Proposal Report

on

“Flood Hazard Mapping Project in

Singhaburee Municipal, Singhaburee province Thailand”

Prepared By

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JICA Region-Focused Training Course

On

Flood Hazard Mapping

JFY 2007

"Flood Hazard Mapping Project in Singhaburee municipal, Singhaburee Province, Thailand"

1. Background and objective of the planned project

Thailand is located in monsoon area. Most Thai people live beside rivers or in flood plain areas because agriculture is the main activity in Thailand. Chaopraya River is the main river which is the biggest main basin in Thailand and located on the central part. The characteristic is flat area in lower part and hilly area in upper part as shown in figure 1. It starts from Nakornsawan Province and reach the sea at Samuthprakarn Province. The total area of the basin is 157,925 sq.km.[2]

Main cause of flood is heavy rainfall from depression or tropical storm. The lower part is the flood plain area and always floods. Almost of economy and administration are in this area including the main paddy field and so many structures have been constructed for irrigation and flood management. Many levees have been constructed to cooperate with Chaopraya Dam and regulators.

Now most of the levees are roads while flood occur especially in case of over bank flow, the levee always breach and water flow to the lower area suddenly. Many people were killed and a lot of economics lost from flood disaster. Reduction of flood damage is important so many structures have been constructed. However the sustainable flood management is cooperating and balancing between the structural method and non-structural method together. The powerful tool of non-structural method is education. People can live in flood plain area with awareness and understanding. Flood Hazard Mapping is a tool which is easy to understand and useful for all stakeholders such as residents or municipal officials.

Figure 1 Chaopraya Basin

Figure 2 Singhaburee Municipal

The project objectives are as follows

1) To establish, first, the Flood Hazard Mapping Project in Thailand (Pilot project in Singhaburee Province).
2) To minimize flood damage in the area by using Flood Hazard Mapping made by cooperative of all stakeholder (government official, municipal official and residents).
3) To rise the Self Help and Mutual Help by educating all stakeholders in target area to live with awareness and understanding in flood disaster

2. Target area

The target area is Singhaburee Municipal, Singhaburee Province, located on the right bank of Chaopraya River as shown in figure 2. If discharge of the river is greater than 2,000 cu.m.^{3}/s., this area is in the first inundation because of the limitation of river capacity as shown in figure 3.

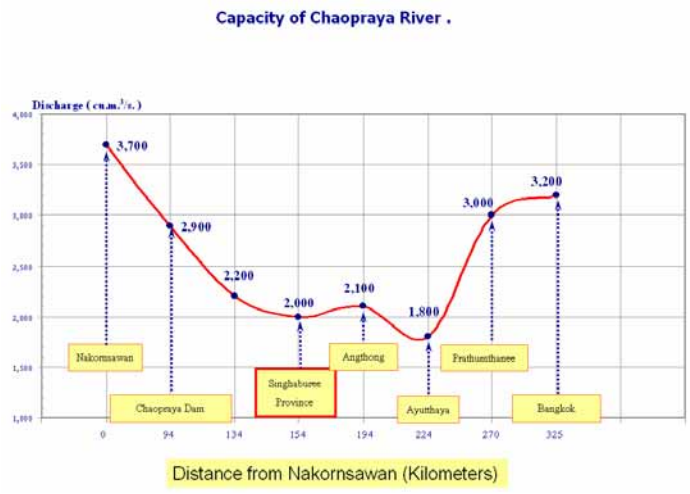

Figure 3 Capacity of Chaopraya River

Normally in case of flood, the government informs the information and forecast the situation of the flood through the municipal officials to the residents by television, municipal speaker system or bulletin boards. The officials raise the levee by sand bags and prepare the necessary things such as water and food for distribute to the residents in the affected area.

3. Project schedule

Flood Hazard Map Action Plan

No.	Activities	Budget (USD)	2008 Jan	Feb	Mar	Apr	May	Jun	Jul
1	**Data collection and preparation**	**5,000.00**							
	- Provide & Acquisition Data								
	- Verify Data								
	- Pre-analysis Data								
2	**Analysis Inundations depth**	**4,500.00**							
	- Simulation & Extrac of Innundation depth								
	- Verify& Integrated Innundation depth								
3	**Flood Hazard Map production**	**5,500.00**							
	- Design & Integrated information								
	- Print								
4	**Utilization**	**11,000.00**							
	- Distribution								
	- Practice								
	- Evaluation								
	Total	**26,000.00**							

4. Concrete implementation of the schedule

1) Data collection, verify and preparation data

The data should be corrected and verified for hydrology and hydraulic models are as follows;

- Spot High
- Cross – section
- Land use
- Rain fall
- Run off
- Arial photo
- Water level
- Historical Data
- Satellite Image
- Dem
- Infrastructure
- Hydraulic structure
- Related Information
- Evacuation Center

- Early Warning system
- Disaster structure and organization
- Communication network

2) Analysis Inundations depth

Model is simulated to find the depth of flood in this area base on flood occurred in Singhburee province in 2006 which is the biggest flood. The activity are as follow:

- Model setting
  - Hydrology Model
  - Hydraulic Model
- Flood simulation
- Calibration
- Inundation area

3) Flood Hazard Map production

To make the flood hazard mapping by put the safety area/evacuation centre for flood evacuation exercise by

- Integrated related information
- Layout Design
- Stake-holder Calibration (government, municipal, residents)
- Print out

4) Dissemination and utilization of flood hazard map

To distribute FHM to all household in this area, establish proper mechanism to disseminate and promote residents to understand FHM. The activities are as follow:

- Distribute FHM to all households in this area
- Establish proper mechanism to disseminate FHM to all resident.
- Promote residents to understand of FHM.
- Flood evacuation drill.
- Evaluation the utilization of FHM.

5. Expected benefits and progress for residents and administrators

In 2006, Flood occurred in Singhaburee Province which affected to inundation area in 6 Amphoe, 27 Districts and 207 Villages. That flood had resulted in detrimental consequences on people's lives, property, natural environment and national economy. The summary of losses as follows:

Life losses

- People inundation area (peoples) 99,503
- No's. family inundation area (family) 28,885
- No's. people evacuated (peoples) 0
- No's. people death (peoples) 26


Property losses

- All of the house were damaged 3
- part of the house were damaged 109
- commercial building were damaged 13
- vehicle/car damaged 10
- Agriculture area (Rai) 191,707
- fisheries farms 1,183



Infrastructure inundation area

- Ditch 7
- temple, school, government's office 157

Loss estimate and budget provided by the government as follows:

- Loss Estimate 25,949,506 Baht (763,000 US.)
- Budget provided inundation area 14,431,627 Baht (424,000 US.)

(Provide Boat, water, food, pumps and cleaning water providing)

If Flood Hazard Map project in Singhaburee Province is success, it can dramatically reduce the loss and make the great benefit in this area. The benefit of FHM in this area is

- Reduce the lost of lives and properties. If the residents know the inundation area and flood forecast, they can prepare and be ready for the flood and can manage themselves and their properties to the safety area.
- Reduce damage of the agriculture area and fisheries farm that the farmer can select the suitable crop and fisheries in the agriculture/fisheries area.

Expected benefit both for the residents and administrators is about 10,000,000 Baht/year (294,000 US$ which is 75% of budget provided by the government)

6. Approximate cost estimate

No.	Activities	Budget (USD)
1	Data collection and preparation	5,000.00
2	Analysis Inundations depth	4,500.00
3	Flood Hazard Map production	5,500.00
4	Utilization	11,000.00
	Total	26,000.00

7. Opinion and suggestion for FHM training course

Opinion for FHM training course

During FHM course in Japan, it is the good chance for Thailand's participants who come from different government agency such as Department of Disaster Prevention and Mitigation, Royal Irrigation Department and Department of Water Resources. They all have responsibilities concerning Flood management directly. Then, we can integrate the information, knowledge and experiences in FHM training course and can apply the technology, knowledge and experience that we obtained from this training course in flood hazard map and flood management in Thailand.

Suggestions for FHM training course

Course objective and course content is very good and suitable, but some suggestions from us are as follows:

- The duration of 2007 FHM course from October 30, to November 30, 2007 is not sufficient. It should be extended for 2 more weeks, so that we can learn and share more experience about FHM.
- It will be better if we have more time for self study and do the exercise about FHM at ICHARM. That is the good chance for us to discuss and consult the expert from ICHARM.
- Town watching is very interesting for the participants as they can walk through the area to collect data experiencing cool climes of Japan. However, the time allocated to town watching is too short. If possible, more time should be added.



- For town watching program, it is better if all the participants have a chance to meet community leader, member of a volunteer group, officers from the government side to make discussion in an efficient way.
- If the flood evacuation drills are organized with the participation of FHM course participants, it will be good experience to the participants to understand how it works.