

UTAH
DAM SAFETY
GUIDE TO
EMERGENCY ACTION PLANS

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I Purpose of an Emergency Action Plan (EAP)

Residents of areas that could be affected by a dam failure or operational incident have a risk of loss of life, injuries, and damage to property from a failure or operational incident. The purpose of an EAP is to protect lives and reduce property damage.

An EAP is a formal document that identifies potential emergency conditions at a dam and specifies actions to be followed to minimize loss of life and property damage. The EAP includes:

- Actions the dam owner will take to moderate or alleviate a problem at the dam
- Actions the dam owner will take in coordination with emergency management authorities, to respond to incidents or emergencies related to the dam
- Procedures dam owners will follow to issue early warning and notification messages to responsible downstream emergency management authorities
- Inundation maps to help dam owners and emergency management authorities identify critical infrastructure and population-at-risk sites that may require protective measures, warning, and evacuation planning
- Delineation of the responsibilities of all those involved in managing an incident or emergency and how the responsibilities should be coordinated

II State of Utah Requirements

Utah Code:

73-5a-601. Emergency action plans required.

- (1) The owner of any dam which, in the state engineer's opinion, may pose a threat to life or cause significant damage to property if it fails shall prepare a plan of action to be implemented when an emergency involving the dam occurs.
- (2) In the case of a dam in operation prior to May 1, 1991, the emergency action plan shall be submitted to the state engineer for his approval by May 1, 1994.
- (3) In the case of a dam beginning operations on or after May 1, 1991, the emergency action plan shall be submitted to the state engineer prior to the date of the final inspection.

Dam Safety Rules:

R655-12-6. Emergency Action Plans.

All owners of high hazard and moderate hazard dams that require submission of plans pursuant to section 73-5a-202 shall prepare, maintain, and exercise an emergency action plan.

R655-12-6A. Content.

A. The emergency action plan shall include the following:

1. A notification flowchart for informing emergency support agencies, downstream interests, and the State Engineer.
2. A dam failure inundation map of a suitable scale and with sufficient topographical information which can be easily used by emergency support people. The map should be understandable by the public at large since persons which may be responsible for evacuation may have minimal training in reading maps. The State Engineer may waive the requirement for inundation maps if it can be shown that written descriptions of evacuation zones are clearer and easier to follow.
3. Procedures to identify possible emergencies, at what level an emergency action is initiated, and who is responsible for making necessary contacts.
4. A list of available materials, equipment, and manpower which can be activated on short notice to deal with possible emergencies or to mitigate damage following a dam failure.

B. All emergency action plans must be approved by the State Engineer. All persons included on the notification flowchart should receive copies and understand their role in the plan.

III Suggested Guidelines Resources and Templates for EAPs

3.1 SUGGESSTED EAP SECTIONS

1 SOP

The EAP should typically be included as part of the dam's Standard Operating Plan (SOP).

2 NOTIFICATION FLOWCHART

A notification flowchart is a schematic representation of the hierarchy for notification in an emergency situation, including who is to be notified, by whom, and in what priority. The flowchart should be prominently displayed in the EAP document.

3 RESPONSIBILITIES

A determination of responsibility for EAP-related tasks must be made during the development of the plan. Generally speaking, owners are responsible for the development and maintenance of the EAP and for activating the notification procedures of the plan. Local, State and Federal officials having statutory obligation are responsible for warning and evacuation within affected areas. The EAP must specify the persons responsible for declaring an emergency under various circumstances and for initiating emergency actions. In doing so, the plan must be site-specific.

4 EMERGENCY IDENTIFICATION, EVALUATION AND CLASSIFICATION

Determination and identification of the situations or triggering events that initiate or require emergency action must be made. The establishment of procedures for reliable and timely recognition of emergency situations is imperative. If time permits, an emergency situation should be evaluated and confirmed by an experienced and qualified engineer. Finally, to determine the appropriate course of action, the emergency situation or triggering event should be classified according to its urgency.

5 NOTIFICATION PROCEDURES

Notification procedures should be developed to ensure the timely notification of persons responsible for taking emergency actions. The procedures should be brief, simple, and easy to implement.

6 *PREVENTIVE ACTION*

Preventive action is a general term used to refer to both preplanned and emergency actions that are aimed at preventing failure of a dam or minimizing loss of life and property damage in the event of a failure. A few of the preventive actions that a dam owner might take are to ensure access to the dam site under adverse conditions, provide emergency flood operating instructions, and arrange for expertise, equipment, labor, and materials for use in emergency situations.

7 *INUNDATION MAP*

An inundation map delineates the areas that would be flooded as a result of a dam failure or unusually large spillway releases. An inundation map is sometimes supplemented by a narrative description of the areas that would be flooded. The flow depth, timing and velocity of the potential flood should be related to known landmarks and historical flood heights.

8 *APPENDICES*

Appendices, containing supporting materials used in the development and maintenance of the plan, are usually included in the EAP document.

3.2 *COORDINATING THE DEVELOPMENT OF THE EAP WITH ALL PARTICIPANTS*

Development of the EAP must be coordinated with all entities, jurisdictions, and agencies that would be affected by a dam failure or that have statutory responsibilities for warning, evacuation, and post-flood actions. The finished product will therefore realistically take into account each organization's capabilities, and each participant will be fully aware of individual responsibilities. Appropriate levels of management must be involved in developing the EAP to ensure that each entity will agree to execute its responsibilities under the plan.

3.3 *GUIDELINES*

It is helpful to place the EAP in a loose-leaf binder, so that outdated pages (or the entire EAP) can be easily removed and replaced with updated information to ensure a complete, current, and workable plan. An EAP can be organized in whatever format seems most useful for those involved in the plan.

3.4 RESOURCES

Many resources are available on the internet. Here are some resources and templates that may be helpful:

Resources

<https://damsafety.org/dam-owners/emergency-action-planning#Resources>

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/ndcsmc/?cid=nrcs143_009164

Templates

<https://damsafety.org/content/nrcs-form-fillable-eap-template-eap-template>

http://www.riema.ri.gov/resources/emergencymanager/RIDEM_RIEMA_Dam%20EAP%20Template_2016.pdf

<https://fortress.wa.gov/ecy/publications/documents/ecy07037.pdf>