Inundation hazard map research in Hiroshima city, 2008

Year of Research	2008	

(Purpose)

In recent years, local torrential rain has increased in urban areas of Japan. Effective ways to quickly and efficiently reduce inundation damage include not only promoting public hard measures, but also promoting self-help soft measures like hazard maps. This research was undertaken to prepare an inundation hazard map of 2600ha of Hiroshima city, and to provide advance inundation information to citizens. The year before last, we described the Ozu, Misasa, and Kannon districts, and last year, we described Yoshijima and Ujina districts, and this year, we describe the Kyobashi, Senda, and Eba districts .

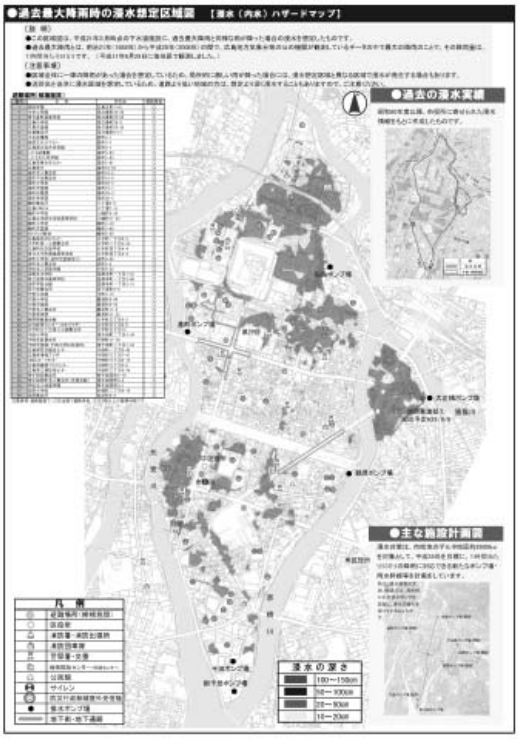

Figure 1 Hazard Map

(Results)

(1) Outline

1) Preparation of the predicted inundation district map

We investigated the following items, ran simulations, and formed a hypothetical inundation area map to create the hazard map.

① Basic survey, ② Analysis of features of drainage district, ③ Selection of simulation methods, ④ Setting the target rainfall, ⑤ Water level of the river receiving the run off water, ⑥ Modeling of target area and facilities, ⑦ Verifying simulation model and performing the inundation simulations, ⑧ Setting the map of the district where inundation by inner water is predicted, and ⑨ Indicating inundation depths

2) Preparing the inner water hazard map

We sorted out the necessary information based on items in section 1) and prepared the hazard map.

3) Verification of the effectiveness of the inundation countermeasure facilities plan

The indundation prevention effects of the facilities were verified by simulations.

(2) Results

1) We simulated an approximate peak intensity of 81 mm/hr, the highest ever recorded, and an intensity higher than that in waste water maintenance standards, of 53 mm/hr which happens to be the 10-year return period, and of 65 mm/hr which is moderate rain between 53 and 81 mm/hr.

2) A Hazard map (Figure 1) was made from the inundation area map during rainfall of 81mm/hr: the largest recorded rainfall. We simulated not only the approximate largest recorded rain, but also rainfalls of approximately 15, 30, 40, and 53 mm/hr. Showing the state of inundation for each simulation along with illustrations lets users visually understand the inundation area and damage.

3) The results indicated that at many places the simulation result and past inundation record differed. So we revised the simulation results based on the pipe bottom height and ground height which we had reviewed.

4) After completion of the facility based on the wastewater facility plan (drastic measures), we simulated an inundation at 53 mm/hr, and presented the results on the hazard map. As a result ,after drastic measures inundation districts were eliminated during the ten-year probable rainfall (53 mm/hr).

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Key words	inundation method, hazard map, 10-year return period rain, inundation area, largest recorded rain