

APPENDIX B

Example Emergency Action Plan for an Intermediate-Size Dam

(NAME) DAM
TXO####
EMERGENCY ACTION PLAN

Date

Prepared for

(Name)

Prepared by

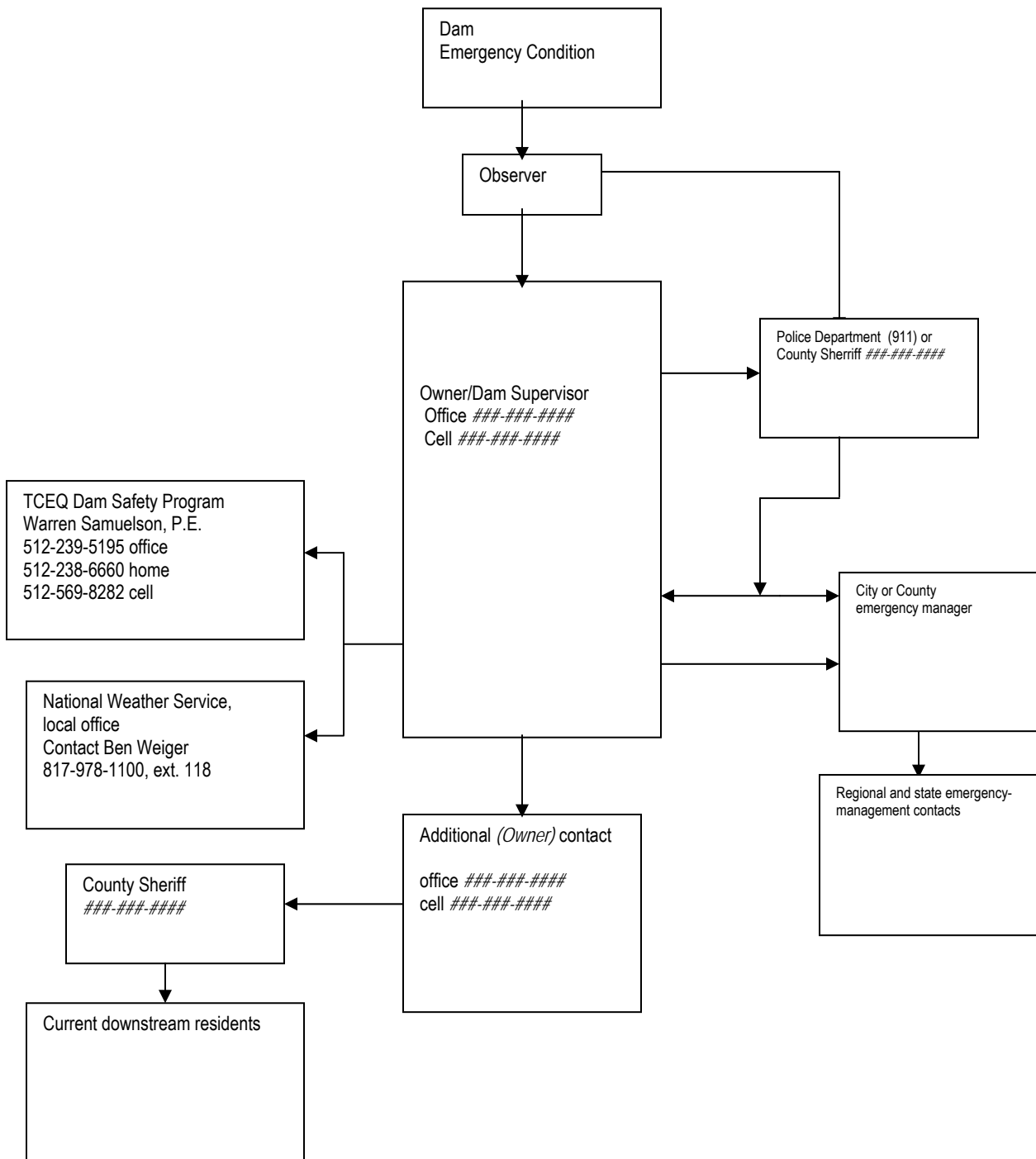
(Name)

Emergency Action Plan
(Name) Dam
(Owner), Inc.

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NOTIFICATION FLOWCHART



(NAME) DAM

LOG SHEET OF CHANGES

[illegible]

APPROVAL AND IMPLEMENTATION

EMERGENCY ACTION PLAN

(NAME) DAM

This Emergency Action Plan is hereby approved. This plan is effective immediately and supersedes all previous editions.

Name and Title of Emergency Planning Manager

Date

Name and Title of Appropriate Manager for Owner

Date

EMERGENCY ACTION PLAN

(NAME) DAM

1. Purpose

This Emergency Action Plan defines responsibilities and prescribes procedures designed to identify unusual and unlikely conditions that may endanger (Name) Dam.

2. Project Description

The owner of (Name) Dam is (Owner). (Name) Dam is located (distance) from (nearest city) in AAA County, Texas. (Name) Dam is designated by the National Inventory of Dams ID number TX0####. The latitude and longitude of the dam are (##)° N and (##)° W, respectively. (Name) Creek flows into (Stream). A vicinity map for the dam and surrounding area is found in Tab 1.

(#####) persons reside in the floodplain below (Name) Dam. The residents are identified in the Notification Flowchart of this EAP. The hazard potential classification is (high or significant).

(Name) Dam is made from earthen material. Its length is approximately (####) feet; its height is (####) feet. The embankment crest is approximately (##) feet wide. The upstream and downstream embankment slopes are approximately (#):1. The upstream embankment is covered with (covering), and the downstream embankment slope is covered with (covering). The service spillway is located on (location). The service spillway is approximately (####) feet wide and is (type). The emergency spillway, located on the (location), is covered with (covering).

The gate valve on the dam is inoperable. The service and emergency spillways drain into the downstream channel of (Name) Creek.

3. Responsibilities

3.1. Dam Owner's Responsibilities

(Owner) is responsible for dam operation and all maintenance.

The dam supervisor (or other appropriate title) is listed on the Notification Flowchart. The Notification Flowchart will be updated with person-specific names and contact numbers as necessary. The remaining portions of this EAP will not designate specific persons but instead will designate duties or job descriptions.

The dam operators are (Owner) employees. They should be advised of the necessity of the EAP. The operators are the first line of dam observers and are the persons responsible to initiate implementation of the EAP protocols.

The dam supervisor (or other appropriate title) is in the first line of dam observers and is the person responsible to initiate implementation of the EAP protocols. The dam supervisor (or other appropriate title) is responsible for conducting routine maintenance activities (such as annual brush control), conducting integrity inspections, and notifying the appropriate emergency personnel in any emergency (or situation that could lead to an emergency). The dam supervisor (or other appropriate title) is responsible for contacting appropriate emergency personnel if a dam failure is imminent.

The dam supervisor (or other appropriate title) is also responsible for ensuring the dam maintenance and inspection activities are conducted and updating the EAP. An annual EAP review should be conducted to ensure that contact names and numbers are current on the Notification Flowchart.

The dam supervisor (*or other appropriate title*) is responsible for directing the specific actions that (name of owner) employees must take during an emergency condition. The actions specified should be incident appropriate, such as opening or closing water intakes, implementing remedial construction activities such as dirt moving, etc. Specific scenarios are not listed in this EAP. The dam supervisor (*or other appropriate title*) will direct the actual measures to be implemented based on the conditions at the dam.

3.2. Responsibilities for Notification

The dam supervisor (*or other appropriate title*) is responsible for conducting an inspection of the dam in the event of a potential emergency such as high waters or a tornado. The dam supervisor (*or other appropriate title*) will contact the appropriate emergency personnel (the owner or the owner's representative, the AAA County emergency manager, and the AAA County sheriff). Those emergency personnel will determine if an emergency declaration is warranted. Sample notifications and sample news releases are found in Tab 4 and Tab 5.

If warranted, the dam supervisor (*or other appropriate title*) will notify the TCEQ Dam Safety Program. The AAA County sheriff will notify downstream residents. The AAA County emergency manager will implement the notification flowchart for regional and state emergency-management contacts.

3.3. Responsibilities for Evacuation

Appropriate emergency personnel are responsible for determining if a directive to evacuate must be issued. The potential Inundation Map in Tab 3 should be used for the evacuation.

Upon a directive from appropriate emergency personnel, the AAA County sheriff's office is responsible for initiating evacuations.

3.4. Responsibilities for Duration, Security, Termination, and Follow-up

The dam supervisor (*or other appropriate title*) is responsible for monitoring of emergency situations at the dam and for reporting to the appropriate emergency personnel, which will keep authorities informed based on the Notification Flowchart.

The AAA County sheriff's office is responsible for cordoning off the affected area per the directives of the appropriate emergency personnel.

The appropriate emergency personnel are responsible for declaring that the emergency at the dam is terminated. Applicable authorities will be notified based on the Notification Flowchart.

The appropriate emergency personnel are responsible for the follow-up evaluation after an emergency. The dam supervisor (*or other appropriate title*) will be responsible for the written report that should be maintained in this EAP.

4. Possible Emergency Conditions

4.1. Situation Awareness and Emergency Detection

(*Owner or Owner's Representative*) is responsible for monitoring the condition of the dam regularly and during situations that could lead to an emergency, including:

- severe thunderstorms with excessive rains
- tornadoes
- other potential breaches in the earthen dam
- terrorist actions

Severe thunderstorms may result in flash flooding that may raise the water level in the dam above the spillway. A single rainfall, or multiple rainfalls, may cause such a rise in water level. Tornadoes generally occur with little warning and can compromise the integrity of a dam. Should heavy rains cause problems, or a tornado strike at or near *(Name)* Dam, the dam supervisor (*or other appropriate title*) will conduct a visual inspection of the dam and complete a written checklist of evidence of distress.

Such a checklist appears in Tab 2. The completed checklist should be maintained in this EAP. **Any areas with leaks, seepage, or other visible signs of an integrity breach should be reported immediately to the dam supervisor (or other appropriate title) and local emergency personnel should be contacted if dam failure is imminent.**

Other breaches in the earthen dam may have various causes such as animal burrows, cracks in the dam structure, leakage, etc. These types of potential breaches will be assessed during the routine annual inspection discussed below.

In addition to potential emergency detection, the dam supervisor (*or other appropriate title*) should conduct an annual inspection for dam integrity. Annual brush-clearing activities along the dam will be conducted prior to or during the inspection. These inspection and maintenance activities are conducted by the dam supervisor (*or other appropriate title*) to ensure the stability of the dam structure. During the brush-clearing maintenance, the dam structure should be inspected for integrity. The written checklist of evidence of distress (see Tab 2) should be completed and retained. The inspection should include indicators of potential problems at the dam, such as:

- slumping, sloughing, or slides on the dam or abutment
- cloudy or dirty seepage, seepage with an increase in flow
- cracks, settlement, misalignment, or sinkholes
- erosion
- animal burrows, especially those associated with beavers
- presence of tree and brush growth
- leakage into the intake
- undermining of the spillway

Besides the dam, the dam supervisor (*or other appropriate title*) should inspect the area downstream of the dam.

4.2. Emergency Evaluation

Upon determination of a potential emergency situation, the dam supervisor (*or other appropriate title*) should notify the *(Owner or Owner's Representative)* and the *AAA* County emergency manager. *(Owner)* should contact the *AAA* County sheriff. The **appropriate emergency personnel, consisting of the Dam Supervisor (or other appropriate title), (Owner), the AAA County emergency manager, and the AAA County sheriff**, must assess the severity and magnitude of any existing or potential emergency through information gathering and discussions to make the emergency classification.

5. Emergency Classification

Emergencies are classified according to their severity and urgency by the appropriate emergency personnel. The following classifications will be used for any emergency situations at *(Name)* Dam.

- **“Watch” condition.** A problem has been detected at the dam, which requires constant monitoring or immediate action to repair or correct. At this time, the distress condition is manageable by dam operations personnel. This condition should convey the impression that **some amount of time** is available for dam repair with further analysis. A “watch” condition will continue until the problem is corrected, or until an imminent or actual “dam failure” warning is issued.
- **Imminent or actual “dam failure” warning.** These conditions apply where a dam failure has occurred, is occurring, or is imminent. If a “watch” condition preceded this warning, repairs have failed and no additional actions can be implemented to secure the dam’s integrity. Whether the dam failure has occurred or is imminent, all EAP agencies should interpret this condition as conservatively as possible. No lag time is available prior to implementing notification and evacuation procedures. This condition should convey the impression that **time has run out**.

6. Implementation

A draft copy of this EAP has been supplied to the TCEQ for review and comments prior to final approval by (*Owner*), whose signature and title appear earlier in this EAP.

The dam supervisor (*or other appropriate title*) is responsible for distributing this EAP and any revisions to the appropriate parties including the appropriate emergency personnel. The dam supervisor (*or other appropriate title*) is the point of contact if any involved parties have questions about the plan.

The dam supervisor (*or other appropriate title*) should schedule training about the plan for those associated with it, including:

- how to use the EAP
- how to identify problems and their severity
- how to implement the notification procedures
- what resources are available
- the importance of each agency during emergencies
- the importance of updating downstream information

The dam supervisor (*or other appropriate title*) is responsible for revising this EAP, as required, and for conducting an annual review to determine if revisions are required. The checklist in Tab 7 may be used for this review. Documentation of the annual review should be maintained in this EAP in Tab 7. Revisions to the EAP must also be approved. The revision approval date, the signature, and title of the approving authority should be included in this EAP. [Note that, if revisions to the contact names and phone numbers on the Notification Flowchart are the only revisions required, the revisions do not require review and approval by the (*Owner*). However, the revised contact-information pages must be distributed to all appropriate parties.]

A tabletop exercise shall be conducted at least once every five years, involving a meeting of the dam owner with state and local emergency-management officials in a conference room. The exercise begins with a description of a simulated event and proceeds with discussions by the participants to evaluate the EAP and response procedures, and to resolve concerns regarding coordination and responsibilities. Any problems identified during an exercise should be included in revisions to the EAP. Records of training and any exercises should be maintained in Tab 6.

TAB 1
VICINITY MAP

TAB 2

EVIDENCE OF DISTRESS

Condition	<input type="checkbox"/> Yes <input type="checkbox"/> No	Inspection Findings	Actions Required	Date Actions Taken
Are there any surface cracks?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe extent of cracking:		
Is there any slumping, sloughing, or slides on the dam or the abutments?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe extent of problem and location:		
Is there cloudy or dirty seepage; or seepage with increase in flow?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe seepage:		
Is there any misalignment or settlement in the dam?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe location and extent of misalignment or settling:		
Is there any erosion or riprap displacement?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe location and extent of erosion or riprap displacement:		
Are there any animal burrows visible, especially those associated with beavers?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe location and extent of animal burrows:		
Are there trees or brush that is overgrown?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe location and extent of overgrowth:		
Is there any undermining of the service spillway?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe extent of undermining:		
Is there any undermining of the emergency spillway?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe extent of undermining:		
For annual inspections: Inspect the downstream areas and contact residents.				
List persons contacted and any revisions required for the contact list or map.				

Any areas with leaks, seepage, or other visible signs of an integrity breach should be reported immediately to the dam supervisor (or other appropriate title). If dam failure appears imminent, contact emergency-management personnel.

Name of Inspector: _____ Date of Inspection: _____ Inspection Type (circle one): annual emergency assessment

Signature of Dam Supervisor: _____ Date of Dam Supervisor's Review: _____

TAB 3
INUNDATION MAP

TAB 4

SAMPLE NOTIFICATION MESSAGES

Note: These notification messages will be coordinated through the *(Owner)*, *(title of dam emergency planner)*, the National Weather Service, the Department of Public Safety Regional Liaison office, and the Emergency Management Coordinators for *AAA*, *BBB*, and *CCC* counties before they are disseminated to downstream organizations. Messages developed with the assistance of the National Weather Service may be used instead.

“Watch” Condition Message

This is an emergency message. *(Owner)* has declared a “watch” condition for *(Name)* Dam, Texas ID TX0####. *(Briefly describe the problem or condition.)* There is no immediate danger of the dam failing; however, the potential does exist. We request that you initiate appropriate emergency-management procedures. For verification, call the phone numbers listed on the Notification Flowchart of the Emergency Action Plan for *(Name)* Dam. The Department of Public Safety *(Location)* District Regional Liaison Office has been notified of this condition and may be contacted for information on emergency procedures. *(Owner)* will supply additional information regarding the status of the dam as it becomes available.

“Possible Dam Failure” Warning

This is an emergency message. *(Owner)* has declared a “possible failure” condition for *(Name)* Dam, Texas ID TX0####. *(Briefly describe the problem or condition.)* There is a possibility that the dam could fail. Attempts to save the dam are under way, but their success cannot be determined as yet. Emergency water releases to lower the lake *(are/are not)* being made. We request that you initiate appropriate emergency management procedures and prepare for evacuation of the threatened areas. If *(Name)* Dam does fail, flooding will occur along the *(Stream)*, the *(Stream)*, and the *(Stream)*. For verification, call the phone numbers listed on the Notification Flowchart of the Emergency Action Plan for *(Name)* Dam. The Department of Public Safety *(Location)* District Regional Liaison office and the Emergency Management Coordinators for *AAA*, *BBB*, and *CCC* counties have been notified of this condition and may be contacted for information on emergency procedures. *(Owner)* will supply additional information regarding the status of the dam as it becomes available.

“Imminent Dam Failure” Warning

Urgent! This is an emergency message. *(Owner)* has declared that *(Name)* Dam, Texas ID TX0####, is in imminent danger of failing. Attempts to save the dam will continue, but their success is unlikely. We request that you initiate appropriate emergency management procedures and begin evacuation of threatened areas. It is probable that the dam will fail in *hours*. If *(Name)* Dam fails, a flood wave will move down the *(Stream)*, up the *(Stream)*, and upstream and downstream on the *(Stream)*. For verification, call the phone numbers listed on the Notification Flowchart of the Emergency Action Plan for *(Name)* Dam. The Department of Public Safety *(Location)* District Regional Liaison Office and Emergency Management Coordinators for *AAA*, *BBB*, and *CCC* counties have been notified of this condition and may be contacted for information on emergency procedures.

“Dam Failure” Message

Emergency! This is an emergency message. *(Owner)* has declared that *(Name)* Dam, Texas ID TX0####, has failed. A flood wave is moving down the *(Stream)*, up the *(Stream)*, and upstream and downstream on the *(Stream)* toward *(City)* and *(City)*. The flood waters have already reached *(Road)*, *(Road)*, and *(Road)* on *(Stream)*. The City of *(Name)* will begin flooding at *(time—give number of hours after PMF breach)*. FM *(###)* on the *(Name)* River will begin flooding at *(time—prior to a PMF breach, give number of minutes after a sunny-day breach)*. The flood wave will go up the *(Stream)* and flood areas along

the river. (Road) in AAA County will begin flooding at (time—prior to a PMF breach and three hours after a sunny-day breach). SH (##) at (landmark) will begin flooding at (time—give number of hours after a PMF breach). Evacuate threatened areas immediately. For verification, call the phone numbers listed on the Notification Flowchart of the Emergency Action Plan for (Name) Dam. The Department of Public Safety (Location) District Regional Liaison office and the Emergency Management Coordinators for AAA, BBB, and CCC counties have been notified of this condition.

TAB 5

SAMPLE NEWS RELEASES

Note: Coordinate with the National Weather Service, the Department of Public Safety (*Location*) District Regional Liaison office, and the emergency management directors for *AAA*, *BBB*, and *CCC* counties prior to release. Messages developed with the assistance of the National Weather Service may be used instead.

Announcement for a Slowly Developing “Watch” Condition

(Owner) has declared a “Watch” condition for *(Name)* Dam as of *(time and date)*. *(Briefly describe the problem or condition.)* There is no immediate danger of the dam failing; however the potential does exist. *(Describe what actions are being taken to monitor and control the situation.)* *(State the quantity of any releases.)*

Announcement for a Possible Dam Failure

(Owner) has declared a possible dam failure at *(Name)* Dam as of *(time and date)*. *(Briefly describe the problem or condition.)* It is possible the dam could fail. Attempts to save the dam are under way, but their success cannot be determined as yet. *(Describe what actions are being taken to monitor and control the situation.)* *(State the quantity of any releases.)* Additional news will be made available as soon as it is received.

Announcement for an Imminent Dam Failure

Urgent! *(Owner)* has announced that *(Name)* Dam is in imminent danger of failing. *(Describe what actions are being taken to monitor and control the situation.)* It is possible that the dam will fail in *(##)* hours. Residents in low lying areas along the *(Stream)*, the *(Stream)*, and the *(Stream)*, as well as the town of *(Name)*, should prepare for immediate evacuation. Additional news will be made available as soon as it is received.

Announcement of a Dam Failure

Emergency! *(Name)* Dam failed at *(time and date)*. Residents who have not yet done so should immediately evacuate the city of *(Name)* and low-lying areas along the *(Stream)*, the *(Stream)*, and the *(Stream)*. The flood waters have already reached *(Highway)* and *(Road)*. Additional news will be made available as soon as it is received.

TAB 6

TRAINING RECORD

Use this form to record training sessions. File the completed form in Tab 7 of the EAP. Thorough review of all items in the EAP should be thoroughly reviewed during training. Appropriate (<i>Owner</i>) employees and EAP team members should attend a training session annually (or participate in a simulated exercise).	
TRAINING LOCATION: _____	
DATE: _____ TIME: _____ INSTRUCTOR: _____	
CLASS SIGN-IN	

TAB 6 (continued)

SIMULATED-EMERGENCY EXERCISE

Date of Exercise:	
Participant Sign-In:	
Type of Simulation Conducted:	Circle Emergency Type: emergency water release watch condition imminent dam failure actual dam failure
Comments, Results of Exercise:	
Revisions Needed to EAP Based on Results of Exercise?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, list revisions required:

TAB 6 (continued)

PLAN REVIEW AND UPDATE

This plan will be reviewed and updated annually and tabletop exercises will be conducted at least once every five years. Document these reviews below.

Date of review: _____

Participants:

Date of review: _____

Participants:

Date of review: _____

Participants:

Date of review: _____

Participants:

Date of tabletop exercise: _____

Participants:

TAB 7

ANNUAL EAP EVALUATION CHECKLIST

Was the annual dam inspection conducted?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, is the checklist signed and included in the EAP? <input type="checkbox"/> Yes <input type="checkbox"/> No
Was brush clearing, animal-burrow removal, or other maintenance required?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, describe actions taken and date:
Was the outlet gate operable?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If no, describe actions taken and date:
Does the Notification Flowchart require revision?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, date revised Contact Information pages were distributed: (Note that revision of the Contact Information will not require EAP approval; however, the revised Contact Information pages will need to be redistributed as a replacement pages.)
Was annual training or an exercise conducted?	<input type="checkbox"/> Yes <input type="checkbox"/> No	Circle: training exercise Date conducted:
Are inspection and training records included in the EAP?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Was the EAP reviewed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, review date:
Were changes required to the EAP?	<input type="checkbox"/> Yes <input type="checkbox"/> No	If yes, date of revised EAP approval:

Signature of dam supervisor: _____ Date completed: _____