

Direction of Recovery being Clarified from the Disaster Investigation in the Omoto River etc.

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1. Site investigation on the flood damage by the August 2016 typhoon

The heavy rains by the four typhoons that hit Japan successively in August 2016 caused serious damage, including levee failure, to branch rivers of the rivers under the control of the central government and rivers under the control of Hokkaido or Iwate Prefecture. Particularly, in the Omoto River basin, some residents of the facility for individuals requiring assistance failed to escape and died. In addition, damage to the important infrastructure, such as bridge facilities, and agricultural damage caused serious damage to recovery / restoration.

In response to the request for disaster support from the Hokkaido Development Bureau and Hokkaido and Iwate prefectural governments, the River Department conducted a site investigation to grasp the events that cause the damage. Through such investigation etc., we analyzed the actual status and factors of damage and are using the results of analysis to support effective countermeasures. We are also accumulating disaster information to contribute to disaster support in the future.

2. Development of the rivers and roads that have disaster reduction function

Omoto River flows through the valley plain with steep slope. Figure 1 shows the air photo of the Horono area taken on August 31, immediately after the flood. The water level of the River rose rapidly, about 4m in several hours, causing levee failure on the right side of the upstream of the Akashika Bridge and wash-away of the bridge approach embankment. As a result, the residential land and farmland were inundated in a short time and gravel deposited on the farmland.

For such rivers, it is important to prevent the occurrence of a rapid flood and resultant isolation. In reference to the findings obtained by sampling the site investigation results¹⁾ on the Yosasa River in the Naka River System, which has similar river characteristics and damage pattern, from the past disaster information, we established the basic policy for recovery consisting of (i) river and community development including disaster reduction function and (ii) development of facilities easier to recover.

For example, instead of river channel excavation and continuous levee development, open levee, existing stock, may be used, i.e., enclosing a house with circle levee and adjusting the opening of the open levee

(width, height, etc.) may result in gradual occurrence of a flood, which is expected to secure time for evacuation (Fig. 2). Such development of structural measures is one of the examples, and accumulation of such devices will lead to development of areas with high toughness against a flood exceeding the standard development level.

In addition, a bridge connecting residential land and national highway, such as Akashika Bridge, is important as an evacuation route or recovery support road. In the Omoto River, the road network was cut off in many spots and some communities were isolated. Therefore, what is required is a bridge with a structure resistant to a flood exceeding the development level or a structure requiring less time for recovery even in case of break. In order to address these issues, we intend to provide technical support in cooperation with the Road Structures Department.

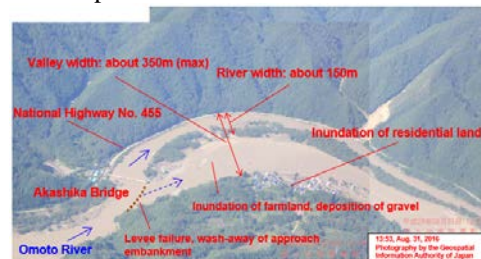


Figure 1: Inundation in the Omoto River Horono area

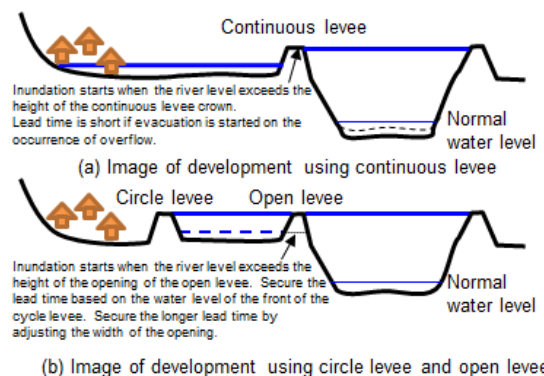


Figure 2: Image of securing time for evacuation by developing circle levee

[References]

- 1) River Division / Foundation Division: Site Investigation Report on the Fukushima-Tochigi Heavy Rain Disaster by the Heavy Rain at the End of August 1998, PWRI material, No. 3793, March 2001