Emergency Action Plans for Dam Safety

Introduction to the NC EAP template

Tami Idol, El
Assistant State Dam Safety Engineer
Primary Purposes of an EAP

- Reduce risk to loss of life
- Determine emergency level
- Make notifications for possible evacuations
- Identify potential people at-risk and properties at-risk
- Provide technical guidance for emergency actions to reduce downstream impacts
NC EAP Background

Existing EAP formats from around the country were reviewed
- ASDSO/NRCS, FEMA64, USFWS, USBR, States of MO, IN, WA, TX

Lessons learned from actual emergencies included

NC has finalized an EAP sample template for dam owners to use
- Although the template does look ominous at 68 pages long, the format is meant to be user friendly regardless of the background or experience of the owner, operator or detector of emergency
- 3-ring notebook for durability and easy updating
- Top “Hot Tabs” for key pages
- Basic dam info on each header to ensure correct dam
- During an emergency, stress and adrenalin make the human thought process much more difficult. The 4 step process can walk you through an emergency situation.
Parts of an EAP

- Cover Sheet
- The 4 STEP Process
- MAPS, FIGURES AND SUPPORTING DATA
  - Directions and Emergency Access Routes Map
  - A list of Residents/Businesses/Roads/Infrastructure at Risk downstream (including names, addresses & telephone numbers listed in the order they would be affected)
  - Map of Hazards Downstream
  - Evacuation Map (If available, developed by local Emergency Management Agency)
  - NC Inventory of Dams Data Sheet
- APPENDICES- Defines Roles & Responsibilities, Emergency contacts, locally available resources, tracks EAP updates and distribution and provides other supporting data as needed.
The Cover Sheet should include the following information:

• Name of Dam
• State Identification #
• The version # and date of the EAP
• Owner’s Name and Contact Information
• General location map that shows where the dam is located relative to other key local roads, drainages, and population centers.
Step 1 – Event Detection and Level Determination
Step 2 – Notifications and Communication
Step 3 – Expected Actions
Step 4 – Termination and Follow-Up
EAP Process

Step 1 – Event Detection Level Determination

EVENT DETECTION

EVENT LEVEL DETERMINATION (TABLE 1.3)

STEP 2

EVENT LEVEL 3, GREEN NOTIFICATIONS (FIGURE 2.1)

EVENT LEVEL 2, YELLOW NOTIFICATIONS (FIGURE 2.2)

EVENT LEVEL 1, RED NOTIFICATIONS (FIGURE 2.3)

STEP 3

EVENT LEVEL 3, GREEN ACTIONS (TABLE 3.1)

EVENT LEVEL 2, YELLOW NOTIFICATIONS (TABLE 3.2)

EVENT LEVEL 1, RED ACTIONS (TABLE 3.1)

STEP 4

RE-EVALUATE

RE-EVALUATE

RE-EVALUATE

TERMINATION AND FOLLOW-UP STEP 4
Event Levels

- **Level 1, RED Emergency** - Urgent!! Dam Failure Imminent or is in Progress
- **Level 2, YELLOW Emergency** - Potential dam failure situation, rapidly developing
- **Level 3, GREEN Emergency** - Unusual event, slowly developing

Levels are numbered and color coded to prevent confusion.
Level 1, RED Emergency - Urgent!! Dam Failure Imminent or is in Progress

This is an extremely urgent situation when a dam failure is occurring or obviously is about to occur and cannot be prevented. When it is determined that there is no longer time available to implement corrective measures to prevent failure, an order for evacuation of residents in potential inundation areas shall be issued by the Incident Commander
Level 2, YELLOW Emergency - Potential dam failure situation, rapidly developing

This classification indicates that a situation is developing that could lead to dam failure, but there is not an immediate threat of dam failure. The dam Owner/Operator should closely monitor the condition of the dam and periodically report the status of the situation. A reasonable amount of time is available for analysis before deciding on evacuation of residents.
Level 3, GREEN Emergency
Unusual event, slowly developing

This classification indicates a situation is developing, but has not yet threatened the operation or structural integrity of the dam. The Owner’s technical representative or engineer AND NC Dam Safety Office should be contacted to investigate the situation and recommend actions to take. The condition of the dam should be closely monitored, especially during storm events, to detect any development of a potential or imminent dam failure situation.
<table>
<thead>
<tr>
<th>Event</th>
<th>Condition</th>
<th>Emergency level*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth spillway flow</td>
<td>Reservoir water surface elevation at auxiliary spillway crest or spillway is flowing with no active erosion</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Spillway flowing with active gully erosion</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Spillway flow that could result in flooding of people downstream if the reservoir level continues to rise</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Spillway flowing with an advancing headcut that is threatening the control section</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Spillway flow that is flooding people downstream</td>
<td>1</td>
</tr>
</tbody>
</table>
What is a Decision Table?

A guidance document that provides pre-selected threshold levels to help dam operators determine the severity of common dam safety emergencies.
Example Earthquake Thresholds

**Emergency Level 3, GREEN**
Measurable earthquake felt at the dam or reported within 50 miles of the dam

**Emergency Level 2, YELLOW**
Earthquake resulting in visible damage to the dam or appurtenances

**Emergency Level 1, RED**
Earthquake resulting in uncontrolled release of water from the dam
Common Event Types for Earthen Dams

- Earth Spillway flow
- Embankment overtopping
- Seepage
- Sinkhole
- Embankment cracking
- Embankment movement
- Instrument readings abnormal
- Earthquake
- Security threat
- Sabotage/Vandalism
- Blocked culverts
EAP Process

Step 1 – Event Detection Level Determination

Step 2 – Notification & Communication

Figure 1

STEP 1

EVENT DETECTION

EVENT LEVEL DETERMINATION (TABLE 1.3)

STEP 2

EVENT LEVEL 3, GREEN NOTIFICATIONS (FIGURE 2.1)

EVENT LEVEL 2, YELLOW NOTIFICATIONS (FIGURE 2.2)

EVENT LEVEL 1, RED NOTIFICATIONS (FIGURE 2.3)

STEP 3

EVENT LEVEL 3, GREEN ACTIONS (TABLE 3.1)

EVENT LEVEL 2, YELLOW ACTIONS (TABLE 3.2)

EVENT LEVEL 1, RED ACTIONS (TABLE 3.1)

RE-EVALUATE

STEP 4

TERMINATION AND FOLLOW-UP STEP 4

RE-EVALUATE

RE-EVALUATE
UNUSUAL EVENT, SLOWLY DEVELOPING
(Can usually wait until regular business hours unless Level is elevated)

Dam Owner/Operator

Name
XXX-XXX-XXXX (Office)
XXX-XXX-XXXX (Home)
XXX-XXX-XXXX (Cell)

(1) Dam Owner’s Engineer (if applicable)

Name of engineer
XXX-XXX-XXXX (Office)
XXX-XXX-XXXX (Home)
XXX-XXX-XXXX (Cell)

(2) Land Quality Section Staff

BUSINESS HOURS
### Regional Office
Phone: ###-###-####
Or
Raleigh Central Office
Phone: 919-733-4574
Emergency Level 2 YELLOW Notifications
Potential dam failure situation, rapidly developing

Dam Owner/Operator
Name of Dam Owner
XXX-XXX-XXXX (Office)
XXX-XXX-XXXX (Home)
XXX-XXX-XXXX (Cell)

Be ready to provide information from Figure 5.4 and directions to the dam.

(1.)

Dam Operator’s Engineer
Name of engineer
XXX-XXX-XXXX (Office)
XXX-XXX-XXXX (Cell)

(2.)

911 Dispatch

State Emergency Operations Center
24 hours
1-800-858-0368
Be ready to provide information from Figure 5.4 and directions to the dam.

(1.)

County Emergency Management Director / Incident Commander
Name of EM Director
XXX-XXX-XXXX (Office)
XXX-XXX-XXXX (Cell)

(2.)

NC Dam Safety
NCDENR
Division of Land Resources

SERT partners as needed
See Emergency Services Contacts (Appendix B) for additional SERT contacts and other emergency personnel.
Emergency Level 1, RED Notifications
FAILURE IN PROGRESS

Dam Owner/Operator
Insert Name Here

XXX-XXX-XXXX (Office)
XXX-XXX-XXXX (Home)
XXX-XXX-XXXX (Cell)

911 Dispatch

County Emergency Director/Incident Commander
Name of EM Director
XXX-XXX-XXXX (Office)
XXX-XXX-XXXX (Cell)

NC Dam Safety
NCDENR
Division of Land Resources

SERT partners as needed
See Emergency Services Contacts (Appendix B) for additional SERT contacts and other emergency personnel.

State Emergency Operations Center (Available 24 hours)
Phone: 1-800-858-0368
Be ready to provide information from Figure 5.4 and directions to the dam.

Note:
1., 2., etc., denotes call sequence

Legend:
Calls by operator/owner ______
Second level calls --------
Third level calls ________
Notification Flow Charts

- Notification procedures may be expanded to address needs of Owner or local responders.
- North Carolina has 100 Counties
  - That does not include the number of local government and volunteer responders and 911 Communications
  - Every County has different capabilities and capacities for local response.
- Communication with the County Emergency Management Director where your dam is located is critical in determining whether the flow charts provided in the template is adequate.
Suggested phone messages are included on each Notification Flow Chart

Goals of pre-scripted messages:

Help the dam owner give the 911 dispatcher appropriate message

Prevent miscommunication of proper information to responders
Repeat after me

- This is an **EMERGENCY**. This is *(Identify yourself)*
- The (Dam Name) is failing. The downstream area must be evacuated immediately. Repeat, the (Dam Name) is failing.
- We have activated the Emergency Action Plan for this dam and are currently under Emergency Level 1.
- Evacuate immediately according to the evacuation map in your copy of the Emergency Action Plan.
- I can be contacted at the following number Phone No. If you cannot reach me. Please call the following alternative number Alt. No.
EAP Process

Step 1 – Event Detection Level Determination

Step 2 – Notification & Communication

Step 3 – Expected Actions

Step 4

EVENT DETECTION

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EVENT LEVEL 3, GREEN ACTIONS (TABLE 3.1)

EVENT LEVEL 2, YELLOW ACTIONS (TABLE 3.2)

EVENT LEVEL 1, RED ACTIONS (TABLE 3.1)

RE-EVALUATE

RE-EVALUATE

RE-EVALUATE

TERMINATION AND FOLLOW-UP STEP 4
Expected Actions

STEP 3

• After the *EAP Coordinator* has determined the event level in STEP 1 and has made the appropriate notifications, the *EAP Coordinator* shall take action, using the Action Data Sheets as a guide.

• Action Data Sheets are provided for the most common types of events for earthen dams. Additional Data Sheets may be needed for other types of dams.
What are Action Data Sheets?

- Pre-planned preventative actions to consider to minimize the consequences of the unusual or emergency situation and prevent the situation from worsening.
- Pre-planned actions must be tailored to address individual dam
- Appropriate Actions will vary depending on the Emergency Event Level
- A knowledgeable dam safety engineer should always be consulted if time permits
Recall the Level Determination Table 1.3

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<td>1</td>
</tr>
<tr>
<td>Event</td>
<td>Event Level</td>
<td>Action Data Sheet</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Earth Spillway Flow</td>
<td>3</td>
<td>A3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>A2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>A1</td>
</tr>
<tr>
<td>Embankment Overtopping</td>
<td>2</td>
<td>B2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>B1</td>
</tr>
<tr>
<td>Seepage</td>
<td>3</td>
<td>C3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>C2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>C1</td>
</tr>
<tr>
<td>Sinkholes</td>
<td>2</td>
<td>D2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>D1</td>
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<tr>
<td>Embankment Cracking</td>
<td>3</td>
<td>E3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>E2</td>
</tr>
<tr>
<td>Embankment Movement</td>
<td>3</td>
<td>F3</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>F1</td>
</tr>
<tr>
<td>Instruments</td>
<td>3</td>
<td>G3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>H3</td>
</tr>
<tr>
<td>Earthquake</td>
<td>2</td>
<td>H2</td>
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<tr>
<td></td>
<td>1</td>
<td>H1</td>
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<tr>
<td>Security Threat</td>
<td>2</td>
<td>I2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>I1</td>
</tr>
<tr>
<td>Sabotage/Vandalism</td>
<td>3</td>
<td>J3</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>J2</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>J1</td>
</tr>
<tr>
<td>Blocked Culverts/Spillways</td>
<td>3</td>
<td>K3</td>
</tr>
</tbody>
</table>
## RECOMMENDED ACTIONS

### Owner/EAP Coordinator
A. Make sure notifications on Figure 2.1 have been made.

B. **Describe a course of action that closely monitors the situation.** Careful observation and inspection of every part of the dam is necessary; this should be done without compromising the safety of anyone performing these tasks. Clearly describe potential problems so that the individual(s) carrying out the inspection know what may be dangerous. Off-site areas and/or instrumentation may also need to be monitored. If necessary, confer with the On-Call Engineer or designee to determine any preventative action that must be taken. Additionally, develop a plan to avoid dam failure and minimize damage downstream.

C. Record all information, observations, and actions on a data sheet (Form 3.2).

D. Contact the **Owner’s Engineer** at least daily to report all observations and conditions. If conditions change significantly, return to Section 3.2 to re-evaluate Emergency Level and follow relevant steps immediately.

### Owner’s Engineer
A. **Describe a course of action to be followed by this position.** In general, this will be to review all pertinent information, monitor the dam, and recommend appropriate actions to the EAP Coordinator. If necessary, confer with local emergency contractors and/or other individuals that may be able to assist in monitoring the situation.

### NC Dam Safety Staff
A. Provide decision support and technical support to the **Incident Commander** as appropriate.
General Emergency Level 3, GREEN

Actions
(Non-emergency, unusual event, slowly developing)

- Make an inspection of the dam
- Contact a dam safety engineer for advice
- Consider the following:
  - Increased monitoring
  - Lower the reservoir
  - Initiate repair strategies
- Record all contacts, observations, and actions
General Emergency Level 2, YELLOW Actions
(Potential dam failure, rapidly developing)

- Contact a dam safety engineer for advice
- Contact local emergency management:
  - Prepare to evacuate
- Provide timely updates to local emergency management
- If time permits, inspect the dam
- Record all contacts, observations, and actions
- Initiate preventative actions if time permits
General Emergency Level 1, RED Actions
(Dam failure is imminent or in progress)

- Immediately contact local emergency management and advise *immediate* evacuation
- If possible observe and record the event from a safe, high ground location
- Update local emergency management throughout the event Record all contacts, observations, and actions
- Do not attempt further remediation efforts
Each data sheet guides you through a continuous process. Once an Event Level determined, Notifications are made, and Actions taken, the situation must be re-evaluated. The EAP may go through multiple event levels during STEPS 2 and 3 as the situation either improves or worsens.
EAP Process

Step 1 – Event Detection Level Determination

Step 2 – Notification & Communication

Step 3 – Expected Actions

Once Re-evaluation made, follow the continuous process lines.
Termination and Follow-up

- Identify the individual responsible for terminating EAP operations. This must not necessarily be the EAP Coordinator.

- Describe notification protocol to be followed once EAP activities have been terminated.

- Outline any special actions that are to be taken prior to termination of a Level 1 event that did not result in dam failure. These actions should ensure the safety of people and property downstream. Do not terminate the EAP unless it is certain that there is no further threat.

- Document any EAP procedures that were followed effectively, as well as any ways that the EAP could be improved, make any updates necessary and ensure distribution to the list of EAP holders.
MAPS, FIGURES AND SUPPORTING DATA

- Directions and Emergency Access Routes Map
- A list of Residents/Businesses/Roads/Infrastructure at Risk downstream. Should include names, addresses & telephone numbers listed in the order they would be affected
- Map of Hazards Downstream
- Evacuation Map (If available, developed by local Emergency Management Agency)
- NC Inventory of Dams Data Sheet
Directions and Emergency Access Routes Map

- This map will enable responders to access the dam in a safe manner.
- Some dams may not have a safe ingress route without traveling through the area that would be affected if the dam were to fail. This should be considered during EAP development.
- The first rule of response is safety of the responders. If the responders cannot make it safely to the incident, they cannot help others.
Residents/Businesses/Roads/Infrastructure Downstream

---

**Residents/Businesses/Roads/Infrastructure at Risk**

Brief summary of number of entities within hazard zone.

<table>
<thead>
<tr>
<th>Entity No.</th>
<th>Resident/business/roads or other impacted entity</th>
<th>Property Address</th>
<th>Phone No. with area code</th>
<th>Distance downstream from dam (mi)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Name of entity</td>
<td>Address/location of entity</td>
<td>XXX-XXX-XXXX</td>
<td>Distance from dam</td>
</tr>
<tr>
<td>X</td>
<td>Name of entity</td>
<td>Address/location of entity</td>
<td>XXX</td>
<td>Distance from dam</td>
</tr>
<tr>
<td>X</td>
<td>Name of entity</td>
<td>Address/location of entity</td>
<td>XXX</td>
<td>Distance from dam</td>
</tr>
</tbody>
</table>

listed in the order they would be affected
Map of Hazards Downstream

North Carolina Simplified Inundation Maps For Emergency Action Plans

OR

More detailed surveying or modeling

Whichever method is appropriate for your dam
Evacuation Plan and Map

- An Evacuation Plan and Map (Provided by Local EM) is based upon the Inundation map (Provided by the dam owner).
- It specifically outlines the evacuation process and procedures and evacuation routes.
- This may include special provisions for nursing homes and other special needs within the inundation zone.
- Outlines responsibilities of other local and state responders such as Highway Patrol, DOT, Sheltering agencies, etc.
# Data Sheet for your Dam

Provided by NC Dam Safety Office

## General Information

<table>
<thead>
<tr>
<th><strong>Alternate names:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Status:</strong></td>
<td>IMPOUNDING</td>
</tr>
<tr>
<td><strong>Dam Type:</strong></td>
<td>Earth</td>
</tr>
<tr>
<td><strong>Dam Purposes:</strong></td>
<td>Water Supply</td>
</tr>
<tr>
<td><strong>Year Constructed:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Region:</strong></td>
<td>Asheville Regional Office</td>
</tr>
<tr>
<td><strong>Quadrangle:</strong></td>
<td>Bold Creek</td>
</tr>
<tr>
<td><strong>Latitude:</strong></td>
<td>35.9426</td>
</tr>
<tr>
<td><strong>Longitude:</strong></td>
<td>-82.4949</td>
</tr>
<tr>
<td><strong>River or Stream:</strong></td>
<td>Big Laurel Creek</td>
</tr>
<tr>
<td><strong>River Basin:</strong></td>
<td>French Broad</td>
</tr>
<tr>
<td><strong>Nearest City/Town:</strong></td>
<td>Faust</td>
</tr>
<tr>
<td><strong>Distance Downstream:</strong></td>
<td>4.0</td>
</tr>
</tbody>
</table>

## Details

| **Structural Height (ft):** | 48.5 |
| **Normal Freeboard (ft):** | 8 |
| **Hydraulic Height (ft):** | 40.5 |
| **Crest Length (ft):** | 306 |
| **Crest Width (ft):** | 19 |
| **Upstream Slope XH:1V:** | 2.5 |
| **Downstream Slope:** | 3.5 |
| **Max Spillway Capacity (cfs):** |  |
| **Low Flow Requirement (cfs):** | 0 |
| **Normal Pool Elevation:** | 0 |
| **Drainage Area (ac):** | 535 |
| **Surface Area (ac):** | 2.8 |
| **Normal Pool Capacity (ac-ft):** | 30 |
| **Max Pool Capacity (ac-ft):** | 40 |
| **Bottom Drain?** | Y |
| **Bottom Drain Operable?** | Y |

## Inspection Information

| **Last Inspection Date:** | 12/10/2009 |
| **Type Inspection:** | Routine |
| **Inspector(s):** | WW/WWB |
| **Next Routine Inspection:** | 12/10/2010 |

## Enforcement

- **NOD**
  - Deadline
  - Resolved?
- **DSO**
  - Deadline
  - Resolved?
- **EAP?**
  - Y
  - EAP Date | 11/12/2009

## Hazard Information

- **Hazard Class** | High |
- **Hazard Description** | State Road, Residences |

## Spillways

<table>
<thead>
<tr>
<th><strong>Primary Spillway</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Channel</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Bottom Width:</strong></td>
<td>29</td>
</tr>
<tr>
<td><strong>Side Slope:</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Lining:</strong></td>
<td>Concrete</td>
</tr>
</tbody>
</table>
APPENDICES

- Roles, Responsibilities, and Authority
- Emergency Services Contacts
- Locally Available Resources (Equipment, Labor, and Materials)
- Record of EAP Annual Review, Revision and Periodic Test
- Record of Revisions and Updates
- EAP Distribution and Acceptance
- Engineering Documents
- Glossary of Terms
Why Should EAPs be Tested?

- Familiarizes local emergency management agencies with the dam and its potential downstream consequences
- Improves the EAP
- Trains dam operators and emergency responders on the use of the EAP
EAP Tabletop Exercise

- Informal meeting of the dam owner and state and local emergency officials
- Minimum stress is involved
- The exercise begins with the description of a simulated scenario
- A discussion to evaluate the EAP, response procedures and resolve questions about coordination and responsibilities
Typical Tabletop Test Agenda

- Introductions
- Document Overview
- Inundation Map Overview
- Introduce and Discuss a Mock Emergency
- Document and Review Improvement Comments
It’s 4:00 p.m. on Friday, July 1st and Ranger Smith, is getting ready for the long holiday weekend. He is hoping that the rain will stop soon as it has been raining almost all week.

Ranger Smith is concerned about the extended forecast so he looks at the National Weather Service website and finds that the forecast calls for continued rain until at least Monday, with potentially heavy thundershowers.

Based on the forecast, Ranger Smith drives to Jellystone Park Dam to check the conditions at the dam prior to going home for the long, holiday weekend. He notices that the reservoir pool has risen to the auxiliary spillway crest.
FORM 3.2

Unusual or Emergency Event Log
(To be completed during the emergency)

Dam name:  

County:  

When and how was the event detected?  

Weather conditions:  

General description of the emergency situation:  

Emergency level determination:  

Made by:  

Actions and Event Progression

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Action/event progression</th>
<th>Recorded by</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>
Reservoir pool rises with 1' of flow over aux. Spillway; flooding possible downstream if reservoir continues to rise.
New Information July 2, 2010 8:00 am

Reservoir has dropped to .5 feet below aux. spillway crest
EAP Process

Step 1 – Event Detection Level Determination

Step 2 – Notification & Communication

Step 3 – Expected Actions

Once Re-evaluation made, follow the continuous process lines.
Updating an EAP

- EAPs are living documents; must be updated periodically to have the greatest effectiveness
- Owner should train new personnel or people with assigned responsibilities.
Annual Testing/Drill by Owner

- Owner calls all contacts on Notification Charts to verify phone numbers and contact person name
- Owner verifies that contact person can find EAP
- Owner checks if current version of EAP is being used (e.g., Revision No. 2)
- Owner asks if contact person understands roles and responsibilities
Owner checks locally available resources (gravel sources, equipment suppliers, etc) for phone numbers and contacts

Owner ensures familiarity with EAP 4 STEP process (event level determination, notification, emergency actions, and termination)

Owner documents annual testing