persons in charge of the prefecture based on the characteristics of disaster events or information that can be gathered.

Additionally, the City designates the location to evacuate and evacuation path to facilitate proper notification for residents in time of normal circumstance. Furthermore, the City discusses with the prefecture to establish the plan on evacuation guidance in the disaster occurrence, and implement the

drill.

(3) The City shall improve the contents of information to be disseminated to utilize information on rainfall efficiently to provide an information dissemination system for general residents through mass media in collaboration with the relevant organization including the prefecture. Additionally, the City shall provide the system for information dissemination that facilitate easy understanding with consideration for the persons need assistance in disaster condition including elderly and persons with disability.

### 3. Dissemination of the information on sediment-disaster alerts

#### (1) Provision of dissemination system

The prefecture and Mito local meteorological observatory jointly announce the information on sediment-disaster alerts to prevent and mitigate the sediment-disaster that will be used as a reference for the judgment of the City Mayor to issue evacuation advisory or the voluntary evacuation of residents in the case of high risk for the occurrence of the sediment-disaster due to heavy rain while a heavy rain warning is in effect.

The City provides the dissemination system to notify the information on sediment-disaster alert for residents.

Reference: Prone point for the sediment-disaster
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#### (2) Content of the alert information

While a heavy rain warning is in effect, this alert is announced per municipality when the calculated value of forecasted rainfall amount is predicted to exceed the criterion for monitoring by the prefecture and Mito local meteorological observatory (i.e. Criteria for the rainfall amount on sediment disaster monitoring and evacuation).

<Example>
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Increase of the sediment disaster risk is forecasted due to heavy rain within two hours. The monitoring is required at the sediment disaster prone point and surrounding area. The forecasted rainfall amount per hour is 50 mm at maximum at the most severe location for three hours from now in the designated municipality for monitoring.
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## II Measures against slope collapse

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Regarding the prone area with prediction of the slope collapse disaster, approximately, the following measures are implemented to prevent the damage before occurrence and to minimize the damage.

### 1 Local survey at the prone point and enhancement of the disaster prevention patrol

In addition to implementation of periodic disaster prevention patrol based on the information from

local survey on prone points by the prefecture, the City shall implement the patrol even under the circumstance that induce the sediment disaster including heavy rain at any time to mitigate the damage in the disaster occurrence.

Additionally, the necessary items required for the disaster management shall be stated in the City disaster management plan. In accordance with the survey result of the public work department of the prefecture, 14 predicted high risk points were identified in the City.

Reference: Steep slope high risk point
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## 2 Designation of the high risk point of the steep slope collapse

The prefecture designates the high risk area of steep slope collapse based on Article 3 of the Act on prevention of disasters caused by failure of steep slope for the predicted high risk points in accordance with the discussion with the City, and one point is designated in the City. In the designated area, the following activities are conducted, so that the designation shall be promoted for the prefecture in relation to the undesignated high risk point of steep slope collapse based on the understanding and cooperation with relevant residents.

Additionally, for the case of the implementation of collapse prevention work by the owner of the land is difficult or inappropriate, the City shall activity request for the prefecture on the implementation of work to prevent steep slope collapse by giving priority for the case with high emergency level or the case already obtained collaboration from residents in the region.

- (1) Restriction of activity that has possibility to propagate or induce a slope collapse
- (2) Dissemination for the residents by providing signs
- (3) Guidance for residents on the maintaining and controlling of slopes by disaster prevention patrol
- (4) Advisory or an improvement order of disaster prevention measure based on the needs
- (5) Implementation of the collapse prevention work at the location that is difficult or inappropriate to implement the work by the owner of the land.

## 3 Guidance on disaster prevention measures for the land owner

The City shall explain the hazard of the steep slope, which had judged as extremely high risk based on the result of disaster prevention patrol, for the land owner, manager, occupant, and person who has potential to be afflicted as well as adjust to provide the activity restriction by designating as the high risk area of steep slope collapse promptly.

## **III Measures against land slide**

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(Designation of the land slide prevention area)

The prefecture designates the point with impendent hazard of land slide as the land slide prevention



area based on Article 3 of the land slide prevention Act. At present, there is no designation in the City. However, the following activities are conducted in the designated area, and regarding the area that has hazard of the land slide, the City shall promote the designation for the prefecture based on the understanding and cooperation of the relevant residents.

- (1) Restriction of activity that has possibility to propagate or induce a land slide
- (2) Dissemination for the residents by providing signs
- (3) Implementation of the land slide prevention work

#### **IV Debris flow prone stream**

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A debris flow prone stream is defined as a stream that has hazard of debris flow occurrence with the possibility to induce damage for more than five houses (including the public facility, school, hospital, station, or power generation plant even for the case of area without any house). Additionally, the debris flow high risk area is defined as an area that had been predicted the accumulation or inundation of the debris flow due to geographical condition in the debris flow prone stream (herein after referred to as “high risk area”).

Additionally, in accordance with the local survey conducted by the prefecture, there is no stream in the city to be designated.

## Chapter 3 Plan for Disaster Response Measure

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This plan regulates the measures that shall be implemented for the case of disaster occurrence or high risk condition of disaster to prevent its occurrence by the relevant organizations for disaster management by operating their full function or to prevent the propagation of the disaster including emergency rescue activity.

### Section 1 Organization plan

#### I Principle of the plan

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In the case of the disaster occurrence or the high risk condition of disaster, the City implements the disaster response measures based on close communication and collaboration with the relevant organizations for disaster management.

#### II Establishment of emergency response centre

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The City shall establish the Joso city disaster response center based on the regulation in the city ordinance on disaster response center (Ordinance No.5 of 1963) to implement the disaster response measures.

##### 1 Location of the disaster response center

The disaster response center is established at the main building of the City hall. However, the following facilities shall be the alternative locations for the case of the main building of the City hall is damaged due to large scale disaster.

The First Alternative Location	The City Hall Ishige Annex (4310-1, Shin-Ishige, Joso City)
The Second Alternative Location	The Life Time Learning Center (4684, Tenman cho, Mitsukaido, Joso City)
The Third Alternative Location	The Joso City Mitsukaido Health Care Center (4434-2, Morishita-cho, Mitsukaido, Joso City)

##### 2 Criterion for the establishment of the disaster response center

The disaster response center is established in the following cases.

(1) The case that the warning is issued on rainstorm, heavy rain, or flood based on the meteorological service Act (Act No.165 of 1952), and the large scale disaster is occurred or high risk

condition for occurrence.

(2) The case of occurrence or high risk condition for the disaster that requires the application of the disaster relief Act.

(3) The case that the City Mayor recognizes the establishment is necessary.

### 3 Criterion for termination

The director of the center (the City Mayor) terminates the disaster response center, while the following criteria are fulfilled.

(1) The predicted hazard of a disaster is eliminated.

(2) The disaster response measures are mostly completed.

(3) The director of the center determines it is appropriate.

### 4 Dissemination of establish and termination

For the case that the disaster response center is established, the establishment of the center shall be notified and announced in public in accordance with the table below as well as displaying the sign of the disaster response center at the main building of the City hall.

Organization to be notified and to announce	Communication Method
Each department in the Main building of the City hall	Announcement in the building, the city radio for disaster management, telephone, oral communication, or other prompt method.
Annex or other branch office	Telephone, the city radio for disaster management, or email
Each fire department	Telephone
Head of the voluntary fire fighting team	Telephone, the city radio for disaster management
The prefectural governor	Telephone, the prefecture radio for disaster management, email
Joso police office	Telephone, the city radio for disaster management
General resident	The city radio for disaster management, car for public announcement
The mass media	Telephone

### 5 Outline of organization

(1) The disaster response center includes Director of the center, Vice-director, director of each department, group leader, and member of group.

(2) The City Mayor is designated for the Director of center, and the vice City Mayor and superintendent of education are designated for vice-directors.

(3) The organization and the responsible works of the disaster response center shall follow the items described in the Appendix, and collaborative support system among each department and group shall be organized at all time in response for the order of the director of center based on the condition of disaster and the necessity level of response activity.

#### 6 Board of the disaster response center

##### (1) Structure of the board of the disaster response center

The Board of the disaster response center consist of Director of the center, Vice directors, and members of the center to discuss on disaster prevention, disaster response measures, and other important items related to disaster management.

##### (2) Holding board meeting of the disaster response center

The director of the center shall call for a board meeting if necessary for the operation of the center and promotion of disaster response.

##### (3) Items to be discussed in the Board meeting

- a. Items on the disaster relief Act.
- b. Items on the organization of the center to operate activity
- c. Items on the implementation and adjustment of the disaster response measures
- d. Items on request for support
- e. Items on request for the disaster relief operation of the Self Defense Force
- f. Items on disaster related dissemination
- g. Items on request for the prefecture
- h. Items on the determination of the disaster related center
- i. Items on other important matters

#### 7 Determination of the alternative person for the role of director of disaster response center

The order of the alternative persons to establish the organization system for the case of absence of the Director of disaster response center (the City Mayor) as listed below.

The first priority      Vice City mayor

The second priority    Superintendent of education

The third priority      Director of the civil life department

Reference: The Joso City ordinance on City Disaster Management Committee  
The Joso City ordinance on Ordinance on Disaster Response Center

### **III Establishment of local disaster response center**

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The City Mayor establishes the local disaster response center (hereinafter referred to as “Local center”) as an organization to support the work of the disaster response center in local region in the case of the efficient emergency response activity is required in the local region.

#### 1 Criterion for the establishment of the disaster response center

The local center is established when the necessity of providing order at the local region is recognized by the City Mayor in the case of a severe disaster occurred in limited area among the City region. The center is terminated by the City Mayor when the emergency response at the area is recognized as completed.

#### 2 Organization of the local center

The local center is organized by the Director of the local center and the local staff of the center. The Director of local center is assigned among the vice director of the disaster response center, members of the disaster response center by the City Mayor, or other staff, while the staff of local center is assigned among the staff of the disaster response center based on the request of the Director of the local center.

常総市地域防災計画

平成 25 年 3 月 常総市防災会議より抜粋

翻訳 2014 年 7 月 (JICA より外注翻訳)

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