Questions and Answers about Emergency Action Plans (EAPs) for Dams
Issued December 29, 2016, Revised July 28, 2017

The DEEP Dam Safety Program has reviewed about 40 Emergency Action Plans submitted to date and has noticed some common errors or omissions amongst the EAP submissions. In an effort to assist in the preparation of EAPs to be submitted, we have put together the following list of questions and answers which are intended to address some of the common issues we have observed. EAPs must conform to the minimum requirements of the Dam Safety Regulation. The answers provided below are based on those requirements.

Q. What should be on the title page of an EAP?

A. The title page must identify the document as an emergency action plan and specify the dam for which it was developed. The dam name, reservoir names, hazard class, and town(s) in which the dam is located shall be included on the title page along with the CT Dam ID number. Additionally, the title page must include date of the EAP, latest revision date (if applicable) and the contact name and address of the engineer who prepared the EAP.

Q. Do I need to reference the National Weather Service when describing the necessary dam monitoring procedure?

A. Yes. The EAP Dam Monitoring Procedure must contain a statement requiring initiation of monitoring when the National Weather Service (NWS) announces a Flood Warning for the area where the dam is located.

Q. Do I need to include the interval for monitoring the dam?

A. Yes. The monitoring interval (e.g. every hour, every half hour or continuously) as warranted by the particular hydrologic and hydraulic characteristics and/or structural components of the dam must be calculated by the engineer and included in the EAP. A separate certification page has been added to the EAP

This circular is designed to answer general questions and provide basic information and guidance. You should also refer to Section 22a-411(a) in both the CT General Statues and Regulations of CT State Agencies.

template for the engineer's stamp and signature certifying the monitoring interval calculation.

For example, if the dam has a small drainage area, with a relatively short time of concentration. The design storm for the dam is a 100-year flood. Here is some possible language specific to the dam described above: "*upon becoming aware of a flood warning for the area containing your dam, the dam owner/operator needs to make a site inspection of the dam, then monitor the rainfall totals on (the weather channel, the National Weather Service Website, etc.,) when the total rainfall exceeds [X]" then inspections of the dam need to be made every hour, unless the rate of rise (if it remains consistent) will overtop the dam in 1 hour, then start Early Warning procedures and monitor the dam continuously until the event has ended.*"

Another example could be that the dam has a relatively large drainage area, such as 90 square miles, a relatively long time of concentration, such as 9 hours, and the dam has been designed to pass the ½ PMF with freeboard. Here is some possible language specific to the dam scenario described above: *"upon becoming aware of a NWS flood warning for the area containing the dam, the dam owner/operator needs to start monitoring the rainfall totals (on the weather channel, the National Weather Service website, etc.,) until the rainfall totals exceed [X]", then inspections at the dam need to be made every 3 hours, unless the rate of rise (if it remains constant) will overtop the dam in 1 hour, then start early warning procedures and monitor the dam from a safe location until the event has ended."*

Q. Are there other instances where dam monitoring should be initiated?

A. Yes. Dam monitoring should be initiated when any of the following emergency conditions are observed:

- a marked increase in seepage through an embankment, particularly if evidence of a boil (release of seepage under pressure which tends to "float" away the material through which it flows) or if piping (an internal eroding leak through the dam) is occurring;
- cracking, settlement, or movement of masonry or concrete spillways, training walls or other structures;

- the rise of the impoundment is such that the non-overflow section(s) of the dam will overtop or is overtopping and the dam is failing or is in imminent danger of failing;
- substantial erosion or sloughing of dam earthen embankments;
- any other condition resulting in a probable failure of the dam.

Once any of the above conditions are observed, The dam owner/operator shall immediately initiate monitoring and contact the engineer. Continuous monitoring should be maintained until the engineer has inspected the dam and evaluated the situation to establish an appropriate monitoring frequency / monitoring procedure.

Q. Does the engineer need to prepare the dam failure inundation map?

A. Yes. The inundation map must be prepared by a Connecticut licensed professional engineer (PE). A separate certification page has been added to the EAP template for the engineer's stamp and signature certifying the inundation map.

Q. Does the EAP need to include a form for the dam owner/operator to use to record their monitoring activity?

A. No. However, the regulation requires the EAP to provide a procedure for maintaining a written record of all monitoring activity. The record must include rainfall data, reservoir level as well as conditions observed at the dam. A form has been provided in Appendix B-2 of the EAP template titled "Unusual or Emergency Event Log." We recommend that the monitoring procedure incorporates using this log and that it be included in the EAP.

Q. Do I need to include an inventory of emergency equipment?

A. Yes. The EAP should include a list of available emergency equipment and supplies as well as their location. In addition, the EAP should identify person(s) who will respond to emergencies at the dam.

Q. Should the EAP explain what happens during an event triggering initiation of monitoring in the absence of the owner/operator?

A. Yes. Provide a list identifying personnel and their alternate(s) that would be utilized by the dam owner or operator(s) responsible for decision making and for implementing emergency repairs when the owner is absent.

Q. How should the requirement for adequate lighting to view the dam at night be addressed in the EAP?

A. The EAP should state that the dam owner must provide or arrange for adequate lighting during EAP activation to allow for safe monitoring of the dam at night. The EAP must indicate where the lighting equipment will come from. If the dam owner does not have lighting equipment, possible sources would be local rental businesses or other organizations such as a municipal emergency management agency or fire department, which may have lighting equipment that the dam owner can use.

Q. Does the EAP need to include a distribution list of all the affected agencies?

A. Yes. The list must be included in the EAP and include all local, state, federal, and federal tribal agencies that will receive a copy of the EAP.

Q. What should a Final Warning Notification say?

A. The Final Warning Notification wording must meet the minimum requirements of the Regulation and include the name of the dam owner, name and location of the dam, a statement that the dam is in imminent danger of failing, and that it is a notice to the municipal emergency management authority(ies) to warn residents within the inundation area that evacuation is now necessary. Example language that meets these requirements can be found in the EAP template. Remember to include a statement that "*the dam is failing and this is a final warning notification*".

Q. Is the Abridged version of the EAP required?

A. No. Including the abridged version of the EAP in the report is optional. DEEP will not be reviewing the abridged versions for accuracy or compliance with applicable regulations. However, the purpose of having an abridged EAP is to be able to provide a condensed document that can be sent by email in instances when the complete approved EAP is not readily available to users in an emergency.