

Research of inner water inundation hazard map in Hiroshima city

Whole term

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(Purpose)

For concentrated heavy rain recent years, it is important not only to promote hard measures as an public way, but also to promote self-help to urgently and efficiently avoid inundation. So it is time to make 「inundation hazard map」, announce water danger information, and promote citizen's mind to avoid damage of inundation. In this research we make inundation hazard map about Oozu area(533ha), Misasa and Kannon area(570ha) in Hiroshima this year. In future, we will make more inundation hazard map about all inundation area (about 2,600 ha) in Hiroshima. The purpose of this research is to provide precursory inundation information to citizen.

(Results)

(1) Outline

1) Drawing inundation area map

We investigate following terms, run simulations, and make supposed inundation area map to make hazard map.

①Basic research,②Analyzing features of drainage distinct,③Choice of simulation methods,④Setting target rainfall,⑤Setting water level in effluent stream,⑥Modeling of target area and facilities,⑦Verifying simulation model and running inundation simulations,⑧Setting supposed inundation area,⑨Indicating inundation level

2) Making inundation hazard map

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

3) Verification effects of the facilities against inundation

It was verified effects of the facilities against inundation with simulations.

(2) Results

1) Target rainfall, which was run some simulations about target rain i.e. 53 mm/hr(probability once ten year),65 mm/hr,81 mm/hr(largest recorded).Rainfall data depends on data of ameddas radar observation, rainfall observation at pumping station, rainfall observation at west Nippon express company limited. We simulated about 81 mm/hr as largest recorded which is more than waste water maintenance standards, 53 mm/hr which happens less than once in ten years, and 65 mm/hr which is middle rain between 53 and 81 mm/hr.

2) Hazard map (Figure 1) was made from the inundation area map when it rained 81mm/hr as largest recorded flood. Indication articles on hazard map based on the examples in another cities, the manual about integrated inundation control and considered actual cases in this city. We simulated not only about largest recorded rain, but also about 15,25,40,and53 mm/hr rain, and described as the same paper makes inhabitants to make the inundated image easily.

3) This hazard map was reflected common opinion that is heard from “wastewater supporter”.

4) We also describe results on hazard map that were about the inundation simulation as 53 mm/hr after wastewater facilities plan which is drastic measure was prepared. After drastic measure was prepared, those inundation were eliminated about ten-year probable rainfall(53 mm/hr). The area that houses are flooded with above or under floor level when it rains 81 mm/hr, is eliminated to have high inundation risk. It is necessary to introduce integrated inundation controls.

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Researchers : Masayuki Matsuura, Toru Meguro, Hiroichi Mizukawa, Nobuaki Chuganji



Figure 1 Hazard Map

Key words

Inundation method, hazard map, ten-year probable rainfall period, inner water inundation area