Flood Hazard Mapping in China

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Brief Introduction to OSFCDRH

- OSFCDRH is a flood control command institution in P. R. C, and it is located in the Ministry of Water Resources P. R. China.
- Main functions: to organize nationwide activities of flood control and drought relief, undertake the day-to-day work of the State Flood Control and Drought Relief Headquarters, and carry out unified control of water volume from water conservancy and hydropower facilities all over the country following the directives of the Headquarters.

Brief Introduction to OSFCDRH

- The general commander of SFCDRH is a vice premier of the state council.
- The member of SFCDRH are relevant department in state council.
- As an deputy director of take charge Yellow River and Taihu, My recent works are flood control management and the flood control operation of Yellow River and Taihu. At the same time, I am drafting out laws abort flood management.

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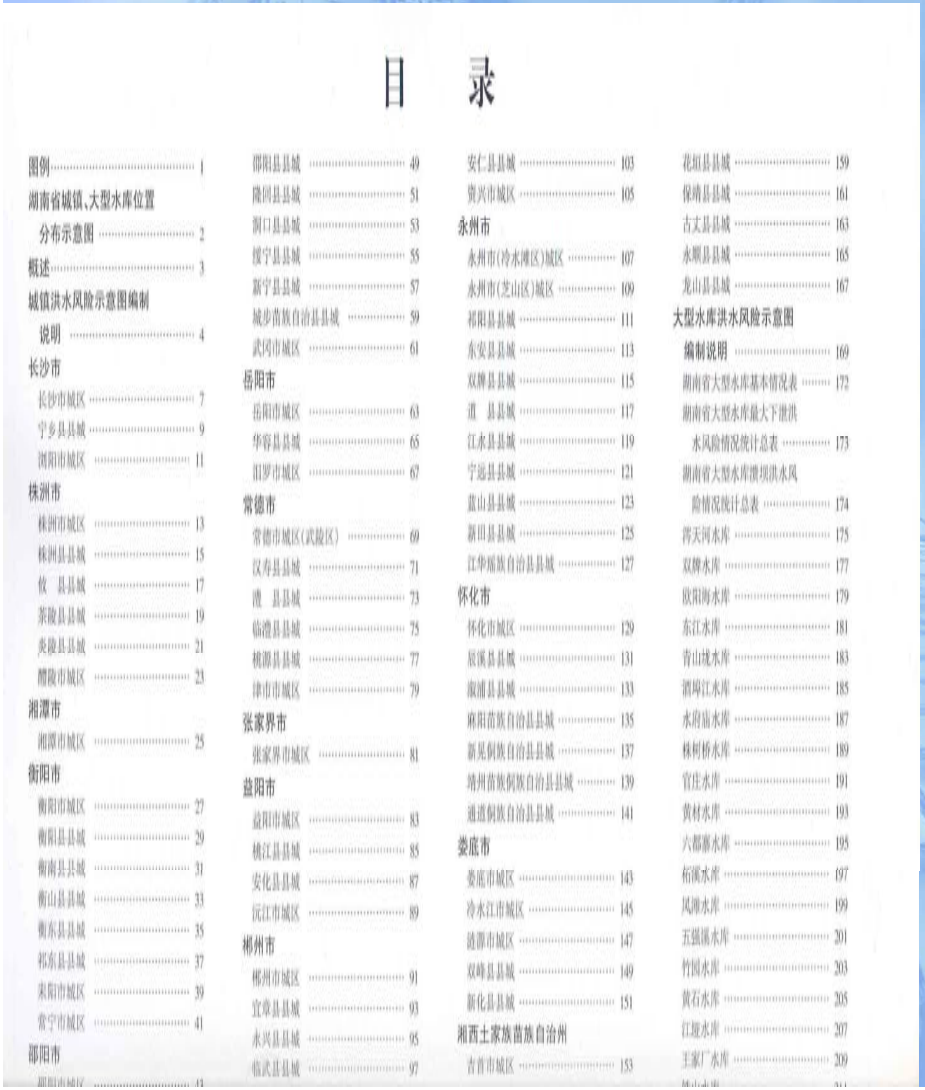
Flood hazard map is very important

- China is one of the countries suffering most from flooding.
- It is of vital importance to protect people and property in floodplain from flooding.
- The recent practice of flood control in China have shown that the flood hazard map is an effective way to keep people away from devastating floods and mitigate the damage when they occur.

1. Development of Flood Hazard Mapping in China



目 录

Since 1984, China has made flood hazard mapping.

The first Flood Hazard Mapping was in the Flood Diversion Area.

Then many Flood Hazard Maps hade made in the rive or city Area.

Three stages

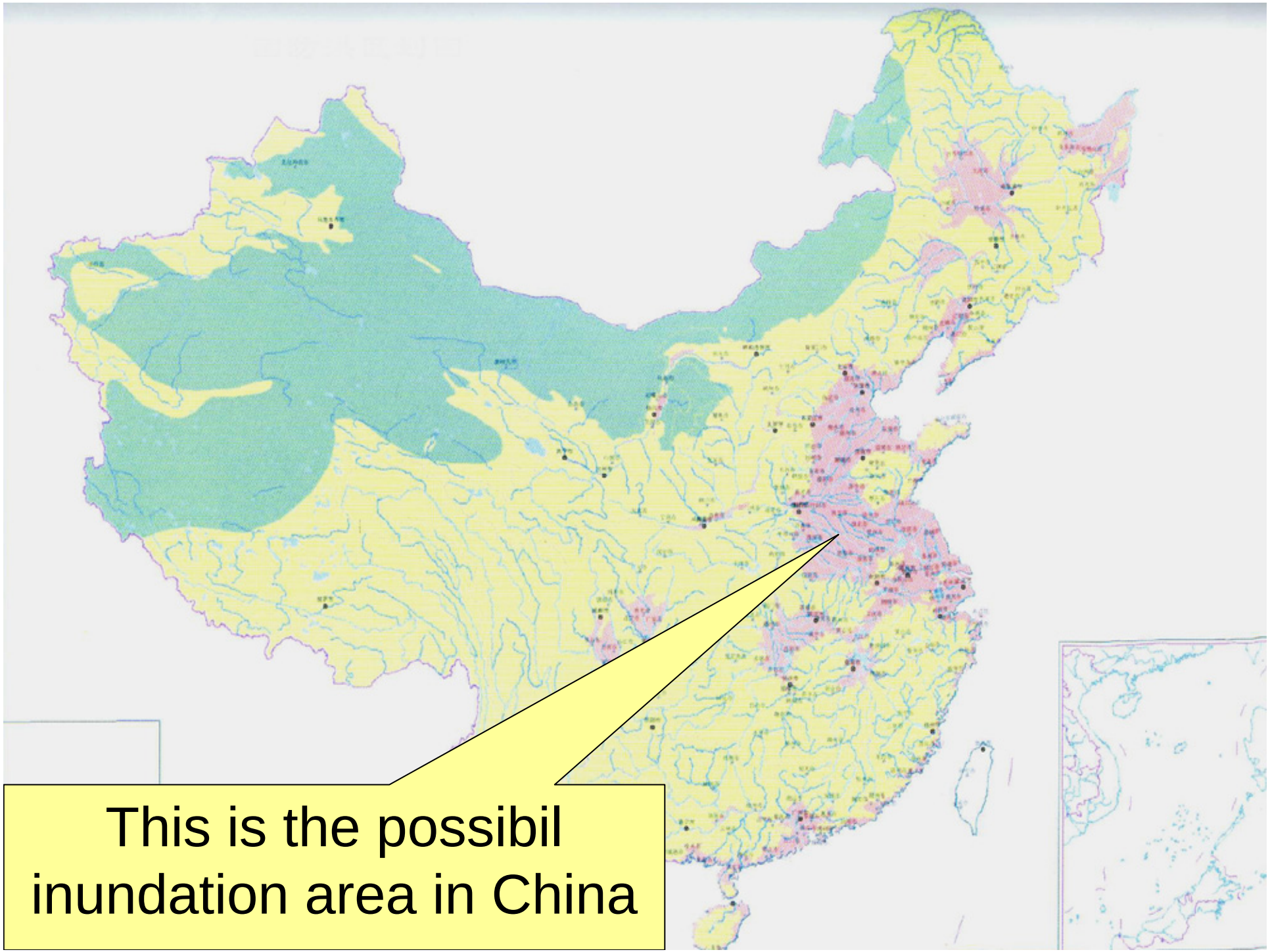
- 1984-1997 The hazard mapping hade made in Different standard and different specification in China. Usually the hazard maps was marked in the Paper.
- 1997-2004 The hazard mapping hade made in the 10、50、100、200 、the largest history flood inundation areas lined out in different colors. The hazard maps was marked in the Paper or in computer.
- 2004-2007 The state's technique standard of production of flood hazard mapping was be illustrated in China. The hazard maps was marked in computer use GIS.

Four types

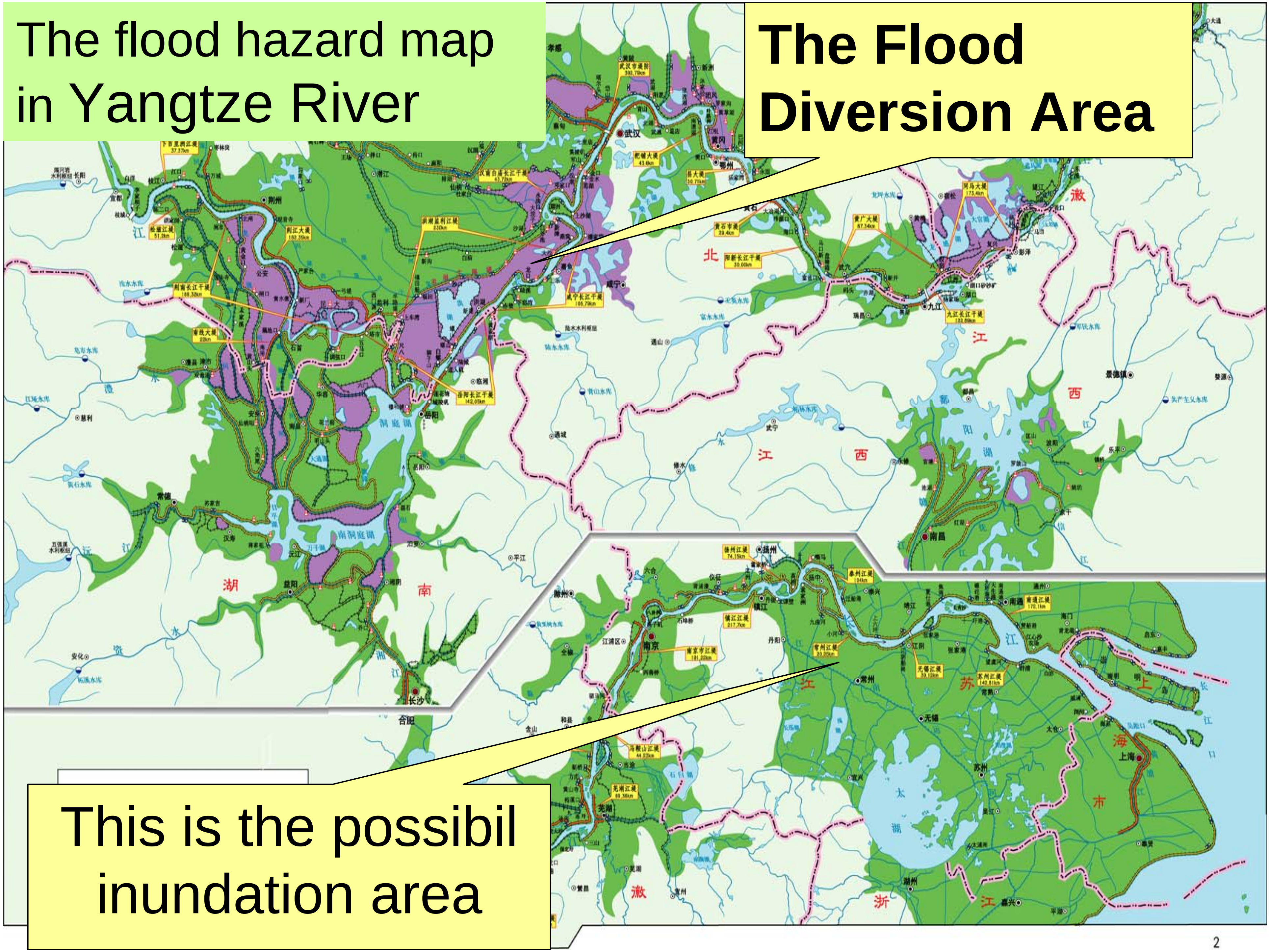
- 1. The hazard maps are in The River's flood detention areas typical.
- 2. The hazard maps are in the urban areas
- 3. The hazard maps are in the reservoirs downstream if the dam break.
- 4. The hazard maps are in the flood diversion areas.

Three steps to generate flood hazard map

- Historical flood inundation maps by investigation or simulation of historical floods.
- Estimated flood inundation maps by simulation of floods with different return periods.
- Flood hazard maps by combination of estimated flood inundation map and other information.


This is the possibil
inundation area in China

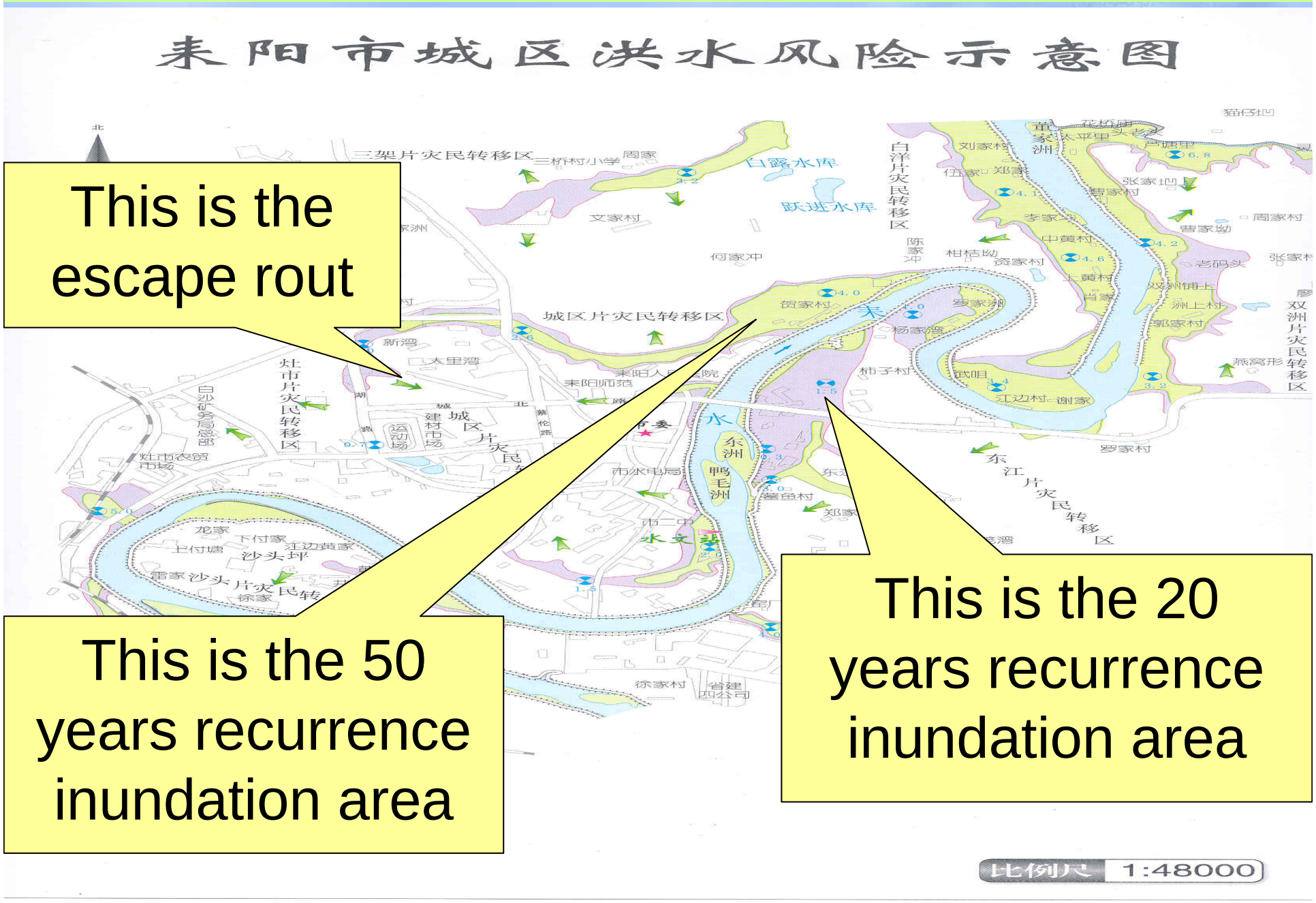
The flood hazard map in Yangtze River



The Flood Diversion Area

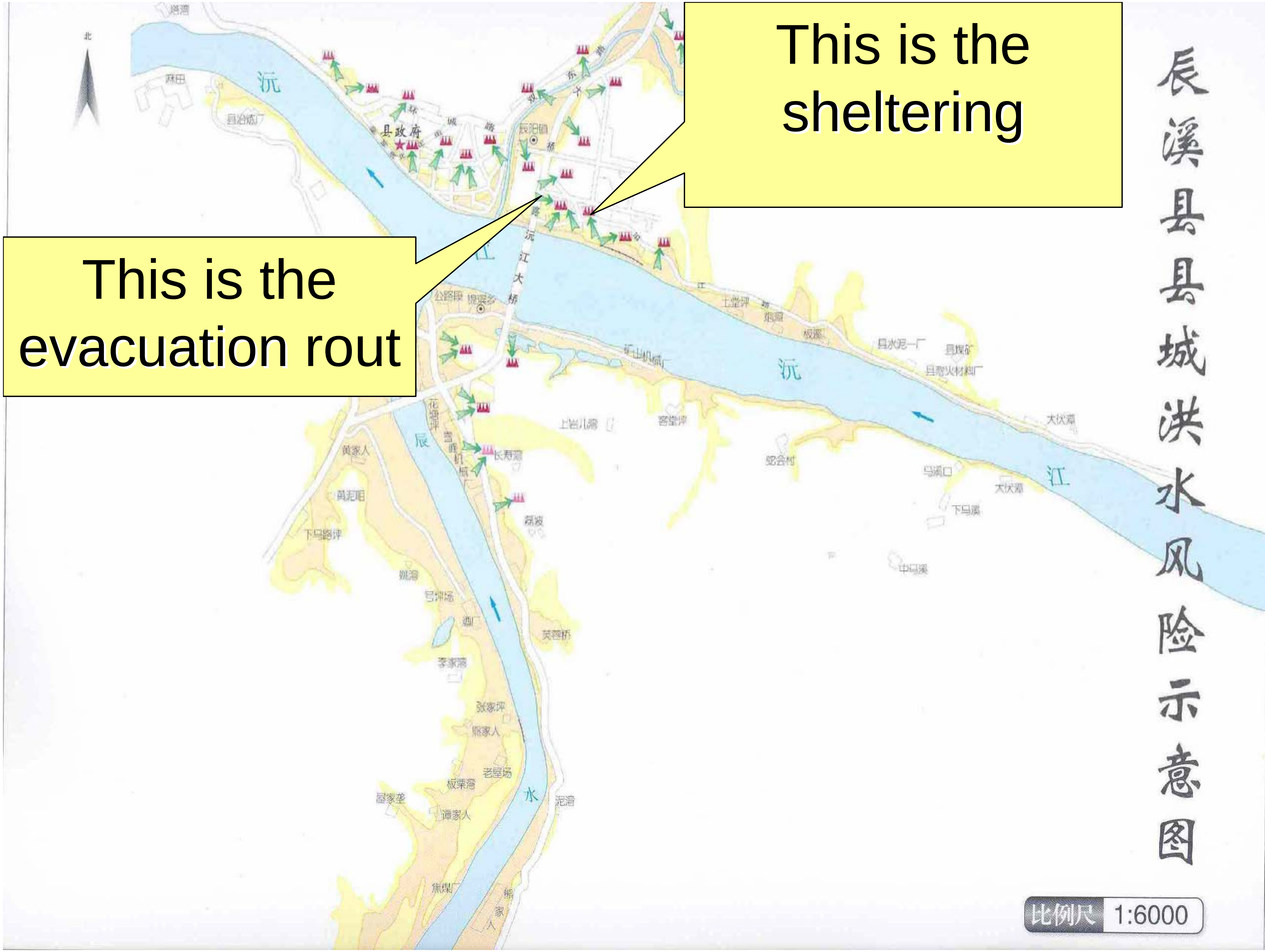
This is the possibil inundation area

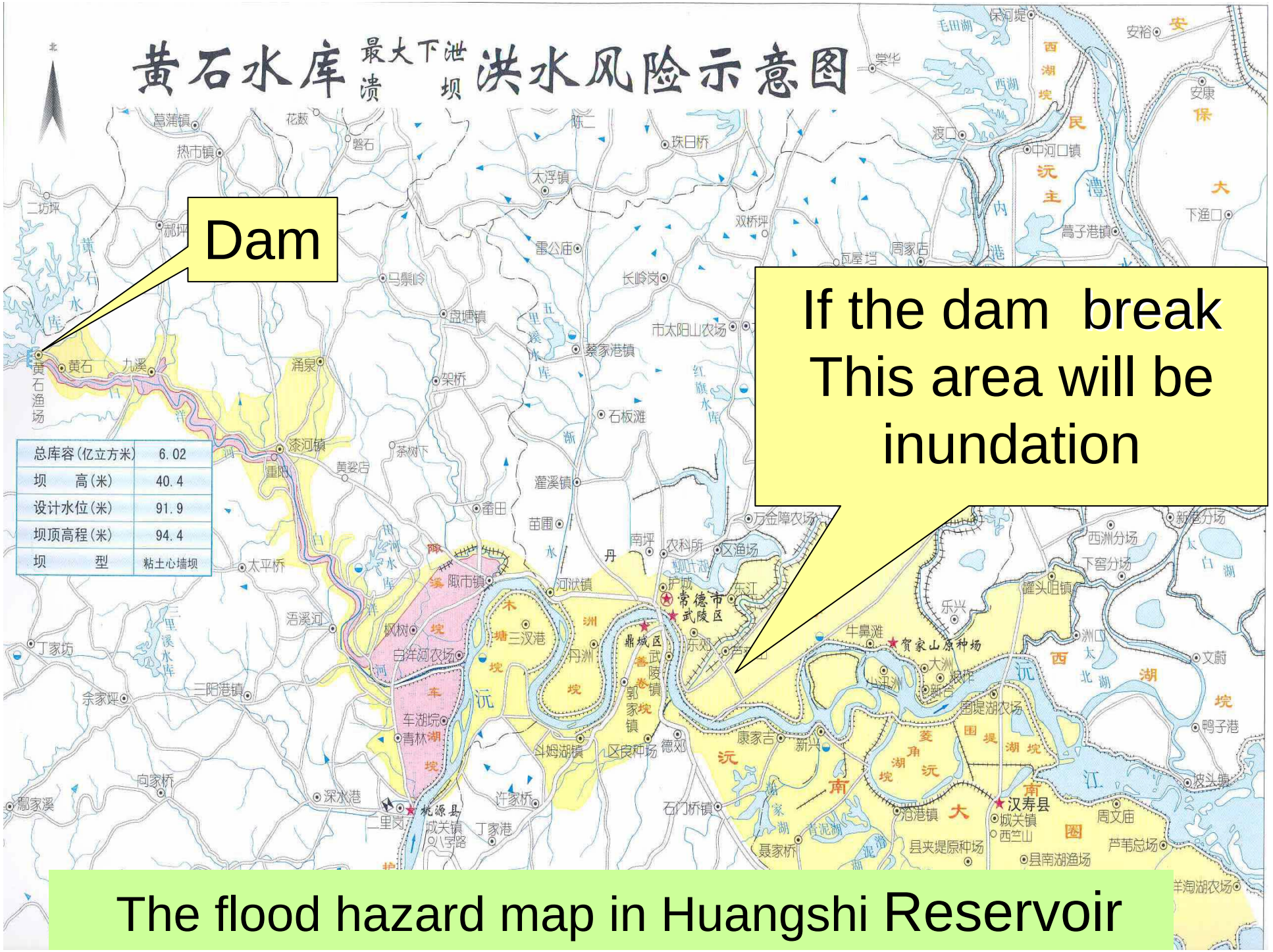
The flood hazard map in Rer yan city of Hunan province

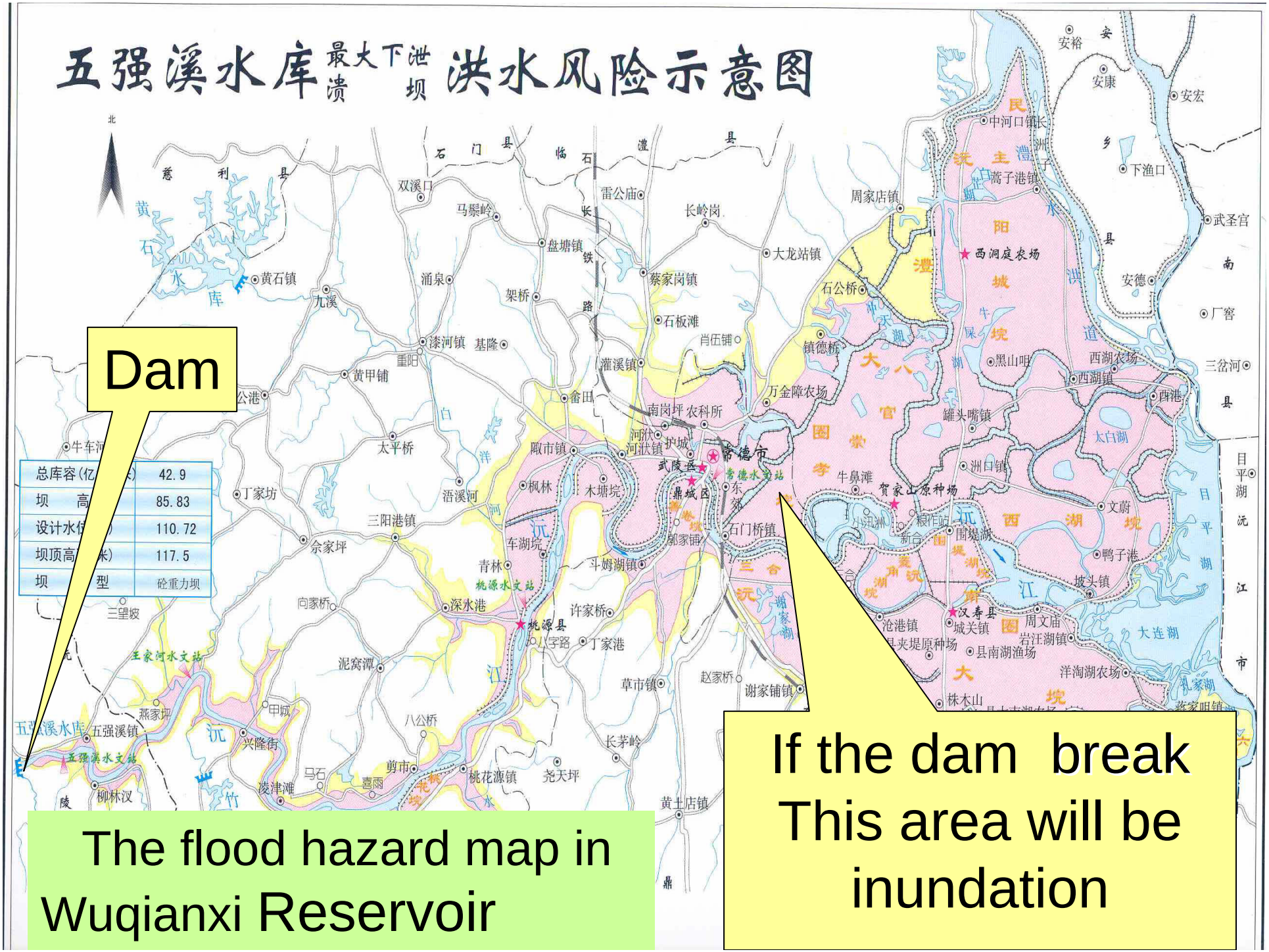


This is the sheltering

This is the evacuation rout




黄石水库最大下泄洪水风险示意图
北
Dam
If the dam break
This area will be
inundation
总库容(亿立方米) 6.02
坝 高(米) 40.4
设计水位(米) 91.9
坝顶高程(米) 94.4
坝 型 粘土心墙坝
The flood hazard map in Huangshi Reservoir


五强溪水库最大下泄溃坝洪水风险示意图
Dam
总库容(亿
坝 高
设计水位
坝顶高
坝 型
42.9
85.83
110.72
117.5
砼重力坝
The flood hazard map in Wuqianxi Reservoir
If the dam break This area will be inundation

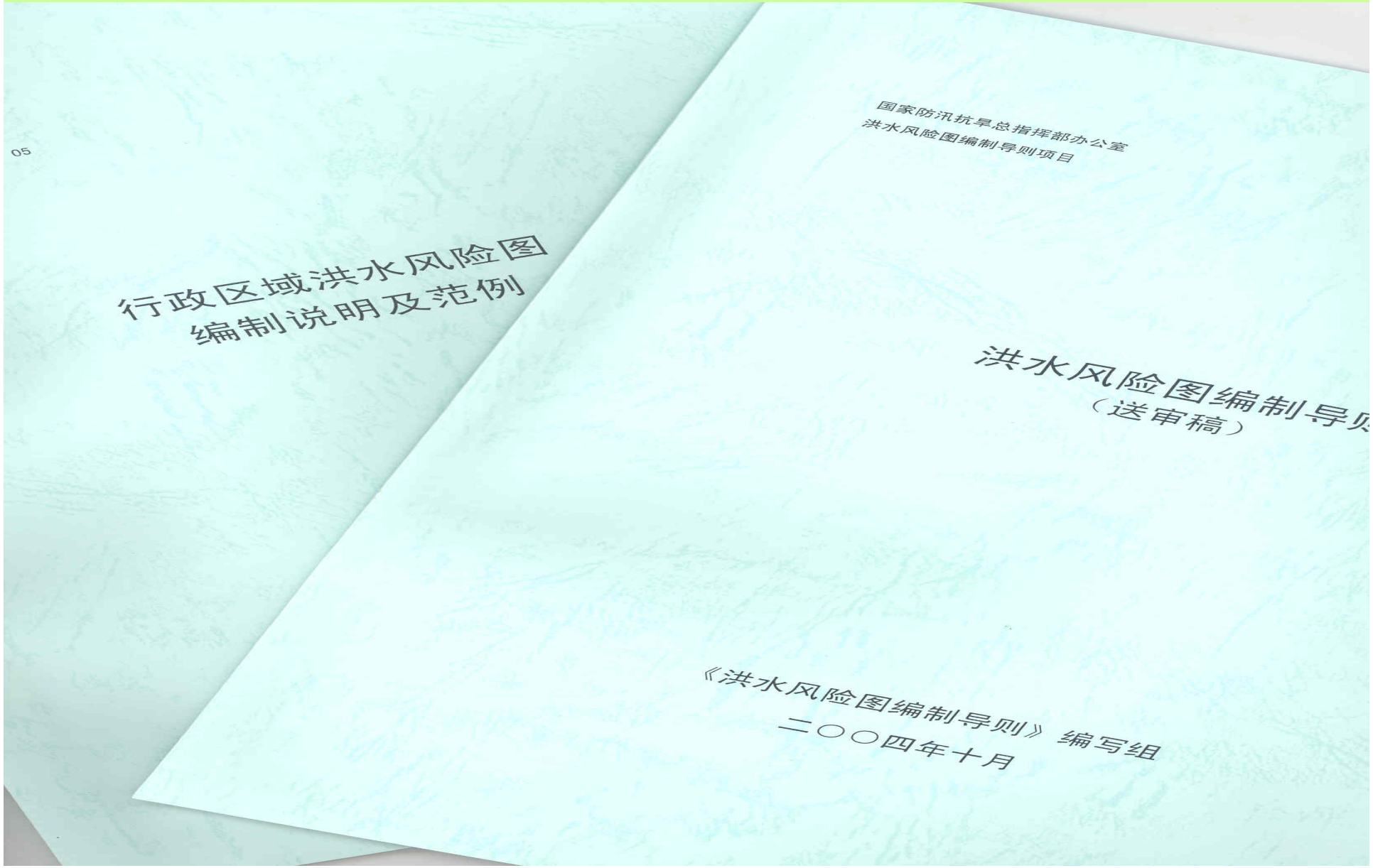
城镇洪水风险示意图图例

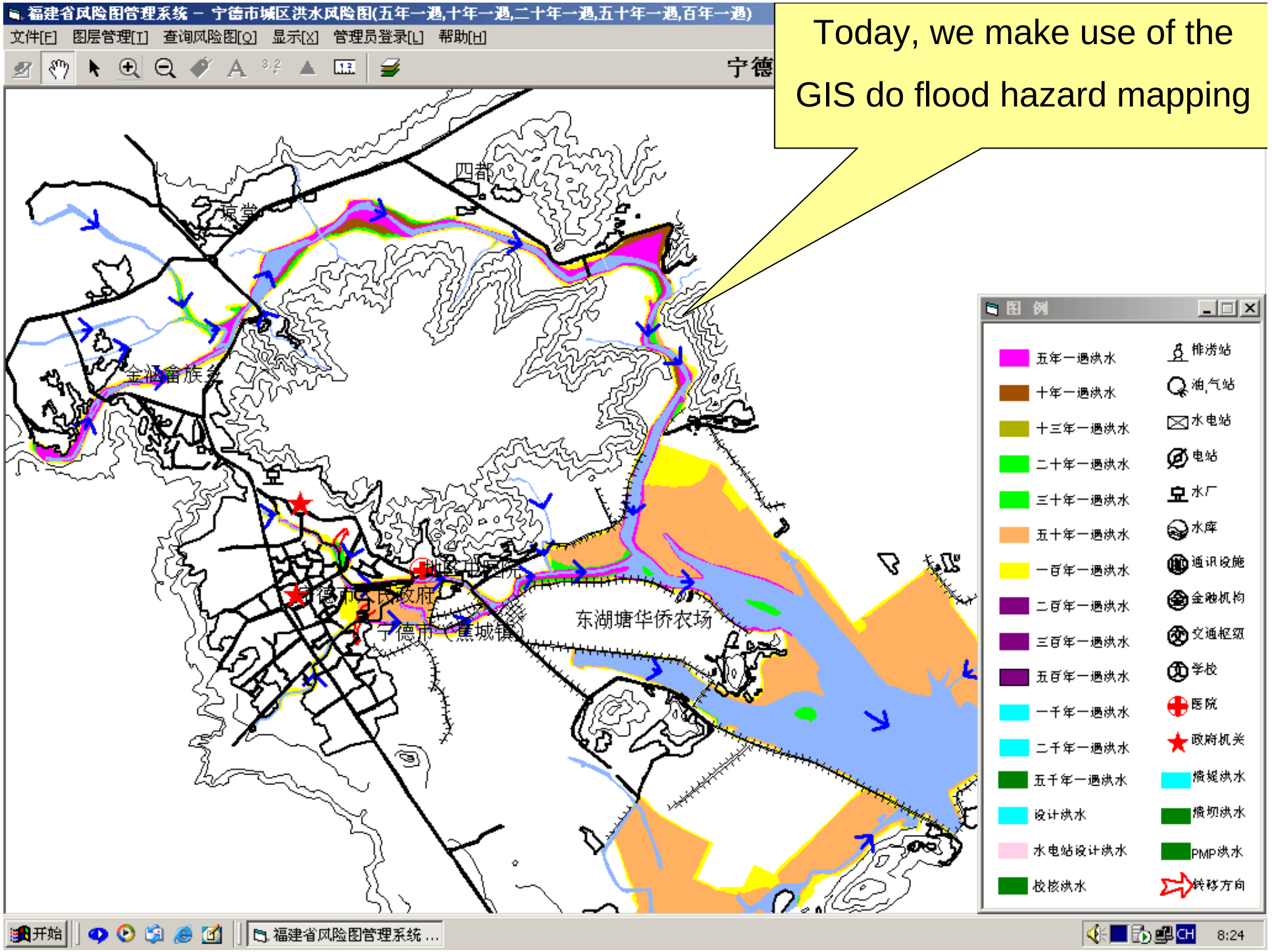
- 省政府驻地
- 省辖地级市(自治州)政府驻地
- 县、市、区政府及县级农场驻地
- 乡、镇政府驻地
- 街区
- 铁路及桥梁
- 主要道路及桥梁
- 次要道路
- 河流及码头
- 水库
- 隔堤或溃堤
- 一线防洪堤
- 淹没水深(米)／高程(米)
- 涵闸
- 电排、电站
- 安置地点
- 物资仓库及类别
- 疏散方向
- 抢险通道
- 进洪通道
- 10年一遇洪水淹没区
- 20年一遇洪水淹没区
- 30年一遇洪水淹没区
- 50年一遇洪水淹没区
- 100年一遇洪水淹没区
- 1000年一遇洪水淹没区

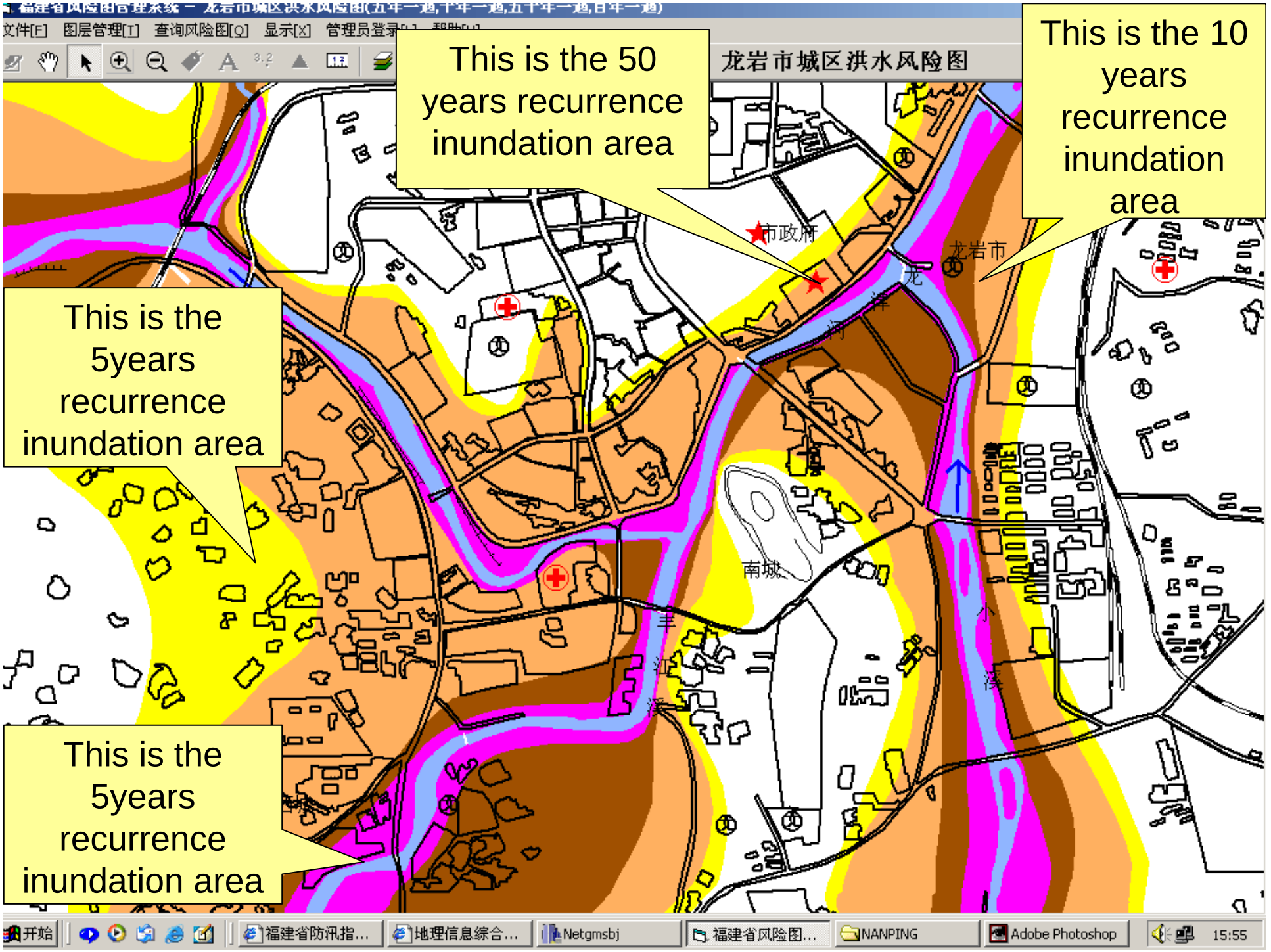
大型水库洪水风险示意图图例

- 省政府驻地
- 省辖地级市(自治州)政府驻地
- 县、市、市辖区政府及县级农场驻地
- 乡、镇政府驻地
- 自然村
- 省界
- 省辖地级市、州界
- 县、市、区及县级农场界
- 铁路及桥梁
- 国道及桥梁
- 省道及桥梁
- 县、乡道及桥梁
- 河流
- 湖泊
- 隔堤或溃堤
- 一线防洪堤
- 水库
- 小型水库
- 溃坝洪水淹没区
- 最大下泄洪水淹没区
- 流域界
- 水文站
- 电站
- 山峰

In 2004,The technique standard of production of flood hazard mapping hade be published




福建省风险图管理系统 - 宁德市城区洪水风险图(五年一遇,十年一遇,二十年一遇,五十年一遇,百年一遇)
文件[F] 图层管理[T] 查询风险图[Q] 显示[X] 管理员登录[L] 帮助[H]
宁德
Today, we make use of the GIS do flood hazard mapping
四都
金涵畲族乡
地区中医院
宁德市人民政府
宁德市(蕉城镇)
东湖塘华侨农场
图 例
五年一遇洪水
十年一遇洪水
十三年一遇洪水
二十年一遇洪水
三十年一遇洪水
五十年一遇洪水
一百年一遇洪水
二百年一遇洪水
三百年一遇洪水
五百年一遇洪水
一千年一遇洪水
二千年一遇洪水
五千年一遇洪水
设计洪水
水电站设计洪水
校核洪水
排涝站
油,气站
水电站
电站
水厂
水库
通讯设施
金融机构
交通枢纽
学校
医院
政府机关
溃堤洪水
溃坝洪水
PMP洪水
转移方向
开始
福建省风险图管理系统 ...
CH
8:24

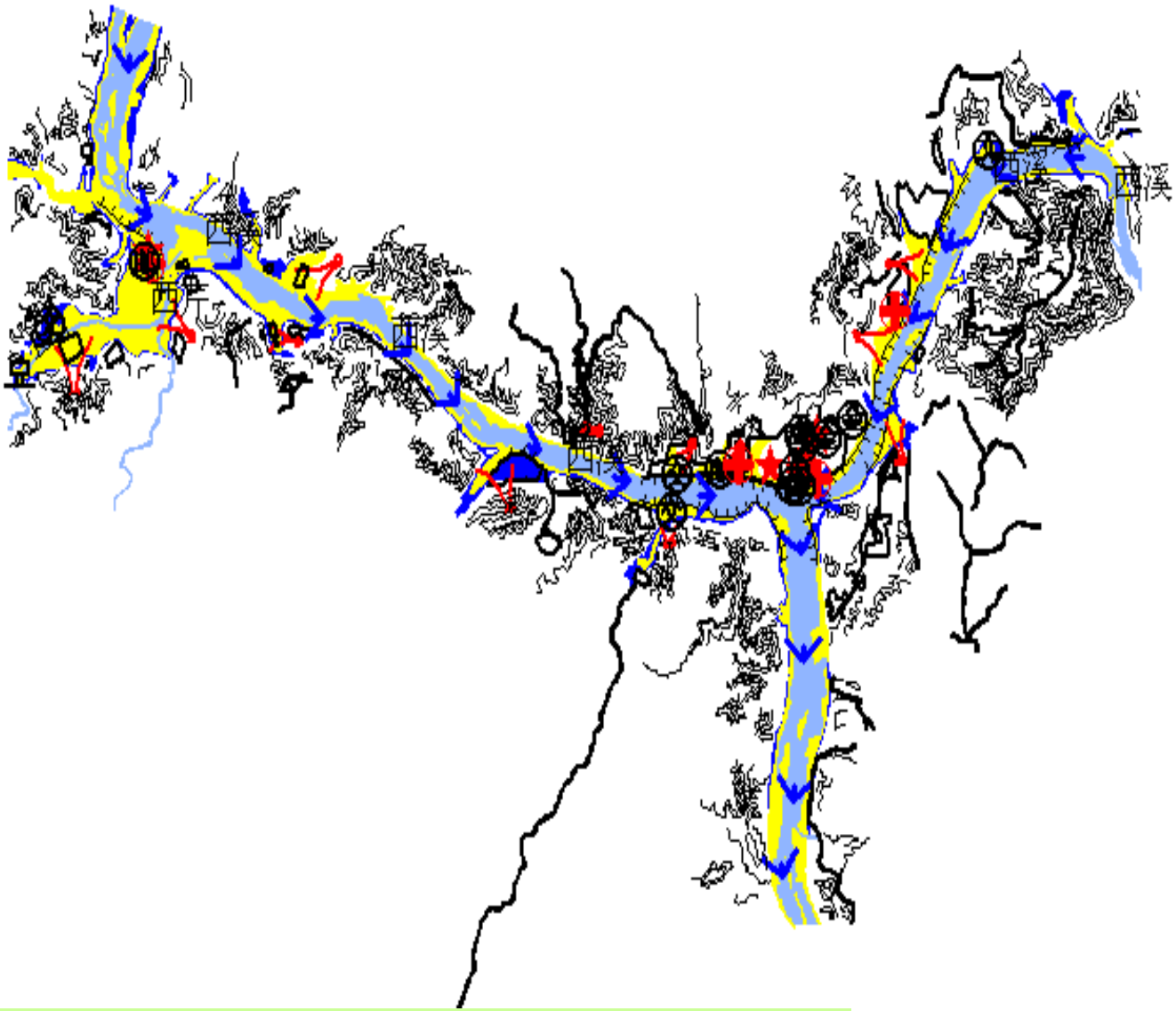

This is the 50 years recurrence inundation area
This is the 10 years recurrence inundation area
This is the 5years recurrence inundation area
This is the 5years recurrence inundation area
龙岩市城区洪水风险图
市政府
龙岩市
南城
文件[F] 图层管理[T] 查询风险图[Q] 显示[X] 管理员登录
开始
福建省防汛指...
地理信息综合...
Netgmsbj
福建省风险图...
NANPING
Adobe Photoshop
15:55

2.The Function of the Flood Hazard Mapping in China

Flood hazard map is used primarily to Flood Emergency management, such as to provide information for decision makers to respond quickly and effectively during flood events and for flood damage assessment before, during and after flood events, and for evacuation, sheltering.

2.The Function of the Flood Hazard Mapping in China

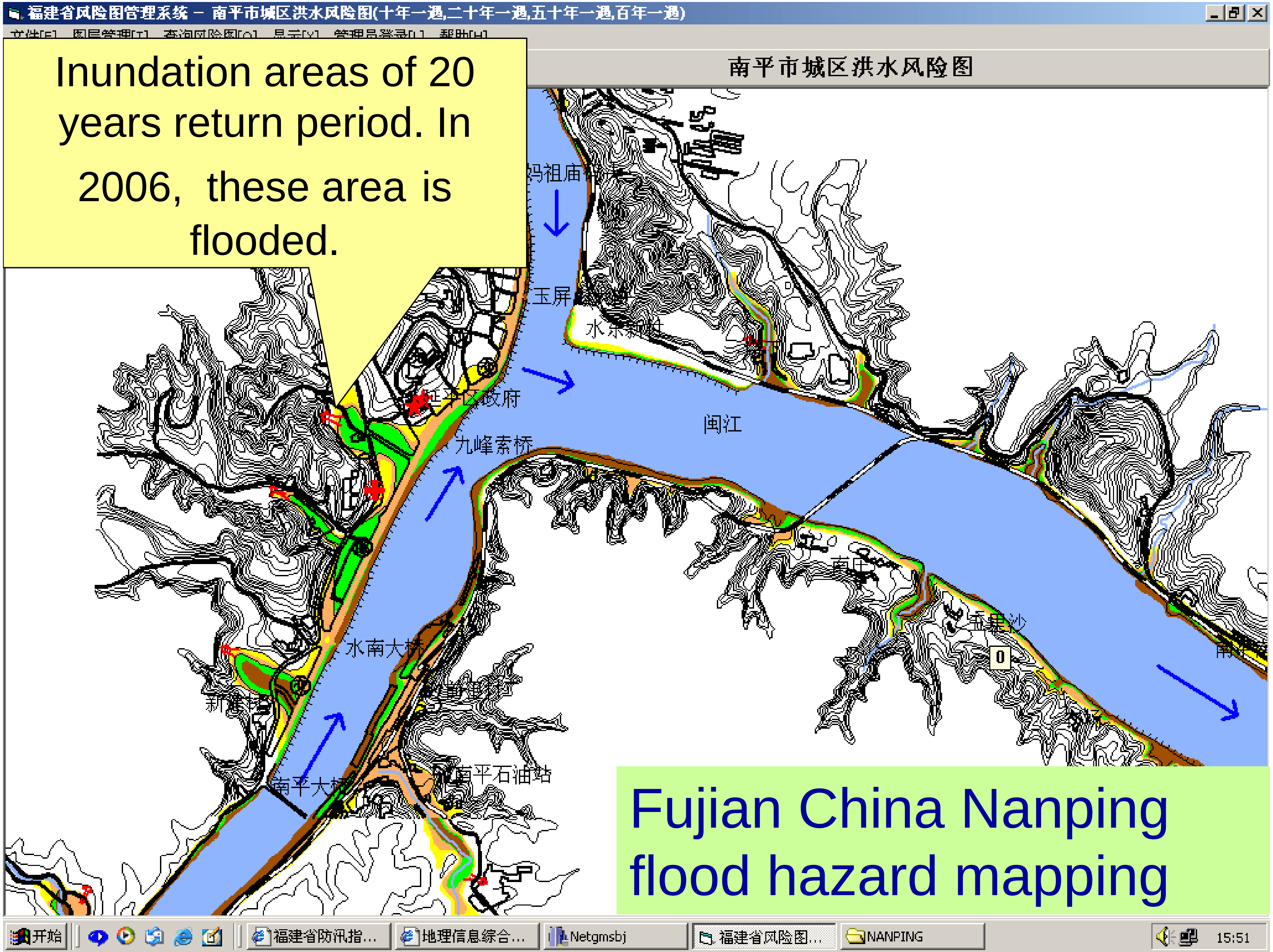
- We did some flood hazard mapping to make the plan of evacuation. For example:
- In 2006, Nanping Fujian China occurrence flood, We according to flood hazard mapping, avoided personnel's dead and injured, and reduced the property loses.
- In 2005, Wuzhou Guanxi China occurrence flood(1/0.01), according to establish in advance of transfer the project although the city east district is flooded, did not result in personnel's dead.



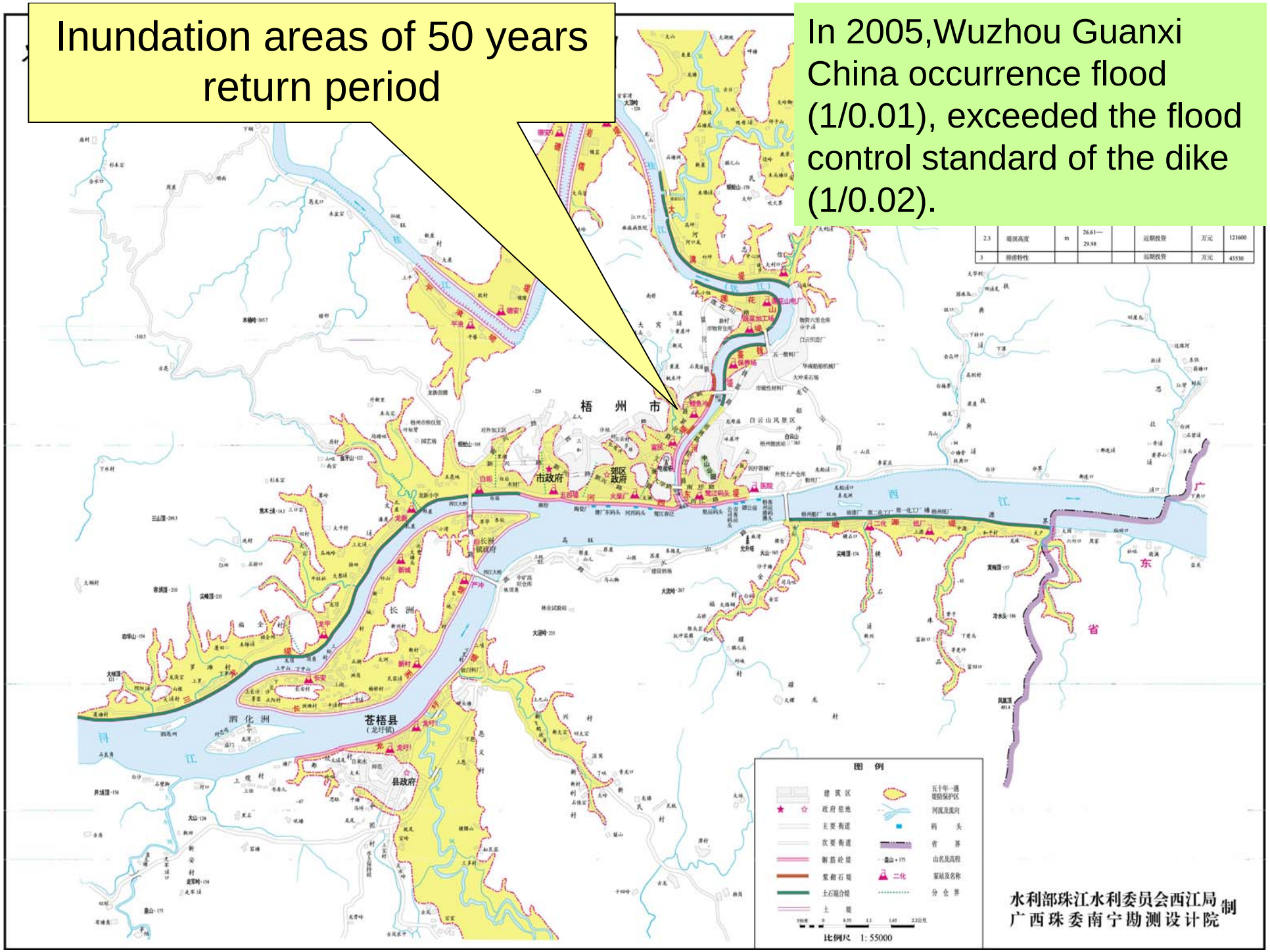
Fujian China Minjian flood hazard mapping

Fujian China Nanping flood hazard mapping

Inundation areas of 20 years return period. In 2006, these area is flooded.



- According to flood hazard mapping and the evacuation plan, We avoided personnel's dead and injured, and reduced the property loses.


Inundation areas of 50 years return period
In 2005,Wuzhou Guanxi China occurrence flood (1/0.01), exceeded the flood control standard of the dike (1/0.02).
梧 州 市
苍梧县
(龙圩镇)
市政府
郊区政府
县政府
长 洲
渭 化 洲
西 江
图 例
比例尺 1: 55000
水利部珠江水利委员会西江局
广西珠委南宁勘测设计院 制

- According to evacuation plan, People arrived at the safe region. Although the eastern region of city is flooded, did not result in personnel's dead.


In the Western region of city west district .we added the high dike. So the wastern region of city did not be flooded.
2005 6 23

3.Future Direction

- In the past 50 years, attempts have been made to control flood by structural measures. With 2003 floods as a turning point, the flood management strategy was adjusted.
- The current strategy is to manage flood by combination of structural and non-structural measures.
- Structural measures: embankment , river training, construction of dam , retarding basin, pumping station, etc.
- Non-structural measures: flood forecast and warning, measures against extreme floods and floods exceeding design flood, operation and management of flood control works, management of retarding basins and floodplains, law, policy and rules for flood management, etc.

3.Future Direction

- Try to use the flood hazard mapping in the valuation system of flood disaster lose and in the land **Use** management.
- The work of the flood hazard mapping in the national scope have been mad in “Eleventh Five-Year Development Plan for the National Water Sector”.
- At the beginning of 1997, the central government decided to generate flood hazard map
- Try to produce the flood hazard maps of every kind of type in the uniform regulations. such as the united technique standard and required the uniform information.
- Establishing the national leads group of flood hazard maps.
- Try to issue the technique guidebook of the flood hazard mapping.
- Try to use the flood hazard mapping in the Promotes intensification in risk areas.

Next step, flood hazard map will be applied to management of structure building in the floodplain.

"Flood Impact evaluation management regulation " will be issues (Similar Executive Order 11988 of America).

2004.10.12

中华人民共和国水利部办公厅

办汛函〔2006〕427号

关于征求对《洪水影响评价管理条例（征求意见稿）》意见的函

各省、自治区、直辖市人民政府办公厅，国务院有关部、委、局办公厅（室），水利部各流域机构，各省、自治区、直辖市水利（水务）厅（局），新疆生产建设兵团水利局：

根据《防洪法》、《水法》的有关规定，为规范河道、水库、湖泊和洪泛区、蓄滞洪区管理范围和防洪保护区内建设项目的防洪管理，我部组织编制了《洪水影响评价管理条例（征求意见稿）》，现函送你单位，请提出书面修改意见，并于2006年10月31日前将意见反馈我部。逾期按无意见处理。

联系人：国家防总办公室　邓玉梅　010—63202539

水利部建管司　马建新　010—63202589

传真电话：010—63202483（国家防总办公室）

010—63202685（水利部建管司）

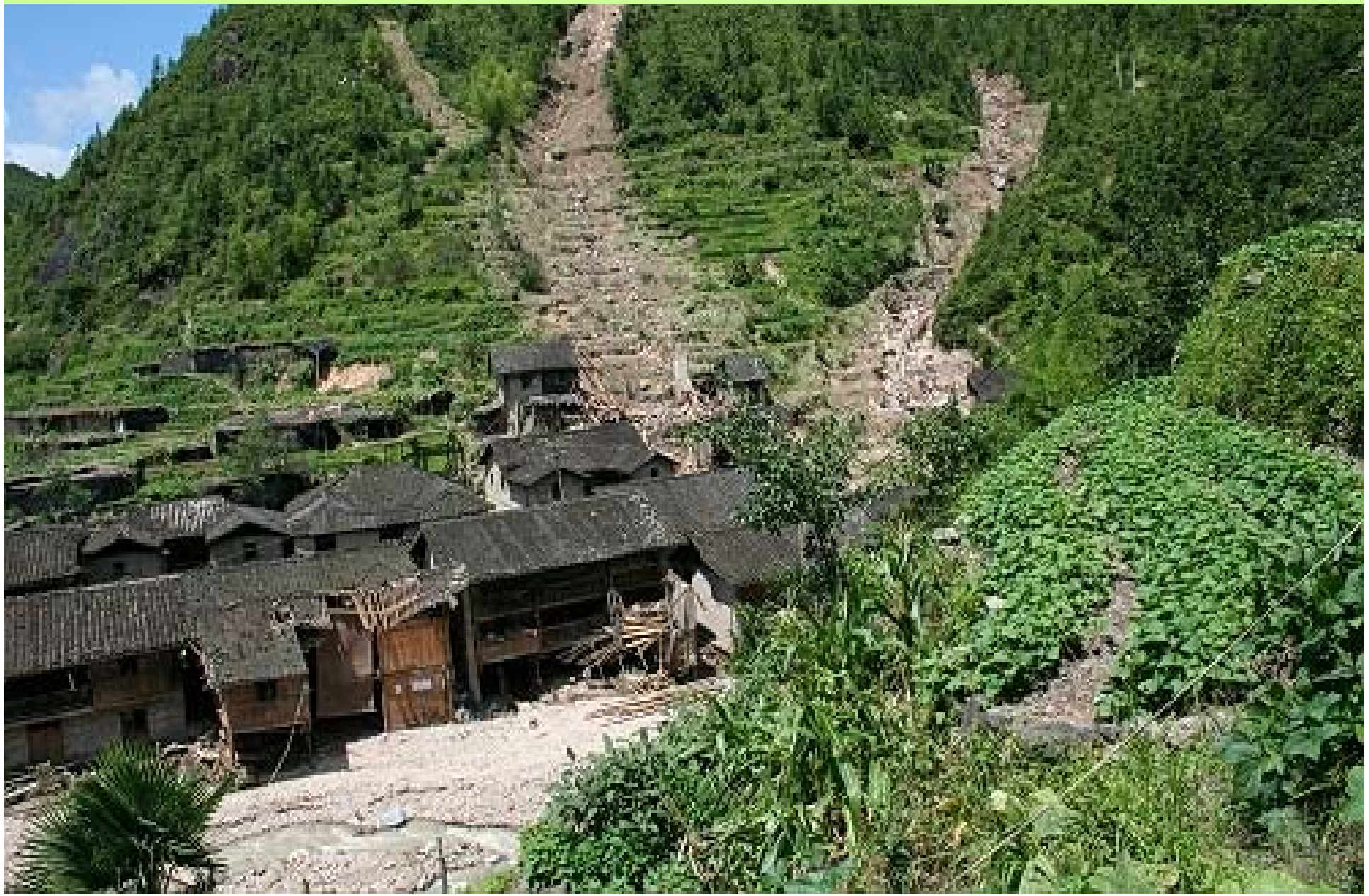
Email—ymdeng@mwr.gov.cn

- In this document, we try to prevent filling the floodplain, and prevent reducing river transect, and reduce flood damage.
- If the bridge will be build, then the document of flood Impact evaluation should be make. if the bridge Impact water pass, then the bridge can not be build.
- If the flood will inundate the building, then the prevent measure will be request to do.
- Technical specification of The Flood Impact Evaluation will be issues.

4. **Challenge and problem**

- Since there are a large number of rivers in China, much work needs to be done abort FHM in the coming years. So the Challenge come from financial assistance and technical assistance.
- Published FHM to public is difficult because Lack of laws support. Some one think of Published FHM will affect the value of land.
- It is difficult for public awareness of FHM for watersheds primarily for land management.
- Difficulty in getting socio-economic data large amount of .

- It is difficulty for FHM to be used in Flash flood in mountainous area.



- It is difficulty for FHM to be used in typhoon disaster.

The 2006's Typhoon 4 result Flash flood of 500 years return period and result in 615 personnel's dead, and disappear 208 people, farm crop disaster the area 1170 thousand hectare, tumble down the house 27.79 ten thousand, direct economies lose 329.95 hundred million yuan.

It is difficulty for FHM to be used in typhoon disaster

- The 2006’s Typhoon 8 result high wind and result in 442 personnel's dead, and disappear 141 people. The strong wind makes the Zhejiang lots of new house to tumble down, and also make Fujian take shelter from the wind near thousand ships of good harbor insides to sink.

2004.10.12

5. Conclusions

- I get many useful information from the “Training Course”.
- I know the Japanese Government has mad many things in flood control, and the main flood control measures have been established, In particular, the flood hazard mapping play an important role in fighting flood and waterlog disasters.
- Japanese FHM is used to raise awareness of flood disaster prevention among the residents and provide information on evacuation routes and shelters, which can make it easy for residents to evacuate and shelter from flooding.
- Today, the Chinese government is too thoughtful of flood risk the information announce the resident.
- Some pictures, books, multimedia of information on flash flood and evacuation have been provided to the residents freely .

- FHM is expected to play an bigger role for flood control plan, flood control works construction, land exploitation and awaking public consciousness etc.
- I think of the JICA Regional-Focused Training Course “Flood Hazard Mapping”, and “East and Southeast Asia Regional Seminar on Flood Hazard Mapping” are very useful for us.

6. Suggestion

- I suggest that much Training Course will be hold, and much Seminar will be hold, and more experts can be invited, much contents can be discuss, such as flood management policy and prevent typhoon measure.


Thank YOU !