

The EAP: Format and Content

ICODS Format

The ICODES EAP Guidelines for Dam Owners, is recommended for consistency and uniformity. The format also serves as a checklist for completeness. When completed, the EAP should have two distinct sections: the basic EAP and the appendices.

Title Page/Cover Sheet/Table of Contents

- I. Notification Flowchart
- II. Statement of Purpose
- III. Project Description
- IV. Emergency Detection, Evaluation, and Classification
- V. General Responsibilities
 - A. Dam Owner
 - B. Notification
 - C. Evacuation
 - D. Termination and follow-up
 - E. EAP coordination
- VI. Preparedness
- VII. Inundation Maps
- VIII. Appendices
 - Appendix A: Investigation and Analyses of Dam Break Floods
 - Appendix B: Plans for Training, Exercising, Updating, and Posting the EAP
 - Appendix C: Site-Specific Concerns
 - Appendix D: Approval of the EAP

Title Page/Cover Sheet/Table of Contents

The purpose of the title page and cover sheet of an EAP are to identify the document as an EAP and to specify the name of the dam. The table of contents, which will list all the major sections and subsections in the EAP, provides a quick means for locating information.

Section I: Notification Flowchart

The notification flowchart provides the hierarchy for notification in the event of an emergency.

The flowchart must include the following essential information:

- P Who notifies whom
- P Names, titles, telephone numbers, alternate contacts, and communication mechanisms

The notification flowchart should be brief, simple, and easy to follow. Notification must flow in both directions and the number of people notified by each individual should be limited. The flowchart should be prominently displayed on the first page of the EAP and also posted as a stand alone chart. Only one flowchart should be used, if possible. The flowchart must represent all emergency classification levels. Color coding is helpful.

The individuals and entities that may be included on the notification flowchart:

- P Dam Owner
- P Appropriate Federal, State, and Local Agencies
- ODNR, Division of Water (614) 265-6731 or (614) 799-9538

National Weather Service Regional Office

Local Emergency Management Agency

Local Sheriff and Police

P Residents and property owners downstream

P Operators of other dams

P Managers of recreational facilities

P National Weather Service

P News media

P Others

(Also see attached flow chart)

Section II: Statement of Purpose

Section II defines the purpose and scope of the EAP. An example of a Statement of Purpose.

The purpose of this EAP is to safeguard lives and to reduce damage to the property of the citizens of Alpha and Beta Counties who live along the Mock River, in the event of the failure of Mock Dam or flooding caused by large flow releases from the dam.

Section III: Project Description

Section III of the EAP must include the following:

P Description and drawing of all water retention structures

P Project location (a vicinity map)

P Significant upstream and downstream dams

P Downstream communities potentially affected by a dam failure or flooding as a result of large operational releases

P Any other relevant information

Section IV: Emergency Detection, Evaluation, and Classification

The data to be included in Section IV:

P **Detection** of the emergency condition

\$ Data and information collection system

\$ Process for analyzing data

P **Evaluation** of information

\$ Procedures for assessing information

\$ Provisions for establishing the severity and magnitude of the emergency

P **Classification** of emergency based on urgency

\$ Indicates urgency of the situation

\$ Emergency classification chosen and agreed to by dam owner and/or dam safety officials

\$ Must be relevant to emergency conditions

Three levels of emergency classifications to the participants.

Non-failure emergency condition

P Flood conditions with no threat to the integrity of the dam

P Large spillway releases

In a non-failure emergency condition, the dam owner may need to provide guidance to agencies, i.e., refer to the inundation maps of the EAP and relate a natural flood to the dam break flood.

A potential failure situation is developing (Condition AB@)

- P Situations where failure may occur, but preplanned actions may prevent or mitigate failure
- P Assess situation and put agencies on alert:
 - \$ Provide periodic updates.
 - \$ Agencies decide their own course of action.
 - \$ As situation worsens, provide a smooth transition from Condition AB@ to Condition AA@.

Failure is imminent or has occurred (Condition AA@)

- P Issued when no time is available to attempt corrective measures
- P How much time from A imminent@ to A failure?@
 - \$ Impossible to determine, but very short!
 - \$ Assume that A failure is imminent@ and A failure has occurred@ are essentially the same condition.

Section V: General Responsibilities

The General Responsibilities section of the EAP are:

- P Dam owner responsibilities
- P Responsibility for notification
- P Responsibility for evacuation
- P Responsibility for duration, termination, security, and follow-up
- P EAP coordinator responsibility

Dam Owner Responsibilities

In this section of the EAP, the responsibilities of the dam owner must be clearly and specifically defined. The following responsibilities should be delineated:

- P The decision-making process, including the selection of the appropriate emergency condition.
- P Specific actions to be taken
- P Who will take the actions
- P Internal (at the dam) and external (off-site) notification activities

This section should provide guidance on communicating the emergency situation to others and should spell out the chain of command and specific emergency actions.

Responsibility for Notification

This section should clearly identify the dam owner personnel authorized to notify local officials. The most important elements of this section are:

- P specificity.
- P delegation of responsibility and authority.
- P timely notification.

This section should also include:

- P procedures for notifying agencies such as the National Weather Service.
- P procedures for notifying the media.
- P sample messages.

Responsibility for Evacuation

Agencies with a statutory obligation are responsible for evacuation. The dam owner:

- P should **not** assume agency responsibility.
- P **should** coordinate with appropriate officials.

This section of the EAP should specify Acoordinated@ and Aagreed-to@ evacuation responsibilities of the dam owner, if any. Inundation maps help the evacuation effort.

Responsibility for Duration, Security, Termination, and Follow-Up

- P The dam owner and dam personnel must monitor the emergency situation at the dam and keep the authorities informed of developing conditions.
- P The dam owner must specify security measures at the dam during the emergency.
- P Officials and agencies are responsible for terminating emergency status in affected areas.
- P The dam owner terminates the emergency status at the dam.
- P There should be a follow-up evaluation by the participants involved in the emergency.

EAP Coordinator Responsibility

The following are responsibilities of the EAP coordinator:

- P Revised EAP
- P Establishes training seminars
- P Coordinates EAP exercises
- P Serves as the EAP contact for:
 - \$ emergencies.
 - \$ non-emergencies.

Section VI: Preparedness

There are two primary objectives to this section of the EAP: to describe preplanned and emergency actions and to specify emergency measures. The rationale for the first objective of this section, i.e., to describe preplanned and emergency actions, is to:

- P prevent a failure from developing, if possible.
- P minimize loss of life and property damage.
- P issue timely warning.
- P facilitate operation of the dam.

The seven areas that must be considered in the development of the section on emergency measures are:

- P Surveillance
- P Response during periods of darkness
- P Access to the site
- P Response during weekends and holidays
- P Operation of equipment during power failures
- P Procedures for notifying officials
- P Impact on expected response times
- P Non-business hours
- P Other instructions

Access to the Site

The following areas must be covered in this section of the EAP.

- P Primary and secondary routes
- P Means for reaching the site under various conditions (e.g., foot, boat, car, snowmobile)
- P Expected travel times
- P Special instructions

Response During Periods of Adverse Weather

This section of the EAP must address the following:

- P Response during adverse weather
- P Alternate means of communication
- P Emergency supplies and resources

Surveillance

The following items should be addressed in this section of the EAP.

- P Provisions for prompt detection and evacuation
- P Instrumentation and/or physical inspections
- P Unattended dams (not continuously attended 24 hours a day)
 - \$ Surveillance procedures and systems, such as remote detection systems
 - \$ Instrumentation, telemetry, audible alarms
 - \$ Headwater/tailwater detectors
- P Coordination of special procedures with local authorities

Response During Periods of Darkness

The following considerations should be addressed in this section of the EAP:

- P Actions to illuminate the dam to facilitate gate and other operations
- P Actions to be taken for different conditions, including when the dam will not be attended
- P Methods of access
- P Expected response time
- P Special instructions

Alternate Systems of Communication

This section of the EAP should consider:

- P availability and use of alternative systems.
- P alternative channels.
- P proper procedures.
- P special instructions.

Emergency Supplies and Resources

This section of the EAP must include information on the following:

- P The stockpiling of materials and equipment
- P Coordination of information on flood flows
 - \$ National Weather Service, dam owners (up and downstream)
 - \$ Actions to lower the reservoir (i.e., reduce inflow and increase outflow)
 - \$ Who, when, and how to take action

- P Provision of alternative sources of power, including location, mode of operation, and transportation
- P Site-specific actions

Section VII: Inundation Maps

The inundation maps are of extreme importance in the development of the notification flowchart.

The following are considerations in the development of the inundation maps for the EAP:

- P The maps are developed by the dam owner.
- P The development of the maps must be coordinated with relevant agencies.
 - \$ Maps must provide information required by the agencies because the agencies will depend on the maps for evacuation.
- P The maps must be usable and of appropriate scale. They must be clear and not cluttered with extraneous information.
- P The maps must identify antecedent flow conditions:
 - \$ Inflow design flood
 - \$ Color should be used for different scenarios.
- P The maps must show peak discharge, maximum flood elevation, and travel time.
- P An index should be used if the map covers several pages.
- P Existing field conditions should be shown on the base map.
- P The accuracy and limitation of the maps should be described.
- P The maps should be supplemented with a narrative description of the areas affected by the dam break, with surface profiles, and with a characteristic of the failure condition assumed in the preparation of the inundation maps.

Section VIII: Appendices

There are four appendices to be developed for the EAP:

- P Appendix A: Investigation and Analyses of Dam Break Floods.
- P Appendix B: Plans for Training, Exercising, Updating, and Posting the EAP
- P Appendix C: Site-Specific Concerns
- P Appendix D: Approval of the EAP

Appendix A: Investigation and Analyses of Dam Break Floods

Appendix A must include data on the following:

- P Methodology
- P Prevailing streamflow conditions
- P Breach assumptions
- P Termination of downstream routing

Appendix B: Plans for Training, Exercising, Updating, and Posting the EAP

Training

- P Training plan and schedule, with provisions for annual training
- P Familiarity with EAP
- P Problem detection and evaluation

Exercising

- P Exercising plan and schedule, with provisions for annual drills
- P Tabletop and functional exercises

- P Test remote sensing equipment
- P Evaluation of exercises
- P Follow-up on recommendation

The follow-up training course focuses on exercising the EAP.

Updating

- P Process for revisions
 - \$ Annual review
 - \$ Updating for personnel changes
 - \$ Exercise lessons learned
- P Distribution of updated plans

Posting the EAP

- P Posting must be up-to-date
- P Place EAP in prominent locations
- P Post copies of complete and up-to-date EAP-s in a location near the posted flowcharts

Appendix C: Site-Specific Concerns

Appendix C should include the following:

- P Site-Specific concerns that affect the EAP
- P A Glossary, if needed

Appendix D: Approval of the EAP

The documentation included in Appendix D:

- P must be signed by all parties.
- P indicates the approval and acceptance of responsibilities.
- P helps ensure that all parties understand the EAP and their roles and responsibilities.