

## Summary of Emergency Plan for Flood Control and Emergency Management of Water Conservancy Projects

Nanbo Ren<sup>1, a</sup>, Hongquan Liu<sup>1, b, \*</sup>, Yongtao Zhu<sup>2</sup>, Guoxing Zhang<sup>2</sup>, Lijun Ma<sup>3</sup>,  
Meng Yang<sup>2</sup>

<sup>1</sup>College of urban and rural construction, Hebei Agricultural University, Baoding 071001, China

<sup>2</sup>Department of Water Resources of Hebei Province, Shijiazhuang 050000, China

<sup>3</sup>College of resources and environmental sciences, Hebei Agricultural University, Baoding 071001, China

<sup>a</sup>1322963856@qq.com, <sup>b, \*</sup>50081999@qq.com

### Abstract

In recent years, extreme rainfall has occurred frequently. For water conservancy projects that are approaching during the flood season, flood prevention and rescue work has become very prominent. Flood prevention and rescue aims to improve the ability of water conservancy projects to respond to floods through emergency plans, formulate rescue engineering measures for possible engineering dangers, and fill in the shortcomings of infrastructure as quickly as possible to ensure the safety of people's lives and properties.

### Keywords

**Water Conservancy Project; Flood Control; Emergency Response Plan; Engineering Measures.**

## 1. Introduction

My country is relatively rich in water resources, with uneven distribution of rainfall during the year, extreme weather in some areas, and sudden changes in the water level during the flood season, which will cause frequent severe floods and serious losses to social development. As the global climate warms, extreme weather increases frequently, and flood prevention risks are prominent. To formulate a rational flood prevention and rescue emergency plan to eliminate dangers to the greatest extent possible to ensure the safety and stability of water conservancy projects as much as possible to reduce disasters caused by catastrophic floods is conducive to Ensure the safety of people's lives and property. Flood prevention and rescue have a heavy responsibility, and adhere to the policy of "safety first, constant attention, focus on prevention, and full rescue"[1]. Otherwise, a water conservancy project crash will threaten people's lives and economic losses[2].

## 2. Sudden Danger Analysis

### 2.1. Exceeding Standard Flood

During the flood season, the flow into the reservoir increased sharply, and the design flow of the spillway could not meet the discharge requirements. The water level of the reservoir skyrocketed and exceeded the check flood level. Under the action of the water level difference between the upstream and downstream, flooding, seepage damage, and dam failure may occur, endangering the stability of the water conservancy project[3].

## 2.2. Hidden Dangers of Water Conservancy Projects

Some dam sections of water conservancy projects have serious leakage problems, with short plates and weak links, and the stability of the dam body does not meet the engineering safety requirements[4]. There is a serious leakage problem at the contact part of the dam and the spillway, and leakage damage has occurred, resulting in slope instability. The gate opening and closing equipment of the discharge structure cannot be opened and closed normally[1], or cannot be repaired for extreme reasons, and the flood may not be discharged in time[3], resulting in a high probability of flooding the dam of the water conservancy project.

## 2.3. Natural Disaster

A huge earthquake or heavy rain caused landslides or landslides in the upstream part of the reservoir bank, and floating objects collided with the dam, causing the dam to become unstable and dangerous[1]. A huge earthquake caused the dam to crack, and the culvert pipe suddenly settled and dislocated, which affected the discharge flow.

## 3. Deficiencies in Flood Control and Rescue

The organizational structure is not perfect, the division of responsibilities of the flood control and rescue command organization is not clear, and the division of responsibilities is vague. Flood forecasting and dispatching data cannot be shared in real time, and work efficiency is low. Lack of technical support to deal with the danger, to deal with the on-site analysis of the danger and the harm caused, to carry out a comprehensive assessment of the danger, and to formulate a corresponding rescue plan. The level of flood prevention needs to be improved. The emergency plan is not targeted and has not yet been tested in practice. There is no analysis of the consequences of a dam break, and it is impossible to formulate a scientific and effective emergency plan.

## 4. Emergency Plan Improvement

### 4.1. Establish a Strict Liability System

The leading cadres of the water conservancy project management department should improve the responsibility system, assign responsibilities to people, coordinate and solve various problems, divide labor from beginning to end, implement project safety inspections before, during, and after floods[5], and orderly connect, and keep a close eye on reservoir floods. The water limit is not relaxed, various potential safety hazards are discovered and dealt with in a timely manner, the management system is improved, and the work arrangements are properly arranged so that the responsible persons are aware of their responsibilities. Implement accountability, actively organize the investigation of dangerous sections, and hold accountable and severely deal with accidents caused by negligence of duty[6].

### 4.2. Safe Operation System

Reinforce the projects with potential safety hazards to ensure the safety, stability and normal operation of water conservancy projects. Repair and maintain water conservancy projects in accordance with national standards, and thoroughly investigate the possible dangers of each dam section. Professional and technical personnel adopt the management mode of on-site office processing to deal with potential safety hazards in a targeted manner. Establish bottom-line thinking and awareness of distress, and improve the system of flood control projects in the river basin[7].

### 4.3. Flood Control Dispatching Management System

Study and formulate an effective water transfer plan, scientifically dispatch floods, and improve flood season dispatching plans[8] to ensure that the flow of flood discharge does not exceed the safe discharge of the river[9]. Strengthen the flood control emergency plan to ensure that when a dangerous situation occurs, the flood control and risk prevention work can be organized in a timely manner. Based on the prediction and analysis of the data and information of the Hydrological Bureau, and drawing on the experience of other successful cases, it lays the foundation for the flood control work of the water conservancy project.

### 4.4. Early Warning and Forecast System

Establish an automated platform, use information technology and data systems to strengthen the monitoring of various natural disasters, and provide timely and rapid early warning and timely reporting of information in the event of a dangerous situation. Equipped with high-precision equipment, using new testing technologies such as UAV flow measurement system, video flow monitoring system, satellite positioning velocity measurement ball, video water level monitoring system, etc, to provide safe, fast and reliable ultra-conventional forecasts for dealing with ultra-standard floods Means[10], accurate and error-free detection of water level changes throughout the day, so as not to miss the early warning opportunity and avoid serious losses. Establish complete early-warning facilities, realize basic coverage of early-warning equipment, and ensure that the transmission of early-warning information is not affected by weather conditions. Maintain and maintain electronic equipment to avoid problems that affect the accuracy of early warning, and maximize the value of advanced early warning systems[11]. Improve the hydrological model, optimize the functions of the integrated flood forecasting system, and further improve the accuracy of hydrological forecasting[10].

### 4.5. Emergency Plan should be Standardized

Starting from the effective maintenance of the fundamental interests of the people, combined with the actual problems found in the investigation of water conservancy projects, reviewing flood control capabilities, revising flood control standards, carrying out bid improvement construction, formulating emergency plans for flood control and emergency rescue of water conservancy projects, adopting effective rectification measures, strengthening project management, and continuously Improve the system and mechanism to prevent and resolve major risks.

## 5. Conclusion

The safety of water conservancy projects is of paramount importance. It is related to the safety of people's lives and property, and plays a major role in maintaining social stability and promoting high-quality economic and social development. Under the requirements of the new era and new situation, there are many dangers and shortcomings in water conservancy projects. With the requirements of water conservancy reform and flood control tasks, new requirements have been placed on the governance system. This article summarizes the possible emergencies of water conservancy projects, and proposes corresponding improved emergency plans for existing diseases and risks. Formulate targeted and maneuverable emergency plans, improve forecasting and forecasting capabilities, improve the flood control and rescue plan system, and optimize the layout of water conservancy projects for flood control and rescue.

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