NATURAL RESOURCES DIVISION

ARKANSAS NATURAL RESOURCES COMMISSION

DAM INSPECTION FORM FOR EARTHEN EMBANKMENT DAMS

INSPECTION TYPE

Name of Dam: _____ ☐ **ANNUAL**

ARNUM: _____ ☐ **MAJOR STORM EVENT**

In accordance with Subtitle IX, Section 709.1 of the Rules Governing Design and Operation of Dams Title 7: At least once per year and after each major storm event, the owner (or owner's agent) of all permitted dams must perform a visual inspection of the dam. Results of such inspections must be summarized on forms supplied by the Commission and mailed to the Commission office within 10 days of inspection. Commission staff may provide training or assistance in performing or interpreting inspections. Any deterioration of the dam or appurtenances must be reported to the Commission, and remedial measures undertaken after approval by the Chief Engineer.

Date: _____

Weather: _____

Inspected by (Print Name): _____

If an inspection item requires further action on your part, place a check mark to the left of the number of the item.

A. CREST (REFER TO GLOSSARY FOR DESCRIPTION)

☐ 1. How would you describe the vegetation on the crest? (Check all that apply)

Recently Mowed ☐ Overgrown ☐ Good Cover ☐ Sparse ☐

Other/Corrective Action (describe): _____

☐ 2. Are there any trees or other inappropriate or excessive vegetation on the crest? Yes ☐ No ☐

If yes, describe (type of vegetation, size, location, etc.)/Corrective Action: _____

☐ 3. Is there a paved road or driveway on the crest? Yes ☐ No ☐

If yes, describe the condition (for example, good condition, numerous cracks, newly paved)/Corrective Action: _____

☐ 4. Are there any depressions, ruts or holes on the crest? Yes ☐ No ☐

If yes, describe (size, location, etc)/Corrective Action: _____

☐ 5. Are there any cracks on the crest? Yes ☐ No ☐

If yes, describe (length and width, location, direction of cracking, etc.)/Corrective Action:

☐ 6. Other observations on the crest/Corrective Action: _____

B. UPSTREAM SLOPE (REFER TO GLOSSARY FOR DESCRIPTION)

☐ 1. What is the reservoir level today? At Normal Pool ☐ Above Normal Pool ☐ ft
Below Normal Pool ☐ ft

☐ 2. How would you describe the vegetation on the upstream slope? (Check all that apply)
Recently Mowed ☐ Overgrown ☐ Good Cover ☐ Sparse ☐
Other/Corrective Action (describe):_____

☐ 3. Are there any trees or other inappropriate or excessive vegetation on the slope? Yes ☐ No ☐
If yes, describe (type of vegetation, size, location, etc.)/Corrective Action:_____

☐ 4. Are there any depressions, bulges, ruts or holes (such as animal burrows) on the slope? Yes ☐ No ☐
If yes, describe (size, location, etc.)/Corrective Action:_____

☐ 5. Are there any eroded areas on the slope (such as wave erosion along the shoreline? Yes ☐ No ☐
If yes, describe (size of area, location, severity, etc.)/Corrective Action:_____

☐ 6. Are there any cracks, sloughs or slides (vertical cliffs) on the slope? Yes ☐ No ☐
If yes, describe (length, width, height, location, etc.)/Corrective Action:_____

☐ 7. Is there any type of slope protection along the shoreline (such as riprap)? Yes ☐ No ☐
If yes, describe what type and its condition (for example, riprap - adequate, inadequate, sparse)/Corrective Action:_____

☐ Other observations on the upstream slope/Corrective Action:_____

C. DOWNSTREAM SLOPE (REFER TO GLOSSARY FOR DESCRIPTION)

☐ 1. How would you describe the vegetation on the downstream slope? (Check all that apply)
Recently Mowed ☐ Overgrown ☐ Good Cover ☐ Sparse ☐
Other/Corrective Action (describe):_____

☐ 2. Are there any trees or other inappropriate or excessive vegetation on the slope? Yes ☐ No ☐
If yes, describe (type of vegetation, size, location, etc.)/Corrective Action:_____

☐ 3. Are there any depressions, bulges, ruts or holes (such as animal burrows) on the slope? Yes ☐ No ☐
If yes, describe (size, location, etc.)/Corrective Action:_____

☐ 4. Are there any eroded areas on the slope (such as along abutment contacts)? Yes☐ No☐
If yes, describe (size of area, location, severity, etc.)/Corrective Action:_____

☐ 5. Are there any cracks, sloughs or slides (vertical cliffs) on the slope? Yes☐ No☐
If yes, describe (length, width, height, location, etc.)/Corrective Action:_____

☐ 6. Are there any wet areas or areas of hydrophilic (lush, water-loving) vegetation? Yes☐ No☐
If yes, describe (size of area, location, etc.)/Corrective Action:_____

☐ 7. Do any wet areas indicate seepage through the dam (such as rust-colored, stained water)?
Yes☐ No☐ N/A☐
If yes, describe (for example, new area of seepage, no change from past observations, size of area, location)
/Corrective Action:_____

☐ 8. Are there any leaks (flowing water) from the slope or beyond the toe of the dam? Yes☐ No☐
If yes, describe (location, rate of flow, turbidity of flow)/Corrective Action:_____

☐ 9. Other observations on the downstream slope/Corrective Action:_____

D. PRINCIPAL AND EMERGENCY SPILLWAYS (REFER TO GLOSSARY FOR DESCRIPTION)

☐ 1. What types of spillways does the dam have (such as corrugated metal, concrete or siphon pipe; concrete or earth channel)?
Principal Spillway_____ Emergency Spillway_____
Other/Corrective Action:_____

☐ 2. Has the emergency spillway activated (had flow) since the last inspection? Yes☐ No☐
If yes describe (date(s) of flow, reason for activation, depth of flow) /Corrective Action:_____

☐ 3. For pipe spillways, is the intake obstructed in any way (such as with excessive debris)? Yes☐ No☐
If yes, describe (type of debris, reason for obstruction, etc.) /Corrective Action:_____

☐ 4. For pipe spillways, what is the condition of any trash racks (for example, adequate, inadequate, damaged)? /Corrective Action: _____

☐ 5. For pipe spillways, are there any visible cracks, separations or holes in the pipe(s) (intake or outlet)?
Yes☐ No☐
If yes, describe (location, width of crack or separation, etc.)/Corrective Action:_____

☐ 6. For pipe spillways, are there any apparent leaks in the pipe(s)? Yes☐ No☐
If yes, describe (location, rate of flow from leak, etc.)/Corrective Action:_____

☐ 7. For pipe spillways, how would you describe the overall condition of the pipe(s)? (Check all that apply) Functioning Normally☐ Not Functional☐ Deteriorated☐ Damaged☐
Adequate☐ Inadequate☐

☐ 8. For concrete or earth channel spillways, is the entrance or channel obstructed in any way?
Yes☐ No☐
If yes, describe (type of obstruction, location, etc.)/Corrective Action:_____

☐ 9. For earth channel spillways, how would you describe the vegetation in the spillway? (Check all that apply) Recently Mowed☐ Overgrown☐ Good Cover☐ Sparse☐
Other (describe)/Corrective Action:_____

☐ 10. For earth channel spillways, are there any trees or other inappropriate vegetation in the spillway?
Yes☐ No☐
If yes, describe (type of vegetation, size, location, etc.)/Corrective Action:_____

☐ 11. For earth channel spillways, are there any eroded areas in the spillway? Yes☐ No☐
If yes, describe (size of area, location, severity, etc.)/Corrective Action:_____

☐ 12. For concrete channel spillways, are there any cracks or holes in the spillway? Yes☐ No☐
If yes, describe (width of crack or hole, location, etc.)/Corrective Action: _____

☐ 13. For concrete channel spillways, are there any leaks or evidence of undermining (flow under the concrete)? Yes☐ No☐
If yes, describe (location, rate of flow from leak, indicators of undermining, etc.)/Corrective Action:

For earth or concrete channel spillways, how would you describe the overall condition of the spillway? (Check all that apply) Functioning Normally☐ Not Functional☐ Deteriorated☐
Damaged☐ Adequate☐ Inadequate☐

☐ 14. Other observations on the spillways/Corrective Action:_____

_____

E. INSTRUMENTATION (REFER TO GLOSSARY FOR DESCRIPTION)

☐ 1. Are there any toe drains at the downstream toe or any other seepage drains on the dam?

Yes☐ No☐

If yes, describe the condition (for example, clogged, free flowing, deteriorated, good condition) /Corrective Action:_____

_____

☐ 2. For drains, is an animal guard installed at the outlet of each drain? Yes☐ No☐

If no, which drains lack animal guards? /Corrective Action:_____

_____

_____

☐ 3. For drains, measure the rate of flow from each drain and record below (use additional pages if necessary):

Designation/Location of Drain	Flow Rate in CFS	Flow Rate in GPM	Turbidity of Flow (describe – clear, muddy, etc.)

☐ 4. Are there any piezometers on the dam? Yes☐ No☐

If yes, describe the condition (for example, good condition, damaged, etc.)/Corrective Action:_____

_____

☐ 5. For piezometers, does each piezometer have a cap with a lock? Yes☐ No☐

If no, which piezometers need caps (to prevent rainwater intrusion) and/or locks (to prevent tampering)? /Corrective Action:_____

_____

☐ 6. For piezometers, are you able to take a measurement (depth to water) in each piezometer?

Yes☐ No☐

If yes, record depth to water (in feet) in each piezometer, record on a separate page, and attach to this form.

☐ 7. Are there any other monitoring devices on the dam? Yes☐ No☐

If yes, describe what type and the condition (for example, monitoring wells - good condition, damaged) /Corrective Action:_____

_____

☐ 8. Other observations on instrumentation/Corrective Action:_____

_____

F. PHOTOGRAPHS

At a minimum, photographs should be taken of the crest, upstream slope, downstream slope and any other notable features.

List of photographs (be sure to date stamp the photos):

_____

_____

_____

_____

_____

_____

_____

_____

EMERGENCY ACTION PLAN (EAP) AND OPERATION AND MAINTENANCE (O&M) MANUAL

Date of EAP or last update on file with Dam Safety? Date: _____

Date of last tabletop exercise on file with Dam Safety? Date: _____

Mail or email a copy of this completed form to the attention of the Dam Safety Office at the Natural Resources Division:

By email: whitney.montague@agriculture.arkansas.gov

By mail: Arkansas Department of Agriculture
Natural Resources Division / Dam Safety
10421 West Markham Street
Little Rock, Arkansas 72205

Problems found during your inspection? If a problem is observed, please call the Dam Safety Office at (501) 682-3969 during business hours for guidance and assistance.

If it is an emergency, **please activate your Emergency Action Plan**.

INSPECTION GLOSSARY

Abutment - the bordering area of the dam site which functions as a support for the ends of the dam structure.

Acre-Foot - The volume of water that would cover one acre to a depth of one foot. It is equal to 43,560 cubic feet or 325,851 gallons.

Appurtenant works - Structures located either in or separate from the dam such as spillways, low level outlet works, access bridges, and other structures.

Berm - A horizontal step in the slope of an embankment dam usually for the purpose of reducing erosion or to increase the thickness and stability of the embankment.

Blanket Drain - A layer of pervious material placed to facilitate drainage of the foundation and/or embankment.

Breach - An opening through a dam that allows a release of water from a reservoir. These can be controlled (plans developed and implemented under the direction of an Engineer of Record) or uncontrolled (failure of the structure of the dam.)

Crest - The top surface of the dam.

EAP - "Emergency Action Plan," plan of action to be taken to reduce the potential for loss of life and property damage in an area affected by a dam failure or large flood.

Emergency or Auxiliary Spillway - A spillway designed to provide additional protection against overtopping of a dam intended for use under extreme conditions such as malfunction of the principal spillway or extreme rainfall.

Flashboards - Structures installed at the top of a dam, gates, or spillways to raise the pool elevation.

Height of Dam - Vertical distance measured from the bottom of the plunge pool at the downstream toe of the dam to the lowest elevation on the crest of the dam.

Inundation map - A map showing areas that would be affected by flooding from releases from a dam's reservoir.

Normal Pool - The reservoir storage volume at normal storage elevation.

Owner - Whoever owns or controls any portion of the dam or its appurtenant works.

Piezometer - Device commonly used to measure the hydraulic pressures within an earthen dam.

Piping - The progressive development of internal erosion of an embankment or foundation material by seepage.

Plunge Pool - A natural or artificially created pool at the base of a dam that dissipates the energy of water flowing through the principal spillway.

Principal Spillway - Spillway which conveys normal runoff from the reservoir over, through, or around the dam.

Riprap - A layer of large stones, broken rock or other suitable material generally placed in random fashion on the upstream and/or downstream faces of embankment dams and around plunge pools to protect them from erosion.

Seepage - Internal movement of water that may take place through the dam, foundation, or abutments.

Slough - A shallow slope failure. Movement of a soil mass downward along a slope because of a slope angle too great to support the soil, wetness reducing internal friction among particles of soil or seismic activity.

Spillway - An outlet from a reservoir or section from a dam designed to release surplus water that is not discharged though a turbine or other outlet works.

Stilling basin - A basin constructed to dissipate the energy of rapidly flowing water, e.g., from a spillway or outlet, and to protect the stream or riverbed from erosion.

Tailwater - The water level immediately downstream from a dam. The water surface elevation varies due to fluctuations in the outflow from the structures of the dam and due to downstream influences of other dams or structures.

Toe - The junction of the slope or face of a dam with the ground surface; these are usually identified as the upstream toe and downstream toe.

Toe drain(s) – A system of pipes and/or pervious materials along the downstream toe of a dam used to collect seepage from the foundation and embankment and convey it to a free outlet.

Trash rack - A device located at the intake of a spillway to prevent floating or submerged debris from entering the intake.