Florida Department of Environmental Protection Logo, Florida Dam Safety Program 

**Emergency Action Plan Template**

**for Florida Dams**

**July 2022**

**Third Revision**

**Acknowledgements**

The Emergency Action Plan Template for Florida Dams and companion Instruction Manual were developed by drawing liberally on the work of several agencies. Appreciation is expressed to the following agencies, organizations, and firms that supplied information and input: the Florida Department of Environmental Protection (FDEP); the five Regional Water Management Districts of Florida; the USDA Natural Resources Conservation Service; the Texas Commission on Environmental Quality; the Federal Emergency Management Agency (FEMA); the Federal Energy Regulatory Commission; the National Dam Safety Review Board Emergency Action Plan Workgroup; the National Weather Service; the Association of State Dam Safety Officials; and the United States Army Corps of Engineers.

Thanks are due to the Florida Dam Safety Program and HDR Engineering, Inc. (HDR), especially the following staff for their contributions in the development of the EAP Template for Florida Dams and companion Instruction Manual: Owete S. Owete, PhD, PE, FDEP; Tracy Woods, PG, FDEP; Stanley Inabinet, FDEP; Pamela Gonzales, PE, HDR; Vicki L. Burke, PE, CFM, HDR; David R. Borys, EI, HDR; and Brice S. Shrader II, EI, HDR. Additional thanks to Steve Jamieson, P.E., W. W. Wheeler and Associates, Inc., for his invaluable expertise.

The original versions of the EAP Template and companion Instruction Manual were completed in December 2010 and funded in part by FEMA National Dam Safety Program grant 209-RC-55-0038 (FDEP DAM10). FEMA grant 210-RC-50-0002 (FDEP DAM11) provided partial support for the first revisions in July 2011. The second revisions were made in February 2021 and were partially funded by FEMA grant EMA-2020-GR-00002 (FDEP DAM21). These third revisions were partially funded by FEMA grant EMA-2021-GR-00001 (FDEP DAM22).

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**Emergency Action Plan (EAP)**

**Dam Name**

**National Inventory of Dams Identification Number**: **NID Number**

**County Name County, Florida**

**Water Management District**

**Permit Type/Number**

**Downstream Hazard Potential**

**Month and Year**

Insert Regional or County map showing location of dam

Insert local area map showing specific location of dam and GPS coordinates

Dam Owner or Dam Owner’s Representative:

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Copy \_\_\_\_\_\_ of \_\_\_\_\_\_

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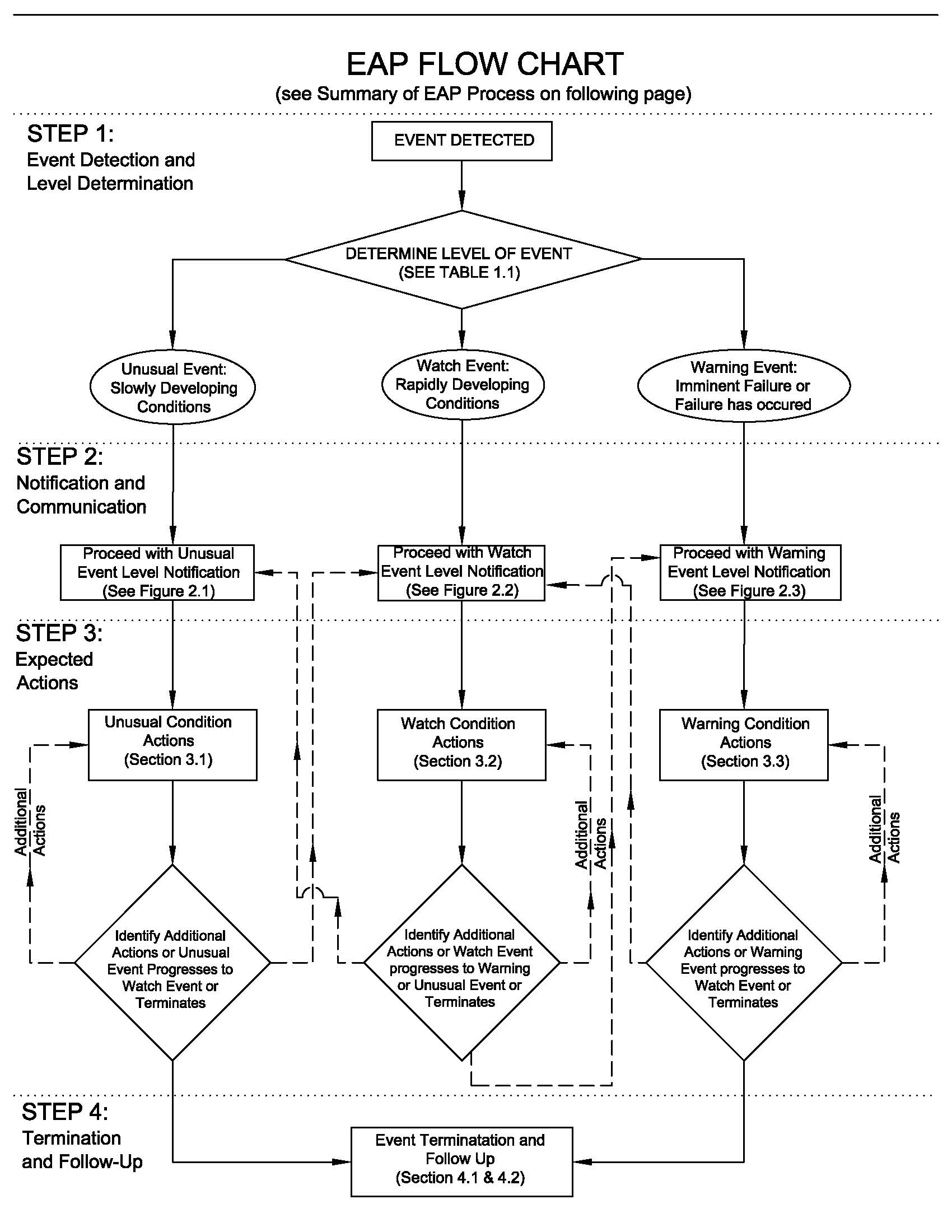
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# EAP Overview

EAP Flow Chart



## Summary of EAP Process

The EAP Process consists of four (4) steps that must be followed anytime an event has been detected. The 4 steps are as follows:

Step1: Event Detection and Level Determination

Step 2: Notification and Communication

Step 3: Expected Actions

Step 4: Termination and Follow-Up

***Step 1 Event Detection and Level Determination***

When an event is detected at the dam, the level of the event must be determined. Section 1.0*Event Detection and Level Determination* will serve as a guide to determine event level. Each event level has a specific notification and expected actions associated with it. The 3 levels of events are:

Unusual Event Level - slowly developing, unusual situation

Watch Event Level - rapidly developing, potential dam failure situation

Warning Event Level - imminent dam failure or dam failure occurring

***Step 2 Notification and Communication***

Once the level of event has been determined, notifications will be made in accordance with the applicable event level notification flow chart included in Section 2.0*Notification and Communication*.

***Step 3 Expected Actions***

Specific actions will be executed depending on the level of event. The specific actions for each event level can be found in Section 3.0*Expected Actions*. A continuous process of acting, notification and assessing the status of the situation may happen during this step. The event may go through multiple event levels as the situation either improves or worsens. After the actions have been performed, evaluation of the actions will occur before proceeding to the next step. If actions have not rectified the event conditions, additional actions may be performed. If event conditions have improved, the event level will be reduced or terminated as the situation dictates.

***Step 4 Termination and Follow-up***

Once the event has ended, termination and follow-up procedures will be followed as explained in Section 4.0 *Termination and Follow-up*. The EAP operations can only be terminated after completing the actions and all issues have been rectified.

## Dam Description and Potential Impact Area Summary

### Purpose

The purpose of this EAP is to reduce the risk of human life loss and injury and minimize property damage during a Watch or Warning Event for Dam Name, NID No. NID Number located in County Name County, Florida.

### Directions to Dam Name

U. S. National Grid (NAD 83): **\_\_\_\_\_\_\_\_\_**

Directions to the dam from all four directions are provided below. (See Appendix A-1: *Project Location Map* and Appendix A-2: *Project Watershed Map*).

|  |  |
| --- | --- |
| From the North: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| From the East: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| From the South: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| From the West: | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

### 

### Potential Impact Areas

See Appendix A-3a: *Inundation Maps for a Sunny Day Dam Failure* of Dam Name ; Appendix A-3b: *Inundation Maps for 100-Year Storm Dam Failure* of Dam Name; *Appendix A-3c: Inundation Maps for Probable Maximum Precipitation (PMP) Dam Failure* of Dam Name; and Appendix A-3d: *Evacuation Maps for Sunny Day/Rainy Day Dam Failures*.

### Dam Description

|  |  |
| --- | --- |
| **Dam Height**: \_\_\_\_\_ft | **Dam Name**: \_\_\_\_\_\_ |
| **Year Completed**: \_\_\_\_\_\_ **Modified:** \_\_\_\_\_\_ | **Former Dam Name**: \_\_\_\_\_\_ |
| **Legal Description**: S\_\_\_\_ T\_\_\_\_R\_\_\_\_ | **Nearby River or Stream**: \_\_\_\_\_\_ |
| **Dam Operator**: \_\_\_\_\_\_ | **Nearest Downstream Town**: \_\_\_\_\_\_ |
| **Latitude**: \_\_\_\_\_\_  **Longitude**: \_\_\_\_\_\_ | **National Inventory of Dams ID No**.: \_\_\_\_\_\_ |
| **Normal Storage**: \_\_\_\_\_\_acre-feet | **Hazard Potential**: \_\_\_\_\_\_ |

## General Roles and Responsibilities

**Dam Owner/ Dam Owner Representative:** Dam Owner

* As soon as an event is observed or reported, immediately determine the level (see Table 1.1: *Event Level Determination Guidance Table* in Section 1.3: *Examples of Emergency Situations*).

|  |
| --- |
| Unusual Event Level- slowly developing, unusual situation. |
| Watch Event Level- rapidly developing, potential dam failure situation. |
| Warning Event Level- imminent dam failure or dam failure occurring. |

* Immediately notify the personnel in the order shown on the notification chart for the appropriate level (see Figure 2.1:*Unusual Event Level Notification*, Figure 2.2: *Watch Event Level Notification*, and Figure 2.3: *Warning Event Level Notification*, in Section 2.1*Notification Charts*).
* Provide updates of the situation to the Incident Commander to assist them in making timely and accurate decisions regarding warnings and evacuations.
* Provide leadership to assure the EAP is reviewed and updated annually and copies of the revised EAP are distributed to all current EAP holders.

**Dam Operator’s Technical Representative:** Technical Representative

* Advise the dam owner of the event level determination.
* Advise the dam owner of the necessary remedial actions to take, **if** time permits.

**Incident Commander (e.g., Sheriff, Emergency Operations Center):** Name, Affiliation

* Serve as the primary contact person responsible for coordination of all emergency actions in the dam area and downstream.
* When a Watch Event Level situation occurs:
  + Prepare emergency management personnel that evacuations may be needed if a Warning Event Level situation occurs.
* When a Warning Event Level situation occurs:
  + Initiate warnings and order evacuation of people at risk downstream of the dam.
  + Order emergency management personnel to carry out the evacuation of people and close roads within the evacuation area.
* Control communication with media.
* Decide when to terminate EAP activation.
* Participate in an annual review and update of the EAP.

**Emergency Management Services:** Name, Affiliation

* Maintain communication with media.
* When a Watch Event Level situation occurs:
  + Support Incident Commander with preparation of emergency management personnel for possible evacuations that may be needed if a Warning Event Level situation occurs.
  + Alert the public as appropriate.
* When a Warning Event Level situation occurs:
  + Alert the public.
  + Immediately close roads and evacuate people within the evacuation area (see *Evacuation Maps*).
* Participate in an annual review and update of the EAP.

**Water Management District:** Name

* Provide technical assistance with relation to flooding extent and repair, as needed.

**Bureau of Emergency Response:** Name, Affiliation

* Provide technical and on-site assistance to ensure threats to the environment and human safety are addressed.

**DEP State Dam Safety Officer:** Tracy Woods, P.G.

* Provide information to FDEP, Florida Department of Emergency Management, Water Management Districts, local agencies, and Federal Emergency Management Agency personnel.
* Review the EAP and participate in emergency exercises.
* Provide grant support, as available, for EAP revisions, including inundation modeling.
* Maintain accurate dam and contact information in the Florida Dam Safety Program database.

**Department of Homeland Security**

* Assist in cases where event may be caused by sabotage or terrorist threat.

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# 1.0 Event Detection and Level Determination

## 1.1 Event Detection

An Unusual, Watch, or Warning Event may be detected by:

* Observations at or near the dam by the dam owner, staff, visitors, or the general public.
* Evaluation of the dam instrumentation data.
* Forewarning of conditions which may cause an event at the dam, i.e., severe weather forecast.
* Suspicious activity or security threats.

Once an event has been detected and reported, the dam owner must determine what level of event has occurred and start the notification process, Section 1.2 *Event Level Determination* will further describe how to determine the event level.

## 1.2 Event Level Determination

There are three types of events that may occur: Unusual, Watch, and Warning Event.

**Unusual Event Level:**

An Unusual Event Level is defined as a slowly developing situation that may compromise the structural integrity of the dam. This event will be closely monitored, and the appropriate notifications will be made according to the notification chart in Section 2.1 *Notification Charts*, Figure 2.1: *Unusual Event Level Notification*. Event preparedness agencies do not need to be notified for an unusual event.

**Watch Event Level:**

A Watch Event Level is defined as a rapidly developing situation that may become a serious emergency, including possible dam failure. Time is usually available to attempt corrective measures to mitigate or prevent the dam’s failure. Emergency preparedness agencies will be notified, so they may prepare to evacuate downstream areas, if necessary. They will also be provided with updates of the situation other notifications will be given according to the notifications chart in Section 2.1 *Notification Charts*, Figure 2.2: *Watch Event Level Notification*.

**Warning Event Level:**

A Warning Event Level is defined as an imminent dam failure or dam failure that has already occurred. Time is not available to try corrective measures. Emergency preparedness agencies will be immediately notified so that immediate evacuations of the impact areas can begin. Specific notifications will be given according to the notifications chart in Section 2.1 *Notification Charts*, Figure 2.3: *Warning Event Level Notification*.

Table 1.1: *Event Level Determination Guidance Table* will serve as an aide providing criteria to help determine the level of event that is occurring. Table 1.1: *Event Level Determination Guidance Table* is provided in Section 1.3 *Examples of Emergency Situations*.

## 1.3 Examples of Emergency Situations

Table 1.1: *Event Level Determination Guidance Table* provided below lists typical emergency situations for earthen dams with the associated Event Level.

### Table 1.1: Event Level Determination Guidance Table

| **Event** | **Situation** | **Event Level** |
| --- | --- | --- |
| Spillway Flow | Reservoir water surface elevation at auxiliary spillway crest or spillway is flowing with no active erosion | Unusual |
| Spillway flowing with active gully erosion | Watch |
| Spillway flow that could result in flooding of people downstream if the reservoir level continues to rise | Watch |
| Spillway flowing with an advancing headcut that is threatening the control section | Warning |
| Spillway flow that is flooding people downstream | Warning |
| Flooding | Reservoir water surface greater than elevation XXX and flows in XXX River channel at elevation XXX are greater than XXX cfs | Unusual |
| Reservoir water surface greater than elevation XXX | Watch |
| Reservoir water surface greater than elevation XXX | Warning |
| Embankment Overtopping | Intermittent overwash of waves is occurring, but is not eroding the outside embankment slope | Unusual |
| Reservoir level is 1 foot below the top of the dam | Watch |
| Water from the reservoir is flowing over the top of the dam | Warning |
| Seepage | New seepage areas in or near the dam | Unusual |
| New seepage areas with cloudy discharge or increasing flow rate | Watch |
| Seepage with discharge greater than 10 gallons per minute | Warning |
| Sinkholes | Observation of new sinkhole in reservoir area or on embankment | Watch |
| Rapidly enlarging sinkhole | Warning |
| Embankment Cracking | New cracks in the embankment greater than ¼-inch wide without seepage | Unusual |
| Cracks in the embankment with seepage | Watch |
| Embankment Movement | Visual movement/slippage of the embankment slope | Unusual |
| Sudden or rapidly proceeding slides of the embankment slopes | Warning |
| Instruments | Instrumentation readings beyond predetermined values | Unusual |
| Earthquake | Measurable earthquake felt or reported on or within 50 miles of the dam | Unusual |
| Earthquake resulting in visible damage to the dam or appurtenances | Watch |
| Earthquake resulting in uncontrolled release of water from the dam | Warning |
| Security Threat | Verified bomb threat that, if carried out, could result in damage to the dam | Watch |
| Detonated bomb that has resulted in damage to the dam or appurtenances | Warning |
| Sabotage/  Vandalism | Damage to dam or appurtenance with no impacts to the functioning of the dam | Unusual |
| Modification to the dam or appurtenances that could adversely impact the functioning of the dam | Unusual |
| Damage to dam or appurtenances that has resulted in seepage flow | Watch |
| Damage to dam or appurtenances that has resulted in uncontrolled water release | Warning |

## 1.4 Site-Specific Concerns

The following are site-specific concerns, including any historical events, actions and photographs, where available.

Enter site-specific concerns into this text box.

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# 

# 2.0 Notification and Communication

## 2.1 Notification Charts

The notification charts on the following pages are for the three types of event levels: Unusual Event, Watch Event, and Warning Event, in that order.

### Figure 2.1: Unusual Event Level Notification

Legend: (1) and (2) Call sequence

Dam Owner Calls Contacts 1 and 2

**See Table 2.1: *EAP Contact Table* in Section 2.3: *EAP Contacts* for alternate contact names and phone numbers.**

### Figure 2.2: Watch Event Level Notification

**Dam Owner Organization**

**Statewide Contact**

**Local Contact**

***(4)*** *Dam Owner's Internal Contacts*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Legend: (1), (2), (3), and (4) Call sequence

Dam Owner Calls Contacts 1, 2, 3, and 4 and they call the others as indicated for initial notification.

**See Table 2.1: *EAP Contact Table* in Section 2.3: *EAP Contacts* for alternate contact names and phone numbers.**

### Figure 2.3: Warning Event Level Notification

**Local Contact**

**Statewide Contact**

**Dam Owner Contact**

***(4)*** *Dam Owner's Internal Contacts*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

Legend: (1), (2), (3), and (4) Call sequence

Dam Owner Calls Contacts 1, 2, 3, and 4 and they call the others as indicated for initial notification.

**See Table 2.1: *EAP Contact Table* in Section 2.3: *EAP Contacts* for alternate contact names and phone numbers.**

## 2.2 Prescript Messages

Appendix B-1: *Communication Checklist* provides a list of critical information to provide to the emergency management personnel during a Watch or Warning Event.

### Watch Event Level Message

This is an emergency message. Dam Owner has declared a Watch Event and possible dam failure of Dam Name, NID No. NID Number. Attempts to save Dam Name are under way, but their success cannot yet be determined. Emergency water releases to (*name of downstream lake/pond/creek*) (*are/are not*) being made. W**e** request that you initiate the Emergency Action Plan and prepare for evacuation of the potential inundation areas. If Dam Name fails, flooding is expected to occur in the areas shown on the inundation maps in (*Appendix A-3a for a Sunny Day, Appendix A-3*b *for a 100-Year storm, or Appendix A-3c for a Probable Maximum Precipitation storm*). Evacuation maps, showing estimated arrival times, flood velocities, flood depths, and distances, for Dam Name failure are provided in Appendix A-3d.

### Warning Event Level – Imminent Dam Failure Message

**Urgent!** This is an emergency message. Dam Owner has declared a Warning Event. Dam Name, NID No. NID Number is in imminent danger of failing. Attempts to save the dam will continue, but their success is unlikely. We request that you IMMEDIATELY initiate the Emergency Action Plan and evacuate the potential inundation areas shown in (*Appendix A-3a for a Sunny Day, Appendix A-3b for a 100-Year storm, or Appendix A-3c for a Probable Maximum Precipitation storm*). Evacuation maps, showing estimated arrival times, flood velocities, flood depths, and distances for Dam Name failures are provided in Appendix A-3d. If Dam Name fails, a flood wave will move down (*name of downstream lake/pond/creek*).

### Warning Event Level – Dam Failure Message

**Emergency!** This is an emergency message. Dam Owner has declared a Warning Event. Dam Name, NID No. NID Number has failed. A flood wave is moving down Location 1, Location 2, Location 3, and Location 4 (*add/remove locations as needed*). The flood waters have already reached (*name of location*). We request that you IMMEDIATELY initiate the Emergency Action Plan and evacuate the potential inundation areas shown in *(Appendix A-3a for a Sunny Day, Appendix A-3b for a 100-Year storm, or Appendix A-3c for a Probable Maximum Precipitation storm)*. Evacuation maps, showing estimated arrival times, flood velocities, flood depths, and distances for Dam Name failures are provided in Appendix A-3d.

## 2.3 EAP Contacts

### Table 2.1: EAP Contact Table

Primary Contact Alternate Contact

|  |  |  |
| --- | --- | --- |
| **Dam Owner/Dam Owner’s Representative:** |  |  |
| Contact Person: |  |  |
| Phone Number: |  |  |
| Phone Number: |  |  |
|  |  |  |
| **Dam Owner’s Technical Representative** |  |  |
| Contact Person: |  |  |
| Phone Number: |  |  |
| Phone Number: |  |  |
|  |  |  |
| **Incident Commander** |  |  |
| Contact Person: |  |  |
| Phone Number: |  |  |
|  |  |  |
| **FDEP State Dam Safety Officer** | Division of Water Resource Management | Division of Water Resource Management |
| Contact Person: | Tracy Woods, P.G. | Aaron Ray, EI |
| Phone Number: | 850-245-7530 (office) | 850-245-8035 |
| Phone Number: | 850-274-3636 (emergency cell) |  |
|  |  |  |
| **Water Management District** |  |  |
| Contact Person: |  |  |
| Phone Number: |  |  |
|  |  |  |
| **FDEP Office of Emergency Response** |  |  |
| Contact Person: |  |  |
| Phone Number: |  |  |
|  |  |  |
| **Homeland Security** | Nationwide Suspicious Activity Reporting | NSI |
| Phone Number: | 911 | 877-437-7411 |
|  |  |  |
| **County Sheriff** |  |  |
| Contact Person: |  |  |
| Phone Number: |  |  |
|  |  |  |
| **State Highway Patrol Dispatcher** |  |  |
| Contact Person: |  |  |
| Phone Number: | 911 or \*FHP (347) |  |
|  |  |  |
| **State Watch Office** | Deputy Chief of Response | State Watch Officer/Chief State Meteorologist |
| Contact Person: | Ian Guidicelli | Amy Godsey |
| Phone Number: | 800-320-0519 | 850-591-0071 (back-up cell) |
|  |  |  |
| **National Weather Service** |  |  |
| Contact Person: | Lead Forecaster |  |
| Phone Number: | 850-942-8833 |  |
|  |  |  |

## 2.4 Dam Owner’s Organization and Roles and Responsibilities

The following is the internal organizational structure, with roles and responsibilities defined for personnel involved in the implementation of the EAP:

Enter Dam Owner’s organization’s roles and responsibilities into this text box.

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# 3.0 Expected Actions

## 3.1 Unusual Event Level

In this condition, the situation is slowly developing. The following actions should be taken:

1. If Dam Owner becomes aware of a situation at the dam and they determine that the event level is an Unusual Event, call according to the Event Level Notification chart (Figure 2.1: *Unusual Event Level Notification*).
2. Dam Owner or Technical Representative should inspect the dam. At a minimum, inspect the full length of the upstream slope, crest, downstream toe, and downstream slope. Also, check the reservoir area, abutments, and downstream channel for signs of changing conditions. Refer to Table 3.1: *Typical Remedial Actions* for a list of conditions and specific actions.
3. If increased seepage, erosion, cracking, or settlement is observed, immediately report the observed conditions to Dam Owner and Technical Representative and refer to Table 1.1: *Event Level Determination Guidance Table*, in Section 1.3 to determine the appropriate event level for the new condition and recommended actions.
4. Record all calls, information, observations, and actions taken on Appendix B-2:*Action Event Log*. Following the termination of the event, complete Appendix B-3:*Dam Event Situation Report***.** Note the time of changing conditions. Document the situation with photographs and video, if possible.

### Table 3.1: Typical Remedial Actions

| **Condition** | **Recommended Actions** |
| --- | --- |
| **Embankment Overtopping** | * 1. Place sandbags along the low areas of the top of the dam to control wave action, reduce the likelihood of flow concentration during minor overtopping, and to safely direct more water through the spillway.   2. Cover the weak areas of the top of the dam and downstream slope with riprap, sandbags, plastic sheets, or other materials to provide erosion-resistant protection. |
| **Flooding** | 1. Monitor flood conditions and report any reservoir water surface changes of 0.5 foot within 12 hours. 2. Consider opening the gates as much as reservoir and downstream change conditions allow. Notify downstream residents. 3. Inspect the dam, including the full length of the upstream slope, crest, downstream toe, and downstream slope. Look for piping, increased seepage, erosion, cracking or settlement and report any of these finds immediately. |
| **Seepage and Sinkholes** | a. Open the principal spillway gate or low-level outlet works to lower the reservoir level as rapidly as possible to a level that stops or decreases seepage to a non-erosive velocity. If the gate is damaged or blocked, pumping or siphoning may be required. Continue lowering the water level until seepage stops. Continue operating at a reduced level until repairs are made.  b. If the entrance to the seepage origination point is observed in the reservoir (possible whirlpool) and is accessible, attempt to reduce flow by plugging the entrance with readily available materials such as hay bales, bentonite, soil or rockfill, or plastic sheeting.  c. Cover the seepage exit area(s) with several feet of sand/gravel to hold fine-grained embankment or foundation materials in place. Alternatively, construct sandbag or other types of ring dikes around seepage exit areas to retain a pool of water, providing backpressure and reducing the erosive nature of the seepage.  d. Prevent vehicles and equipment from driving between the seepage exit points and the embankment to avoid potential loss of life and dam failure from the collapse of an underground void. |
| **Embankment Movement** | 1. Open outlet(s) and lower the reservoir to a safe level at a rate commensurate with the urgency and severity of the condition of the slide or slump. If the gate is damaged or blocked, pumping or siphoning may be required. Continue operation at a reduced level until repairs are made. 2. Repair settlement of the crest by placing sandbags or earth and rockfill materials in the damaged area to restore freeboard. 3. Stabilize slides by placing a soil or rockfill buttress against the toe of the slide. |
| **Auxiliary Spillway Erosion** | 1. Provide temporary protection at the point of erosion by putting in place sandbags, riprap materials, or plastic sheets weighted with sandbags. 2. Consider pumps and siphons to help reduce the water level in the reservoir. 3. When inflow subsides, lower the water in the reservoir to a safe level. Continue operation at a lower water level to minimize spillway flow. |
| **Failure at an Appurtenant Structure Such as an Inlet or Outlet Spillway** | 1. Implement temporary measures to protect the damaged structure, such as closing the inlet or putting in place temporary protection for a damaged spillway. 2. Employ experienced, professional divers, if necessary, to assess the problem and possibly implement repair. 3. Lower the water level in the reservoir to a safe elevation. If the inlet is inoperable, pumping or siphoning may be required. |
| **Malicious Human Activity (Sabotage, Vandalism, or Terrorism)** | 1. If malicious human activity that could endanger public safety is suspected, contact law-enforcement personnel for their help in evaluating the situation. 2. If the principal spillway or low-level outlet works have been damaged or plugged, implement temporary measures to protect the damaged structure. Employ experienced, professional divers, if necessary, to assess the problem and possibly implement repair. 3. If the embankment or auxiliary spillway has been damaged or partially removed, provide temporary protection in the damaged area by putting in place sandbags, riprap materials, or plastic sheets weighted with sandbags. Use pumps and siphons to help reduce the water level in the reservoir. 4. If the water supply has been contaminated, immediately close all inlets to the water supply system and notify appropriate authorities. |

## 3.2 Watch Event Level

In this condition, the emergency type is a potential dam failure event that is rapidly developing. The following actions should be taken:

1. If Dam Owner becomes aware of a situation at the dam and they determine that the event level is a Watch Event, call according to the Event Level Notification chart (Figure 2.2: *Watch Event Level Notification*). Be prepared to provide the information listed in Appendix B-1: *Information for Emergency Management* to emergency management personnel.
2. If time permits and it is safe to do so, Dam Owner or Technical Representative should inspect the dam. At a minimum, inspect the full length of the upstream slope, crest, downstream toe, and downstream slope. Also, check the reservoir area, abutments, and downstream channel for signs of changing conditions.

1. Dam Owner will designate at least one person for onsite monitoring of the situation at the dam and keep Dam Owner or Technical Representative informed of developing conditions at the dam from the time that an event starts until the event has been terminated. Provisions for security measures at the dam during the event should be specified.
2. If time permits, emergency remedial actions should be taken as appropriate. Typical remedial actions are listed in Table 3.1: *Typical Remedial Actions* in Section 3.1. Immediate implementation of these remedial actions may delay, moderate, or prevent the failure of the dam. The dam must be closely monitored to confirm the success of the actions taken.
3. Record all calls, information, observations, and actions taken on Appendix B-2: *Action Event Log*. Following the termination of the event, complete Appendix B-3: *Dam Event Situation Report*. Note the time of changing conditions. Document the situation with photographs and video, if possible. Attach as supplementary information to the *Action Event Log*.
4. If increased piping, seepage, erosion, cracking, or settlement is observed, immediately report the observed conditions to Dam Owner or Technical Representative; refer to Table 1.1: *Event Level Determination Guidance Table* in determining the appropriate event level for the new condition and recommended actions.
5. Provide updates to County Emergency Management Name to assist the Incident Commander in making timely decisions concerning the need for warnings, road closures, and evacuations.

## 3.3 Warning Event Level

In this condition, dam failure is imminent or is occurring. The following actions should be taken:

1. If Dam Owner becomes aware of a situation at the dam and they determine that the event level is a Warning Event, call according to the Event Level Notification chart (Figure 2.3: *Warning Event Level Notification*). Be prepared to provide the information listed in Appendix B-1: *Information for Emergency Management* to emergency management personnel.
2. The Incident Commander shall lead the efforts to carry out warnings, close roads, and evacuate people at risk downstream from the dam. Emergency management services personnel shall alert the public and immediately evacuate at-risk people and close roads as necessary.
3. Dam Owner will advise the people monitoring the dam and the event to follow safe procedures. Everyone should stay away from any of the failing structures or slopes and out of the potential breach inundation areas.
4. Dam Owner will maintain continuous communication with the Incident Commander to provide updates of the situation to assist their ability to make timely decisions concerning warnings and evacuations.
5. Dam Owner will record all calls, information, observations, and actions taken on Appendix B-2:*Action Event Log*. Following the termination of the event, complete Appendix B-3:*Dam Event Situation Report*. Document the situation with photographs and video, if possible. Attach photographs or video to the *Action Event Log*.

## 3.4 Locally Available Equipment, Labor, and Materials

Equipment and supplies such as sandbags, riprap, fill materials, and heavy equipment, along with other resources may be needed. A list of available resources, labor, and site-specific equipment is provided in the table in Appendix C: *Resources Available*.

**Resources that may be helpful include:**

* Earth-moving equipment
* Riprap
* Sand and gravel
* Sandbags
* Pumps
* Pipe
* Laborers
* Lighting equipment
* Divers

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# 4.0 Termination and Follow-up

After the EAP actions have been completed and the situation is over, the activation of the EAP must be terminated. An evaluation of the situation, actions, and the results should be performed and documented.

## 4.1 Termination Responsibilities

The Incident Commander is responsible for terminating EAP operations and relaying this decision to all parties involved in the emergency. It is the responsibility of the Incident Commander to notify the same group of contacts that were notified during the original event notification process to inform those people that the event has been terminated.

Prior to termination of an Event Level that has not resulted in dam failure, Dam Owner will inspect the dam to determine whether any damage has occurred that could potentially result in loss of life, injury, or property damage. If it is determined that conditions do not pose a threat to people or property, the Incident Commander will be advised to terminate EAP operations as described above.

## 4.2 Follow-up

After an event, a follow-up evaluation by all participants should be conducted; the nature of this evaluation should be planned and specified. The results of the evaluation should be documented in a written report.

Dam Owner will assure that the Appendix B-3: *Dam Event Situation Report* formis completed to document the event and all actions that were taken. Dam Owner will keep the original completed event records, Appendix B-1, B-2, and B-3 forms, and available photographs and videos. Dam Owner will make available copies of the completed report to the Incident Commander and the FDEP State Dam Safety Officer.

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# 5.0 EAP Distribution, Review, Revision, Training, and Exercises

## 5.1 EAP Distribution

See Appendix D-1: *Record of Holders of Control Copies of this EAP* for EAP distribution documentation and Appendix D-2: *Concurrences* for Signatures of key EAP participants assigned roles and responsibilities. Portions of the EAP are marked “limited distribution” and should not be shared with other than trusted persons.

## 5.2 EAP Annual Review and Updating

This plan will be reviewed and updated annually by Dam Owner and should include review by County Emergency Management Name in conjunction with an annual maintenance inspection of the dam. All signatories to this plan are encouraged to attend and to ensure that all names and contact information are current. If all signatories do not attend, Dam Owner will follow up with those entities individually to verify that the names and phone numbers identified in the specified positions are current.

Dam Owner is responsible for updating the EAP document. The EAP document held by Dam Owner is the master document. When revisions occur, Dam Owner will electronically provide the revised report and revision summary page, Appendix D-3: *Record of Revisions Made to EAP,* to all the EAP document holders. The document holders are responsible for replacing the hardcopy pages or electronic document or clearly labeling and controlling the outdated versions in both formats.

## 5.3 Training

Dam Owner will ensure that persons involved in the EAP will be trained so that they are thoroughly familiar with its elements, the availability of equipment, and their responsibilities and duties under the plan. Personnel will be trained in problem detection, evaluation, and appropriate corrective measures. This training is essential for proper evaluation of developing situations at all levels of responsibility. Dam Owner will keep records of the training provided to those individuals involved in the EAP on form Appendix D-4: *Record of Training.* Dam Owner should keep the training records in Appendix D of the master document and may provide these records in subsequent revisions.

## 5.4 EAP Exercises

A tabletop exercise is to be conducted at least once every five years. The tabletop exercise involves a meeting between Dam Owner, Technical Representative, County Emergency Management Nametr and other key personnel. The exercise begins with a description of a simulated event and proceeds with discussions by the participants. The purpose of the discussions is to evaluate the EAP and response procedures and resolve concerns regarding coordination and responsibilities. Dam Owner will serve as facilitator during the discussion. Appendix D-5: *Simulated Event Exercise* should be completed to record the exercise and maintained in the master document. Any problems identified during an exercise may prompt revisions to the EAP.

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# Appendices –Maps, Forms, Resources, Supporting Data & Glossary

* A – Maps, Tables, and Details
* B – Checklist, Logs, and Report
* C – Resources Available
* D – Supplementary Information
* E – Glossary of Terms

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# Appendix A: Maps, Tables, and Details

* Appendix A-1: Project Location Map Example
* Appendix A-2: Project Watershed Map Example
* Appendix A-3: Inundation Calculations (SIMs) Maps and Evacuation Maps (Limited Distribution)
* Appendix A-4: Plan View of Dam (Limited Distribution)
* Appendix A-5: Profile of Principal Spillway (Limited Distribution)
* Appendix A-6: Reservoir Elevation-Area-Volume and Spillway Capacity Data (Limited Distribution)
* Appendix A-7: National Inventory of Dams (NID) Data (Limited Distribution)

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## Appendix A–1: Project Location Map

## Appendix A–2: Project Watershed Map

## Appendix A–3a: Inundation Map for Sunny Day Dam Failure (Limited Distribution)

## Appendix A–3b: Inundation Map for 100-Year Storm Dam Failure (Limited Distribution)

## Appendix A–3c: Inundation Maps for Probable Maximum Precipitation (PMP) Dam Failure (Limited Distribution)

## Appendix A–3d: Evacuation Maps for Sunny Day/Rainy Day Dam Failures (Limited Distribution)

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## Appendix A–4: Plan View of Dam (Limited Distribution)

(To be provided by dam owner)

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## Appendix A–5: Profile of Principal Spillway (Limited Distribution)

(To be provided by dam owner)

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## Appendix A–6: Dam Name Elevation-Area-Storage and Discharge Data (Limited Distribution)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Elevation (ft) | Surface Area (ac) | Storage (ac-ft) | Drop Shaft Discharge (cfs) | Emergency Spillway Discharge (cfs) | Dam Overtopping discharge (cfs) | Total Discharge (cfs) | Description |
|  |  |  |  |  |  |  |  |
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## Appendix A–7: National Inventory of Dams (NID) Data

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Dam Name | **\_\_\_\_\_\_\_\_\_\_** | Other Dam Name | **\_\_\_\_\_\_\_\_\_\_** | NID ID | **\_\_\_\_\_\_\_\_\_\_** |
| Longitude | **\_\_\_\_\_\_\_\_\_\_** | Latitude: | **\_\_\_\_\_\_\_\_\_\_** | Public Land Survey | **\_\_\_\_\_\_\_\_\_\_** |
| County | **\_\_\_\_\_\_\_\_\_\_** | River | **\_\_\_\_\_\_\_\_\_\_** | City | **\_\_\_\_\_\_\_\_\_\_** |
| Distance to nearest City | **\_\_\_\_\_\_\_\_\_\_** | Owner Name | **\_\_\_\_\_\_\_\_\_\_** | Purposes | **\_\_\_\_\_\_\_\_\_\_** |
| Year Completed | **\_\_\_\_\_\_\_\_\_\_** | Year Modified | **\_\_\_\_\_\_\_\_\_\_** | Dam Type | **\_\_\_\_\_\_\_\_\_\_** |
| Dam Length: | **\_\_\_\_\_\_\_\_\_\_** | Dam Height: | **\_\_\_\_\_\_\_\_\_\_** | Structural Height | **\_\_\_\_\_\_\_\_\_\_** |
| Hydraulic Height | **\_\_\_\_\_\_\_\_\_\_** | NID Height | **\_\_\_\_\_\_\_\_\_\_** | Maximum Discharge | **\_\_\_\_\_\_\_\_\_\_** |
| Maximum Storage | **\_\_\_\_\_\_\_\_\_\_** | Normal Storage | **\_\_\_\_\_\_\_\_\_\_** | NID Storage | **\_\_\_\_\_\_\_\_\_\_** |
| Dam Volume | **\_\_\_\_\_\_\_\_\_\_** | Surface Area at Normal Pool | **\_\_\_\_\_\_\_\_\_\_** | Hazard Potential Classification | **\_\_\_\_\_\_\_\_\_\_** |
| Emergency Action Plan | **\_\_\_\_\_\_\_\_\_\_** | Last EAP Revision | **\_\_\_\_\_\_\_\_\_\_** | Last Inspection Date | **\_\_\_\_\_\_\_\_\_\_** |
| State Regulating Agency | **\_\_\_\_\_\_\_\_\_\_** | Spillway Width | **\_\_\_\_\_\_\_\_\_\_** | Condition Assessment | **\_\_\_\_\_\_\_\_\_\_** |
| WMD | **\_\_\_\_\_\_\_\_\_\_** | WMD Permit Number | **\_\_\_\_\_\_\_\_\_\_** | Spillway Type | **\_\_\_\_\_\_\_\_\_\_** |
| Outlet Gates | **\_\_\_\_\_\_\_\_\_\_** | Number of Locks | **\_\_\_\_\_\_\_\_\_\_** | Lock Length | **\_\_\_\_\_\_\_\_\_\_** |
| Width of Locks | **\_\_\_\_\_\_\_\_\_\_** | State Regulated Dam | **\_\_\_\_\_\_\_\_\_\_** | Permitting Authority | **\_\_\_\_\_\_\_\_\_\_** |
| Inspection Authority | **\_\_\_\_\_\_\_\_\_\_** | Enforcement Authority | **\_\_\_\_\_\_\_\_\_\_** | Jurisdictional Dam | **\_\_\_\_\_\_\_\_\_\_** |
| Private Dam on Federal Property | **\_\_\_\_\_\_\_\_\_\_** | Dam Core | **\_\_\_\_\_\_\_\_\_\_** | Foundation | **\_\_\_\_\_\_\_\_\_\_** |
| Drainage Area | **\_\_\_\_\_\_\_\_\_\_** | Condition assessment Date | **\_\_\_\_\_\_\_\_\_\_** | Owner Type | **\_\_\_\_\_\_\_\_\_\_** |

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# Appendix B: Checklist, Logs and Report

* Appendix B-1: Information for Emergency Management
* Appendix B-2: Action Event Log
* Appendix B-3: Dam Event Situation Report

## Appendix B-1: Information for Emergency Management

(Typical information requested by emergency management personnel)

Time of Call: \_\_\_\_\_\_\_\_\_\_\_\_\_

Caller name/call back phone number/caller represents: \_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Time/Date of incident: \_\_\_\_\_\_\_\_\_\_\_\_\_

Location of incident (dam name, street address, city, county): \_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Has the dam failed?: Yes/No

If no break, is it anticipated, and time: \_\_\_\_\_\_\_\_\_\_\_\_\_

Any threat to population: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Evacuations (yes/no), (where & how many): \_\_\_\_\_\_\_\_\_\_\_\_\_

Injuries (# and severity): \_\_\_\_\_\_\_\_\_\_\_\_\_

Fatalities #: \_\_\_\_\_\_\_\_\_\_\_\_\_

What agencies are on scene: \_\_\_\_\_\_\_\_\_\_\_\_\_

Any assistance requested: \_\_\_\_\_\_\_\_\_\_\_\_\_

Who has been notified?: \_\_\_\_\_\_\_\_\_\_\_\_\_

Water level in the dam: \_\_\_\_\_\_\_\_\_\_\_\_\_

Staging location: \_\_\_\_\_\_\_\_\_\_\_\_\_

Estimated time for repairs: \_\_\_\_\_\_\_\_\_\_\_\_\_

## Appendix B-2: Action Event Log

(To be completed during Unusual, Watch, or Warning Events)

Dam Name:        County Name:

When and how was the event detected? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Weather conditions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

General description of the event situation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Event level determination: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Made by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Calls, Information, Actions and Event Progression**

(Include caller’s name, organization, and contact information)

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Time | Action / Event Progression | Taken by |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
|  |  |  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Report prepared by:       Date:

## Appendix B-3: Dam Event Situation Report

(To be completed following the termination of the event)

Dam name:

National Inventory of Dams (NID) No.:

Dam location:       

*(City) (County) (Stream/River)*

Date:       Time:

Weather conditions: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

General description of emergency situation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Area(s) of dam affected: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Extent of dam damage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Possible cause(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Effect on dam’s operation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Initial reservoir elevation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Maximum reservoir elevation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Final reservoir elevation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Time: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Description of area flooded downstream/damages/injuries/loss of life: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Other data and comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Observer’s name and telephone number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Report prepared by: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

# 

# Appendix C: Resources Available

Locally available equipment, labor, and materials:

       has/have the following resources that can be utilized in a Warning Event:

* Count:      Item:
* Count:      Item:
* Count:      Item:
* Count:      Item:
* Count:      Item:
* Count:      Item:
* Count:      Item:

Contact the        Road Department— See Emergency Management Services (Table 2.1: *EAP Contact Table*, in Section 2.3 *EAP Contacts*)

**Other locally available resources include:**

|  |  |  |
| --- | --- | --- |
| **Heavy Equipment Service and Rental**  **(Name/Address/Phone/**  **Website/Email)** | **Sand and**  **Gravel Supply**  **(Name/Address/Phone/**  **Website/Email)** | **Ready-Mix**  **Concrete Supply**  **(Name/Address/Phone/**  **Website/Email)** |
|  |  |  |
|  | | |
| **Pumps**  **(Name/Address/Phone/**  **Website/Email)** | **Diving Contractor**  **(Name/Address/Phone/**  **Website/Email)** | **Sandbags**  **(Name/Address/Phone/**  **Website/Email)** |
|  |  |  |

# Appendix D: Supplementary Information

* Appendix D-1: Record of Holders of Control Copies of this EAP
* Appendix D-2: Concurrences
* Appendix D-3: Record of Revisions Made to EAP
* Appendix D-4: Record of Training
* Appendix D-5: Simulated Event Exercises

## Appendix D-1: Record of Holders of Control Copies of this EAP

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| --- | --- | --- |
| **Copy Number** | **Organization Name, Address, Phone Number, and Email Address** | **Person Receiving Copy** |
| 1 |  |  |
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## Appendix D-2: Concurrences

By my signature, I acknowledge that I, or my representative, have reviewed this plan and concur with the tasks and responsibilities assigned herein for me and my organization.

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Signature Organization Date*

1. Printed Dam Owner name and title:

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Signature Organization Date*

2. Printed internal contact name and title:

3.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Signature Organization Date*

3. Printed name and title:       

4.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Signature Organization Date*

4. Printed name and title:

5.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Signature Organization Date*

5. Printed name and title:

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*Signature Organization Date*

6. Printed name and title:

7.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Signature Organization Date*

7. Printed name and title:

8.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Signature Organization Date*

8. Printed name and title:

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## Appendix D-3: Record of Revisions Made to EAP

|  |  |  |  |
| --- | --- | --- | --- |
| **Revision Number** | **Date**  (MM/DD/YYYY) | **Description of Revisions Made** | **By Whom** |
| 1  2  3  4  5  6  7  8  9  10  11  12  13  14  15  16  17  18  19  20 | / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / /    / / |  |  |

## Appendix D-4: Record of Training Attendees

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| Training Location: | | | |
| Date: | Time: | Instructor: | |
| Class Sign-In: | | | |
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## Appendix D-5: Simulated Event Exercise

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| Date of Exercise: | | |
| Participant Sign In: | | |
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|  |  | |
| Type of Simulation Conducted: | | Event Type (Please Circle):  Unusual Event Level  Watch Event Level  Warning Event Level: Imminent dam failure  Warning Event Level: Dam failure |
| Comments, Results of Exercise: | |  |
| Revisions Needed to EAP Based on Results of Exercise? | | Yes No  If yes, list revisions required: |

# Appendix E: Glossary of Terms

* Appendix E: Glossary of Terms

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## Appendix E: Glossary of Terms

**Abutment** The part of the valleyside against which the dam is constructed. The left and right abutments of dams are defined with the observer looking downstream from the dam.

**Acre-foot** A unit of volumetric measure that would cover 1 acre to a depth of 1 foot. One acre-foot is equal to 43,560 cubic feet or 325,850 gallons.

**Appurtenant Structure** A structure necessary for the operation of a dam such as outlets, trashracks, valves, spillways, powerplants, tunnels, etc.

**Berm** A nearly horizontal step (bench) in the upstream or downstream sloping face of the dam.

**Boil** A disruption of the soil surface due to water discharging from below the surface. Eroded soil may be deposited in the form of a ring (miniature volcano) around the disruption.

**Breach** An opening in the dam that allows draining of the reservoir. A controlled breach is an intentionally constructed opening. An uncontrolled breach is an unintended failure of the dam.

**Conduit** A closed channel (round pipe or rectangular box) that conveys water through, around, or under the dam.

**Control section** A usually level segment in the profile of an open channel spillway above which water in the reservoir discharges through the spillway.

**Cross section** A slice through the dam showing elevation vertically and direction of natural water flow horizontally from left to right. It is also a slice through a spillway showing elevation vertically and left and right sides of the spillway looking downstream. Cross section can also refer to a slice across a stream or channel from one bank to the other; showing changes in elevation vertically, and horizontally showing width and/or shape of the stream or channel at that section.

**Dam** An artificial barrier generally constructed across a watercourse for the purpose of impounding or diverting water.

**Dam failure** The uncontrolled release of a dam’s impounded water.

**Dam Operator** The person(s) or unit(s) of government with responsibility for the operation and maintenance of dam.

**Drain, toe or foundation,** A water collection system of sand and gravel and typically pipes along

**or blanket** the downstream portion of the dam to collect seepage and convey it to a safe outlet.

**Drainage area (watershed)** The geographic area on which rainfall flows into the dam.

**Drawdown** The lowering or releasing of the water level in a reservoir over time or the volume lowered or released over a particular period of time.

**Embankment** Any dam constructed of excavated natural materials, such as both earthfill and rockfill dams, or of industrial waste materials, such as a tailings dam.

**Emergency Action Plan** A formal document identifying potential emergency conditions that may

**(EAP)** occur at the dam and specifying preplanned actions to minimize potential failure of the dam or minimize failure consequences including loss of life, property damage, and environmental impacts.

**Evacuation map** A map showing the geographic area downstream of a dam that should be evacuated if it is threatened to be flooded by a breach of the dam or other large discharge.

**Event** A situation or a condition which develops that is of a serious nature that may endanger the dam, or endanger persons or property, and demands immediate attention.

**Filter** The layers of sand and gravel in a drain that allow seepage through an embankment to discharge into the drain without eroding the embankment soil.

**Freeboard** Vertical distance between a stated water level in the reservoir and the top of dam.

**Gate, slide or sluice,** An operable, watertight valve to manage the discharge of water from

**or regulating** the dam.

**Groin** The area along the intersection of the face of a dam and the abutment.

**Hazard classification** A system that categorizes dams (high, significant, or low) according to the degree of their potential to create adverse incremental consequences such as loss of life, property damage, or environmental impacts of a failure or misoperation of a dam.

**Height, dam** The vertical distance between the lowest point along the top of the dam and the lowest point at the downstream toe, which usually occurs in the bed of the outlet channel.

**Hydrograph, inflow,** A graphical representation of either the flow rate or flow depth at a

**outflow, or breach** specific point above or below the dam over time for a specific flood occurrence.

**Incident Commander** The highest ranking predetermined official available at the scene of an emergency situation.

**Instrumentation** An arrangement of devices installed into or near dams that provide measurements to evaluate the structural behavior and other performance parameters of the dam and appurtenant structures.

**Inundation area or zone** The geographic area downstream of the dam that would be flooded by a breach of the dam or other large discharge.

**Inundation Map** A map showing areas that would be affected by flooding from releases from a dam’s reservoir. The flooding may be from either controlled or uncontrolled releases or as a result of a dam failure. A series of maps for a dam could show the incremental areas flooded by larger flood releases.

**Notification** To immediately inform appropriate individuals, organizations, or agencies about a potentially emergency situation so they can initiate appropriate actions.

**Outlet works** An appurtenant structure that provides for controlled passage of normal

**(principal spillway)** water flows through the dam.

**Piping** The progressive destruction of an embankment or embankment foundation by internal erosion of the soil by seepage flows.

**Probable Maximum** The theoretically greatest precipitation or resulting flood that is

**Precipitation (PMP) or** meteorologically feasible for a given duration over a specific drainage a

**Flood (PMF)** area at a particular geographical location.

**Reservoir** The body of water impounded or potentially impounded by the dam.

**Riprap** A layer of large rock, precast blocks, bags of cement, or other suitable material, generally placed on an embankment or along a watercourse as protection against wave action, erosion, or scour.

**Risk** A measure of the likelihood and severity of an adverse consequence.

**Seepage** The natural movement of water through the embankment, foundation, or abutments of the dam.

**Slide** The movement of a mass of earth down a slope on the embankment or abutment of the dam.

**Spillway (auxiliary** The appurtenant structure that provides the controlled conveyance of

**or emergency)** excess water through, over, or around the dam.

**Spillway capacity** The maximum discharge the spillway can safely convey with the reservoir at the maximum design elevation.

**Spillway crest** The lowest level at which reservoir water can flow into the spillway.

**Tailwater** The body of water immediately downstream of the embankment at a specific point in time.

**Toe of dam** The junction of the upstream or downstream face of an embankment with the ground surface.

**Top of dam (crest of dam)** The elevation of the uppermost surface of an embankment which can safely impound water behind the dam.

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