

Emergency Action Plan (EAP)

Rock Creek Watershed, Dam No. 23

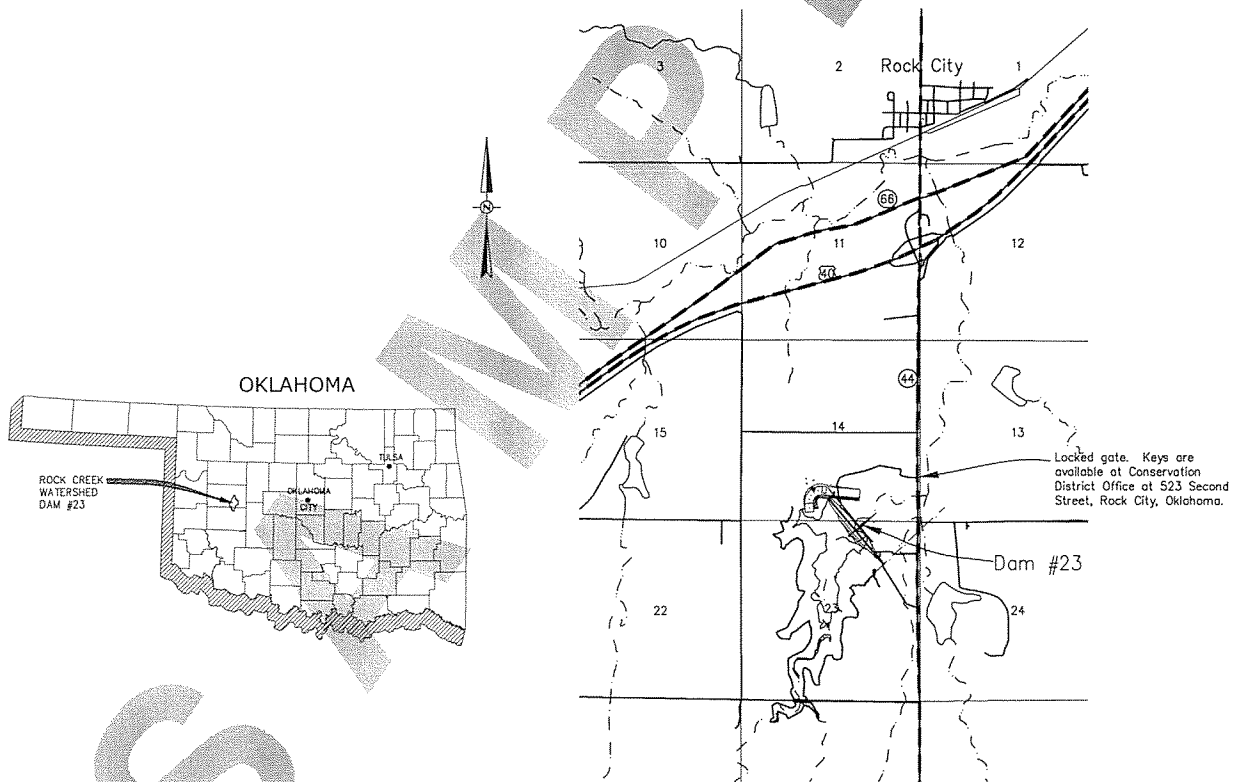
(Rock City Lake)

National Inventory of Dams (NID) No. OK11111

Coal County, Oklahoma

Coal County Conservation District

With assistance from the
U.S. Department of Agriculture
Natural Resources Conservation Service



Reviewed and Updated:

Chair, Coal County Conservation District

Sheriff, Coal County, OK

Date

Date

Copy 3 of 8

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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 Rock Creek Watershed, Dam No. 23.

Potential Impacted Area

See *Evacuation Map* tab (Appendix B-4) and *People at Risk* tab (Appendix B-5) for the locations and contact information of the following residents and businesses that may be flooded if the dam should fail and the estimated time for the floodwave to travel from the dam to these locations:

- 6 houses:
 - 4 on the south side of the Elmwood Heights subdivision in southeast Rock City
 - 2 outside city limits:
 - 1 on south side of Rock Creek, south of Rock City
 - 1 on east side of Highway 44 approximately 1 mile south of Rock City
- 3 businesses on east side of Highway 44 south of Rock City:
 - Lori’s Music Shop, Larry’s Hardware, and Bill’s Coffee Shop
- 3 highways:
 - Interstate 40 and OK Highways 44 and 66

Dam Description

Height: 40 ft	Drainage Area: 7.7 mi
Built: 1960	Hazard Classification: High
Legal Description: Sects. 14 and 23, T13N, R21W	Dam Operator: Coal Co. Cons. District
Latitude: 35.42875 Longitude: -99.19802	Major Property Owner: Bryan Babcock
National Inventory of Dams No.: OK11111	Dam Designer: NRCS

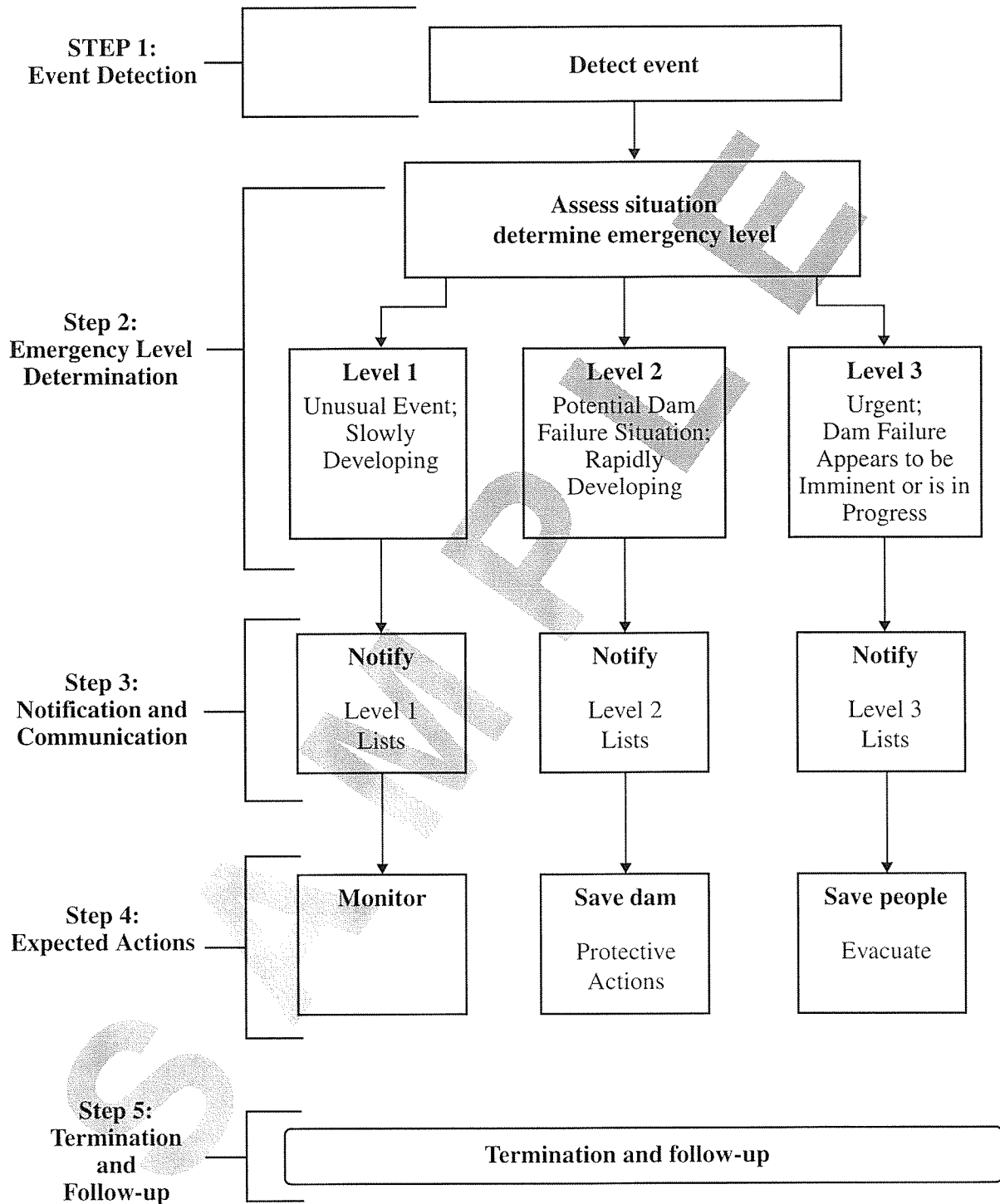
See detailed design data in *Appendix B* tab.

Directions to dam (See *Location and Vicinity Map*—Appendix B-2.)

Rock Creek Watershed, Dam No. 23, can be accessed by traveling south 1.2 miles on OK Highway 44 from the Interstate 40 interchange south of Rock City; turn right (west) on a gated dirt road that goes directly to the left abutment of the dam. Keys for the lock on the gate are available from the Conservation District Manager at 523 Second Street, Rock City, OK. Note that a portion of this road is within the dam breach inundation area, and the valley below the dam may be flooded.

An alternate route to the dam is available approximately 0.5 miles south of Rock Creek on Highway 44; turn right on an ungated dirt road that goes to the right abutment of the dam. Note that Highway 44 may be inundated or the bridge may be damaged, so access to this alternate route may have to be gained from Highway 44 south of the dam.

EAP Overview



Roles and Responsibilities

Dam Operator's Representative (Conservation District Manager)

- 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 (County Sheriff)

- 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 (Rock City)

- 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.
- 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 (NRCS)

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

State Dam Safety Agency (Oklahoma Water Resources Board)

- Advise the dam operator of the emergency level determination, if time permits.
- Advise the dam operator of remedial actions to take if a 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.

SAMPLE

Step 2 Emergency Level Determination

After an unusual or emergency event is detected or reported, the Conservation District Manager 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. NRCS technical representatives or state dam safety officials should be contacted to investigate the situation and recommend actions to be taken. 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 Sheriff 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 sheriff 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 Sheriff. If the dam condition worsens and failure becomes imminent, the sheriff must be notified immediately of the change in the emergency level to evacuate the people at risk downstream.

If time permits, NRCS and 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 (local resources that may be available—see Appendix B-1). Time available to employ remedial actions may be hours or days.

This emergency level is also applicable when flow through the earth 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 earth spillway is causing downstream flooding of people and roads. The Sheriff 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*
Earth 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
	Rapidly enlarging sinkhole	3
Embankment cracking	New cracks in the embankment greater than 1/4-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 appurtenances 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

Examples of Emergency Situations

The following are examples of conditions that usually constitute an emergency situation that may occur at a dam. Adverse or unusual conditions that can cause the failure of a dam are typically related to aging or design and construction oversights. Extreme weather events that exceed the original designed conditions can cause significant flow through the auxiliary spillway or overtopping of the embankment. However, accidental or intentional damage to the dam may also result in emergency conditions. The conditions have been grouped to identify the most likely emergency-level condition. The groupings are provided as guidance only. Not all emergency conditions may be listed, and the dam operator is urged to use conservative judgment in determining whether a specific condition should be defined as an emergency situation at the dam.

Pre-existing conditions on this dam: There has been a small seepage area near the downstream toe on the north side of the release channel. This was first noticed in the 1990s, but has not changed since that time.

Earth Spillway Flows

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

1. Significant erosion or headcutting of the spillway is occurring, but the rate does not appear to threaten an imminent breach of the spillway crest that would result in an uncontrolled release of the reservoir.
2. Flow through the earth auxiliary spillway is or is expected to cause flooding that could threaten people, homes, and/or roads downstream from the dam.

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

1. Significant erosion or headcutting of the spillway is occurring at a rapid rate, and a breach of the control section appears imminent.
2. Flow through the earth auxiliary spillway is causing flooding that is threatening people, homes, and/or roads downstream from the dam.

Embankment Overtopping

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

1. The reservoir level is within 1 foot from the top of the dam.

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

1. The reservoir level has exceeded the top of the dam, and flow is occurring over the embankment.

Seepage and Sinkholes

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

1. Cloudy seepage or soil deposits are observed at seepage exit points or from internal drain outlet pipes.
2. New or increased areas of wet or muddy soils are present on the downstream slope, abutment, and/or foundation of the dam, and there is an easily detectable and unusual increase in volume of downstream seepage.
3. Significant new or enlarging sinkhole(s) near the dam or settlement of the dam is observed.
4. Reservoir level is falling without apparent cause.
5. The following known dam defects are or will soon be inundated by a rise in the reservoir:
 - Sinkhole(s) located on the upstream slope, crest, abutment, and/or foundation of the dam; or
 - Transverse cracks extending through the dam, abutments, or foundation.

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

1. Rapidly increasing cloudy seepage or soil deposits at seepage exit points to the extent that failure appears imminent or is in progress.
2. Rapid increase in volume of downstream seepage to the extent that failure appears imminent or is in progress.
3. Water flowing out of holes in the downstream slope, abutment, and/or foundation of the dam to the extent that failure appears imminent or is in progress.
4. Whirlpools or other evidence exists indicating that the reservoir is draining rapidly through the dam or foundation.
5. Rapidly enlarging sinkhole(s) are forming on the dam or abutments to the extent that failure appears imminent or is in progress.
6. Rapidly increasing flow through crack(s) eroding materials to the extent that failure appears imminent or is in progress.

Embankment Movement and Cracking

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

1. Settlement of the crest, slopes, abutments and/or foundation of the dam that may eventually result in breaching of the dam.
2. Significant increase in length, width, or offset of cracks in the crest, slopes, abutments, and/or foundation of the dam that may eventually result in breaching of the dam.

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

1. Sudden or rapidly proceeding slides, settlement, or cracking of the embankment crest, slopes, abutments, and/or foundation, and breaching of the dam 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 developing:

The Conservation District Manager and NRCS District Conservationist should contact the NRCS State Conservation Engineer and Oklahoma Water Resources Board. Describe the situation, and request technical assistance on next steps to take.

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

The following message may be used to help describe the emergency situation to the Sheriff or Rock City emergency management personnel:

“This is _____ (Identify yourself: name, position) _____.

We have an emergency condition at Rock Creek Watershed, Dam No. 23, located 2 miles south of Rock City.

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 Rock Creek.

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; dam failure appears imminent or is in progress:

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

1. Call the Sheriff's 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 Sheriff or Rock City emergency management personnel:

"This is an emergency. This is _____ Identify yourself: name, position _____."

Rock Creek Watershed, Dam No. 23, located 2 miles south of Rock City, is failing. The downstream area must be evacuated immediately. Repeat, Rock Creek Watershed, Dam No. 23, is failing; evacuate the area along low-lying portions of Rock Creek.

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 Sheriff.
3. Keep in frequent contact with the Sheriff 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 the Sheriff and emergency services.

The following prescribed message may be used as a guide for the Sheriff or Rock City emergency services personnel to communicate the status of the emergency with the public:

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

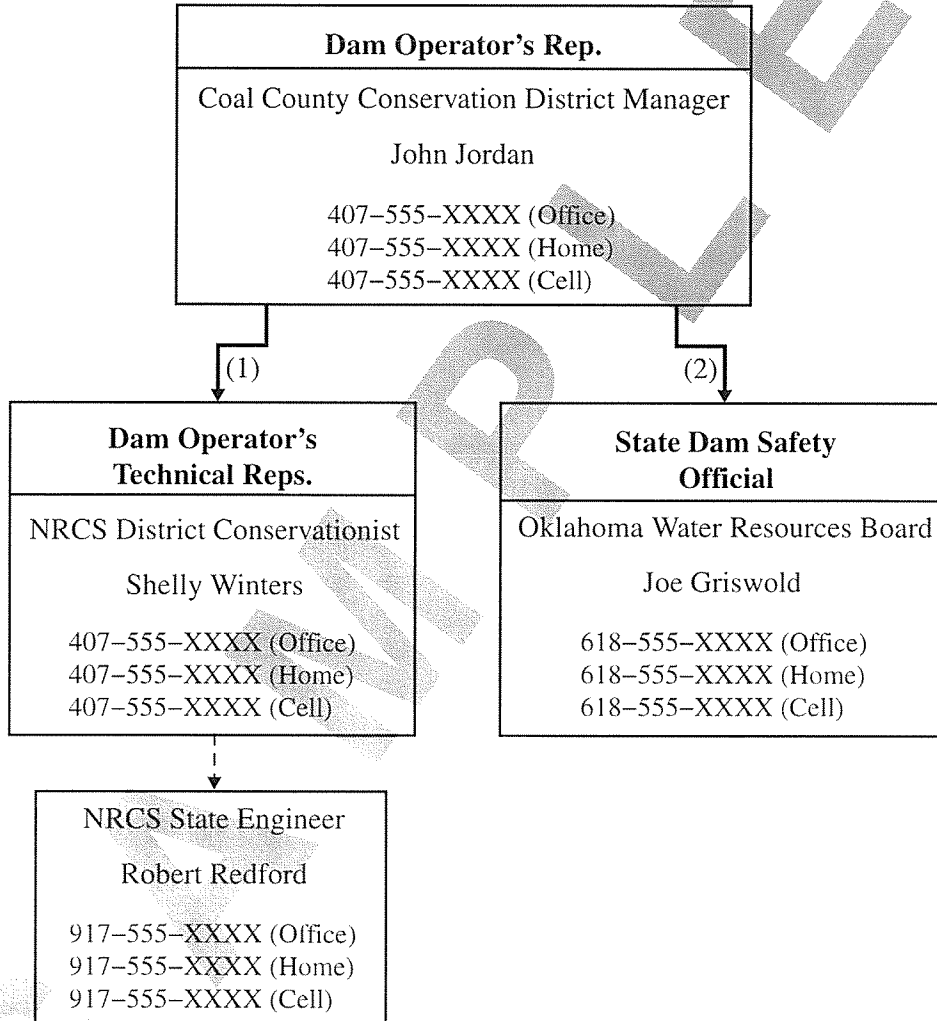
Rock Creek Watershed, Dam No. 23, located 2 miles south of Rock City is failing. Repeat. Rock Creek Watershed, Dam No. 23, located 2 miles south of Rock City is failing.

If you are in or near this area, proceed immediately to high ground away from the valley. Do not travel on Highway 44 south of Rock City or return to your home to recover your possessions. You cannot outrun or drive away from the floodwave. Proceed immediately to high ground away from the valley.

Repeat message.

Emergency Level 1 Notifications

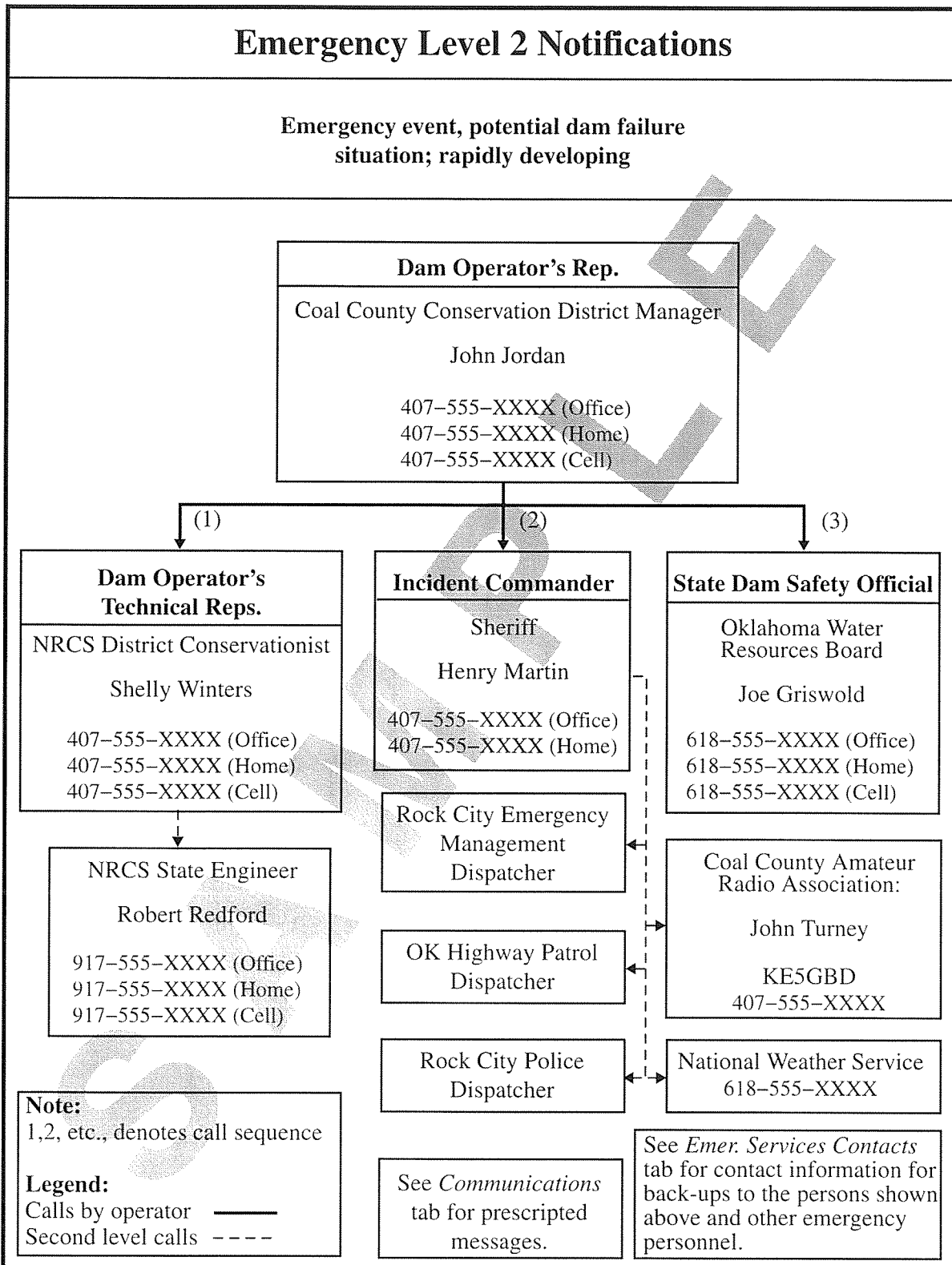
**Nonemergency
unusual event, slowly developing**

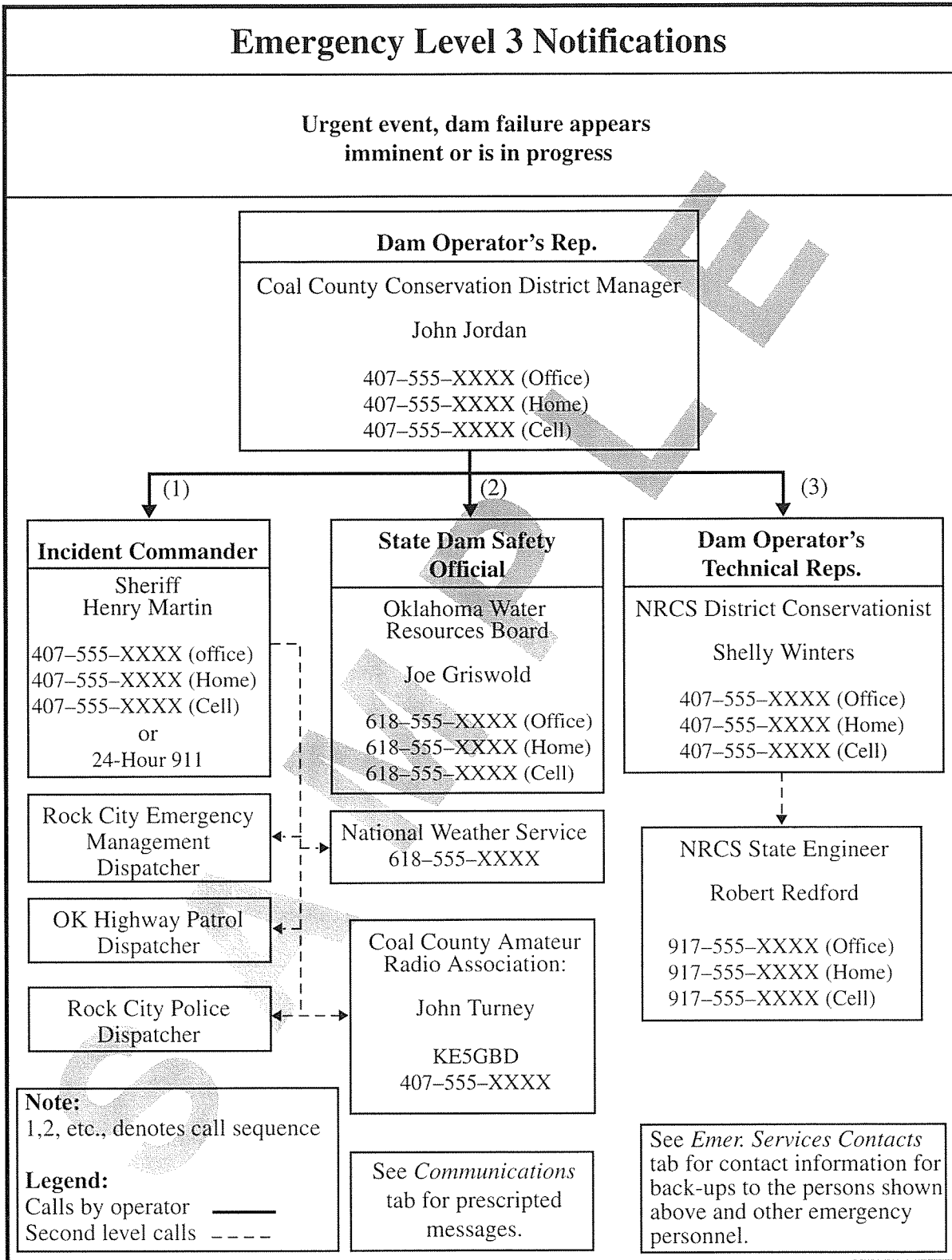


Note:
1,2, etc., denotes call sequence

Legend:
Calls by operator ———
Second level calls - - - -

See *Emer. Services Contacts* tab for contact information for back-ups to the persons shown above and other emergency personnel.





Emergency Services Contacts

Agency/organization	Principal contact	Address	Office telephone number	Alternate telephone numbers
Coal County Board of Supervisors	Gloria Brown Chair	336 Highway 66 Rock City, OK	407-555-XXXX	407-555-XXXX
Coal County Road Department	Max Gray Supervisor	973 Ninth Street Rock City, OK	407-555-XXXX	407-555-XXXX
Coal County Conservation District	John Jordon * District Manager	523 Second Street Rock City, OK	407-555-XXXX	407-555-XXXX (H) 405-555-XXXX (C)
Coal County Conservation District	Mary James * District Secretary	523 Second Street Rock City, OK	407-555-XXXX	407-555-XXXX (H) 405-555-XXXX (C)
Coal County Conservation District	Mike Blain * Board Chair	523 Second Street Rock City, OK	407-555-XXXX	407-555-XXXX (H) 405-555-XXXX (C)
Coal County Sheriff	Henry Martin	336 Highway 66 Rock City, OK	407-555-XXXX	407-555-XXXX (H) 407-555-XXXX (C)
Dry Gulch Television Station KJMT	Chris Klinger Manager	5632 Main Street Dry Gulch, OK	407-555-XXXX	407-555-XXXX
Landowner of Dam No. 23	Bryon Babcock	R.R. #2 Rock City, OK		407-555-XXXX (H) 407-555-XXXX (C)
National Weather Service	Danny Lee Climatologist	66374 Elm Street Norman, OK	618-555-XXXX	407-555-XXXX
Natural Resources Conservation Service	Shelly Winters District Conservationist	523 Second Street Rock City, OK	407-555-XXXX	407-555-XXXX (H) 405-555-XXXX (C)
Natural Resources Conservation Service	John Blake * Technician	523 Second Street Rock City, OK	407-555-XXXX	407-555-XXXX (H)
Natural Resources Conservation Service	Robert Redford State Engineer	3458 Farm Road Strong City, OK	917-555-XXXX	917-555-XXXX (H) 917-555-XXXX (C)
Oklahoma Department of Transportation	Bill Dobson District Engineer	539 Center Street Dry Gulch, OK	407-555-XXXX	
Oklahoma Highway Patrol	Richard Barnell	299 First Avenue Dry Gulch, OK	407-555-XXXX	
Oklahoma Water Resources Board	Joe Griswold Dam Safety Officer	1522 Maple Avenue Strong City, OK	618-555-XXXX	618-555-XXXX (H) 618-555-XXXX (C)
Rock City Emergency Management Coordinator	Jeff Powers	121 Main Street Rock City, OK	407-555-XXXX	
Rock City Fire Department	Harry James	336 Maple Street Rock City, OK	407-555-XXXX	
Rock City Police	Red Jones	336 Maple Street Rock City, OK	407-555-XXXX	
Rock City Radio Station 1040 AM	Scott Fagen Manager	667 Eighth Street Rock City, OK	407-555-XXXX	

* 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 Conservation District office. After the Conservation District Manager determines the emergency level, the following actions should be taken. If time permits, NRCS and the Oklahoma Water Resources Board should be contacted for technical consultation.

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

- A. The Conservation District Manager 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, or settlement are observed, immediately report the observed conditions to the NRCS or the Oklahoma Water Resources Board; 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 Conservation District Manager should contact NRCS and request technical staff to investigate the situation and recommend corrective actions.

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

- A. The Conservation District Manager should contact the NRCS and the Oklahoma Water Resources Board to report the situation and, if time permits, request technical staff to investigate the situation and recommend corrective actions.
- B. The Conservation District Manager should contact the Sheriff 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 Sheriff 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 Conservation District Manager 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 NRCS and the Oklahoma Water Resources Board; 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.

