

Title 15. Natural Resources and Economic Development
Chapter I. Arkansas Natural Resources Commission, Department of
Agriculture
Subchapter B. Water
Part 23. Design and Operation of Dams

Codification Notes. This part as promulgated prior to codification into the Code of Arkansas Rules provided as follows: " Authority. Rules governing design and operation of dams within the State of Arkansas are promulgated under authority of Subchapter 2 of Chapter 22 of title 15 of the Arkansas Code of 1987".

Subpart 1. General Provisions

15 CAR § 23-101. Purpose.

(a) Provide for the comprehensive regulation and supervision of dams for the protection of the health, safety, welfare, and property of the citizens of Arkansas.

(b) Assure proper planning, design, construction, maintenance, monitoring, and supervision of dams, including such preventive measures as are necessary to provide an adequate margin of safety.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-102. Definitions.

Unless clearly indicated by context, the following words and terms, when used in this part, shall have meanings as defined below:

(1) "Billing volume" means normal storage designed to contain sediment accumulation over the life of the dam;

(2) "Chief engineer" means the Deputy Director/Chief Engineer of the Arkansas Natural Resources Commission;

(3) "Commission" means the Arkansas Natural Resources Commission;

(4)(A) "Construction costs" means estimated or actual material and labor costs, including:

- (i) Excavation;
- (ii) Embankment placement;
- (iii) Spillways;
- (iv) Gates;
- (v) Valves; and
- (vi) Conduits.

(B) Shall not include costs of:

- (i) Land;
- (ii) Reservoir clearing;
- (iii) Engineering;
- (iv) Water treatment facilities; or
- (v) Other costs not directly related to construction of the dam;

(5)(A) "Dam" means any barrier, including one for flood detention, designed to impound liquid volumes.

(B) This shall not include highway, railroad, or other roadway embankments, including low water crossings that may temporarily detain floodwater, levees designed to prevent inundation by floodwater, or closed dikes to temporarily impound liquids in the event of emergencies, and those barriers not exempt by 15 CAR § 23-103 or § 23-104;

(6) "Director" means the Director of the Arkansas Natural Resources Commission;

(7) "Effective crest of the dam" means the elevation of the lowest point on the crest of the dam excluding spillways;

(8) "Height of dam" means the vertical distance from the effective crest of the dam to the lowest elevation on the downstream toe of the dam;

(9) "Maximum storage" means the volume of the impoundment created by the dam at the effective crest of the dam;

(10) "Minimum release" means the daily quantity of water that must be released to:

(A) Preserve downstream riparian rights or permitted nonriparian rights;

or

(B) Meet instream water needs including, but not limited to, those of fish and wildlife;

(11) "Normal storage" means the volume of the impoundment created by the dam at the lowest uncontrolled spillway crest;

(12)(A) "PMF" (probable maximum flood) means the maximum runoff condition resulting from the most severe combination of hydrologic and meteorologic conditions that are reasonably possible for a given watershed.

(B) The PMF is the maximum runoff computed from the spatial and temporal distribution of the PMP over the watershed;

(13) "PMP" (probable maximum precipitation) means the greatest theoretical depth of precipitation (rainfall equivalent) for a given duration that is physically possible over a given size storm area at a particular geographical location at a certain time of the year; and

(14) "Spillway design flood" (SDF) means the largest flood the spillway must pass without overtopping a dam.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-103. Scope.

All dams within the State of Arkansas, except those owned by the United States Government or those exempted by 15 CAR § 23-104, must have a valid construction and operation permit issued under the provisions of this part.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-104. Exemptions.

Dams meeting any of the following criteria are not subject to rules contained in this part unless 15 CAR § 23-105 is successfully invoked:

- (1) Dams with height less than twenty-five feet (25');
- (2) Dams with normal storage less than fifty acre-feet (50 ac-ft); or
- (3) Dams with crest elevations below the ordinary high water mark of the stream at that location.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-105. Petition by affected persons.

(a) Persons who believe themselves or their property to be endangered by failure of a dam that is below the size requirements specified in 15 CAR § 23-104 may file a petition requesting that the Arkansas Natural Resources Commission require permitting and compliance with dam safety regulations for that dam.

(b) **Commission investigation.** Upon receipt of such petition, the Director of the Arkansas Natural Resources Commission shall immediately begin an investigation of the petitioner's allegations.

(c) **Public hearing.**

(1) As a part of the commission's investigation, a public hearing shall be held within the county in which the dam is located.

(2) Notice of the hearing shall be published in a manner consistent with 15 CAR § 23-208.

(d) **Commission order.** Upon consideration of staff findings and testimony received, the commission shall issue an order either approving or denying the petitioner's request.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-106. Duties, obligations, and liabilities of dam owners.

Nothing in this part shall be construed to relieve an owner or operator of a dam or reservoir of the legal duties, obligations, or liabilities incident to ownership or operation.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-107. No liability by commission, employees, or agents.

No action shall be brought against the state or the Arkansas Natural Resources Commission or its employees or agents for the recovery of damages caused by the partial or total failure of any dam or reservoir or through the operation of any dam or reservoir upon the grounds that the aforementioned parties are liable by virtue of any of the following:

- (1) The approval of the dam or reservoir, or approval of flood-handling plans during construction;
- (2) The issuance or enforcement of orders relative to maintenance and operation of the dam or reservoir;
- (3) Inspection, control, and regulation of the dam or reservoir; or
- (4) Measures taken to protect against failure during an emergency.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-108. Exceptions.

(a) The Arkansas Natural Resources Commission may grant exceptions to requirements contained within this part.

(b) Any variance from this part must be supported by written approval of the Director of the Arkansas Natural Resources Commission setting forth the reason for its granting and the limits placed thereon.

Authority. Arkansas Code § 15-22-205.

Subpart 2. Permits for Dams

15 CAR § 23-201. Construction permit.

A permit issued by the Arkansas Natural Resources Commission is required prior to construction of any dam not exempted under 15 CAR § 23-103 or § 23-104.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-202. Operation permit.

(a)(1) Before water is deliberately impounded by closing drain gates on a newly constructed dam, an operation permit must be issued by the Arkansas Natural Resources Commission.

(2) An operation permit will be issued by the Chief Engineer of the Arkansas Natural Resources Commission upon completion of final inspection and receipt of the Certificate of Substantial Compliance by the owner's engineer.

(3) See 15 CAR § 23-606.

(b) An operation permit is required for all existing dams not exempted under 15 CAR § 23-103 or § 23-104.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-203. Transfer of permit.

(a) Within six (6) months after change of ownership of a permitted dam, the new owner shall notify the Arkansas Natural Resources Commission.

(b) The commission shall issue a dam permit in the name of the new owner.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-204. Water plan compliance.

(a) Filing of an application to permit a proposed dam also serves as filing for Water Plan Compliance Certification as described in 15 CAR § 22-205.

(b) The water plan compliance process may run concurrently with the dam permit review.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-205. Application.

Applicants for dam permits must provide all applicable information requested on the form supplied by the Arkansas Natural Resources Commission.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-206. Commission review.

(a) Upon receipt of application for dam permit, the Arkansas Natural Resources Commission staff will review data presented to determine compliance with:

- (1) State law;
- (2) Commission rules; and
- (3) Accepted engineering practices.

(b) If necessary, the staff may request additional data to ensure compliance.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-207. Public notice.

(a) Upon completion of Arkansas Natural Resources Commission review, the Director of the Arkansas Natural Resources Commission will cause a public notice to be published two (2) times, one (1) week apart.

(b) The public notice will be placed in a newspaper having general circulation in the county in which the dam is/will be located.

(c) Information in the public notice will include:

- (1) The owner's name and address;
- (2) The dam's location; and

(3) Pertinent physical data describing the dam.

(d) In addition, the public notice will request that questions, comments, and objections to the dam's permitting and/or requests for public hearing be forwarded in writing to the commission for action within twenty (20) days after the second publication.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-208. Public hearing.

(a) If requested, the Director of the Arkansas Natural Resources Commission shall cause a public hearing to be conducted within the county in which the dam is/will be located.

(b) Said hearing will be for the purpose of:

- (1) Describing the proposed actions; and
- (2) Taking testimony regarding the public view of the proposal.

(c) The director shall cause publication of a public notice describing the time, place, and purpose of the public hearing.

(d) Copies of the public notice shall be furnished to the:

- (1) Owner or owners;
- (2) Complainant or complainants; and
- (3) Adjacent landowners, if known.

(e) Publication shall be in a newspaper having general circulation in the county in which the dam is/will be located.

(f) Notice shall be published twice, one (1) week apart.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-209. Commission action.

(a) If no public hearing is requested as a result of the public notice, the Director of the Arkansas Natural Resources Commission will either approve or deny the permit request.

(b) If a public hearing is requested as a result of the public notice, the director will approve or deny the permit request based upon the evidence presented.

(c) Prior to issuance of the permit, a Water Plan Compliance Certification must be obtained as prescribed in 15 CAR pt. 22, if applicable.

Authority. Arkansas Code § 15-22-205.

Subpart 3. Fees

15 CAR § 23-301. Estimated application review fees.

Any application for permitting a proposed dam after March 24, 1993, shall be accompanied by a check for one percent (1%) of the estimated construction cost of the dam or one hundred dollars (\$100), whichever is greater, except that no application review fee shall exceed one thousand dollars (\$1,000).

Authority. Arkansas Code §§ 15-22-205, 15-22-219.

15 CAR § 23-302. Final cost report.

The owner shall provide to the Arkansas Natural Resources Commission a report of actual construction costs within forty-five (45) days after completion of construction.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-303. Final application review fees.

(a) If the estimated application review fee exceeds the fee based on actual construction cost, an amount equal to the difference will be refunded.

(b) If the fee based on construction cost exceeds the estimated application review fee, an amount equal to the difference will be paid to the Arkansas Natural Resources Commission.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-304. Annual permit fee.

(a) The annual permit fee shall be computed as specified in Arkansas Code § 15-22-219, as may be amended from time to time.

(b) Excerpt from Arkansas Code § 15-22-219:

“(b)(1) Any person obtaining a permit under the provisions of § 15-22-210, in consideration therefor, shall pay to the commission a fee equal to twelve cents (12¢) per acre-foot of water which the dam involved is designed to impound, but not less than twenty-five dollars (\$25.00) nor more than ten thousand dollars (\$10,000).

(2) The permit shall provide that the same fee shall be paid by that person to the commission each year thereafter during which the dam is maintained, on or before the anniversary date of the issuance of the permit.”

(c)(1) The volume “the dam involved is designed to impound” is defined as the billing volume.

(2) See 15 CAR § 23-102, Definitions.

Authority. Arkansas Code §§ 15-22-205, 15-22-219.

Subpart 4. Enforcement

15 CAR § 23-401. Notice of nonemergency deficiency.

(a) Upon discovery of a deficiency that does not immediately threaten the dam's safety, the Chief Engineer of the Arkansas Natural Resources Commission will issue a letter:

- (1) Specifying actions necessary to remedy the problem; and
- (2) Requesting a schedule for implementing the required actions.

(b) Based on mutual agreement a consent order will be issued that will embody the agreed upon actions and timetable.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-402. Public hearings.

(a) In the event remedial measures for nonemergency deficiencies cannot be accomplished through the means of consent orders, the Director of the Arkansas Natural Resources Commission shall cause a public hearing to be conducted to:

- (1) Present the staff's proposed order; and
- (2) Accept testimony.

(b) The hearing shall be conducted in the county in which the dam is located.

(c) Public notice of the hearing shall be provided in a manner consistent with 15 CAR § 23-208.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-403. Commission orders.

After review of findings of the public hearing, the Arkansas Natural Resources Commission may issue orders compelling specified actions.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-404. Penalties.

(a) Noncompliance with Arkansas Natural Resources Commission rules or disregard of commission orders may result in fines up to ten thousand dollars (\$10,000).

(b) In general, penalties will be set by doubling the costs incurred by the commission.

Authority. Arkansas Code §§ 15-22-204, 15-22-205.

15 CAR § 23-405. Emergency remedial orders.

(a) Upon discovery of a condition that renders a dam subject to rapid failure, the Director of the Arkansas Natural Resources Commission may issue an Emergency Remedial Order describing actions that must be taken to protect life and property.

(b) Failure to comply with these orders may result in penalties under 15 CAR § 23-404.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-406. Appeals.

Actions by the Arkansas Natural Resources Commission may be appealed as described in Subpart 5 of Organization and General Operation of the Arkansas Natural Resources Commission, 15 CAR pt. 1.

Authority. Arkansas Code § 15-22-205.

Subpart 5. Design Criteria

15 CAR § 23-501. General standards.

(a) All dams must be designed in accordance with currently accepted engineering practices.

(b) Acceptable guidelines include those published and recommended by the:

- (1) United States Army Corps of Engineers;
- (2) United States Department of Agriculture, Soil Conservation Service;
- (3) United States Department of Interior, Bureau of Reclamation; and
- (4) Federal Energy Regulatory Commission.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-502. Registered professional engineer.

Preparation of all plans and specifications and the construction, enlargement, alteration, repair, or removal of dams subject to Arkansas Natural Resources Commission review shall be under the supervision of an engineer registered in this state.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-503. Size classification criteria.

Size classification is based on the more stringent of two (2) categories, either height of dam or maximum storage, and shall be in accordance with Table 1 of this section.

Table 1		
Size Classification		
<u>Size</u>	<u>Maximum storage (acre-feet)</u>	<u>Height (Feet)</u>
Small	50 to 1,000	24 to 40
Intermediate	≥ 1,000 and < 50,000	≥ 40 and < 100
Large	≥ 50,000	≥ 100

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-504. Hazard classification criteria.

(a) All dams will be classified or reclassified as required to ensure appropriate safety considerations.

(b) Hazard classification shall be based on the more stringent of either potential loss of human life or economic loss in accordance with Table 2 of this section.

(c) If doubt exists concerning classification, the more hazardous category must be selected.

(d) **Note.** The hazard classification does not indicate the physical condition of a dam.

Table 2 Hazard Classification		
Category	Loss of <u>Human life</u>	<u>Economic loss</u>
Low	No	Minimal (No significant structures; pastures, woodland, or largely undeveloped land); less than \$100,000.
Significant	No	Appreciable (Significant structures, industrial, or commercial development, or cropland); \$100,000 to \$500,000.
High	Yes	Excessive (Extensive public, industrial, commercial, or agricultural development); over \$500,000.

Note: Loss of human life is based upon presence of habitable structures.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-505. Spillway design flood (SDF) for dams.

(a) The size and hazard classifications are combined to determine the hydrologic criteria for dams.

(b) The minimum acceptable spillway design floods (SDFs) for dams are shown in Table 3.

(c) The minimum hydrologic criteria may be reduced if properly prepared dam breach analyses show that dam failure during the SDF would cause an increase in flood level of one foot (1') or less at, and downstream of, the first:

- (1) Habitable structure; or
- (2) Financially significant development.

Table 3 Spillway Design Flood for Dams		
Hazard Classification	Size	Spillway Design Flood
Low	Small	.25 PMF
	Intermediate	.25 to .50 PMF
	*Large	.50 to .75 PMF
Significant	Small	.25 to .50 PMF
	Intermediate	.50 to PMF
	Large	PMF
High	Small	.50 PMF to PMF
	Intermediate	PMF
	Large	PMF

Note: Where ranges are given in this table, the spillway design flood shall be determined by straight line interpolation, based upon the effective height of dam or maximum storage, whichever computed SDF is greater.

*SDF shall be extrapolated at the same rate of change as an intermediate size dam to a maximum of .75 PMF.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-506. Downstream releases.

(a) Each dam constructed after the effective date of this part shall be equipped with a release port or ports designed to release a flow of water for instream and downstream riparian uses.

(b) Minimum release quantities shall be:

- (1) Sufficient to maintain existing instream and offstream uses; and
- (2) Defined after consideration of the best available low flow information.

(c) Minimum release ports must be designed to operate without manual intervention.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-507. Reservoir drain conduit.

(a) All proposed dams must include a permanent facility for draining the reservoir.

(b)(1) Such conduit shall have a minimum diameter of:

(A) Twelve inches (12”) for watershed areas less than one (1) square mile; and

(B) Eighteen inches (18”) for watershed greater than one (1) square mile.

(2) Such conduits must be capable of lowering the surface of the reservoir at a rate not less than two inches (2”) per day (at normal pool) while inflow to the reservoir is twice the annual average daily flow.

(c) Operating equipment for the drain facility must be accessible from above the maximum design water surface, unless inlet design is such that the conduit is flowing at capacity at a lower elevation.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-508. Structural criteria.

As a minimum, the design must address the following:

- (1) Slope stability under all probable loading conditions;
- (2) Stability against sliding and overturning;
- (3) Adequacy of foundation for imposed loads;
- (4) Adequacy of energy dissipating devices at discharge points;
- (5) Adequacy of channels and conduits for expected flows;
- (6) Protection of embankments and other earth slopes from erosion; and
- (7)(A) Stability against seismic forces for all "High or Significant Hazard" dams in Seismic Zones 2 and 3.

(B) See Appendix, Figure 1.

Authority. Arkansas Code § 15-22-205.

Subpart 6. Construction Requirements

15 CAR § 23-601. Plans and specifications.

Written approval of plans and specifications must be obtained from the Chief Engineer of the Arkansas Natural Resources Commission prior to start of construction.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-602. Construction inspections.

An agent of the design-registered professional engineer must be on site during construction to ensure that techniques and materials used comply with plans and specifications.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-603. Construction records.

(a) The applicant (or applicant's engineer) must retain construction records throughout the life of the dam.

(b) As a minimum, the records must include:

- (1) Daily log of construction activities;
- (2) Record of personnel and equipment on site;
- (3) Documentation of soil tests such as:
 - (A) Standard proctor;
 - (B) In-place density; and
 - (C) Moisture;
- (4) Documentation of concrete cylinder tests; and
- (5) Copies of all engineering change orders and field change notes.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-604. Erosion protection.

(a) During construction, adequate measures must be taken to prevent excessive erosion and off-site sedimentation.

(b) Suitable techniques include:

- (1) Temporary vegetation;
- (2) Mulching;
- (3) Staked straw bales;
- (4) Filter fences; and
- (5) Chemical stabilization.

(c) Other techniques may be used if approved by the Chief Engineer of the Arkansas Natural Resources Commission.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-605. Final inspection.

Upon substantial completion of construction, the owner must:

- (1) Notify the Arkansas Natural Resources Commission; and
- (2) Schedule a final inspection of the work.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-606. Engineer's certification.

Upon completion of construction, the project engineer shall file with the Arkansas Natural Resources Commission a certificate of substantial compliance with approved plans and specifications.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-607. Record drawings.

Within sixty (60) days after completion of construction, the owner or his or her engineer shall submit to the Chief Engineer of the Arkansas Natural Resources Commission a complete set of record drawings of the project for filing as a permanent record with the Arkansas Natural Resources Commission.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-608. Permanent reference marks.

(a) Two (2) or more permanent reference marks shall be established for future use near but not on the dam.

(b) Accurate longitude, latitude, and elevation shall be shown on the record drawings.

(c) Elevations shall be referenced to the National Geodetic Vertical Datum of 1929.

Authority. Arkansas Code § 15-22-205.

Subpart 7. Evaluations of Existing Dams

15 CAR § 23-701. Types of evaluations.

(a) Spillway design flood.

(1) Existing dams will be evaluated periodically to determine if development of downstream areas warrants:

(A) Change in hazard classification; and

(B) Review of spillway design flood (SDF).

(2) Overtopping during the SDF may be allowed if properly prepared analyses demonstrate that:

(A) Overtopping will have a return interval greater than twenty-five (25) years; and

(B) The dam will withstand the projected overtopping without failure.

(b) **Structural.** A complete evaluation of the structural integrity may include the following:

(1) Geotechnical investigation;

(2) Structural stability;

(3) Seismic resistance;

(4) Horizontal and vertical alignments;

(5) Structural concrete reliability;

(6) Erosion controls;

(7) Inlet and outlet works;

(8) Stilling basins;

(9) Seepage; and

(10) Others.

(c) Operation and maintenance.

(1) Evaluation of an existing structure shall include, but not be limited to, visual inspections and evaluations of potential problems such as:

(A) Leakage;

(B) Seepage;

(C) Cracks;

(D) Slides;

(E) Settlement;

(F) Spillway blockages;

(G) Conduit controls; and

(H) Other operational and maintenance deficiencies that could lead to failure of the dam.

(2) There may be sufficient evidence for a finding that an existing dam is inadequate.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-702. Deficiencies.

Dams not meeting minimum acceptable standards (see Subparts 5 and 8 of this part) are deemed inadequate and therefore subject to necessary action under Subpart 4 of this part.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-703. Interim alternatives.

(a) When the Arkansas Natural Resources Commission considers the permanent upgrading or removal of an inadequate dam, the dam owner may request the commission to consider interim alternatives including, but not limited to:

(1) Temporary repairs;

- (2) Reservoir dewatering;
- (3) Insurance coverage; and
- (4) Downstream warning/evacuation plans.

(b) Consideration shall be given to:

- (1) The time required to overcome economic, physical, and legal restraints to upgrading;
- (2) The prospect of permanent repair;
- (3) Current use of the facility;
- (4) Degree of risk; and
- (5) Public welfare.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-704. Variance.

(a) Upon request by the owner of an existing dam that does not meet the minimum acceptable standards stated in Subparts 5 and 8 of this part, the Chief Engineer of the Arkansas Natural Resources Commission may authorize a variance from this criteria.

(b) The chief engineer's decision shall consider:

- (1) Consequences of dam failure;
- (2) The owner's proposal for reduction of hazards;
- (3) Barriers to upgrading of the structure; and
- (4) Other pertinent factors.

Authority. Arkansas Code § 15-22-205.

Subpart 8. Operation and Maintenance

15 CAR § 23-801. Compliance with approved documents.

Operation and maintenance must be performed in accord with documents filed by the owner or owner's engineer in obtaining the dam permit.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-802. Erosion protection.

Maintenance of adequate means to protect embankments, abutments, crests, and earthen channels from erosion is required.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-803. Woody vegetation prohibited — Embankment dams.

(a) Growth of woody vegetation is not permitted:

- (1) On the spillway, crest, upstream or downstream embankments; and
- (2) Within twenty feet (20') of the downstream toe or groin of the dam.

(b) **Remediation.**

- (1) Trees with roots likely to extend to the crest of the dam shall be removed.
- (2) Trees whose roots are unlikely to extend to the crest may remain if:
 - (A) Erosion control vegetation can be maintained; and
 - (B) Inspections can be accomplished.
- (3) Trees larger than six inches (6") in diameter that are to be removed from embankments must be removed together with roots larger than two inches (2").
- (4) The resulting voids shall be repaired with compacted soil similar to the remaining embankment material.
- (5) Smaller trees and brush and those not on embankments may be cut and/or treated with herbicide.

(c) **Time for compliance.**

- (1) New growth must be removed before it shades out desirable vegetation generally on a two-year cycle.

(2) Where extensive tree and brush growth were established prior to adoption of this part, a compliance schedule of up to five (5) years may be approved provided that:

- (A) No evidence of significant immediate hazard is detected;
- (B) The compliance schedule includes a:
 - (i) Reasonable estimate for costs; and
 - (ii) Rational procedure for accumulating necessary funds;
- (C) Vegetation is not so dense that effective inspections are impossible;

and

- (D) Appropriate annual efforts are scheduled.

(3) The long-term schedule may be cancelled if evidence of immediate hazards is discovered in subsequent inspections.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-804. Woody vegetation prohibited — Concrete or masonry dams.

(a) No grass, vines, brush, trees, or other vegetation is permitted to grow in cracks or joints of concrete or masonry structures.

(b) **Remediation.**

(1) Vegetation shall be removed by:

- (A) Manual, mechanical, or chemical means; or
- (B) A combination thereof.

(2) Open cracks or joints shall be repaired by approved means.

(c) **Time for compliance.** In the absence of conditions indicating immediate hazards, a schedule resulting in complete compliance within six (6) months may be approved.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-805. Operation of gates and controls.

(a) All gates, valves, and controls must be maintained in operational condition.

(b) Operation of each such item must be tested at least annually, and such tests must be documented in the owner's permanent records.

(c) However, tests may be waived by the Chief Engineer of the Arkansas Natural Resources Commission if the design of drainage facilities and/or their condition is such that reclosing the drain would be impossible until the reservoir was substantially emptied.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-806. Repairs and modifications.

(a) Written approval by the Chief Engineer of the Arkansas Natural Resources Commission is required before repairs or modifications to a dam or appurtenances may be undertaken.

(b) Plans and specifications prepared by a registered professional engineer may be required for major actions.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-807. Records.

Documentation of all owner's inspections and repairs or modifications to the dam or appurtenances must be retained by the owner.

Authority. Arkansas Code § 15-22-205.

Subpart 9. Inspection

15 CAR § 23-901. Owner inspection.

(a) 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.

(b) Results of such inspections must be:

(1) Summarized on forms supplied by the Arkansas Natural Resources Commission; and

(2) Mailed to the commission office within ten (10) days of inspection.

(c) Commission staff may provide training or assistance in performing or interpreting inspections.

(d) Any deterioration of the dam or appurtenances must be reported to the commission and remedial measures undertaken after approval by the Chief Engineer of the Arkansas Natural Resources Commission.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-902. Commission inspection.

(a) Arkansas Natural Resources Commission personnel will periodically perform inspections of each permitted dam.

(b) Commission inspections are of three (3) types:

(1) Maintenance and Operation;

(2) Dam Safety Evaluation; and

(3) Emergency.

(c) The frequency of inspections and evaluations will vary according to the hazard rating, size, and condition of the dam.

(d) Emergency inspections will be performed when conditions warrant.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-903. Access.

(a) The owner or owner's agent must provide Arkansas Natural Resources Commission personnel access to the dam during reasonable working hours for commission inspections.

(b) Access during emergency conditions must be available to commission personnel.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-904. Assistance by owner.

(a) The owner or owner's agent may be requested to provide limited assistance to Arkansas Natural Resources Commission personnel in performing inspections.

(b) Requested assistance may include:

- (1) Operating gates, valves, and other controls; and
- (2) Cutting excessive vegetation in preparation for inspections.

Authority. Arkansas Code § 15-22-205.

Subpart 10. Emergency Action Plans

15 CAR § 23-1001. Emergency action plans required.

An emergency action plan must be prepared by the owner for all permitted high hazard dams.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-1002. Approval of emergency action plans required.

Written approval of the Chief Engineer of the Arkansas Natural Resources Commission must be obtained for all EAPs.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-1003. Contents of emergency action plans.

(a) Site conditions will dictate exact contents of specific EAPs.

(b) Guidelines for preparation of EAPs are available from the Arkansas Natural Resources Commission.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-1004. Annual exercises and drills.

(a) Implementation of EAPs must include at least:

(1) One (1) tabletop exercise per year; and

(2) One (1) test drill every three (3) years.

(b) The Chief Engineer of the Arkansas Natural Resources Commission must be notified at least one (1) week in advance of either procedure.

Authority. Arkansas Code § 15-22-205.

Subpart 11. Removal of Dams

15 CAR § 23-1101. Approval of plans required.

Prior to removal, a plan for removal and revegetation must be approved by the Chief Engineer of the Arkansas Natural Resources Commission.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-1102. Notice to downstream landowners.

Downstream landowners must be notified of the proposed action if any measure of flood protection would be lost due to the removal of the dam.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-1103. Rights of other landowners.

Downstream landowners and those adjacent to the reservoir have the right to notice of projected changes in streamflow patterns or reservoir levels but do not have the right to continued benefits at the dam owner's expense, unless the dam owner is contractually bound to provide such benefits.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-1104. Procedure for breaching.

The procedure for breaching must adequately guard against downstream:

- (1) Flooding;
- (2) Erosion; and
- (3) Sedimentation.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-1105. Restoration of original stream channel.

Dimensions of the final cut through the dam must be defined in the plan and must be of sufficient size to prevent impounding water when streamflow equals the one hundred-year flood.

Authority. Arkansas Code § 15-22-205.

15 CAR § 23-1106. Erosion protection.

The plan must provide for establishment of vegetation or other erosion protection measures sufficient to guard against deposition of excessive sediment off site.

Authority. Arkansas Code § 15-22-205.

Appendix A. Arkansas Seismic Zones

Link:

<https://CodeOfARRules.arkansas.gov/docs/CARCodeAppendices/Appendices/57/15CARpt.23Appendix.pdf>