

**Forest Service Handbook
National Headquarters – Washington Office
Washington, DC**

**Forest Service Handbook 7509.11 – Dams Management Handbook
Chapter 50 - Emergency Action Plans**

Amendment: 7509.11-1993-1

Effective date: August 5, 1993

Duration: This amendment is effective until superseded or removed.

Superseded Directive: 1, August 8, 1990; Entire Handbook issued, December 1986

Approved by: F. Dale Robertson, Chief

Date approved:

Responsible Staff:

Explanation of changes: Following is an explanation of the changes throughout the directive by section.

POSTING NOTICE: Amendments are numbered consecutively by Handbook number and calendar year. Post document in numerical order of chapters (1109.12, sec. 4.32, ex. 01). Remove entire national text of the Handbook and replace with this amendment. DO NOT REMOVE SUPPLEMENTS OR INTERIM DIRECTIVES. Retain this transmittal as the first page of this document.

Revises and updates entire Handbook. Significant changes in direction are as follows:

05: Moves select definitions from FSM 7500. Modifies definitions to agree with Glossary of Terms for Dam Safety, prepared by the Interagency Committee for Dam Safety (ICODS), and Federal Emergency Management Agency (FEMA).

08: Updates reference list and adds names and addresses of agencies, associations, and groups publishing reference materials related to dams and dam safety.

10: Changes chapter title from Project Files to Records and Files.

40: Changes chapter title from Safety Evaluation/Hazard Potential to Safety Inspections and Hazard Assessments. Replaces the term "safety evaluation" with "safety inspection" throughout.

42: Replaces the term "Hazard - Potential Evaluations "with" Hazard Assessment."

42.3: Adds hazard classification examples.

53: Adds direction on location of copies of emergency action plans.

54: Adds direction on testing emergency action plans.

62: Revises direction to exclude Regional dam or water resources engineer from serving on a dam failure investigation team in cases of potential or apparent conflict of interest.

70: Changes title from Dam Inventory to Management of Special Use and Other Non-Forest Service Projects. Previous direction contained in this chapter is moved to FSM 7514; moves direction from previous chapter 80 to chapter 70.

80: Changes title from Management of Special-Use and Other Non-Forest Service Projects to Planning and Design.

Completes previously reserved FSM 7520 and incorporates it into FSH 7509.11.

81: Provides guidance and definitions for four phases in the design schedule.

82: Provides guidance for planning and designing channel layout.

83: Provides guidance for assigning hazard classification.

This Handbook is now available electronically in the National Information Center in the same format as the paper copy. Henceforth, amendments to this Handbook will be issued to Forest Service units electronically on a document basis.

Table of Contents

50.2 - Objective	4
51 - Plan Development	4
51.1 - Evaluations of Risk	4
51.2 - Coordination	4
51.3 - Content of Plan	5
51.4 - Sample Plan Format	6
51.5 - Preventive Action Sheet	9
51.6 - Affected Area Map	9
52 - Location of Copies of Emergency Action Plan.....	9
53 - Testing Emergency Action Plans	9

The emergency action plan outlines a planned method of quickly informing responsible parties of the impending or actual sudden release of water caused by project operation or a dam failure. Responsible parties should use the information on the expected release of water to warn upstream and downstream inhabitants, property owners, operators of water-related facilities, recreational users, and other persons in the vicinity who might be affected by a project emergency, and the measures to be taken to prevent or slow down failure. This chapter describes the information to be included in an emergency action plan and how to test the emergency action plan.

50.2 - Objective

To develop and test adequate emergency action plans that provide for adequate warning and safe evacuation procedures.

51 - Plan Development

Prepare emergency action plans (EAP's) for all high-hazard dams on or impacting National Forest lands (FSM 7517). Additionally, some moderate-hazard dams, such as those with high values downstream may merit EAP's. An EAP should be concise and easily implemented, with key individuals and their required actions clearly identified. Consider the time of day, particularly the hours of darkness, and potential problems in the communication system when establishing the actions and procedures to be followed during a project emergency.

51.1 - Evaluations of Risk

Evaluate the possible modes of failure of each dam, indicators or precursors of failure for each mode, possible emergency actions appropriate for each mode, and the effects on downstream areas of failure by each mode. In every case, the evaluation should recognize the possibility of sudden failure and should provide a basis for such "worst case" emergency planning actions by identifying notification and evacuation procedures where failure would pose a significant danger to human life and property. Prepare plans in a degree of detail commensurate with the hazard and provide instructions to operators and attendants regarding the actions to be taken in an emergency.

51.2 - Coordination

Coordinate planning with local officials, as necessary, to enable those officials to draw up a workable plan for notifying and evacuating local communities when conditions affecting dam safety arise. The response or evacuation actions required should be prepared by the appropriate Federal, state, and local officials responsible for public health and safety. It is imperative to consult with the other responsible parties during preparation of each section of the plan, including Forest Service staff responsible for disaster response planning, to ensure quick and effective action during an actual emergency.

Requiring a permittee or owner to prepare an emergency action plan for a dam in no way implies that a structure is suspect or thought to be unsafe. The plan is merely a precaution taken for the public good and is a nationally accepted practice. Consult Federal Emergency Management Agency (FEMA) report 64 "Emergency Action Planning Guideline for Dams," February 1985, for comprehensive guidance for emergency action plans.

51.3 - Content of Plan

As a minimum each plan should contain the following:

1. Dam name, location, and general description. The general description should include the height, width, and type of the dam and flow controls.
2. The names, telephone numbers, and duties of those people charged with implementing the plan. Include position titles when applicable.
3. Procedures outlining preventive or mitigating actions to delay or prevent failure that the owner/operator could take in the case of impending failure, such as:
 - a. Providing emergency access to the dam.
 - b. Ensuring equipment availability for action at the dam, such as breach control, emergency spillway construction, and acquisition of fill material.
 - c. Opening the outlet works.
 - d. Coordinating with owners of other upstream and downstream dams, canals, to reduce inflow to the reservoir or waterway and to provide flood protection for downstream structures.
4. Warning procedures during impending and actual failure.
5. A map delineating the approximate area directly affected by the sudden release of water.
6. Provisions for review of the plan, particularly for updating names and telephone numbers of people responsible for implementing the plan.
7. An appendix that includes the following, as applicable:
 - a. Plans for training project operators, attendants, and other responsible personnel to respond properly during a project emergency, and tests or drills to periodically review the knowledge and understanding that these personnel have of the procedures.

- b. A summary of the study used for determining the upstream and downstream areas that may be affected by sudden release of water, including a summary of all criteria and assumptions used in the study.

- c. Documentation of consultations with Federal, State, and local agencies, including public safety and law enforcement bodies and medical units.

51.4 - Sample Plan Format

An abbreviated sample format for an emergency action plan is shown in exhibit 01.

51.4 - Exhibit 01

Emergency Action Plan

Dam Name

Location

Description

I. Condition: DAM FAILURE IS OCCURRING

A. Duties:

1. Owner _____ Phone
(District Ranger, if dam is owned by Forest Service)
Alternate _____ Phone
 - a. Calls law enforcement officer.
_____ Phone
or _____ Phone
 - b. Calls District Ranger.
_____ Phone
or _____ Phone
 - c. Assembles staff, equipment, and vehicles for emergency assistance.
 - d. Maintains contact with law enforcement officer and provide information and help as requested.
2. Law enforcement officer:
 - a. Directs evacuation of delineated areas.
 - b. Notifies public safety authorities or other local/State authorities.
3. District Ranger:
 - a. Notifies the Forest Supervisor of the situation.
 - b. Assists law enforcement officer as requested.

II. Condition: FAILURE OF THE DAM IS PROBABLE IF
PREVENTIVE ACTION IS NOT TAKEN.

A. Duties:

1. Owner _____ Phone
(District Ranger, if dam is owned by Forest Service)
Alternate _____ Phone
 - a. Calls law enforcement officer.
_____ Phone
or _____ Phone
 - b. Calls District Ranger (if not a Forest Service dam).
_____ Phone
_____ Phone
 - c. Implements preventive action (enclosed).
 - d. Maintains contact with law enforcement officer.

51.4 - Exhibit 01--Continued

2. Law enforcement officer:
 - a. Evaluates, in consultation with the owner, whether and when evacuation should be started.
 - b. Directs evacuation of delineated areas, as determined necessary.
 - c. Notifies Civil Defense or other local/State authorities, as deemed necessary.
3. District Ranger:
 - a. Assigns duties to staff to execute preventive action (if Forest Service dam).
 - b. Notifies Forest Supervisor of the situation.

Enclosures:

Preventive Action Sheet
Affected Area Map
Evacuation Plan

51.5 - Preventive Action Sheet

This sheet should fully describe all measures that can be taken to prevent or lessen the effects of a dam failure.

List suggested or mandatory procedures such as:

1. Open outlet works. Explain operation, location of controls, and the need for and location of keys or special tools.
2. Dump material into whirlpool. Explain location or source of fill material, needed equipment, and location.
3. Cut a breach in the saddle dam to relieve pressure on main dam. Explain where it should be cut, depth and width to be cut, and equipment needed.

51.6 - Affected Area Map

This map should show the area that would be affected by failure of the dam. Cross hatching or pastel coloring on a Department of Interior, Geological Survey 7-1/2 quadrangle map is an effective way to highlight the affected area. Aerial photographs or flood insurance maps can also be used. Include on the map such information as the travel time of flood waves to key points, the telephone numbers of residences (if feasible), and the downstream limit of flooding.

52 - Location of Copies of Emergency Action Plan

Copies of the emergency action plan should be held by the dam operator (if any) on site, the District Ranger, the Forest Supervisor, and appropriate emergency agencies (for example, police departments).

53 - Testing Emergency Action Plans

The dam owner, permit holder, or State, as appropriate, should prepare scenarios for slowly developing, rapidly developing, and instantaneous emergencies and test the state of training and readiness of key personnel responsible for actions during an emergency to ensure that they know and understand the procedures to be followed and actions required. Include any special procedures required for nighttime, weekends, and holidays. Include in the tests a drill simulating emergency conditions. Coordinate and consult with local government, law enforcement officials, and other involved organizations in order to enhance the realism of the test. Their involvement will perfect the close coordination with agencies necessary for a successful execution of the plan in an actual emergency. Critique the test in writing and revise the plan to correct any deficiencies noted.

The schedule for personnel training and emergency action plan testing is located in FSM 7517.