Emergency Action Plan (EAP)

DIETZ LOWER DAM

National Inventory of Dams (NID) No. 0684

CAMPBELL COUNTY, Kentucky

RICHARD DIETZ

Vicinity Map

Initial template developed by Kentucky Division of Water (SEPTEMBER 2014)

Reviewed and Updated:

Author Name _____

Author Title _____

Date Last Updated _____ Copy __ of __

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Basic EAP Data

Purpose

The purpose of this EAP is to reduce the risk of human life loss and injury and minimize property damage during an unusual or emergency event at DIETZ LOWER DAM.

Potential Impacted Area

See *Evacuation Map* tab (Appendix B–2) and *People at Risk* tab (Appendix B–3) for the locations of the residences and businesses that may be flooded if the dam should fail and the estimated time for the flood wave to travel from the dam to these locations. Based on this mapping, there is approximately N/A structure and N/A road crossings in the downstream inundation area.

Dam Description

Dam Height: 38 feet

Dam Length: 400 feet

Surface Area: 7.7 acres (normal pool)

Maximum Storage: 76.6 acre-feet

Normal Storage: 59.5 acre-feet

Year Constructed: 1960

Potential Damages: N/A

Latitude: 38.978058

Longitude: -84.347266°

Population at Risk: N/A

Hazard Classification: C

Drainage Area: 0.17 square miles

National Inventory of Dams No.: 0684

Stream: WILLOW BRANCH

Dam Operator: Richard Dietz

Dam Designer: N/A

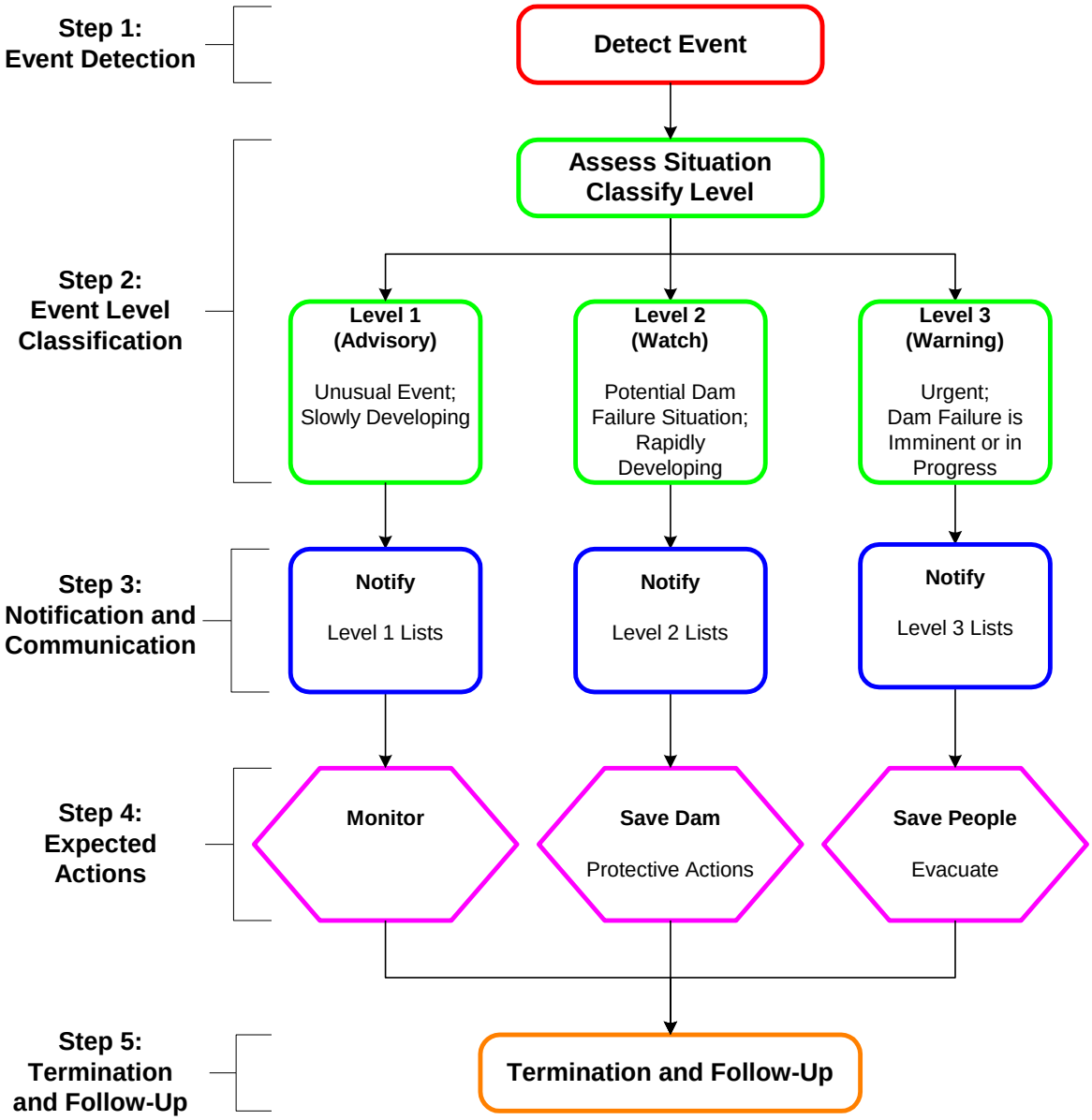
Community Hazard Mitigation Plan Status: UNKNOWN

[Provide a brief description of the dam including a description of the type of primary spillway, emergency spillway, and associated dimensions and the presence of drawdown valves if applicable.]

EARTHFILL. 10 FT. TOP WIDTH. 282 FT. LONG. SIDE SLOPES ARE 2:1. 40 FT. WIDE EARTH SPILLWAY. DROPS OFF 15' TO VALLEY FLOOR. WOODED GROWTH IN SPILLWAY
18" C.M.P. WITH TRASH RACK. 2" DRAWDOWN PIPE WITH VALVE

Directions to Dam

DAM IS LOCATED 2.5 MILES EAST OF KY 547 BELOW CAMP SPRINGS AND ABOVE STONEHOUSE ROAD IN CAMPBELL COUNTY.


Step 1:
Event Detection
Detect Event
Assess Situation
Classify Level
Step 2:
Event Level
Classification
Level 1
(Advisory)
Unusual Event;
Slowly Developing
Level 2
(Watch)
Potential Dam
Failure Situation;
Rapidly
Developing
Level 3
(Warning)
Urgent;
Dam Failure is
Imminent or in
Progress
Step 3:
Notification and
Communication
Notify
Level 1 Lists
Notify
Level 2 Lists
Notify
Level 3 Lists
Step 4:
Expected
Actions
Monitor
Save Dam
Protective Actions
Save People
Evacuate
Step 5:
Termination
and Follow-Up
Termination and Follow-Up

Roles and Responsibilities

Dam Operator's Representative

- As soon as an emergency event is observed or reported, immediately determine the emergency level (see *Emergency Levels* tab).
  - Level 1: unusual event, slowly developing
  - Level 2: potential dam failure situation, rapidly developing
  - Level 3: dam failure appears imminent or is in progress
- Immediately notify the personnel in the order shown on the notification chart for the appropriate level (see *Notification Charts* tab).
- Provide updates of the situation to the police/sheriff dispatcher 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 who received copies of the original EAP.

Incident Commander

- Serve as the primary contact person responsible for coordination of all emergency actions.
- When a Level 2 situation occurs: Prepare emergency management personnel for possible evacuations that may be needed if a Level 3 situation occurs.
- When a Level 3 situation occurs:
  - Initiate warnings and order evacuation of people at risk downstream of the dam.
  - Notify local emergency management services to carry out the evacuation of people and close roads within the evacuation area (see *Evacuation Map* tab).
- Decide when to terminate the emergency.
- Participate in an annual review and update of the EAP.

Emergency Management Services

- Maintain communication with media.
- When a Level 2 situation occurs:
  - Prepare emergency management personnel for possible evacuations that may be needed if a Level 3 situation occurs.
  - Alert the public as appropriate.
- When a Level 3 situation occurs:
  - Alert the public.
  - Immediately close roads and evacuate people within the evacuation area (see *Evacuation Map* tab).
- Participate in an annual review and update of the EAP.

Dam Operator's Technical Representatives

- Advise the dam operator of the emergency level determination, if time permits.
- Advise the dam operator of remedial actions to take if Level 2 event occurs, if time permits.

State Dam Safety Agency (Kentucky Division of Dam Safety)

- Advise the dam operator of the emergency level determination, if time permits.
- Advise the dam operator of remedial actions to take if Level 2 event occurs, if time permits.

The Five-Step EAP Process

Step 1 Event Detection

This step describes the detection of an unusual or emergency event and provides information to assist the dam operator in determining the appropriate emergency level for the event.

Unusual or emergency events may be detected by:

- Observations at or near the dam by government personnel (local, state, or Federal), landowners, visitors to the dam, or the public
- Evaluation of instrumentation data
- Earthquakes felt or reported in the vicinity of the dam
- Forewarning of conditions that may cause an unusual event or emergency event at the dam (for example, a severe weather or flash flood forecast)

See *Guidance for Determining the Emergency Level* table for assistance in evaluating specific events to determine if they are unusual or potential emergency situations.

Step 2 Emergency Level Determinations

After an unusual or emergency event is detected or reported, the Dam Operator's Representative or his alternate is responsible for classifying the event into one of the following three emergency levels:

Emergency Level 1—Nonemergency, unusual event, slowly developing:

This situation is not normal but has not yet threatened the operation or structural integrity of the dam, but possibly could if it continues to develop. State dam safety officials 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. The Incident Commander should be informed if it is determined that the conditions may possibly develop into a worse condition that may require emergency actions.

Emergency Level 2—Potential dam failure situation, rapidly developing:

This situation may eventually lead to dam failure and flash flooding downstream, but there is not an immediate threat of dam failure. The Incident Commander should be notified of this emergency situation and placed on alert. The dam operator should closely monitor the condition of the dam and periodically report the status of the situation to the Incident Commander. If the dam condition worsens and failure becomes imminent, the Incident Commander must be notified immediately of the change in the emergency level to evacuate the people at risk downstream.

If time permits, state dam safety officials should be contacted to evaluate the situation and recommend remedial actions to prevent failure of the dam. The dam operator should initiate remedial repairs (note local resources that may be available—see Appendix A–5). Time available to employ remedial actions may be hours or days.

This emergency level is also applicable when flow through the spillway has or is expected to result in flooding of downstream areas and people near the channel could be endangered. Emergency services should be on alert to initiate evacuations or road closures if the flooding increases.

Emergency Level 3—Urgent; dam failure appears 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. Flash flooding will occur downstream of the dam. This situation is also applicable when flow through the spillway is causing downstream flooding of people and roads. The Incident Commander should be contacted immediately so emergency services can begin evacuations of all at-risk people and close roads as needed (see *Evacuation Map* tab).

See the following pages for guidance in determining the proper emergency level for various situations.

Guidance for Determining the Emergency Level

Event	Situation	Emergency level*
Spillway flow	Reservoir water surface elevation at auxiliary spillway crest or spillway is flowing with no active erosion	1
	Spillway flowing with active gully erosion	2
	Spillway flow that could result in flooding of people downstream if the reservoir level continues to rise	2
	Spillway flowing with an advancing headcut that is threatening the control section	3
	Spillway flow that is flooding people downstream	3
Embankment overtopping	Reservoir level is 1 foot below the top of the dam	2
	Water from the reservoir is flowing over the top of the dam	3
Seepage	New seepage areas in or near the dam	1
	New seepage areas with cloudy discharge or increasing flow rate	2
	Seepage with discharge greater than 10 gallons per minute	3
Sinkholes	Observation of new sinkhole in reservoir area or on embankment 2	2
	Rapidly enlarging sinkhole	3
Embankment cracking	New cracks in the embankment greater than ¼-inch wide without seepage	1
	Cracks in the embankment with seepage	2
Embankment movement	Visual movement/slippage of the embankment slope	1
	Sudden or rapidly proceeding slides of the embankment slopes	3
Instruments	Instrumentation readings beyond predetermined values	1
Earthquake	Measurable earthquake felt or reported on or within 50 miles of the dam	1
	Earthquake resulting in visible damage to the dam or appurtenances	2
	Earthquake resulting in uncontrolled release of water from the dam	3
Security threat	Verified bomb threat that, if carried out, could result in damage to the dam	2
	Detonated bomb that has resulted in damage to the dam or appurtenances	3
Sabotage/ vandalism	Damage to dam or appurtenance with no impacts to the functioning of the dam	1
	Modification to the dam or appurtenances that could adversely impact the functioning of the dam	1
	Damage to dam or appurtenances that has resulted in seepage flow	2
	Damage to dam or appurtenances that has resulted in uncontrolled water release	3

* Emergency Level 1: Nonemergency unusual event, slowly developing
* Emergency Level 2: Potential dam failure situation, rapidly developing
* Emergency Level 3: Urgent; dam failure appears imminent or is in progress

Step 3 Notification and Communication

Notification

After the emergency level has been determined, the people on the following notification charts for the appropriate emergency level shall be notified immediately.

Communication

Emergency Level 1—Nonemergency, unusual event; slowly develops:

The Dam Operator's Representative should contact the Kentucky Division of Dam Safety. Describe the situation, and request technical assistance on next steps to take.

Emergency Level 2—Emergency event, potential dam failure situation; rapidly develops:

The following message may be used to help describe the emergency situation to the Incident Commander or emergency management personnel:

"This is _____Identify yourself; name, position)_____.

We have an emergency condition at DIETZ LOWER DAM, DAM IS LOCATED 2.5 MILES EAST OF KY 547 BELOW CAMP SPRINGS AND ABOVE STONEHOUSE ROAD IN CAMPBELL COUNTY.

We have activated the Emergency Action Plan for this dam and are currently under Emergency Level 2.

We are implementing predetermined actions to respond to a rapidly developing situation that could result in dam failure.

Please prepare to evacuate the area along low-lying portions of WILLOW BRANCH.

Reference the evacuation map in your copy of the Emergency Action Plan.

We will advise you when the situation is resolved or if the situation gets worse.

I can be contacted at the following number _____. If you cannot reach me, please call the following alternative number _____."

Emergency Level 3—Urgent event; dam failure appears imminent or is in progress:

The Incident Commander should be contacted immediately and the area evacuated (see *Evacuation Map* tab). The following actions should be taken:

1. Call the Incident Commander Dispatch center. Be sure to say, "This is an emergency." They will call other authorities and the media and begin the evacuation. The following message may be used to help describe the emergency situation to the Incident Commander or emergency management personnel:

   "This is an emergency. This is _____Identify yourself; name, position)_____.

   DIETZ LOWER DAM, located 2.5 MILES EAST OF KY 547 BELOW CAMP SPRINGS AND ABOVE STONEHOUSE ROAD IN CAMPBELL COUNTY is failing. The downstream area must be evacuated immediately. Repeat, DIETZ LOWER DAM, is failing; evacuate the area along low-lying portions of WILLOW BRANCH.

   We have activated the Emergency Action Plan for this dam and are currently under Emergency Level 3. Reference the evacuation map in your copy of the Emergency Action Plan.

   I can be contacted at the following number _____. If you cannot reach me, please call the following alternative number_____."

2. Do whatever is necessary to bring people in immediate danger (anyone on the dam, downstream from the dam, boating on the reservoir, or evacuees) to safety if directed by the Incident Commander.

3. Keep in frequent contact with Incident Commander and emergency services to keep them up-to-date on the condition of the dam. They will tell you how you can help handle the emergency.

4. If all means of communication are lost: (1) try to find out why, (2) try to get to another radio or telephone that works, or (3) get someone else to try to re-establish communications. If these means fail, handle the immediate problems as well as you can and periodically try to re-establish contact with Incident Commander and emergency services.

The following prescripted message may be used as a guide for the Incident Commander or emergency services personnel to communicate the status of the emergency with the public:

Attention: This is an emergency message from _____. Listen carefully. Your life may depend on immediate action.

DIETZ LOWER DAM, located 2.5 MILES EAST OF KY 547 BELOW CAMP SPRINGS AND ABOVE STONEHOUSE ROAD IN CAMPBELL COUNTY is failing. Repeat. DIETZ LOWER DAM, located 2.5 MILES EAST OF KY 547 BELOW CAMP SPRINGS AND ABOVE STONEHOUSE ROAD IN CAMPBELL COUNTY mile(s) is failing

If you are in or near this area, proceed immediately to high ground away from the valley. Do not travel on STONEHOUSE ROAD or return to your home to recover your possessions. You cannot outrun or drive away from the flood wave. Proceed immediately to high ground away from the valley.

Repeat message.

Emergency Level 1 Notifications

Nonemergency unusual event; slowly developing

Dam Operator's Rep.

Title: _____
Name: _____

(_____ (Office)
(___) ___-____ (Home)

(1)

Dam Operator's Technical Rep.

Name: _____
Title: _____

(_____(Office))
(___) ___-____ (Home)
(_____) (Cell)

State Dam Safety Official, Kentucky Division of Dam Safety

Name:

(502) 564-3410 (Office)
((Home)
Click here to enter text. (Cell)

Title: _____
Name:

800) 928-2380
(___) ___-____ (Home)
(___) ___-____ (Cell)

Notes

- The call sequence is denoted by (1), (2), etc.
- See *Communications* tab for prescripted messages.
- See *Emer. Services Contacts* tab for contact information for back-ups to the persons shown above

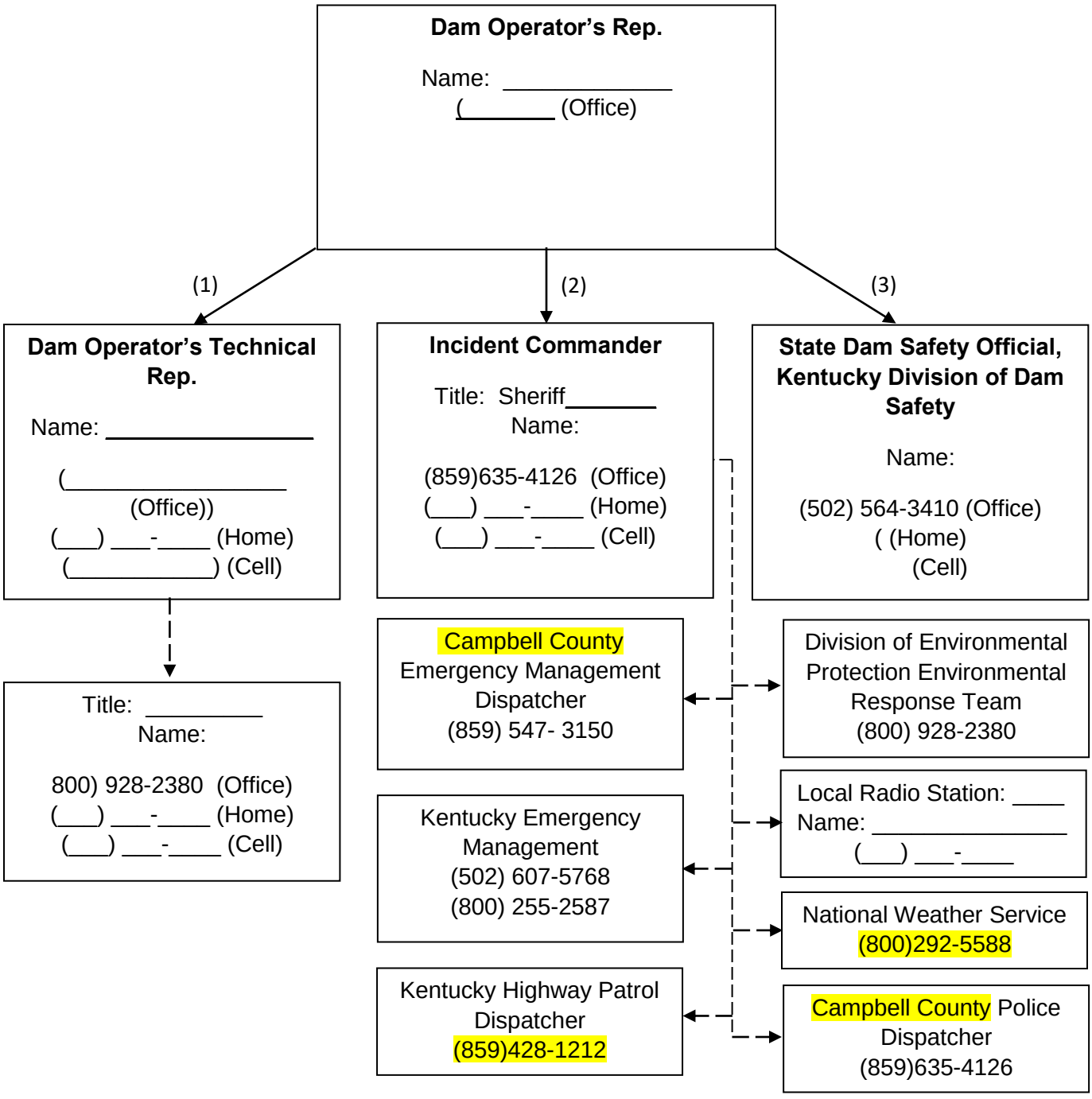
Legend

Calls by operator →

Second level calls - - →

Emergency Level 2 Notifications

Emergency event, potential dam failure situation; rapidly developing



Notes

- The call sequence is denoted by (1), (2), etc.
- See *Communications* tab for prescripted messages.
- See *Emer. Services Contacts* tab for contact information for back-ups to the persons shown above

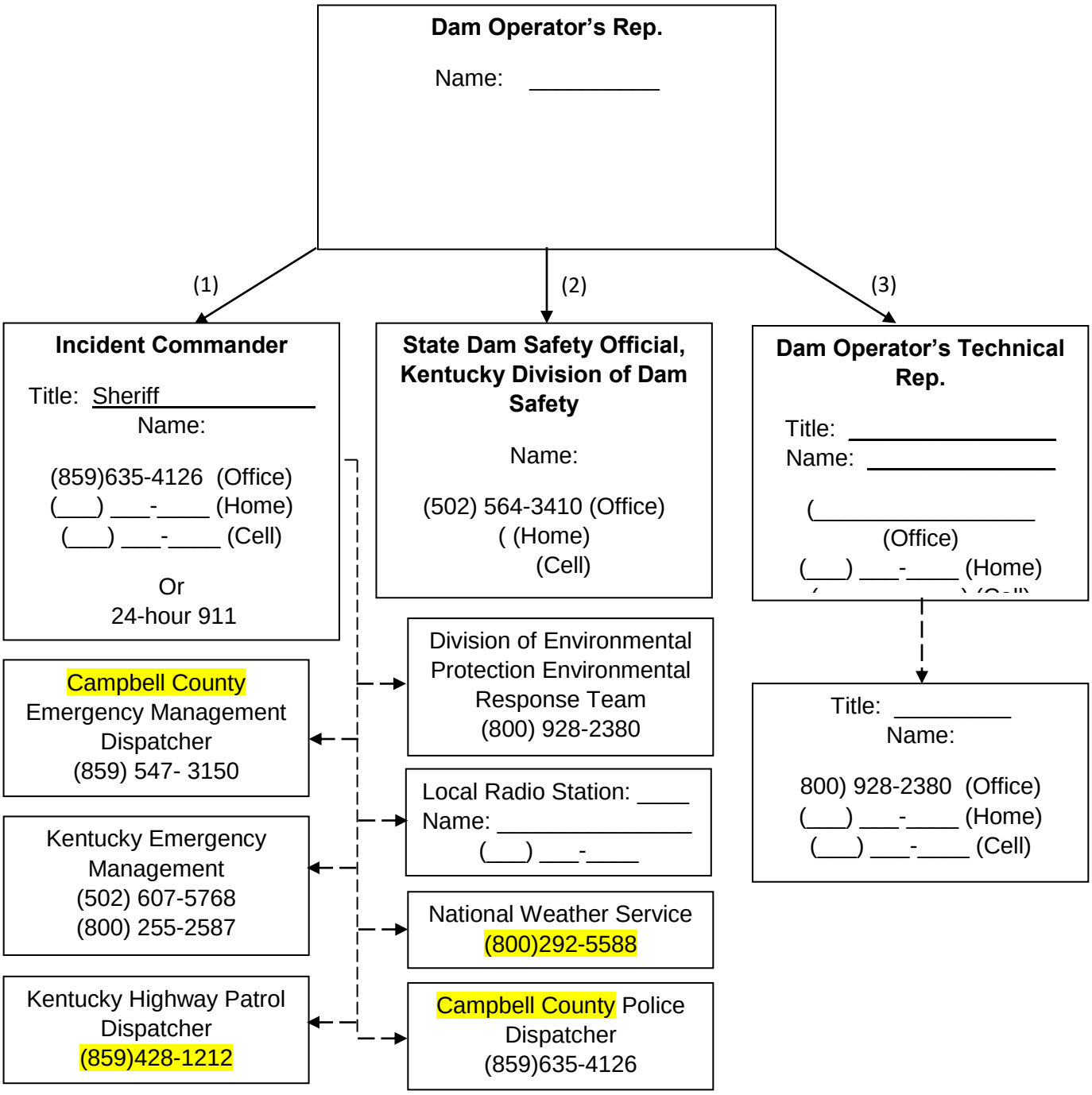
Legend

Calls by operator →

Second level calls - - →

Emergency Level 3 Notifications

Urgent event, dam failure appears imminent or is in progress



Notes

- The call sequence is denoted by (1), (2), etc.
- See *Communications* tab for prescripted messages.
- See *Emer. Services Contacts* tab for contact information for back-ups to the persons shown above

Legend

Calls by operator →

Second level calls - - →

Emergency Services Contacts

Agency / Organization	Principal contact	Address	Office telephone number	Alternate telephone numbers
KY EMERGENCY RESPONSE				
EMERGENCY MANAGEMENT – LOCAL EM DIRECTOR				
KY DAM SAFETY				
KY DAM SAFETY				
KYEM REGION 5 EM COORDINATION CENTER				

* Back-up to primary contact

Step 4 Expected Actions

If the police or Sheriff receives a 911 call regarding observations of an unusual or emergency event at the dam, they should immediately contact the Dam Owner. After the Dam Operator's Representative determines the emergency level, the following actions should be taken. If time permits, **DAM SAFETY** should be contacted for technical consultation.

Emergency Level 1—Nonemergency, unusual event; slowly develops:

A. The Dam Operator's 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. **If increased seepage, erosion, cracking, and/or settlement are observed, immediately report the observed condition(s) to the Kentucky Division of Dam Safety. Refer to the emergency level table for guidance in determining the appropriate event level for the new condition and recommended actions.**

B. Record all contacts that were made on the *Contact Checklist* (Appendix A–1). Record all information, observations, and actions taken on the *Event Log Form* (Appendix A–2). Note the time of changing conditions. Document the situation with photographs and video, if possible.

C. The Dam Operator's Representative should contact the Kentucky Division of Dam Safety and request technical staff to investigate the situation and recommend corrective actions.

Emergency Level 2—Potential dam failure situation; rapidly developing:

A. The Dam Operator's Representative should contact the Kentucky Division of Dam Safety to report the situation and, if time permits, request technical staff to investigate the situation and recommend corrective actions.

B. The Dam Operator's Representative should contact the Incident Commander to inform him/her that the EAP has been activated and if current conditions get worse, an emergency situation may require evacuation. Preparations should be made for possible road closures and evacuations.

C. Provide updates to the Incident Commander and emergency services personnel to assist them in making timely decisions concerning the need for warnings, road closures, and evacuations.

D. If time permits, the Dam Operator's 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. **If piping, increased seepage, erosion, cracking, or settlement are observed, immediately report the observed conditions to the Kentucky Division of Dam Safety; refer to the emergency level table for guidance in determining the appropriate event level for the new condition and recommended actions.**

E. Record all contacts that were made on the *Contact Checklist* (Appendix A–1). Record all information, observations, and actions taken on the *Event Log Form* (Appendix A–2). Note the time of changing conditions. Document the situation with photographs and video, if possible.

F. If time permits, the following emergency remedial actions should be taken as appropriate.

Emergency Level 2—Potential dam failure situation; rapidly developing: *(continued)*

Emergency remedial actions

If time permits, the following emergency remedial actions should be considered for Emergency Level 2 conditions. Immediate implementation of these remedial actions may delay, moderate, or prevent the failure of the dam. Several of the listed adverse or unusual conditions may be apparent at the dam at the same time, requiring implementation of several modes of remedial actions. Close monitoring of the dam must be maintained to confirm the success of any remedial action taken at the dam. Time permitting, any remedial action should be developed through consultation with the Kentucky Division of Dam Safety. See *Resources Available* (Appendix A–5) for sources of equipment and materials to assist with remedial actions.

Embankment overtopping

1. If the water level in the reservoir is no longer rising, 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.

Seepage and sinkholes

1. Open the principal spillway gate to lower the reservoir level as rapidly as possible to a level that stops or decreases the 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 the seepage stops.

2. If the entrance to the seepage origination point is observed in the reservoir (possible whirlpool) and is accessible, attempt to reduce the flow by plugging the entrance with readily available materials such as hay bales, bentonite, soil or rock fill, or plastic sheeting.

3. 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.

4. Prevent vehicles and equipment from driving between the seepage exit points and the embankment to avoid potential loss 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.

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.

Emergency Level 2—Potential dam failure situation; rapidly developing: *(continued)*

Earthquake

1. Immediately conduct a general overall visual inspection of the dam.
2. Perform a field survey to determine if there has been any settlement and movement of the dam embankment, spillway, and low-level outlet works.
3. Drain the reservoir, if required.

Emergency Level 3—Urgent; dam failure appears imminent or is in progress:

A. The Dam Operator's Representative shall immediately contact the Incident Commander and others shown on the notification chart.

B. The Incident Commander shall lead the efforts to carry out warnings, close roads, and evacuate people at risk downstream from the dam (see *Evacuation Map* tab).

C. Emergency management services personnel shall alert the public and immediately evacuate at-risk people and close roads as necessary.

D. The Dam Operator's Representative shall maintain continuous communication and provide the Sheriff with updates of the situation to assist him/her in making timely decisions concerning warnings and evacuations.

E. The Dam Operator's Representative should record all contacts that were made on the *Contact Checklist* (Appendix A–1). Record all information, observations, and actions taken on the *Event Log Form* (Appendix A–2). Note the time of changing conditions. Document the situation with photographs and video, if possible.

F. Advise people monitoring the dam to follow safe procedures. Everyone should stay away from any of the failing structures or slopes and out of the potential breach inundation areas.

Step 5 Termination

Whenever the EAP has been activated, an emergency level has been declared, all EAP actions have been completed, and the emergency is over, the EAP operations must eventually be terminated and follow-up procedures completed.

Termination responsibilities

The Incident Commander is responsible for terminating EAP operations and relaying this decision to the Dam Operator's Representative. It is then the responsibility of each person 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 Emergency Level 3 event that has not caused actual dam failure, the Kentucky Division of Dam Safety technical representative will inspect the dam or require the inspection of 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 condition does not pose a threat to people or property, the Incident Commander will be advised to terminate EAP operations as described above.

The Dam Operator's Representative shall assure that the *Dam Safety Emergency Situation Report* (Appendix A–3) is completed to document the emergency event and all actions that were taken. The Dam Owner shall distribute copies of the completed report to the Kentucky Department of Dam Safety.

Step 6 Recovery

In the event there has been damage to the dam, loss of a dam structure, and/or damage to the surrounding infrastructure follow these guidelines.

The following is a list of resources that can be contacted to aid in recovery planning:

State Emergency Management Agency: Kentucky Emergency Management, 1-800-255-2587

County Emergency Management Agency:

Area Development District:

Additional information regarding Long-Term Recovery can be found in the following sources:

FEMA, *National Disaster Recovery Framework*, http://www.fema.gov/recoveryframework/

FEMA, *Emergency Support Function #14 Planning Resources*, http://www.fema.gov/rebuild/ltcr/plan_resource.shtm

Kentucky Emergency Management, *Kentucky Emergency Support Function – 14: Long-Term Recovery Mitigation, and Damage Assessment*, http://kyem.ky.gov/programs/Pages/StateEOP.aspx

Maintenance—EAP Review and Revision

EAP annual review

The Dam Operator's Representative will review and, if needed, update the EAP at least once each year. The EAP annual review will include the following:

- Calling all contacts on the three notification charts in the EAP to verify that the phone numbers and persons in the specified positions are current. The EAP will be revised if any of the contacts have changed.
- Contacting the local law enforcement agency to verify the phone numbers and persons in the specified positions. In addition, the Dam Operator's Representative will ask if the person contacted knows where the EAP is kept and if responsibilities described in the EAP are understood.
- Calling the locally available resources to verify that the phone numbers, addresses, and services are current.

Revisions

The Dam Owner is responsible for updating the EAP document. The EAP document held by the Dam Owner is the master document. When revisions occur, the Dam Owner will provide the revised pages and a revised revision summary page to all the EAP document holders. The document holders are responsible for revising outdated copy of the respective document(s) whenever revisions are received. Outdated pages shall be immediately discarded to avoid any confusion with the revisions.

EAP periodic test

The Dam Owner will host and facilitate a periodic test of the EAP. For low and moderate hazard dams, exercises shall be performed at least every 3 years. For high hazard dams, exercises shall be performed at least every 2 years.

The periodic tests will initially consist of a meeting, including a tabletop exercise. Future exercises should increase in complexity until functional or full-scale exercises are developed (explained below). Attendance should include the Dam Operator's Representative, key staff members, at least one representative of the local law enforcement agency, and others with key responsibilities listed in the EAP. At the discretion of the Dam Owner, other organizations that may be involved with an unusual or emergency event at the dam are encouraged to participate. Before the tabletop exercise begins, meeting participants will visit the dam during the periodic test to familiarize themselves with the dam site.

The exercises should be developed and moderated by people knowledgeable in exercise development and evaluation.

The tabletop exercise will begin with the facilitator presenting a scenario of an unusual or emergency event at the dam. The scenario will be developed prior to the exercise. Once the scenario has been presented, the participants will discuss the responses and actions that they would take to address and resolve the scenario. The narrator will control the discussion, ensuring realistic responses and developing the scenario throughout the exercise. The Dam Operator's Representative should complete an event log as they would during an actual event.

Functional exercises will involve the all of the stakeholders in a stress-induced environment with time constraints. A functional exercise involves a simulation of a dam failure and other specified events and the participants act out their actual roles.

A full scale exercise is the most complex type of exercise and it evaluates the operational capability of all facts of the emergency management system interactively in a stressful environment with the actual mobilization of personnel and resources.

After any exercise, the five sections of the EAP will be reviewed and discussed. Mutual aid agreements and other emergency procedures can be discussed. The Dam Owner will prepare a concise written summary with the objective being to spotlight both weaknesses and strong points of the responders and improvement of the ability to respond. If necessary, the dam owner shall revise the EAP.

Record of Holders of Control Copies of this EAP

Copy Number	Organization	Person receiving copy
1	Dam Owner	
2	Kentucky Division of Water – Dam Safety	Marilyn Thomas
3		
4	Kentucky Emergency Management	
5		
6		
7		
8		

Record of Revisions and Updates Made to EAP

Revision Number	Date	Summary of Revision	By Whom
1	*[Enter revision date]*	*[Enter description of change made to EAP]*	*[Enter name of person who made the revision, the organization they represent, and their title]*
2			
3			
4			
5			
6			
7			
8			
9			
10			

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.

Dam Operator's Representative: *[Enter name and title]*

Signature	*Organization*	*Date*

Incident Commander: *[Enter name and title]*

Signature	*Organization*	*Date*

Emergency Management Services Personnel: *[Enter name and title]*

Signature	*Organization*	*Date*

Dam Operator's Technical Representative: *[Enter name and title]*

Signature	*Organization*	*Date*

Kentucky Division of Dam Safety: *[Enter name and title]*

Signature	*Organization*	*Date*

[Enter Organization Name]: *[Enter name and title]*

Signature	*Organization*	*Date*

[Enter Organization Name]: *[Enter name and title]*

Signature	*Organization*	*Date*

Appendices–Forms, Glossary, Maps, and Supporting Data

Appendix A

A–1 Contact Checklist

A–2 Unusual or Emergency Event Log Form

A–3 Dam Emergency Situation Report Form

A–4 Glossary of Terms

A–5 Resources Available

Appendix B

B–1 Location and Vicinity Maps

B–2 Evacuation Map

B–3 Residents/Businesses/Highways at Risk

B–4 Dam Data

Appendix A–1

Contact Checklist

(To be completed during the emergency)

DIETZ LOWER DAM

CAMPBELL COUNTY County, Kentucky Date: _____

The following contacts should be made immediately after the emergency level is determined. (See pages 7–10 for guidance to determine the appropriate emergency level for a specific situation). The person making the contacts should initial and record the time of the call and who was notified for each contact made. See the *Notification Charts* tab for critical contact information and *Emer. Services Contacts* tab for contact information for other possible emergency services.

Emergency Level 1 (see page 12)

	Person Contacted	Time Contacted	Contacted By
Dam Operator's Rep.			
Dam Operator's Technical Rep.			
State Dam Safety Official			

Emergency Level 2 (see page 13)

	Person Contacted	Time Contacted	Contacted By
Dam Operator's Rep.			
Dam Operator's Technical Rep.			
State Dam Safety Official			
Incident Commander			

Emergency Level 3 (see page 14)

	Person Contacted	Time Contacted	Contacted By
Incident Commander			
State Dam Safety Official			
Dam Operator's Rep.			
Dam Operator's Technical Rep.			

Appendix A–2

Unusual or Emergency Event Log

(To be completed during the emergency.)

Dam: DIETZ LOWER DAM County: CAMPBELL 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

Date	Time	Action / Event Progression	Taken By

Report prepared by: _____ Date: _____

Appendix A–3

Dam Emergency Situation Report

(To be completed following the termination of the emergency)

Dam name: DIETZ LOWER DAM

National Inventory of Dams (NID) No.: 0684

Dam location: *2.5 MILES EAST OF KY 547 BELOW CAMP SPRINGS AND ABOVE STONEHOUSE ROAD IN CAMPBELL COUNTY* *mile(s)*

County: CAMPBELL COUNTY

Stream: WILLOW BRANCH

Date: _____ Time: _____

Weather conditions: _____

General Description of the 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 A–3 *(continued)*

Dam Emergency Situation Report

(To be completed following the termination of the emergency)

Photo Log

	Photo Description:
	Photo Description:
	Photo Description:

Appendix A–4
Glossary of Terms

Abutment That part of the valley side 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.

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 through 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. Also, a slice through a spillway showing elevation vertically and left and right sides of the spillway looking downstream.

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, or blanket A water collection system of sand and gravel and typically pipes along 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.

Emergency A condition that develops unexpectedly, endangers the structural integrity of the dam and/or downstream human life and property, and requires immediate action.

Emergency Action Plan (EAP) A formal document identifying potential emergency conditions that may 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.
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, or regulating	An operable, watertight valve to manage the discharge of water from 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 or outflow, or breach	A graphical representation of either the flow rate or flow depth at a specific point above or below the dam over time for a specific flood occurrence.
Incident Commander	The highest 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 map	The geographic area downstream of the dam that would be flooded by a breach of the dam or other large discharge.
Notification	To immediately inform appropriate individuals, organizations, or agencies about a potentially emergency situation so they can initiate appropriate actions.
Outlet works (principal spillway)	An appurtenant structure that provides for controlled passage of normal 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 Precipitation (PMP) or Flood (PMF)	The theoretically greatest precipitation or resulting flood that is meteorologically feasible for a given duration over a specific drainage 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 movements of a mass of earth down a slope on the embankment or abutment of the dam.

Spillway (auxiliary or emergency)	The appurtenant structure that provides the controlled conveyance of 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.

Appendix A–5
Resources Available

Locally available equipment, labor, and materials:

KY EMERGENCY RESPONSE TEAM has the following resources that can be utilized in the event of an emergency:

- **PUMPS & HOSES**
-
-
-
-
-
-
-

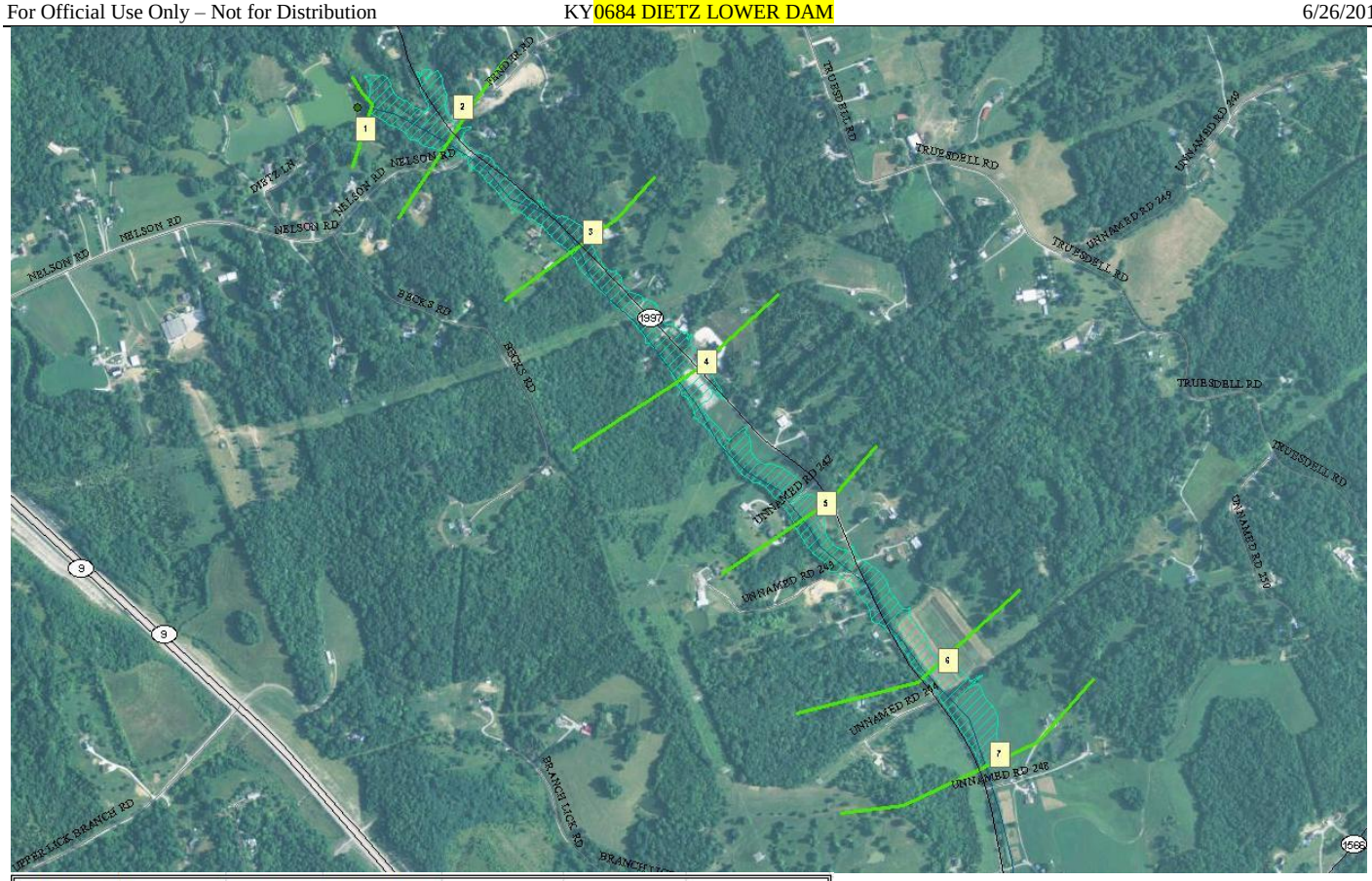
Contact the **ROBERT FRANCIS** (see *Emer. Services Contacts* tab).

Other locally available resources include:

Heavy equipment service and rental	Sand and gravel supply	Ready-mix concrete supply
Pumps	**Diving contractor**	**Sand bags**

Appendix B–1

Location and Vicinity Maps



NAME OF DAM:	KY 684 DIETZ LAKE DAM					
NAME OF RIVER	WILLOW BRANCH					
SECTION	RIVER MILE FROM DAM	MAX ELEV (FT-MSL)	MAX DEPTH (FT)	TIME(HR) MAX DEPTH	TIME(HR) FLOOD	TIME(HR) DEFLOOD
1	0.01	561.02	5.96	0.25	0.01	0.6
2	0.12	555.74	6.29	0.28	0.04	0.73
3	0.35	550.63	8.92	0.35	0.11	0.85
4	0.58	545.8	8.68	0.44	0.24	0.95
5	0.83	536.93	6.74	0.53	0.28	1.14
6	1.1	526.42	6.28	0.62	0.38	1.26
7	1.25	521.45	6.7	0.64	0.4	1.33

Inundation Map

Appendix B–2

Begin Inundation Map 1

Inundation map is included that identifies areas that should be considered for evacuation.

Hydrology & Hydraulics – Simplified Dam Break

Inundation areas referred to in the EAP were developed by performing a dam breach analysis using the Simplified Dam Break (SMPDBK) model developed by the National Oceanic and Atmospheric Administration (NOAA)/National Weather Service (NWS). The model was executed using a GIS based preprocessing tool that utilizes the National Inventory of Dams (NID) database in conjunction with terrain data, cross sections, and stream centerlines to generate input data for the simplified dam breach analysis tool.

Inundation Map 2

Inundation Map 3

Inundation Map 4

Inundation Map 5