



- DAM OWNERSHIP - EMERGENCY ACTION PLANNING

EMERGENCY ACTION PLANS HELP DAM OWNERS AS WELL AS PEOPLE DOWNSTREAM

WHAT IS AN EMERGENCY ACTION PLAN?

An emergency action plan (EAP) is a written document that identifies potential emergency conditions at a dam and specifies pre-planned actions to be followed to minimize property damage or loss of life as a result of failure or mis-operation of a dam.

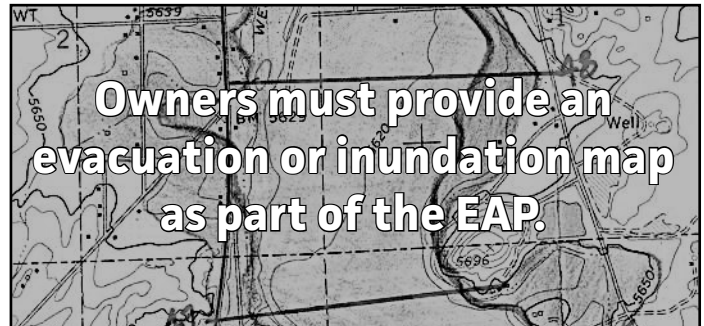
The dam owner is responsible for development, maintenance, and exercise of the EAP. However, no dam owner has to shoulder the burden of creating an EAP alone. City and county emergency management directors and state dam safety officials stand ready to partner with dam owners in helping to create EAPs. An owner can tap into this technical and emergency management expertise and can get additional support by using state and national educational materials, EAP forms and examples, and step-by-step guidelines.

The dam owner initiates the EAP process, but emergency responders are also going to be the primary users of the EAP. The completed document should have had input from emergency action managers, emergency response organizations, state dam safety officials, leaders of downstream communities and, directly or indirectly, everyone who may be responsible for the proper implementation of the EAP.

Inundation maps are a key component of the EAP. New technologies are available to create inundation maps of areas below dams. This will help dam owners complete a vital element of their EAPs. Inundation maps show areas that may have to be evacuated in a dam emergency. The maps facilitate notification by displaying flood areas and estimated travel times for the dam

KEY POINTS ABOUT EAPs

- An EAP must clearly specify the dam owner's responsibilities to ensure timely and effective action. Responsibilities of dam owners include: surveillance (monitoring the condition of the dam) and notification (phoning local or state emergency management agency officials in charge of emergency response).
- EAPs are developed by dam owners working in coordination with local emergency response managers, dam safety engineers, and state dam safety officials.
- Dam owners and local emergency responders are primary users of EAPs.



An EAP takes time, focus, and dedication. The time is now. The focus is on saving lives. The dedication is to public safety.



- The local emergency response manager or another local official is the link between the dam owner and emergency responders. The owner can also contact the state dam safety office to initiate emergency action.
- Public awareness is a critical component of emergency planning. Many people do not know they may live or work near a dam. Public awareness of an EAP will enhance its proper implementation.
- The EAP defines events that trigger emergency actions. Inundation maps show areas that may have to be evacuated. The maps facilitate notification by displaying flood areas and estimated travel times for the dam failure flood wave to arrive.
- An EAP includes a notification flowchart with names and numbers of who will call whom and in what priority.
- Emergency events at dams are infrequent. Training and exercises of EAPs help maintain readiness.
- EAPs are regularly updated to include new information such as changes in downstream development or new contact information.

One should not believe that periodic state safety inspections are sufficient to prevent failure of the dam and harm to those located downstream. This is not the case. Safety inspections and EAPs are very different.

DAM OWNER RESPONSIBILITIES

For any owner or manager of a dam, its failure can be disastrous. Often the owners are local residents who know many of the people, businesses, schools, and other institutions that would be impacted by an inundation. Some dam owners are neighborhood associations and other organizations whose members reside near the dam's reservoir.

In many states, dam owners are legally obligated to provide EAPs. Dam owners are responsible for dam operations and any related incidents. This responsibility entails significant liability and reflects the social responsibility of every dam owner: to provide an EAP for a potentially hazardous dam, regardless of state regulations.

Time and effort must be devoted to creating an EAP, filing it appropriately with state and local officials, updating plan details, testing the plan's assumptions and functionality, and following its procedures in an emergency. Completion of an EAP demonstrates that a dam owner is actively attempting to prevent and mitigate harm to persons and property.

The need for timely action in an emergency situation cannot be overemphasized.

HOW TO GET STARTED

Know your:

- state dam safety official
- state and local emergency management coordinator



The best way to begin is by drawing on the expertise of state and city or county officials who will be part of your EAP team. Locally, make time to sit down with the emergency management official. This official will know how and where to gather much of the information needed, other professionals who can be called upon for help, and precisely which details are most important to gather first. Priorities can be established, and a reasonable timetable for completion of the EAP can be developed. The county courthouse or city hall, or their websites, will have the name and contact information for the emergency management contact (an internet search will typically list the correct contact when you search: "your city/township/county" emergency management.)

Another good starting point is the state dam safety regulatory office. You can locate your state's office by going to the ASDSO website (www.damsafety.org) and clicking on the map of the U.S. in the dam owners section.

The primary means of notification to the public is the National Weather Service (NWS). The NWS has the Congressional mandate for issuing flood warnings, which include dam failure. The NWS has a well established warning infrastructure that includes access to the Emergency Alert System, Weather Radio network, and Internet-based mechanisms. The other principle link is the downstream "warning points." The other principle link is a downstream "warning point," usually a joint first responder dispatch center or sheriff's office. In general, this is where the local 9-1-1 center is located.

An important factor in the effectiveness of the EAP is the prompt detection and evaluation of information obtained from instrumentation and/or physical inspection procedures.

Who is Responsible?

Dam Owners/Operators

- Identification of emergency at dam
- Initial notifications
- Implementation of repairs
- Security and technical assistance on site

Local Emergency Management and Local Responders

- Public warning
- Possible evacuation
- Shelter plan activated
- Rescue and recovery
- State of Emergency declaration
- Termination of emergency status

State Emergency Management

- Provide assistance to affected area when requested
- Coordinate specialized assistance
- Notify appropriate state agencies

The Emergency Action Plan will establish procedures necessary to minimize the threat to life and damage to property in the event of a dam failure related release.

EVERY HIGH- AND SIGNIFICANT-HAZARD POTENTIAL DAM NEEDS AN EAP

Dam incidents and emergencies are often triggered by large storms or other extreme events which can cause confusion and hinder a quick and successful response. In addition, signs indicating possible stress to the dam may be hard to determine and interpret; therefore, all potentially hazardous dams benefit from some type of an Emergency Action Plan. Obviously dams with a potential for loss of life or damage to infrastructure or high value property in the event of failure (typically identified by regulators as High-Hazard Potential) would be a higher priority and would require a more sophisticated and detailed plan. The regulatory agency responsible for dam safety will probably have criteria for the type and detail of EAP required and the required priority if major repairs are also needed. Regardless of the requirement for a recorded or documented EAP by the Dam Safety Regulatory Program, every dam owner is strongly encouraged to develop some type of EAP that can be used to implement emergency action response in the event of a dam incident.

Exercising or testing the EAP is important.

TIPS FOR BETTER EAPs

Typical Components

1. Basic Dam Characteristics
2. EAP Plan Overview
3. Roles & Responsibilities
4. Event Detection
5. Emergency Level Determination
6. Notification & Communication
7. Expected Actions
8. Termination
9. EAP Maintenance (Review & Update)
10. Appendices including Inundation Maps

Features to Make the EAP Easier to Use

The following tips are suggested for making site-specific EAPs easier to use :

- Place the EAP in a three-ring binder for durable field use.
- Use top “hot buttons” divider tabs to quickly access important sections during an emergency.
- Use side divider tabs for major sections for use during training, annual reviews.
- Use headers and footers to identify each sheet with dam name in case sheets get separated.
- Number each copy of the final EAP and maintain a record of the person who received each numbered copy to help assure all official holders receive future updates and revisions.
- Individual EAP pages should be dated.

NOTIFICATION SYSTEMS

DIRECT DIAL

PROS

- Peace of mind - direct contact with downstream residents/officials

CONS

- Only works if residents are home and within phone range
- Takes time
- Will not work if there are phone/power outages

REVERSE 911

PROS

- Can make multiple calls at one time to certain locations

CONS

- Similar to direct dialing, residents/officials need to be near their phones

DOOR TO DOOR NOTIFICATIONS

PROS

- Accountability - tracking system (who is leaving, staying, not home, etc.)

CONS

- Time consuming

THE EMERGENCY ALERT SYSTEM (EAS)

PROS

- Can send alerts and messages out to multiple areas via television and radio

CONS

- Only works if resident's/official's television or radio is turned on
- Satellite television subscribers may not get alerts

SIRENS

PROS

- Allows for quick notifications

CONS

- Maintenance
- Dependability, can they be heard in all areas
- Residents may not understand siren tones

STATE POLICE INFORMATION NETWORK

PROS

- Allows quick distribution of event messages to surrounding law enforcement agencies as well as warning points

WEATHER RADIO

PROS

- Quick distribution of severe weather information for a particular area as well as emergency notifications
- Residents below dams usually live in rural valleys where radio coverage may be spotty or non-existent.

CONS

- Programming these radios may be difficult for some residents, causing the system to be unsuccessfully programmed
- Only works if residents/officials leave their radios turned on

Note: The model used by some: Model R-1650, 7-Channel S.A.M.E. Weather Radio from Reecom Electronics

Resources

DHS / FEMA RESOURCES

DHS and FEMA make several publications and videos available to dam owners through:

FEMA.gov (search “dam safety”) and are also available at DamSafety.org

The following resources are free to dam owners, operators, and regulators and address emergency action planning and the safety of dams.

- Training Aids for Dam Safety (TADS): A Self-Instructional Study Course in Dam Safety Practices (FEMA 609DVD)
- Expert Video Series (FEMA P-717DVD through FEMA P-722DVD)
- Emergency Action Planning Video - Emergency Action Planning for State Regulated High-Hazard Potential Dams: Findings, Recommendations, and Strategies (FEMA 608)
- Emergency Action Planning for Dam Owners (FEMA 64)
- Federal Guidelines for Dam Safety (FEMA 93)
- Glossary of Terms (FEMA 148)
- Hazard Potential Classification System for Dams (FEMA 333)
- Crisis Management Guidelines

NRCS RESOURCES

USDA's Natural Resources Conservation Service has created guidelines and templates for EAPs. A fact sheet on EAPs can be found at:

damsafety.org (Search on EAP)

NRCS also has posted its own EAP instructions at:

<http://directives.sc.egov.usda.gov/viewerFS.aspx?hid=21519>

ASDSO RESOURCES

The Association of State Dam Safety Officials (ASDSO) welcomes dam owners as members and has an extensive website at www.damsafety.org, where the following materials can be found:

- An EAP Resource Page
- Dam Ownership: Responsibility & Liability
- Dam Safety, An Owners Guidance Manual
- Emergency Action Planning for Dam Owners (FEMA 64)
- Emergency Action Planning Video
- Procuring the Services of a Professional Engineer

ASDSO also holds workshops for dam owners at various locations around the United States. These workshops cover several topics, including EAPs.



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