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E.1. Alabama



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HB454

By Representatives Wood, Canfield, McCutcheon, Laird, Bridges and Fite

RFD Commerce

Rd 1 14-FEB-08

SYNOPSIS: This bill would provide for the inventory and classification of dams by the Water Resources Division of the Alabama Department of Economic and Community Affairs; to define terms associated with the safety of dams; to provide that no action for damages could be brought against the state by reason of any action taken or not taken by the state pursuant to this act; to authorize the promulgation of rules; and to provide for criminal and civil violations.

Amendment 621 of the Constitution of Alabama of 1901, now appearing as Section 111.05 of the Official Recompilation of the Constitution of Alabama of 1901, as amended, prohibits a general law whose purpose or effect would be to require a new or increased expenditure of local funds from becoming effective with regard to a local governmental entity without enactment by a 2/3 vote unless: it comes within one of a number of specified exceptions; it is approved by the affected entity; or the Legislature appropriates funds, or provides a local source of revenue, to the entity for the purpose.

The purpose or effect of this bill would be to require a new or increased expenditure of local funds within the meaning of the amendment. However, the bill does not require approval of a local governmental entity or enactment by a 2/3 vote to become effective because it comes within one of the specified exceptions contained in the amendment.

A BILL
TO BE ENTITLED
AN ACT

To provide for the inventory and classification of dams by the Water Resources Division of the Alabama Department of Economic and Community Affairs for the purpose of assuring the safety of state dams; to define certain terms associated with dams and dam safety; to provide that no action for damages shall be bought against the state by reason of any action taken or not taken by the state pursuant to this act; to authorize the promulgation of rules; to provide criminal and civil penalties for violations; and in connection therewith would have as its purpose or effect the requirement of a new or increased expenditure of local funds within the meaning of Amendment 621 of the Constitution of Alabama of 1901, now appearing as Section 111.05 of the Official Recompilation of the Constitution of Alabama of 1901, as amended.

BE IT ENACTED BY THE LEGISLATURE OF ALABAMA:

Section 1. This act shall be known and may be cited as the "Alabama Dam Inventory and Classification Act."

Section 2. (a) It is the purpose of this act to provide for the inventory and classification of dams in order to protect the health, safety, and welfare of all the citizens of the state.

(b) The Legislature finds and declares that the inventorying and classification of dams is properly a matter for regulation under the police powers of the state for the safety, protection, and welfare of the citizens of Alabama.

Section 3. As used in this act, the following terms shall have the following meanings:

(1) **ABANDON or ABANDONMENT.** To render a dam non-impounding by dewatering and making the dam incapable of impounding water.

(2) **ADVERSE CONSEQUENCES.** Negative impacts that may occur upstream, downstream, or at locations remote from a dam as a direct and proximate result of the existence or operation of the dam. The primary concerns for adverse consequence are loss of human life, loss of critical infrastructure, property damage, and lifeline disruption.

(3) **ALTERATIONS or REPAIRS.** Alterations, modifications, or repairs to existing dams or appurtenant works as may directly affect the safety of the dam or reservoir, as determined by the office.

(4) **APPROVAL.** Authorization in writing issued by the director to an owner who has applied to the office for permission to construct, reconstruct, enlarge, repair, alter, modify, remove, maintain, operate, or abandon a dam, and which specifies the conditions or limitations under which work is to be performed by the owner or under which approval is granted.

(5) **APPURTENANT WORKS.** The term includes, but is not limited to, such structures as spillways, either in the dam or separate therefrom; the reservoir and its rim; low-level outlet works; and liquid conduits such as tunnels, pipelines, or penstocks, either through the dam or its abutments.

(6) **BREACH.** Partial removal of a dam, creating a channel through the dam.

(7) **CERTIFICATE.** For a high hazard potential dam the term means a written authorization issued by the director to construct or operate, or both, a dam. For all other dams the term means a written acknowledgement of dam construction or removal solely for inventorying purposes.

(8) **CONSTRUCT or CONSTRUCTION.** The design, building, alteration, reconstruction, or enlargement of any dam for the impoundment or diversion of water or liquid substance and shall include any activity which, other than routinely as part of an approved maintenance program, repairs or restores the dam, or alters its design, shape, or structural characteristics.

(9) **CRITICAL INFRASTRUCTURE.** Systems and assets associated with or impacted by dams or impoundments, whether physical or virtual, so vital to Alabama that the incapacity or destruction of such a system or asset would have a debilitating impact on security, economic stability, public health or safety, or any combination of those matters, consistent with the "Critical Infrastructure Protection Act of 2001."

(10) **DAM.** Any artificial barrier, including appurtenant works, which impounds or diverts water, wastewater, or liquid-borne materials and which meets any of the following criteria:

a. Has an impounding capacity at maximum water storage elevation of at least 50 acre-feet.

b. Is 25 feet or more in height.

c. Will create a probable loss of human life in the event of failure or improper operation, regardless of height or storage capacity.

d. Will create a probable loss of critical infrastructure in the event of failure or of improper operation, regardless of height or storage capacity.

(11) **DIRECTOR.** The Director of the Office of Water Resources or his or her designee. The director or designee must be an engineer. The director must have a current license to practice engineering in the State of Alabama.

(12) **ENGINEER.** A qualified professional engineer. The term qualified professional engineer as used in this act is intended to mean an individual who has a background in civil engineering and meets all the following qualifications:

a. Is a licensed professional engineer in the state.

b. Is competent in areas related to dam investigation, design, construction, and operation for the type of dam being investigated, designed, constructed, or operated.

c. Has at least seven years of relevant experience in areas such as investigation, design, construction, reconstruction, enlargement, repair, alteration, maintenance, operation, breach, removal, or abandonment of dams.

d. Either (i) understands adverse dam incidents, failures, and the potential causes and consequences of failures; or (ii) is the state conservation engineer of the Department of Conservation and Natural Resources.

(13) **ENLARGE or ENLARGEMENT.** Any change in or addition to an existing dam or impoundment which raises or may raise the maximum water storage elevation of the liquid impounded by the dam or reservoir.

(14) **HAZARD POTENTIAL.** Possible adverse consequences that result from the release of water or stored contents due to failure or improper operation of the dam or appurtenant works. The hazard potential classification of a dam does not reflect in any way on the current condition of the dam and its appurtenant works, such as, but not limited to, the safety, structural integrity, or flood routing capacity.

(15) **HEIGHT.** The term means either (i) the distance from the natural bed of the impoundment, stream, or watercourse measured at the downstream toe of the dam to the maximum water storage elevation; or (ii) the distance from the lowest elevation of the outside limit of the dam, if the dam is not across a stream channel or watercourse, to the maximum water storage elevation.

(16) **HIGH HAZARD POTENTIAL DAM.** A dam assigned the high hazard potential classification where failure or improper operation will cause probable loss of human life.

(17) **LOCAL UNIT OF GOVERNMENT.** Any political subdivision of this state including, but not limited to, a county, city, town, or municipality, if the political subdivision provides local governmental services in a geographically limited area of this state as its primary purpose and it has the power to act primarily on behalf of that area.

- (18) **LOW HAZARD POTENTIAL DAM.** A dam not assigned the moderate or high hazard potential classification.
- (19) **MAXIMUM WATER STORAGE ELEVATION.** The elevation of the top of the dam.
- (20) **MODERATE HAZARD POTENTIAL DAM or SIGNIFICANT HAZARD POTENTIAL DAM.** A dam assigned the moderate hazard potential classification where failure or improper operation results in no probable loss of human life but will cause probable loss of critical infrastructure.
- (21) **OFFICE.** The Office of Water Resources, a division of the Alabama Department of Economic and Community Affairs or its successor.
- (22) **OPERATE or OPERATION.** To take actions to control the impoundment or diversion of a liquid substance by a dam.
- (23) **OWNER.** Any person who owns, controls, operates, maintains, or manages or proposes to construct, reconstruct, enlarge, repair, alter, remove, or abandon a dam or reservoir.
- (24) **PERSON.** Any and all persons, natural or artificial, including any individual, entity, firm, association, organization, partnership, business, trust, corporation, company, any federal agency, authority, or corporation created by the United States of America, and the state and all political subdivisions, regions, districts, municipalities, counties, and public agencies thereof.
- (25) **PROBABLE LOSS OF CRITICAL INFRASTRUCTURE.** The loss of critical infrastructure is likely to occur, is reasonably expected to occur, or is the actual result of any action or inaction.
- (26) **PROBABLE LOSS OF HUMAN LIFE.** Loss of human life that will likely occur, is reasonably expected to occur, or is the actual result of any action or inaction.
- (27) **RECONSTRUCTION.** Removal and replacement of an existing dam.
- (28) **REMOVE or REMOVAL.** Complete elimination of a dam embankment or appurtenant works, or both.
- (29) **RESERVOIR or IMPOUNDMENT.** Any basin which contains or will contain impounded water, wastewater, or liquid-borne materials by virtue of its having been impounded by a dam.
- (30) **RESPONSIBLE AUTHORITY.** Those state, county, city, or other offices that are charged with maintaining public safety and that are listed in any emergency action plan required by this act or any rule promulgated pursuant to this act.
- (31) **RULES.** The most recent policies, requirements, regulations, administrative rules, or standards adopted by the office pursuant to the Alabama Administrative Procedure Act, codified as Chapter 22, Title 41, Code of Alabama 1975, as amended, in order to enforce this act.
- (32) **STATE.** The State of Alabama.
- (33) **SURFACE MINING ACT.** Chapter 16, Title 9 of the Code of Alabama 1975, as amended.

Section 4. (a) In addition to any other powers and duties provided in this act, the director shall perform

the following duties:

(1) Exercise general supervision over the administration and enforcement of this act and the rules promulgated under this act.

(2) Advise, consult, cooperate, contract, and enter into cooperative agreements with persons, local units of government, and other governmental agencies or committees, including, but not limited to, the State Soil and Water Conservation Committee, the Alabama Department of Environmental Management, the Department of Conservation and Natural Resources, the Alabama Department of Transportation, the Alabama Association of Conservation Districts, or the United States Army Corps of Engineers for the purposes of carrying out this act.

(3) Take such other actions as may be necessary to carry out this act.

(4) Specify conditions under which any employee of the office or its agents may enter upon lands of owners of dams.

(5) Direct, conduct, and supervise investigations, as the director deems necessary to carry out the duties as prescribed in this section.

(b) In the performance of its duties, the office shall establish, adapt, modify, and repeal, by the promulgation of rules, such policies, requirements, conditions, or standards governing the inventory and classification of dams covered under this act, including, but not limited to, the following:

(1) Standards to govern the inventory of dams.

(2) Report necessary dam information to the National Performance of Dams Program, as requested.

(3) Report inventory and other necessary information to the National Inventory of Dams, as requested.

Section 5. (a) The office shall inventory the dams in the state and classify each dam into one of the following categories:

(1) Low hazard potential.

(2) Moderate hazard potential.

(3) High hazard potential.

(b) The office may gather necessary updated information regarding the characteristics of a dam and its surroundings in order to verify classification.

(c) The office may use information furnished to it by other persons to accomplish the purpose of this act and this section including, but not limited to, the classification of dams as set forth in subsection (a).

Section 6. (a) The following low hazard potential dams are not required to be included in the inventory of dams maintained pursuant to this act:

(1) Any dam which is less than six feet in height, regardless of its storage capacity.

(2) Any dam which has an impounding storage capacity at maximum water storage elevation of less than 15 acre-feet, regardless of its height.

(b) The following dams shall be exempt from all regulatory requirements of this act, except as necessary to maintain the inventory of dams pursuant to this act:

(1) Any dam owned and operated by any department or agency of the United States government, provided those dams are regulated in a manner that meets or exceeds the requirements of this act.

(2) Any dam licensed by the Federal Energy Regulatory Commission, or for which a license application is pending with the Federal Energy Regulatory Commission.

(c) Any dam regulated and permitted under the Surface Mining Act is exempt from this act so long as the dam is subject to regulation by the Surface Mining Act. However, if a dam so constructed is classified by the director as a high hazard potential dam, the owner, upon the completion of the mining activity in connection with which the dam was constructed, shall either drain and reclaim the impoundment formed by the dam pursuant to the mined land use plan approved under the Surface Mining Act or stabilize the impoundment as a lake pursuant to the mined land use plan and the rules promulgated under this act. If the impoundment is reclaimed as a lake and the dam which created the impoundment remains in place as a high hazard potential dam, then before the lake is deemed to be reclaimed so as to release the owner from his or her obligations under the Surface Mining Act, the owner shall certify to the director and the owners of the properties on which the high hazard potential dam is located that the high hazard potential dam is in full compliance with this act.

(d) The owners of exempt dams shall be required to submit information to the agency in accordance with rules promulgated under this act for purposes of maintaining the inventory.

Section 7. (a) The director, or any authorized agent or contractor, is authorized and shall be permitted by the owner to make a visual inspection of a high hazard potential dam.

(b) This act shall not be construed as exempting any existing dam from compliance with applicable engineering design standards or requirements.

(c) With regard to moderate and low hazard potential dams, the office is not required to perform structural inspections of a moderate or low hazard potential dam.

Section 8. (a) It shall be unlawful for any person to refuse entry or access to any authorized representative of the office who requests entry for purposes of fulfilling the requirements of this act and who presents appropriate identification. It shall also be unlawful to obstruct, hamper, or interfere with any representative while in the process of carrying out his or her official duties, including, but not limited to, classification determination pursuant to this act and the rules promulgated under this act.

(b) Any person who is aggrieved or adversely affected by an order or action of the director or the office may seek a review of the order or action in accordance with the Alabama Administrative Procedure Act, codified as Chapter 22, Title 41, Code of Alabama 1975, as amended, in order to enforce this act.

Section 9. (a) Nothing in this act shall be construed to constitute a waiver of the sovereign immunity of the state or the office.

(b) No legal or administrative action shall be brought against the state, the office, the director, or any

member, officer, or employee of the state or the office for damages sustained through the partial or total failure of any dam or for any action or inaction or responsibility pursuant to this act, including specifically, but not limited to, any action taken or not taken by the office, the director, or the employees, officers, or representatives of the office.

(c) Nothing in this act and any order, action, or advice of the director or the office or any representative thereof may be construed to relieve an owner of the legal duties, obligations, or liabilities incident to the ownership or operation of the dam.

Section 10. Any person who engages in any violation of this act or the rules promulgated under this act shall be guilty of a Class C misdemeanor. Each day of a continued violation shall constitute a separate offense.

Section 11. As an alternative to criminal enforcement pursuant to Section 10, the director may impose civil penalties in accordance with the following provisions:

(1) Whenever the director has reason to believe that any person has violated any provision of this act or rules adopted pursuant to this act, or that a person has negligently or willfully failed or refused to comply with any final order of the director, the director may cause a hearing to be conducted before a hearing officer appointed by the office. Upon a finding that a person has violated any provision of this act, the rules promulgated under this act, or any certificate condition or limitation established pursuant to this act, or that a person has negligently or willfully failed or refused to comply with a final administrative order of the director, the hearing officer shall issue a written decision. The hearing and any administrative or judicial review thereof shall be conducted in accordance with applicable Alabama law.

(2) All civil penalties recovered under this section by the office or by the Attorney General shall be deposited into the State Treasury to the credit of the State General Fund, except that portion representing the reasonable costs incurred to recover the penalties. That portion representing recovery costs shall be deposited to the credit of the operating fund of the office or the Attorney General, whichever incurred such costs.

Section 12. Any owner whose dam is in existence as of the effective date of this act will be required to comply with this act and the rules promulgated under this act once notification has been given as to the classification of the dam by the agency.

Section 13. Although this bill would have as its purpose or effect the requirement of a new or increased expenditure of local funds, the bill is excluded from further requirements and application under Amendment 621, now appearing as Section 111.05 of the Official Recompilation of the Constitution of Alabama of 1901, as amended, because the bill defines a new crime or amends the definition of an existing crime.

Section 14. The provisions of this act are severable. If any part of this act is declared invalid or unconstitutional, that declaration shall not affect the part which remains.

Section 15. All laws or parts of laws which conflict with this act are repealed and superseded by this act.

Section 16. This act shall become effective immediately following its passage and approval by the Governor, or its otherwise becoming law.

Economic and Community Affairs Department

Water and Waterways

Popular Names

Dams and Reservoirs

Crimes and Offenses

Criminal Law and Procedure

Civil Immunity

State of Alabama

Safety

Public Safety

Water Resources Division

Office of Water Resources

E.2. Alaska



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✚ 11 AAC 93.157. Hazard classification

✚ (a) In order to determine design, operation, inspection, maintenance, emergency action, and reporting criteria under [AS 46.17](#) and 11 AAC [93.151](#) - 11 AAC [93.201](#), the department will periodically review and classify each artificial barrier according to the barrier's potential danger to life or property, and will assign the barrier one of the following hazard potential classifications:

(1) a Class I (high) hazard potential classification, if the department determines that the failure or improper operation of the barrier will result in probable loss of human life;

(2) a Class II (significant) hazard potential classification, if the department determines that the failure or improper operation of the barrier will result in

(A) a significant danger to public health;

(B) the probable loss of or probable significant damage to homes, occupied structures, commercial property, high-value property, major highways, primary roads, railroads, or public utilities, other than losses described in (3)(B) of this subsection;

(C) other probable significant property losses or damage, other than losses described in (3)(B) of this subsection; or

(D) probable loss of or significant damage to waters identified under 5 AAC [95.011\(a\)](#) as important for the spawning, rearing, or migration of anadromous fish; or

(3) a Class III (low) hazard potential classification if the department determines that the failure or improper operation of the barrier will result in

(A) limited impacts to rural or undeveloped land, rural or secondary roads, and structures;

(B) property losses or damage limited to the owner of the barrier; or

(C) insignificant danger to public health.

(b) As necessary to obtain accurate information for a review and classification under (a) of this section, the department will require the owner of an artificial barrier to submit the following information, on a form provided by the department and sealed by an engineer qualified under 11 AAC [93.193\(a\)](#) :

(1) the type and height of the barrier and the impounding capacity of the reservoir at the maximum storage elevation;

(2) the name of the water body, the location of the barrier and a description of the area downstream;

(3) a proposed hazard potential classification, and any supporting information for that proposed classification; supporting information may include maps, an inundation map prepared in substantial accordance with 11 AAC [93.195](#), a dam break analysis, photographs, and engineering calculations.

(c) The department may reject a hazard potential classification proposed under (b)(3) of this section and require the owner to submit additional information if the department determines that the

(1) engineer who sealed that information is not qualified under 11 AAC [93.193\(a\)](#) ; or

(2) information previously provided is insufficient for the department to assign that hazard potential classification.

(d) The department may assign an artificial barrier a higher hazard potential classification than one proposed under (b)(3) of this section. The department will assign the barrier a hazard potential classification based on the level of information readily available regarding the barrier and its potential hazards.

✚ **History:** Eff. 8/16/89, Register 111; am 10/2/2004, Register 171

✚ **Authority:** [AS 46.17.010](#)

[AS 46.17.030](#)

[AS 46.17.050](#)

[AS 46.17.070](#)

Editor's note: As of Register 186 (July 2008), and acting under [AS 44.62.125](#) (b)(6), the regulations attorney made technical changes to 11 AAC [93.157\(a\)](#) (2)(D), to reflect Executive Order 114 (2008). Executive Order 114 transferred functions related to protection of fish habitat in rivers, lakes, and streams from the Department of Natural Resources to the Department of Fish and Game.

✚ **11 AAC 93.159. Owner's periodic safety inspections**

✚ (a) The owner of a Class I or Class II dam shall provide for a periodic safety inspection of the dam at least once every three years. The owner of a Class III dam shall provide for a periodic safety inspection of the dam at least once every five years. The department may order a dam owner to provide for a periodic safety inspection more often than required by this subsection if the department determines that the dam might be unsafe or that more frequent inspections are necessary to protect public safety. Each periodic safety inspection and other work required by this section is at the owner's sole expense. Each periodic safety inspection must be detailed and comprehensive, and must meet the department's guidelines for periodic safety inspections. Those guidelines, set out in Chapter 10, Section 10.4 of the department's *Guidelines for Cooperation with the Alaska Dam Safety Program*, dated September 26, 2003 are adopted by reference.

(b) The periodic safety inspections required by this section must be performed by an engineer who has been approved under 11 AAC [93.193\(b\)](#) . Before an inspection, the owner shall submit to the department, in writing, the qualifications of the engineer and the scope of the periodic safety inspection. The department will approve the scope of the inspection if the department determines that the scope is adequate to determine the safety of the dam and for the engineer to make reliable recommendations regarding operation and maintenance of the dam, inspections of the dam, and other aspects related to the safety of the dam.

(c) Within 30 days after the visual inspection of the dam is completed, the owner shall submit a periodic

safety inspection report to the department for approval, with as many copies as the department requires. The periodic safety inspection report must be sealed by the engineer approved under 11 AAC [93.193\(b\)](#) to conduct the inspection. The engineer shall, in the report, make

(1) specific conclusions regarding the safety of the dam, including conclusions with respect to the condition of the dam and the potential for and consequences of any dam failure; and

(2) recommendations for any additional inspections, monitoring, studies, or construction that may be required to improve the safety of the dam.

(d) In response to a periodic safety inspection report, the department may

(1) approve the report, if the department determines that the report adequately reflects the safety of the dam and provides for the maintenance or improvement of the safety of the dam;

(2) request additional detail or clarification in the report;

(3) issue an order requiring the owner to perform additional inspections, studies, or analyses, or to submit additional information that the department determines is necessary to adequately assess the safety of the dam;

(4) revoke, under 11 AAC [93.173\(k\)](#) , a certificate of approval to operate a dam; or

(5) issue a construction, operation, repair, maintenance, shutdown, or dam removal order that the department considers necessary to protect against dam failure or to protect life and property.

(e) Repealed 10/2/2004.

✚ **History:** Eff. 8/16/89, Register 111; am 10/2/2004, Register 171

✚ **Authority:** [AS 46.17.010](#)

[AS 46.17.030](#)

[AS 46.17.050](#)

[AS 46.17.060](#)

[AS 46.17.070](#)

Editor's note: Copies of Chapter 10, Section 10.4 of the department's *Guidelines for Cooperation with the Alaska Dam Safety Program*, adopted by reference in 11 AAC [93.159\(a\)](#) , are available from the Department of Natural Resources, Division of Mining, Land and Water, Dam Safety and Construction Unit, 550 West 7th Avenue, Anchorage, Alaska 99501.

✚ **11 AAC 93.160. General requirements**

✚ Repealed 8/16/89.

✚ **11 AAC 93.161. State inspections**

⊕ (a) The department may inspect a dam or artificial barrier, regardless of its size or hazard potential classification, after providing notice to the owner under [AS 46.17.060](#) .

(b) If the department determines that providing two weeks' notice under [AS 46.17.060](#) is not practical because the dam or barrier presents a potential immediate danger to life or property, the department will give the owner of the dam or barrier as much notice before the inspection as is reasonable under the circumstances.

(c) The owner of a dam shall reimburse the department for costs that the department incurs in making an inspection under this section, including the costs of conducting related dam safety studies and analyses and employing consulting engineers or contractors, if the department determines that a condition may exist that could adversely affect the safety of the dam and the

(1) owner has failed or refused to perform a periodic safety inspection in accordance with 11 AAC [93.159](#); or

(2) periodic safety inspection report submitted under 11 AAC [93.159\(c\)](#) is inadequate, and the owner has failed to respond to a department order or request for additional information.

⊕ **History:** Eff. 8/16/89, Register 111; am 10/2/2004, Register 171

⊕ **Authority:** [AS 46.17.010](#)

[AS 46.17.030](#)

[AS 46.17.050](#)

[AS 46.17.060](#)

⊕ **11 AAC 93.163. Emergency remedial action**

⊕ (a) The department may take emergency remedial action to protect life or property from the risks created by the dam's operation or potential failure, if the department determines that one or more of the following conditions exist:

(1) the condition of a dam is sufficiently dangerous to preclude adequate time for the issuance of an order to the owner under 11 AAC [93.159\(d\)](#) regarding the maintenance or operation of the dam;

(2) actual or potential flooding threatens the condition of the dam;

(3) the owner will not voluntarily comply with an order or does not have the present means to comply with an order from the department.

(b) In taking emergency remedial action under this section, the department may take supervisory control of the dam from the owner, over the owner's objection if necessary, until the emergency no longer exists. During the department's supervisory control of the dam, the owner, agents, and employees of the owner shall comply with all of the department's orders.

(c) The owner shall reimburse the state for the costs of any reasonably necessary emergency remedial action taken under this section, including the costs of any consultant, contractor, emergency response

agency, or other entity retained or requested by the department to respond to the emergency.

✚ **History:** Eff. 8/16/89, Register 111; am 10/2/2004, Register 171

✚ **Authority:** [AS 46.17.010](#)

[AS 46.17.030](#)

[AS 46.17.050](#)

[AS 46.17.060](#)

[AS 46.17.070](#)

✚ **11 AAC 93.164. Owner's emergency action plan**

✚ (a) The owner of a Class I or Class II dam shall develop and maintain an emergency action plan in accordance with this section.

(b) The department will approve an emergency action plan if

(1) the plan adequately protects life and property, given the particular risks presented to life or property if the dam fails or in anticipation of imminent dam failure;

(2) the plan provides adequately for the coordination of emergency responders in the community;

(3) the plan contains information that the department considers necessary to minimize danger to life and property; that information must include, if required by the department, a

(A) detailed inundation map, prepared in substantial accordance with 11 AAC [93.195](#);

(B) dam break analysis; and

(C) schedule for exercise and revision of the plan; and

(4) for a Class I dam, the plan is developed and maintained in accordance with

(A) the Federal Emergency Management Agency's *Federal Guidelines for Dam Safety: Emergency Action Planning for Dam Owners* (FEMA 64), as revised as of October 1998 and adopted by reference; or

(B) other requirements that the department determines are necessary to protect life or property.

(c) The owner of a Class I or II dam shall review the emergency action plan at least annually, and shall submit any revision of the plan to the department for approval.

(d) The owner of a Class I or II dam shall exercise the emergency action plan to a level specified by the department as sufficient to maintain adequate preparation for an actual emergency, and shall revise the emergency action plan at least every three years, or at a frequency that the department determines sufficient to maintain adequate preparation for an actual emergency. The plan shall be revised after the

exercise in order to address any problems or areas for improvement identified during the exercise, and shall be submitted to the department for approval. Revised plans must be distributed to all persons with responsibilities identified in the plan.

(e) The owner of a Class II dam may include the emergency action plan in the operations and maintenance manual required under 11 AAC [93.167](#), 11 AAC [93.171](#), or 11 AAC [93.173](#).





✚ 11 AAC 93.195. Inundation maps and inflow design flood information

✚ (a) An inundation map prepared under 11 AAC [93.157\(b\)](#) or 11 AAC [93.164](#) must

(1) indicate the extent of flooding below a dam after failure under the normal operating level of the reservoir, under the inflow design flood, and under other scenarios as the department considers necessary to evaluate danger to life and property;

(2) identify downstream structures or other development, flood wave depth and arrival times, roads, evacuation routes, staging areas, and other information required by the department to minimize danger to life and property; and

(3) be based on a dam break analysis, if required.

(b) For purposes of 11 AAC [93.164](#) and 11 AAC [93.171](#), the information for determining the inflow design flood shall be developed in substantial accordance with

(1) the Federal Emergency Management Agency's *Federal Guidelines for Dam Safety: Selecting and Accommodating Inflow Design Floods for Dams* (FEMA 94), as revised as of October 1998 and adopted by reference; or

(2) methods approved by the department that adequately assess and characterize the design hydrology, and that are based on the hazard potential classification assigned under 11 AAC [93.157](#).

(c) In this section, "inflow design flood" means the flood flow above which the incremental increase in the downstream flood caused by a failure of the dam does not result in any additional danger downstream.

✚ **History:** Eff. 10/2/2004, Register 171

✚ **Authority:** [AS 46.17.010](#)

[AS 46.17.030](#)

[AS 46.17.050](#)

[AS 46.17.070](#)

Editor's note: The Federal Emergency Management Agency's *Federal Guidelines for Dam Safety: Selecting and Accommodating In flow Design Floods for Dams*, adopted by reference in 11 AAC [93.195](#), may be viewed at the Department of Natural Resources, Division of Mining, Land and Water, Dam Safety and Construction Unit, 550 West 7th Avenue, Anchorage, Alaska.

✚ 11 AAC 93.197. Operation and maintenance manuals

✚ (a) An owner that is required under 11 AAC [93.167](#), 11 AAC [93.171](#), or 11 AAC [93.173](#) to prepare or provide an operation and maintenance manual must describe in that manual, in detail, how a dam will

be operated, inspected and maintained, including

- (1) a physical description of the dam;
- (2) any operating limitations on the dam;
- (3) critical design criteria;
- (4) a schedule and procedures for routine safety inspections, monitoring, and maintenance of the dam;
- (5) detailed instructions and maintenance procedures for operating valves, gates, or other equipment;
- (6) maintenance procedures, calibration information, and instructions for instrumentation and for monitoring and alarm systems;
- (7) site-specific visual inspection checklists; and
- (8) other information requested by the department to provide sufficient detail regarding dam operation, inspection, and maintenance for the protection of life and property.

✚ **History:** Eff. 10/2/2004, Register 171

✚ **Authority:** [AS 46.17.010](#)

[AS 46.17.030](#)

[AS 46.17.040](#)

[AS 46.17.050](#)

[AS 46.17.070](#)

✚ **11 AAC 93.200. Fee for dam construction permit**

✚ Repealed 1/1/86.

✚ **11 AAC 93.201. Definitions**

✚ Unless the context requires otherwise, in [AS 46.17](#) and 11 AAC [93.151](#) - 11 AAC [93.201](#),

- (1) "alteration" has the meaning given in [AS 46.17.900](#) ;
- (2) "appurtenant works" has the meaning given in [AS 46.17.900](#) ;
- (3) "Class I dam" means a dam assigned a Class I (high) hazard potential classification under 11 AAC [93.157](#);
- (4) "Class II dam" means a dam assigned a Class II (significant) hazard potential classification under 11 AAC [93.157](#);

- (5) "dam" has the meaning given in [AS 46.17.900](#) ;
- (6) "department" means the Department of Natural Resources;
- (7) "enlargement" has the meaning given in [AS 46.17.900](#) ;
- (8) "modification" means an enlargement or alteration;
- (9) "owner" has the meaning given in [AS 46.17.900](#) ;
- (10) "record drawings" means plan, profile, and cross-section drawings that show the final configuration of a dam as constructed, including
- (A) lines, grades, elevations, and size;
- (B) types of material used for construction;
- (C) reservoir area; and
- (D) details of all appurtenant works, including spillways, outlet pipes, monitoring devices, and other equipment;
- (11) "repair" has the meaning given in [AS 46.17.900](#) ; "repair" does not include routine maintenance;
- (12) "routine maintenance" means any work performed on a dam that
- (A) is generally of a housekeeping nature; and
- (B) does not affect or have the potential to affect the safety of the dam;
- (13) "sealed" means prepared by an engineer or a person under that engineer's direct supervision, and bearing the signature and seal of that engineer as required by [AS 08.48.221](#) and 12 AAC [36.185](#).

⊕ **History:** Eff. 8/16/89, Register 111; am 10/2/2004, Register 171

⊕ **Authority:** [AS 46.17.010](#)

[AS 46.17.030](#)

[AS 46.17.900](#)

⊕ **Article 4**
Temporary Water Use

Section

210. Temporary water use.

220. Procedure for temporary water use.

⊕ **11 AAC 93.210. Temporary water use**

⊕ (a) Procedures to authorize the temporary use of water, as provided in 11 AAC 93.220, will apply if the use continues for less than five consecutive years and the water applied for is not otherwise appropriated.

(b) A water right or priority is not established by a temporary water use authorization issued under 11 AAC 93.220. Authorized temporary water use is subject to amendment, modification, or revocation by the department if the department determines that amendment, modification, or revocation is necessary to supply water to lawful appropriators of record or to protect the public interest.

(c) Upon the commissioner's receipt of a written request from the permittee, an authorization for temporary use of water will, in the commissioner's discretion, be extended one time for good cause for a period of time not to exceed five years. The request for an extension of the authorization for temporary use of water must be accompanied by the fee prescribed by 11 AAC 05.010.

⊕ **History:** Eff. 2/8/67, Register 23; am 12/29/79, Register 72; am 11/7/90, Register 116; am 9/16/92, Register 123; am 8/20/2004, Register 171

⊕ **Authority:** AS 46.15.020

AS 46.15.040

AS 46.15.133

AS 46.15.155

Editor's note: As of Register 160 (January 2002), the regulations attorney made technical revisions under AS 44.62.125 (b)(6), and as authorized in ch. 100, sec. 12, SLA 2001, to change "temporary water use permit" to "authorization for temporary use of water" in 11 AAC 93.210(b) and (c).

⊕ **11 AAC 93.220. Procedure for temporary water use**



ALASKA DAM SAFETY LAWS AND REGULATIONS 2007

Citation

Laws establishing the Alaska Dam Safety Program (ADSP) are found in the Alaska Statutes (AS) Title 46 Chapter 17, effective May 31, 1987. Regulations are in the Alaska Administrative Code (AAC) Title 11, Chapter 93, Article 3, which were last amended October 2, 2004.

History

During the 1970s, several dams failed in both Alaska and the Lower 48. These incidents resulted in numerous deaths, including one in Alaska, and millions of dollars in property damage. As early as 1973, Alaska passed laws that attempted to regulate the construction of dams in the state. In 1975, Senate Bill 362 titled "An Act Relating to Supervision of Safety of Dams and Reservoirs" attempted to delegate responsibility to the Department of Public Works, but failed to pass the Ninth Legislative Session. On May 29, 1978, Governor Jay S. Hammond signed an agreement for the Alaska Department of Transportation and Public Facilities to jointly review specific dams with the USACE. Subsequent discussions within the state led to the conclusion that the ADNR had authority related to dam safety through the Water Use Act (AS 46.15) and 11 AAC 72.060, Dam Construction (1973). However, the ADNR expressed a great deal of concern because the statutes and regulations inadequately addressed important dam safety issues such as routine safety inspections, operation and maintenance, and liability.

On December 29, 1979, revised dam safety regulations became effective under Article 3 of 11 AAC 93, Dam Safety and Construction. By 1982, the Water Management Section of the Division of Land and Water Management began to organize the ADSP. The efforts of the entire staff of the central region Water Management Section were directed toward the dam safety program. Nevertheless, the section's civil engineer expressed concern about the ability of the ADNR to address important technical issues associated with dam safety, and the current regulations were again sharply criticized as inadequate. During the early 1980s, the ADNR (with support from consultants) conducted Phase I inspections and site visits of practically every dam that could be identified in the state, including those identified in the National Inventory of Dams. The USACE listed 175 dams in Alaska in 1981. By 1984, the ADSP was staffed with three positions and a \$350,000 general fund budget.

In 1987, the state legislature passed the Alaska Dam Safety Act and AS 46.17, which elaborated on the basis for the state to "supervise" the safety of dams in Alaska. The state was required to employ a professional engineer for this purpose, but the staffing of the ADSP was reduced to that one individual and the budget was cut significantly. In 1989, the dam safety regulations were again promulgated under Article 3 of 11 AAC 93. These statutes and regulations were more comprehensive than previous versions, and were based on a model state dam safety program developed by the ASDSO and extensive review of dam safety regulations from other states.

The content of Article 3 of 11 AAC 93 was reviewed in detail and updated between 2000 and 2004. The regulations were revised to include important changes and clarifications about the hazard potential classification; dam owner's periodic safety inspections and emergency action plans; applications for construction, modification, repair, removal, and

abandonment of dams; certificates of approval issued by the department; incident reporting; qualifications for dam design and inspection engineers; and other important information. The original publication of the Guidelines for Cooperation with the Alaska Dam Safety Program (September 2003) was based on a draft version of the revised regulations. The current guidelines (June 2005) are revised to be consistent with the current, final version of the regulations adopted in October 2004.

Definitions

A *dam* is "an artificial barrier, and its appurtenant works, which may impound or divert water and which has or will have an impounding capacity at maximum water storage elevation of 50 acre-feet and is at least 10 feet in height measured from the lowest point at either the upstream or downstream toe of the dam to the crest of the dam; is at least 20 feet in height; or poses a threat to lives and property as determined by the department after an inspection" (AS 46.17.900(3)).

Dam height is the maximum vertical distance from the natural bed of the water course the upstream or downstream toe of the barrier, whichever yields the greater measurement, to the top of the barrier; or if the barrier is not across a watercourse, the maximum vertical distance from the lowest elevation of the outside limit of the barrier to the top of the barrier. (11 AAC 93.153).

Dam Classification

Dams are classified by hazard potential according to the following (11 AAC 93.157):

Class I for a dam whose failure would, in the opinion of the commissioner, result in probable loss of human life;

Class II for a dam whose failure would result in a significant danger to public health; the probable loss of or probable significant damage to homes, occupied structures, commercial property, high-value property, major highways, primary roads, railroads, or public utilities; other probable significant property losses or damage other than losses limited to the owner of the barrier; or, probable loss of or significant damage to waters identified under 11 AAC 195.010(a) as important for spawning, rearing, or migration of anadromous fish.

Class III for a dam whose failure would result in limited impacts to rural or undeveloped land, rural or secondary roads, and structures; property losses or damage limited to the owner of the barrier; or insignificant danger to public health.

Design Criteria

Hydrologic: From 11 AAC 93.195, the inflow design flood shall be developed in substantial accordance with:

(1) the Federal Emergency Management Agency's Federal Guidelines for Dam Safety: Selecting and Accommodating Inflow Design Floods for Dams (FEMA 94), as revised as of October 1998 and adopted by reference; or

(2) methods approved by the department that adequately assess and characterize the design hydrology, and that are based on the hazard potential classification assigned under 11 AAC 93.157.

In this section, "inflow design flood" means the flood flow above which the incremental increase in the downstream flood caused by a failure of the dam does not result in any additional danger downstream. For a Class I (high) hazard potential dam, the "probable maximum flood" is considered the maximum standard; for a Class III (low) hazard potential dam, a "100-year flood" is considered the minimum standard.

Seismic: From 11 AAC 93.171, seismic parameters for the location of the dam, including the peak ground acceleration, the maximum credible earthquake, the maximum design earthquake, and the operating basis earthquake, must be determined in substantial accordance with the guidelines from the United States Army Corps of Engineers' Earthquake Design and Evaluation for Civil Works Projects, publication ER 1110-2-1806, dated July 31, 1995 adopted by reference, or must be determined in substantial accordance with another approach approved by the department.

Other: From 11 AAC 93.171, an applicant must obtain approval of a proposal prepared by the qualified engineer that outlines the proposed scope of work, methodologies, levels of analysis, and approach to design and construct, repair, or modify a dam to adequately provide for the protection of life and property; the proposal must be based on the proposed size and type of the dam, and based on the hazard potential classification, and must include a description of the design quality assurance and quality control to be conducted during the design.

Jurisdiction/Powers of Department

The Department of Natural Resources supervises the safety of dams and reservoirs (AS 46.17.020). The department has the power to adopt regulations and issue orders necessary to carry out its duties (AS 46.17.030). A person may not construct, enlarge, repair, alter, remove, maintain, operate, or abandon a dam or reservoir without the approval of the department (AS 46.17.040). The department has the power to make inspections (AS 46.17.050). The department may enter a dam or reservoir premises without notice if there is reason to believe that a dam or reservoir may be unsafe or presents an imminent threat to life or property (AS 46.17.060). The department may order the owner to take action to protect life and property if it determines the dam or reservoir is unsafe (AS 46.17.070) and may invoke judicial action to enforce the laws and regulations (AS 46.17.080). The department may take supervisory control of the dam from the owner in emergency situations (11 AAC 93.163).

Permit/Approval Process

No person may abandon a dam, remove a dam, or begin the construction, enlargement, modification, or repair (except routine maintenance) of a dam without first applying for the commissioner's permission on a form provided by the commissioner, paying the applicable fees under 11 AAC 05.010, and receiving a certificate of approval from the commissioner for the proposed action. 11 AAC 93.171 defines a detailed application process that includes the following information and documents, unless the department determines that an item or document is not required for the protection of life or property: 1) an initial application package, 2) a preliminary design package, 3) a detailed design package, 4) a final construction package, 5) pre-construction plans, and 6) post-construction documentation. Additional details for each of these packages are described in the regulations. In addition, the applicant must propose a schedule for filing the information and documents required under this section that provides adequate opportunity for the department to review the safety

of the dam and for issuing the required certificates of approval. Furthermore, the applicant must demonstrate financial ability or provide financial assurance, for certain actions, for new dams or for modifications that increase the size of the reservoir or raise the hazard potential classification of the dam. The application must be prepared and sealed by a “qualified engineer” defined in 11 AAC 93.193.

Fees

The completed application form must be accompanied by a non-refundable deposit on the application fee described under 11 AAC 05.010(a)(8)(J), calculated based on preliminary estimates of the applicable costs. Before a Certificate of Approval to Construct a Dam is issued by the Department, the applicant must submit an application fee supplement based on a certified cost estimate of the project. The total fee is based on a declining scale of the estimated project cost; i.e., 2% of first \$100,000 of the estimated cost, 1% of the next \$400,000, 0.5% of the next \$500,000, and 0.25% of all costs in excess of \$1,000,000. The cost estimate must include labor and materials for construction, engineering, site investigations, surveying, construction quality assurance and quality control, and other direct expenses.

Inspection Process

The owner of a Class I or Class II dam shall perform a periodic safety inspection on the dam at least once every three years. The owner of a Class III dam shall perform a safety inspection on the dam at least once every five years. All inspections required by the regulations must be accomplished at the owner's sole expense (11 AAC 93.159). The safety inspections must be performed by a qualified engineer with sufficient experience in dam design, construction, and safety appropriate for the type of dam inspected (11 AAC 93.193). If the commissioner determines that a condition may exist that may affect the safety of a dam, or determines that the owner inspection required by 11 AAC 93.159 has been inadequate, the commissioner may inspect the dam, at the owner's expense (11 AAC 93.161).

Frequency of Inspections

<i>Hazard Classification</i>	<i>Inspection Cycle</i>
High	3 years
Significant	3 years
Low	5 years

Owner's Non-Compliance/Violations/Penalties

The department has the authority to issue orders for remedial measures to be performed at the owner's expense (11 AAC 93.163). A person is guilty of a Class A misdemeanor if the person knowingly violates a provision of the laws or regulations (AS 46.17.150).

Emergencies

In an emergency situation the commissioner will, at the commissioner's discretion, take remedial action that the commissioner determines is necessary to protect life and property from the risks posed by the dam's operation or potential failure (11 AAC 93.163). The commissioner may take supervisory control of the dam from the owner, over the owner's

objection if necessary, until the emergency passes (11 AAC 93.163). Emergency action plans are required for all Class I and II dams. (11 AAC 93.164).

Liability

The laws and regulations "do not relieve the owner of a dam or reservoir of the duties or liabilities incident to the ownership or operation of the dam or reservoir." (AS 46.17.120). State liability is addressed in the laws or regulations. (AS 46.17.110)

Oversight

A person may not bring an action against the state, the department, or agents or employees of the state, for the recovery of damages caused by the partial or total failure of a dam or reservoir, or by the operation of a dam or reservoir, or by the operation of a dam or reservoir, or by an act or omission in connection with approval of construction, issuance of enforcement orders relating to maintenance or operation of the dam or reservoir, or control or regulation of the dam or reservoir. A person may bring an action against the state for the recovery of damages caused by an action undertaken by a dam owner that was negligently ordered by the state over the owner's objection (AS 46.17.110).

State Citations

	<i>Statute</i>	<i>Regulations</i>
Original	Water Use Act (AS 46.15) (1973)	11 AAC 72.060, Dam Construction (1973)
Last Amended	Alaska Dam Safety Act (AS 46.17) (1987)	Article 3 of 11 AAC 93, Dam Safety (2004)

Web Site: <http://www.dnr.state.ak.us/mlw/water/dams/>

E.3. Arizona



FEMA

Citation

The Arizona dam safety law is contained in Arizona Revised Statutes Title 45, Waters, Chapter 6, Dams and Reservoirs, Article I, Supervision of Dams, Reservoirs and Projects, ARS 45:1201-1223. The rules pertaining to the dam safety program are contained in the Arizona Rules and Regulations Pertaining to the Supervision of Dams, Chapter 15, R12-15-151 and 152-15-1201 through 1226. These rules and regulations were originally adopted on Nov. 2, 1978 and substantially revised in 2000.

Definitions/Dam Classification

Arizona Statutes Section 45-1201 defines a *dam* as any artificial barrier, including appurtenant works for the impounding or diversion of water, twenty-five feet or more in height or the storage capacity of which will be more than fifty acre-feet, but does not include

- (a) any barrier that is or will be less than six feet in height, regardless of storage capacity
- (b) any barrier that has or will have a storage capacity of fifteen acre-feet or less, regardless of height
- (c) any barrier for the purpose of controlling liquid-borne material
- (d) any barrier that is a release-contained barrier
- (e) any barrier that is owned, controlled, operated, maintained or managed by the United States Government or its agencies or instrumentalities if a safety program that is as least as stringent as the state safety program applies and is enforced against the agent or instrumentality.

Dam height is defined as the vertical distance from the lowest elevation of the outside limit of the barrier at its intersection with the natural ground surface to the spillway crest elevation.

Release contained barrier is defined as a barrier that has the storage capacity that in the event of a failure would be contained within the property of its owner.

Hazard Classification Criteria

Hazard classification criteria are given in the Rules (R12-15-1206).

Category	Economic Loss
Very Low - Low	Minimal (underdeveloped to occasional structures or agriculture)
Significant	Appreciable (notable agriculture, industry, or other structure)
High	Excessive (extensive community, industry, agriculture), with probable loss of life

The size of each dam is defined according to the U.S. Army Corps of Engineers National Inventory of Dams standard.

Jurisdiction/Powers of Department

The law states that it is unlawful to construct, reconstruct, repair, operate, maintain, enlarge, remove, or alter any dam except upon prior approval of the director. The director is responsible for the approval process including adopting and revising rules and issuing general orders to effectuate this law. The director is also directed by law to supervise the operation and maintenance of all jurisdictional dams to safeguard life and property.

The law gives the director the right and responsibility to conduct investigations and assemble data to make a proper review of the design and construction process and may enter private property for such purposes.

It also gives the director the ability to issue a notice of noncompliance to prescribed provisions of approval to the owner or construction contractor and can order immediate compliance or can order work stoppage until compliance has been effected and approved by the director. Failure to follow this directive may render the approval revocable.

The director can order construction to cease and desist and can order the owner to appear at a hearing before the department to state his case for non-compliance. The decision is then up to the director as to continuation of the project.

The director is authorized to take any legal action necessary to enforce these statutory provisions.

Approval Process

Arizona law cites characteristics of the process to approve construction, reconstruction, repair, operation, maintenance, enlargement, removal, or alteration of a dam including what shall be included in the application process plus what should be in the plans and specifications and what other materials are required by the director. Rules R12-15-1207 describe the application process in detail--what should be in the application and how the filing fee is calculated. Rules R12-15-1215 describe what should be in the plans and specifications for construction, alteration, etc.

In these rules, it states that all plans and specifications accompanying an application for approval shall be prepared by or under the direction of a professional engineer, registered under Arizona law.

The law pertaining to repair specifies that the approval process may be waived if repair is needed immediately in order to safeguard life and property. The director must be informed prior to this action taking place.

Application Fees

The law gives the director the authority to establish filing fees based on the estimated cost of the dam. The fee shall not exceed 2% of this established cost. The fee must be paid before consideration of the application. All fees will be deposited in the dam repair fund. The following fee structure has been established by the rules (R12-15-151):

Application filing fee is based on:

1) Review of plans, studies of dam costs (in dollars):

-first \$ 100,000	2.0%
-next \$ 400,000	1.5%
-next \$500,000	1.0%
-over \$600,000	0.5%

2) Safety Inspections

Per inspection	\$100
Plus, per foot of height	\$ 2

3) Other Charges

Photocopies	.25 each
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Computer reports:

First page of report	\$15
Additional pages	.25 each

Certified "True Copies"	\$2.75/ Page
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Approval of Application

By law, the director must inspect the dam upon completion of construction. If the inspection passes, the approval is made and a license is issued for use (the rules detail this process, R12-15-1214). The approval plan may be revised if after inspecting the work he believes amendments, modifications or changes are necessary.

According to law, the application must be approved in not less than 10 days from receipt nor retained more than 60 days unless more information is needed. Construction must commence within one year of approval and the director must be notified at least 10 days before construction begins. Time frame rules provide limits of 120 days for administrative review, and 60 days for substantive review.

Inspection Process

According to law, the director shall inspect after construction, repair , remodeling. or alteration, during operation and maintenance, and upon filing of a legitimate complaint concerning the safety of the dam. The rules specify criteria for the inspection process. Guidelines were developed to accompany the rules stating operation and maintenance frequency--they are as follows:

Hazard Potential	Storage Dam Inspection Frequency (at least once each)
Low – Very low	Five Years
Significant	Three Years
High	One Year

The rules state that the owner is responsible for safety during construction and after completion of the dam and inspection during and after construction, enlargement, repair, alteration, or removal in accordance with the plans and specifications as approved by the director.

Violations/Penalties

Arizona law defines a violation as failure to follow the law concerning construction, repair, enlargement, alteration, or removal of a dam or failure to carry out an order of the director. The violator is guilty of a class 2 misdemeanor for each day the violation continues.

If the director feels a violation has taken place, he must give the owner written notice to appear at a hearing before the department to show cause why the owner should not be penalized or be directed to cease and desist work. The director is then responsible for all decisions based on the hearing. If the violation continues, the director may retain a temporary restraining order or a permanent injunction from the state superior court.

The law states that a person determined to violate the law may be assessed a penalty not to exceed \$1,000 per day of the violation. These monies go to the state general fund. A judge may stay the decision of the director upon appeal on a showing of good cause.

Emergencies

The law requires that the director determine if a dam is dangerous or if floods threaten its safety and can then employ immediate remedial measures to correct the problem. The law goes on to explain exactly what the director can do to the dam in this instance and says that he is in full charge of the dam until it is rendered safe or the emergency has terminated.

The law also states that the director may spend monies from the dam repair fund (Sect. 45-1212.01).

The owner is ultimately responsible for the costs of the remedial work. The law states that a lien shall be put against the owner's property to cover these costs. As he pays back the debt, the money collected goes back to the dam repair fund.

Liability

Section 45-1215 of the law states that no action shall be brought or maintained against the state, or any of its departments, agencies or officials thereof, or any of their employees or agents, for damages sustained through the partial or total failure of a dam or its maintenance by reason of control and regulation thereof by any of them pursuant to duties imposed upon them under the provisions of this chapter.

Nothing in this article shall relieve the owner or operator of a dam from the legal duties, obligations and liabilities arising from such ownership or operation.

Oversight

Section 45-1210-1211 explains the process by which a petition can be filed against any decision made by the director. It also explains how a board of review is formed to hear the petition.

Miscellaneous

Financing

The law states that the director may require a surety company bond in amount sufficient to secure the costs to the state in assuming the safety of a dam left partially constructed. This is required when the director questions the financial stability of the owner or contractor or otherwise deems the bond advisable.

The law also establishes funds to help finance the repair of unsafe dams:

The dam repair fund is made up of monies appropriated by the legislature and monies collected from a lien as described under "Emergencies" and is used for emergency remedial work. The dam repair fund also includes appropriate funds, inspection fees, filing fees, and principal and interest collected from dam repair loans. This money may be used for loans and grants (described below). Monies in these funds are exempt from Section 35-190 relating to lapsing of appropriations.

Non-emergency dam repair loans let the director grant loans to dam owners to defray the costs of repair which are necessary for safety reasons but not emergencies. Loans are for terms of not more than 20 years. The law goes on to prescribe interest rates, contractual arrangements, fund maintenance procedures, and defaulting procedures.

Dam repair grants may be granted for the same purposes as above and may be in addition to the loans.

Arizona Secretary of State - Ken Bennett

TITLE 12. NATURAL RESOURCES

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TITLE 12. NATURAL RESOURCES

[CHAPTER 15. DEPARTMENT OF WATER RESOURCES](#)

[Supp. 07-3](#)

(Authority: A.R.S. § 45-101 et seq.)

[ARTICLE 1. FEES](#)

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R12-15-101. Reserved
through
R12-15-150. Reserved
R12-15-151. Fee Schedule
R12-15-152. Expired

[ARTICLE 2. PROCEDURAL RULES](#)

Article 2, consisting of Sections R12-15-201 through R12-15-224, adopted effective June 13, 1984.

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R12-15-202. Expired
R12-15-203. Expired
R12-15-204. Expired
R12-15-205. Expired
R12-15-206. Expired
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R12-15-304. Reserved
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R12-15-306. Reserved
R12-15-307. Reserved
R12-15-308. Reserved
R12-15-309. Reserved
R12-15-310. Renumbered

[ARTICLE 4. LICENSING TIME-FRAMES](#)

Article 4, consisting of Sections R12-15-401 and Table A, adopted effective December 31, 1998; filed in the Office of the Secretary of State July 28, 1998 (Supp. 98-3).

Section
R12-15-401. Licensing Time-frames
Table A. Licensing Time-frames

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[ARTICLE 6. RESERVED](#)

[ARTICLE 7. ASSURED AND ADEQUATE WATER SUPPLY](#)

Article 7, consisting of Sections R12-15-701 through R12-15-725, adopted effective February 7, 1995.

Section
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R12-15-702. Physical Availability Determination
R12-15-703. Analysis of Assured Water Supply
R12-15-703.01. Repealed
R12-15-704. Certificate of Assured Water Supply
R12-15-705. Assignment of Type A Certificate of Assured Water Supply
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R12-15-714. Designation of Adequate Water Supply
R12-15-715. Designation of Adequate Water Supply; Annual Report Requirements, Review, Modification, Revocation

R12-15-716. Physical Availability
 R12-15-717. Continuous Availability
 R12-15-718. Legal Availability
 R12-15-719. Water Quality
 R12-15-720. Financial Capability
 R12-15-721. Consistency with Management Plan
 R12-15-722. Consistency with Management Goal
 R12-15-723. Extinguishment Credits
 R12-15-724. Phoenix AMA Calculation of Groundwater Allowance and Extinguishment Credits
 R12-15-725. Pinal AMA - Groundwater Allowance and Extinguishment Credits Calculation
 R12-15-726. Prescott AMA Calculation of Groundwater Allowance and Extinguishment Credits
 R12-15-727. Tucson AMA Calculation of Groundwater Allowance and Extinguishment Credits
 R12-15-728. Reserved
 R12-15-729. Remedial Groundwater; Consistency with Management Goal
 R12-15-730. Assured and Adequate Water Supply Fees

[ARTICLE 8. WELL CONSTRUCTION AND LICENSING OF WELL DRILLERS](#)

Article 8, consisting of Sections R12-15-801 through R12-15-821, adopted effective March 5, 1984.

Section
 R12-15-801. Definitions
 R12-15-802. Scope of Article
 R12-15-803. Well Drilling and Abandonment Requirements; Licensing and Supervision Requirements
 R12-15-804. Application for Well Drilling License
 R12-15-805. Examination for Well Drilling License
 R12-15-806. License Fee; Issuance and Term of Licenses; Renewal; Display of License
 R12-15-807. Single Well License
 R12-15-808. Revocation of License
 R12-15-809. Notice of Intention to Drill
 R12-15-810. Authorization to Drill
 R12-15-811. Minimum Well Construction Requirements
 R12-15-812. Special Aquifer Conditions
 R12-15-813. Unattended Wells
 R12-15-814. Disinfection of Wells
 R12-15-815. Removal of Drill Rig from Well Site
 R12-15-816. Abandonment
 R12-15-817. Exploration Wells
 R12-15-818. Well Location
 R12-15-819. Use of Well as Disposal Site
 R12-15-820. Request for Variance
 R12-15-821. Special Requirements
 R12-15-822. Capping of Open Wells
 R12-15-823. Reserved
 R12-15-824. Reserved
 R12-15-825. Reserved
 R12-15-826. Reserved
 R12-15-827. Reserved
 R12-15-828. Reserved
 R12-15-829. Reserved
 R12-15-830. Reserved
 R12-15-831. Reserved
 R12-15-832. Reserved
 R12-15-833. Reserved
 R12-15-834. Reserved
 R12-15-835. Reserved
 R12-15-836. Reserved
 R12-15-837. Reserved
 R12-15-838. Reserved
 R12-15-839. Reserved
 R12-15-840. Reserved
 R12-15-841. Reserved
 R12-15-842. Reserved
 R12-15-843. Reserved
 R12-15-844. Reserved
 R12-15-845. Reserved
 R12-15-846. Reserved
 R12-15-847. Reserved
 R12-15-848. Reserved
 R12-15-849. Reserved
 R12-15-850. Evaluation of Notices of Intention to Drill; Notification of Registered Site Locations; Vertical Cross-Contamination Evaluation
 R12-15-851. Notification of Well Drilling Commencement
 R12-15-852. Notice of Well Inspection; Opportunity to Comment

[ARTICLE 9. WATER MEASUREMENT](#)

Article 9, consisting of Sections R12-15-901 through R12-15-905, adopted effective December 27, 1982.

Section
 R12-15-901. Definitions
 R12-15-902. Installation of Approved Measuring Devices
 R12-15-903. Approved Water Measuring Devices and Methods
 R12-15-904. Water Measuring Method Reporting Requirements
 R12-15-905. Accuracy of Approved Measuring Devices
 R12-15-906. Repair and Replacement of Approved Measuring Devices
 R12-15-907. Calculation of Irrigation Water Deliveries
 R12-15-908. Measurement of Water by One Person on Behalf of Another
 R12-15-909. Alternative Water Measurement Devices, Methods, and Reporting

[ARTICLE 10. REPORTING REQUIREMENTS FOR ANNUAL REPORTS, ANNUAL ACCOUNTS, OPERATING FLEXIBILITY ACCOUNTS, AND CONVEYANCES OF GROUNDWATER RIGHTS](#)

Section
 R12-15-1001. Definitions
 R12-15-1002. Form of Annual Account or Annual Report
 R12-15-1003. Accuracy of Annual Reports
 R12-15-1004. Annual Reports Filed on Behalf of a Responsible Party
 R12-15-1005. Management Plan Monitoring and Reporting Requirements
 R12-15-1006. Reporting Requirements for Holders of Recovery Well Permits
 R12-15-1007. Reporting Requirements for Annual Account
 R12-15-1008. Information Required to Maintain an Operating Flexibility Account
 R12-15-1009. Credits to Operating Flexibility Account
 R12-15-1010. Operating Flexibility Account; Tailwater
 R12-15-1011. Statement of Operating Flexibility Account
 R12-15-1012. Rule of Construction

R12-15-1013. Retention of Records for Annual Accounts and Annual Reports
 R12-15-1014. Late Filing or Payment of Fees; Extension Penalties
 R12-15-1015. Reporting Requirements for Conveyances of Grandfathered Rights and Groundwater Withdrawal Permits
 R12-15-1016. Spillwater Reporting by Water Deliverers
 R12-15-1017. Maintenance and Filing of Annual Reports Required by A.R.S. § 45-343

ARTICLE 11. INSPECTIONS AND AUDITS

Article 11, consisting of Sections R12-15-1101 and R12-15-1102, adopted effective August 31, 1992 (Supp. 92-3).

Section
 R12-15-1101. Inspections
 R12-15-1102. Audits

ARTICLE 12. DAM SAFETY PROCEDURES

Article 12, consisting of Sections R12-15-1201 through R12-15-1206, repealed; new Article 12, consisting of Sections R12-15-1201 through R12-15-1226 et seq., adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

Section
 R12-15-1201. Applicability
 R12-15-1202. Definitions
 R12-15-1203. Exempt Structures
 Table 1. Exempt Structures
 R12-15-1204. Provision for Guidelines
 R12-15-1205. General Responsibilities
 R12-15-1206. Classification of Dams
 Exhibit A. Repealed
 Table 2. Size Classification
 Table 3. Downstream Hazard Potential Classification
 R12-15-1207. Application Process
 R12-15-1208. Application to Construct, Reconstruct, Repair, Enlarge, or Alter a High or Significant Hazard Potential Dam
 R12-15-1209. Application to Breach or Remove a High or Significant Hazard Potential Dam
 R12-15-1210. Application to Construct, Reconstruct, Repair, Enlarge, Alter, Breach, or Remove a Low Hazard Potential Dam
 R12-15-1211. Application to Construct, Reconstruct, Repair, Enlarge, Alter, Breach, or Remove a Very Low Hazard Potential Dam
 R12-15-1212. Construction of a High, Significant, or Low Hazard Potential Dam
 R12-15-1213. Completion Documents for a Significant or High Hazard Potential Dam
 R12-15-1214. Licensing
 R12-15-1215. Construction Drawings, Construction Specifications, and Engineering Design Report for a High, Significant, or Low Hazard Potential Dam
 R12-15-1216. Design of a High, Significant, or Low Hazard Potential Dam
 Table 4. Inflow Design Flood
 Table 5. Minimum Factors of Safety for Stability
 R12-15-1217. Maintenance and Repair; Emergency Actions
 R12-15-1218. Safe Storage Level
 R12-15-1219. Safety Inspections
 R12-15-1220. Existing Dams
 R12-15-1221. Emergency Action Plans
 R12-15-1222. Right of Review
 R12-15-1223. Enforcement Authority
 R12-15-1224. Emergency Procedures
 R12-15-1225. Emergency Repairs
 R12-15-1226. Non-Emergency Repairs; Loans and Grants

ARTICLE 13. WELL SPACING REQUIREMENTS; REPLACEMENT WELLS IN APPROXIMATELY THE SAME LOCATION

Article 13, consisting of Sections R12-15-1301 through R12-15-1308, made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

R12-15-1301. Definitions
 R12-15-1302. Well Spacing Requirements - Applications to Construct New Wells or Replacement Wells in New Locations Under A.R.S. § 45-599
 R12-15-1303. Well Spacing Requirements - Applications for Recovery Well Permits Under A.R.S. § 45-834.01
 R12-15-1304. Well Spacing Requirements - Wells Withdrawing Groundwater From the Little Colorado River Plateau Groundwater Basin for Transportation to Another Groundwater Basin Under A.R.S. § 45-544(B)(1)
 R12-15-1305. Well Spacing Requirements - Applications to Use a Well to Withdraw Groundwater for Transportation to an Active Management Area Under A.R.S. § 45-559
 R12-15-1306. Well Spacing Requirements - Applications for Water Exchange Permits Under A.R.S. § 45-1041
 R12-15-1307. Well Spacing Requirements - Notices of Water Exchange Under A.R.S. § 45-1051
 R12-15-1308. Replacement Wells in Approximately the Same Location

ARTICLE 1. FEES

R12-15-101. Reserved through

R12-15-150. Reserved

R12-15-151. Fee Schedule

- A. The Department shall only accept or take action on an application or filing upon payment of the appropriate fee as listed below. Payment may be made by cash, check, or by entry in an existing Department fee-credit account established pursuant to R12-15-152.
- B. The following fees shall be paid:
1. SURFACE WATER FEE (\$)
 - a. Application for permit to appropriate
 - i. Less than 50 acre feet 50.00
 - ii. 50 acre feet or more 75.00
 - b. Permit to appropriate
 - i. Less than 50 acre feet 25.00
 - ii. 50 acre feet or more 50.00
 - c. Claim of water right for a stockpond and application for certification 10.00
 - d. Certificate of water right for stockpond 30.00
 - e. Issue certificate of water right (except stockpond) 50.00
 - f. Application for severance and transfer of water right. 500.00
 - g. Application to transport water out of state 500.00
 - h. Assignment
 - i. Assignment of application for permit to appropriate, statement of claim, or claim of water right for a stockpond 10.00
 - ii. Assignment and reissuance of permit to appropriate 20.00
 - iii. Assignment and reissuance of certificate of water right (except stockpond) 35.00
 - iv. Assignment and reissuance of certificate of water right for a stockpond 20.00
 2. GROUNDWATER
 - a. Application for groundwater withdrawal permit, modifications and renewals (except

- applications for hydrologic testing and temporary dewatering permits) 150.00
- b. Application for permit for hydrologic testing and temporary dewatering, modifications, and renewals 50.00
- c. Groundwater withdrawal permit 50.00
- d. Convey groundwater withdrawal permit (except for permits for temporary electrical energy generation, temporary dewatering, hydrologic testing, and groundwater replenishment district withdrawals) 35.00
- e. Application for notice of authority to irrigate in an irrigation nonexpansion area 50.00
- f. Convey or reissue notice of authority to irrigate in an irrigation nonexpansion area 35.00
- 3. WATER EXCHANGES
 - a. Statement of water exchange contract 100.00
 - b. Application for water exchange permit 150.00
 - c. Water exchange permit 100.00
 - d. Renew or modify water exchange permit 100.00
 - e. Notice of water exchange 150.00
- 4. WELLS
 - a. Reissue drilling card 10.00
 - b. Permit to drill new or replacement well 30.00
 - c. Registration of exempt well No charge
 - d. Registration of nonexempt well 10.00
 - e. Late registration of any well (post 7/16/82) 10.00
 - f. Well assignments (single or group of wells by same owner) 10.00
 - g. Well driller's licenses (except single well license) 50.00
 - h. Reissue or renew unexpired well driller's license 10.00
 - i. Reactivate expired well driller's license 20.00
 - j. Single well license No charge
 - k. Well capping 300.00 minimum plus actual expenses over 300.00
- 5. GRANDFATHERED RIGHTS
 - a. Application for certificate of grandfathered right 75.00
 - b. Late application for certificate of grandfathered right 100.00
 - c. Convey or reissue certificate of grandfathered right 35.00
 - d. Application for type 1 nonirrigation grandfathered right associated with retired irrigation 1 and 50.00
 - e. Application to retire an irrigation grandfathered right from irrigation to nonirrigation 100.00
 - f. Application for restoration of retired irrigation grandfathered right 50.00
 - g. Purchase of flexibility account credit balance 100.00
- 6. SUBSTITUTION OF ACRES
 - a. Application to substitute irregularly shaped acres in an irrigation nonexpansion area or an active management area 50.00
 - b. Application to substitute flood-damaged acres in an irrigation nonexpansion area or an active management area 100.00
 - c. Application to substitute CAP acres in an irrigation nonexpansion area 50.00
 - d. Application to substitute, or to reverse substitution of, CAP acres in an active management area 100.00
- 7. ADEQUATE AND ASSURED WATER SUPPLY

Applications, certificates, licenses, reports, and permits relating to assured and adequate water supply The applicable fee prescribed in Article 7 of this Chapter.
- 8. UNDERWATER WATER STORAGE SAVINGS AND REPLENISHMENT PROGRAM
 - a. Application for underground storage facility permit 750.00
 - b. Underground storage facility permit 500.00
 - c. Convey underground storage facility permit 300.00
 - d. Application for groundwater savings facility permit 500.00
 - e. Groundwater savings facility permit 350.00
 - f. Convey groundwater savings facility permit 300.00
 - g. Application for water storage permit 250.00
 - h. Water storage permit 100.00
 - i. Convey water storage permit 300.00
 - j. Application for recovery well permit
 - i. First 10 wells 50/well
 - ii. Over 10 wells 10/well
 - k. Recovery well permit
 - i. First 10 wells 50/well
 - ii. Over 10 wells 10/well
- 9. CERTIFICATES OF GROUNDWATER OVERSUPPLY
 - a. Application for certificate of groundwater oversupply 150.00
 - b. Certificate of groundwater oversupply 50.00
- 10. LAKES
 - a. Application for permit to fill or refill a body of water

- i. Poor quality groundwater 150.00
 - ii. Interim 50.00
 - b. Permit to fill or refill a body of water
 - i. Poor quality groundwater 75.00
 - ii. Interim 30.00
 - c. Application for determination of substantial capital investment to fill or refill a body of water 50.00
 - d. Application and permit for temporary emergency use of water to fill a body of water 50.00
 - 11. SAFETY OF DAMS
 - a. Application for review No charge
 - b. Application filing fee - review of plans and studies based upon dam cost
 - i. First \$100,000 2.0%
 - ii. Next \$400,000 1.5%
 - iii. Next \$500,000 1.0%
 - iv. Remainder over \$1,000,000 .5%
 - c. Safety Inspections
 - i. Per inspection 100.00
 - ii. Plus, per foot of height 2.00
 - 12. WEATHER MODIFICATION
 - a. Application for weather modification license 100.00
 - b. License to manufacture or sell weather modification equipment 10.00
 - 13. COPIES
 - a. Photocopies .25/page
 - b. Microfiche copies .30/page
 - c. Computer reports:
 - i. First page of report 15.00
 - ii. Additional page .25 each
 - d. Certified copies 2.75/page
- C. In addition to the fees listed above, the applicant shall pay the Department the actual cost of mailing and/or publishing any legal notice required by statute.

Historical Note

Adopted effective October 8, 1982 (Supp. 82-5). Amended effective June 29, 1994 (Supp. 94-2). Amended effective March 3, 1995 (Supp. 95-1). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4). Amended by final rulemaking at 13 A.A.R. 3022, effective October 6, 2007 (Supp. 07-3).

R12-15-152. Expired**Historical Note**

Adopted effective October 8, 1982 (Supp. 82-5). Section expired under A.R.S. § 41-1056(E) at 13 A.A.R. 1647, effective May 31, 2006 (Supp. 07-2).

ARTICLE 2. PROCEDURAL RULES**R12-15-201. Expired****Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). The reference to R12-14-223 in subsection (C) corrected to read R12-15-223 (Supp. 93-1). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-202. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-203. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-204. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-205. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-206. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-207. Correction of Clerical Mistakes

Upon a motion or on the initiative of the Director, the Director may correct clerical mistakes in decisions, orders, rulings, any process issued by the Department, or other parts of the record, and errors in the record arising from oversight or omission. The Director shall give all parties and the Chief Counsel notice of any corrections made pursuant to this Section.

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Amended by final rulemaking at 13 A.A.R. 3022, effective October 6, 2007 (Supp. 07-3).

R12-15-208. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-209. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-210. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-211. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-212. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-213. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-214. Expired**Historical Note**

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-215. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section number corrected (Supp. 93-1). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-216. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-217. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-218. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-219. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-220. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-221. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-222. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-223. Expired

Historical Note

Adopted effective June 13, 1984 (Supp. 84-3). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2159, effective February 28, 2001 (Supp. 01-2).

R12-15-224. Ex Parte Communications

- A. During the course of a contested case or appealable agency action, a party shall not make an ex parte communication or knowingly cause an ex parte communication to be made to the Director or other Department employee or consultant who is or may reasonably be expected to be involved in the decision-making process of the contested case or appealable agency action.
- B. During the course of a contested case or appealable agency action, the Department personnel listed in subsection (A) shall not make an ex parte communication or knowingly cause an ex parte communication to be made to a party or a person who will be materially and directly affected by the outcome of the contested case or appealable agency action.
- C. Any of the Department personnel listed in subsection (A) of this Section who receives a written communication prohibited by this Section shall file a copy of the communication in the public docket and serve a copy on the Director, the Chief Counsel, and all parties to the contested case or appealable agency action. Any of the Department personnel listed in subsection (A) of this Section who receives an oral communication prohibited by this Section shall file a summary, stating the substance of the communication, in the public docket and serve a copy on the Director, the Chief Counsel, and all parties to the contested case or appealable agency action.
- D. Upon receipt of an ex parte communication or a copy or summary of an ex parte communication made or knowingly caused to be made by a party in violation of this Section, the Director, to the extent consistent with the interests of justice and the policy of the underlying statutes and rules, may require the party to show cause why the party's claim or interest in the contested case or appealable agency action should not be dismissed, denied or disregarded because of the violation.
- E. For purposes of this Section, "ex parte communication" means any written or oral communication relating to the merits of a contested case or appealable agency action, except:
 1. Communications made in the course of official proceedings in the contested case or appealable agency action;
 2. Communications made in writing, if a copy of the communication is promptly served on the Director, the Chief Counsel, and all parties to the contested case or appealable agency action;
 3. Oral communications made after adequate notice, stating the substance of each communication, to all parties and the Chief Counsel;
 4. Communications relating solely to procedural matters; and
 5. As otherwise authorized by law.

Historical Note

Adopted effective June, 1984 (Supp. 84-3). Amended by final rulemaking at 13 A.A.R. 3022, effective October 6, 2007 (Supp. 07-3).

ARTICLE 3. STOCKPOND AND OTHER SURFACE WATER RULES

R12-15-301. Expired

Historical Note

Adopted effective October 8, 1982 (Supp. 82-5). Amended effective April 3, 1987 (Supp. 87-2). Amended effective May 7, 1990 (Supp. 90-2). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2012, effective February 28, 2001 (Supp. 01-2).

R12-15-302. Expired

Historical Note

Adopted effective October 8, 1982 (Supp. 82-5). Amended effective May 7, 1990 (Supp. 90-2). Section expired under A.R.S. § 41-1056(E) at 7 A.A.R. 2012, effective February 28, 2001 (Supp. 01-2).

R12-15-303. Multiple Applications for Water Rights

- A. If two or more applications are filed with the Director pursuant to A.R.S. §§ 45-152 or 45-273 or both by or for the same applicant and for a right to use the same water, the Director shall consolidate the applications. If the applicant is otherwise entitled to both a permit to appropriate and a certificate of stockpond water right, the Director shall issue to the applicant either the permit to appropriate or the certificate of stockpond water right, whichever would give the applicant the higher priority.
- B. If one or more applications are filed with the Director pursuant to A.R.S. §§ 45-152 or 45-273 or both by or for the same applicant and for a right to use the same water for which the applicant holds a permit to appropriate, a certificate of water right or a certificate of stockpond water right, the Director shall deny the application or applications unless the applicant relinquishes every permit to appropriate, certificate of water right and certificate of stockpond water right which the applicant holds for that same water. The applicant may relinquish every permit to appropriate, certificate of water right and certificate of stockpond water right on the condition that the Director issues a permit to appropriate or certificate of stockpond water right to the applicant for the same water. In that case, the relinquishment shall be effective when the Director issues the permit to appropriate or certificate of stockpond water right.
- C. For purposes of this rule, "same water" means the same quantity of water from the same source for use at the same place for the same purpose. Water for which a right is applied or held pursuant to an application or permit to appropriate, certificate of water right or certificate of stockpond water right may be the same water in whole or in part as water for which a right is applied or held pursuant to a separate application or permit to appropriate, certificate of water right or certificate of stockpond water right.

Historical Note

Adopted effective April 3, 1987 (Supp. 87-2). Section R12-15-310 renumbered to R12-15-303 and amended effective May 7, 1990 (Supp. 90-2).

R12-15-304. Reserved

R12-15-305. Reserved

R12-15-306. Reserved

R12-15-307. Reserved

R12-15-308. Reserved

R12-15-309. Reserved

R12-15-310. Renumbered

Historical Note

Adopted effective April 3, 1987 (Supp. 87-2). Section R12-15-310 renumbered to R12-15-303 effective May 7, 1990 (Supp. 90-2)

ARTICLE 4. LICENSING TIME-FRAMES

R12-15-401. Licensing Time-frames

The following time-frames apply to licenses issued by the Department. In this Article, "license" has the meaning prescribed in A.R.S. § 41-1001. The licensing time-frames consist of an administrative completeness review time-frame, a substantive review time-frame, and an overall time-frame.

1. Within the administrative completeness review time-frames set forth in subsection (7), the Department shall notify the applicant in writing whether the application is complete or incomplete. If the application is incomplete, the notice shall specify what information or component is required to make the application complete.
2. An applicant with an incomplete application shall supply the missing information within 60 days from the date of the notice, or within such further time as the Director may specify, unless another time limit is specified by statute or applicable rule. If the applicant fails to complete the application within the specified time period, the Director may deny the application. Denial of an application under this provision does not preclude the applicant from filing a new application.
3. Within the overall time-frames set forth in subsection (7), unless extended by mutual agreement under A.R.S. § 41-1075, the Department shall notify the applicant in writing that the application is granted or denied. If the application is denied, the Department shall provide written justification for the denial and a written explanation of the applicant's right to a hearing or the applicant's right to appeal.
4. In computing any period of time prescribed by this rule, the day of the filing, notice or event from which the designated period of time begins to run shall not be included. The last day of the computed period shall be included, unless it is a Saturday, Sunday, or a legal holiday, in which event the period runs until the end of the next day which is not a Saturday, Sunday, or legal holiday. When the prescribed administrative completeness review time-frame or substantive review time-frame is less than 11 days, intermediate Saturdays, Sundays and legal holidays shall be excluded from the computation. The overall time-frame is the sum of the administrative completeness review time-frame and the substantive review time-frame calculated as prescribed by this Section.
5. Except as otherwise noted, the licensing time-frames do not include time for hearings. Time-frames in cases where a hearing is held are increased by 120 days.
6. The licensing time-frame rules are effective after December 31, 1998, as prescribed by A.R.S. § 41-1073(A), and apply to all applications filed after that date.
7. The licensing time-frames are set forth in Table A.

Historical Note

Adopted effective December 31, 1998; filed with the Office of the Secretary of State July 28, 1998 (Supp. 98-3). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

Table A. Licensing Time-frames

No.	License	Legal Authority	Completeness Review (Days)*	Substantive Review (Days)*	Overall Time-frame (Days)*
1	Filling a body of water with poor quality water	A.R.S. § 45-132(C)	30	60	90
2	Interim water use in body of water	A.R.S. § 45-133	30	60	90
3	Temporary emergency permit for use of surface water or groundwater in body of water	A.R.S. § 45-134	10	20	30
4	Permit to appropriate water (non-instream flow)	A.R.S. §§ 45-151 and 45-153	30	420	450
5	Permit to appropriate water (instream flow)	A.R.S. §§ 45-151 and 45-153	50	530	580
6	Change in use of water	A.R.S. § 45-156(B)	30	375	405
7	Exception to limitation on time of completion of construction	A.R.S. § 45-160	5	15	20
8	Primary reservoir permit	A.R.S. § 45-161	30	420	450
9	Secondary reservoir permit	A.R.S. § 45-161	30	420	450
10	Certificate of water right (non-instream flow)	A.R.S. § 45-162	20	100	120
11	Certificate of water right (instream flow)	A.R.S. § 45-162	20	190	210
12	Reissuance of permit or certificate held by the United States or State of Arizona	A.R.S. § 45-164(C)	10	80	90
13	Severance and transfer	A.R.S. § 45-172 (excluding 172.6)	30	390	420
14	Stockpond certificate	A.R.S. § 45-273	30	190	220
15	Transporting water from this state **	A.R.S. § 45-292	120	300	420
16	Waiver of water conserving plumbing fixture requirement	A.R.S. § 45-315	10	3	13
17	Irrigated acreage in an irrigation non-expansion area	A.R.S. § 45-437	30	90	120
18	Substitution of acres in an irrigation non-expansion area/flood damage	A.R.S. § 45-437.02	30	90	120
19	Substitution of acres in an irrigation non-expansion area/impediments to efficient irrigation	A.R.S. § 45-437.03	30	90	120
20	Reversal of substitution of acres irrigated with Central Arizona Project water	A.R.S. § 45-452(G)	30	90	120
21	Type 1 non-irrigation grandfathered right associated with irrigation land retired 1965-1980	A.R.S. §§ 45-463, 45-476.01, and 45-476	30	90	120
22	Type 2 non-irrigation grandfathered right	A.R.S. §§ 45-464, 45-476.01, and 45-476	30	90	120
23	Irrigation grandfathered right	A.R.S. §§ 45-465, 45-476.01, and 45-476	30	90	120
24	Substitution of acres in an active management area/flood damaged acres	A.R.S. § 45-465.01	30	90	120
25	Substitution of acres in an active management area/impediments to efficient irrigation	A.R.S. § 45-465.02	30	90	120
26	Type 1 non-irrigation right retired after 6/12/80	A.R.S. § 45-469	30	90	120
27	Restoration of retired irrigation grandfathered right	A.R.S. § 45-469(O)	30	90	120
28	Revised certificate for new or additional points of withdrawal for a Type 2 right	A.R.S. § 45-471(C)	45	135	180
29	Conveyance of irrigation grandfathered right for electrical energy generation	A.R.S. § 45-472(B)(2)	30	90	120
30	Conveyance of irrigation grandfathered right for non-irrigation use within service area	A.R.S. § 45-472(C)	30	90	120
31	Contract to supply groundwater	A.R.S. § 45-492(C)	15	90	105
32	Extension of service area to provide disproportionately large amount of water to large user	A.R.S. § 45-493(A)(2)	15	90	105
33	Addition/exclusion of acres by irrigation district	A.R.S. § 45-494.01(A)	30	90	120
34	Delivery of groundwater from an irrigation district to a general industrial use permit holder	A.R.S. § 45-497(B)	15	60	75
		A.R.S. §§ 45-513 and 45-			

35	Issuance/renewal/modification of dewatering permit	527	30	70	100
36	Issuance/renewal/modification of mineral extraction and metallurgical processing permit	A.R.S. §§ 45-514 and 45-527	30	70	100
37	Issuance/renewal/modification of general industrial use permit	A.R.S. §§ 45-515, 45-521, 45-522, 45-523, 45-524, and 45-527	30	70	100
38	Issuance/renewal/modification of poor quality groundwater withdrawal permit	A.R.S. §§ 45-516 and 45-527	30	70	100
39	Issuance/renewal/modification of temporary permit for electrical energy generation	A.R.S. §§ 45-517 and 45-527	30	70	100
40	Issuance/extension/modification of temporary dewatering permit	A.R.S. §§ 45-518 and 45-527	30	70	100
41	Emergency temporary dewatering permit	A.R.S. § 45-518(D)	3	7	10
42	Issuance/renewal/modification of drainage water withdrawal permit	A.R.S. §§ 45-519 and 45-527	30	70	100
43	Issuance/renewal/modification of hydrologic testing permit	A.R.S. §§ 45-519.01, 45-521, 45-522, 45-524, and 45-527	30	30	60
44	Change of location of use	A.R.S. §§ 45-520(A), 45-521, and 45-527	30	30	60
45	Conveyance of a groundwater withdrawal permit	A.R.S. § 45-520(B)	30	30	60
46	Transportation of groundwater withdrawn in McMullen Valley Basin to an active management area	A.R.S. § 45-552(B)	45	105	150
47	Transportation of groundwater withdrawn in Harquahala irrigation non-expansion area to an initial active management area	A.R.S. § 45-554(B)	45	105	150
48	Transportation of groundwater withdrawn in Big Chino subbasin to an initial active management area	A.R.S. § 45-555(B)	45	105	150
49	Well spacing requirements for withdrawing groundwater for transportation to an active management area	A.R.S. § 45-559	45	105	150
50	Groundwater replenishment district's preliminary or long-term replenishment plan **	A.R.S. § 45-576.03	As prescribed by A.R.S. § 45-576.03(A)	As prescribed by A.R.S. § 45-576.03 (B), (C), (D), and (E)	As prescribed by A.R.S. § 45-576.03
51	Conservation district or water district long-term replenishment plan **	A.R.S. §§ 45-576.03, 45-576.02(C), and 45-576.02(E)	As prescribed by A.R.S. § 45-576.03(I)	As prescribed by A.R.S. § 45-576.03(J), (K), (L), and (M)	As prescribed by A.R.S. § 45-576.03
52	Notice of intent to abandon a well	A.R.S. § 45-594 and A.A.C. R12-15-816	15	15	30
53	Well construction request for variance	A.R.S. §§ 45-594, 45-596(D), and A.A.C. R12-15-820	15	35	50
54	Well driller license	A.R.S. § 45-595(C)	25	105	130
55	Single well license	A.R.S. § 45-595(D)	25	105	130
56	Renewal or reactivation of well drilling license	A.R.S. § 45-595(C) A.A.C. R12-15-806	25	15	40
57	Notice of intent to drill	A.R.S. § 45-596, and A.A.C. R12-15-810	15	0	15
58	Well construction permit	A.R.S. § 45-599	30	60	90
59	Alternative water measuring devices	A.R.S. § 45-604 and A.A.C. R12-15-909	15	60	75
60	Underground storage facility permit	A.R.S. §§ 45-811.01 and 45-871.01	As prescribed by A.R.S. § 45-871.01(B)	As prescribed by A.R.S. § 45-871.01(D), (G), and (H)	As prescribed by A.R.S. § 45-871.01
61	Groundwater savings facility permit	A.R.S. §§ 45-812.01 and 45-871.01	As prescribed by A.R.S. § 45-871.01(B)	As prescribed by A.R.S. § 45-871.01(D), (G), and (H)	As prescribed by A.R.S. § 45-871.01
62	Storage facility permit renewal/conveyance/modification	A.R.S. §§ 45-814.01 and 45-871.01	As prescribed by A.R.S. § 45-871.01(B)	As prescribed by A.R.S. § 45-871.01(D), (G), and (H)	As prescribed by A.R.S. § 45-871.01
63	Water storage permit modification/conveyance	A.R.S. §§ 45-831.01 and 45-871.01	As prescribed by A.R.S. §§ 45-831.01(G) and 45-871.01(B) and (E)	As prescribed by A.R.S. §§ 45-831.01(G) and 45-871.01(D), (E), (G), and (H)	As prescribed by A.R.S. §§ 45-831.01(G) and 45-871.01
64	Recovery well permit	A.R.S. §§ 45-834.01 and 45-871.01	As prescribed by A.R.S. § 45-871.01(B)	As prescribed by A.R.S. § 45-871.01(F), (G), and (H)	As prescribed by A.R.S. § 45-871.01
65	Emergency temporary recovery well permit	A.R.S. § 45-834.01(D)	5	10	15
66	Issuance/renewal/modification of water exchange permit	A.R.S. §§ 45-1041, 45-1042, and 45-1045	As prescribed by A.R.S. § 45-1042(A)	As prescribed by A.R.S. § 45-1042 (B), (C), and (D)	As prescribed by A.R.S. § 45-1042
67	Modification of previously enrolled or permitted water exchange/non-Colorado River	A.R.S. § 45-1041(B)	60	90	150
68	Construction, enlargement, repair, alteration, or removal of a dam	A.R.S. §§ 45-1203, 45-1206, and 45-1207	120	60	180
69	Weather modification license	A.R.S. § 45-1601	15	60	75
70	Certificate of Assured Water Supply	A.A.C. R12-15-702, A.R.S. §§ 45-576 and 45-578	150	60	210
71	Designation or Modification of Designation of Assured Water Supply	A.A.C. R12-15-702 and R12-15-714; A.R.S. § 45-576	150	60	210
72	Analysis of Assured Water Supply/unplatted development plan	A.A.C. R12-15-712, A.R.S. § 45-576(H)	150	30	180
73	Assured Water Supply for State lands	A.A.C. R12-15-713, A.R.S. § 37-334(F)	30	60	90
74	Water adequacy report	A.A.C. R12-15-716, A.R.S. § 45-108	60	60	120
		A.A.C. R12-15-716,			

75	Designation or Modification of Designation of Adequate Water Supply	A.A.C. R12-15-725 A.R.S. § 45-108	150	60	210
76	Analysis of water adequacy/unplatted	A.R.S. § 45-108 A.A.C. R12-15-723	60	60	120
77	Adequate Water Supply for State lands	A.R.S. § 45-108 A.A.C. R12-15-724	30	60	90

* The computation of days is prescribed by subsection (4).

** Hearing is required.

Historical Note

Adopted effective December 31, 1998; filed with the Office of the Secretary of State July 28, 1998 (Supp. 98-3).

ARTICLE 5. RESERVED

ARTICLE 6. RESERVED

ARTICLE 7. ASSURED AND ADEQUATE WATER SUPPLY

R12-15-701. Definitions - Assured and Adequate Water Supply Programs

In addition to any other definitions in A.R.S. Title 45 and the management plans in effect at the time of application, the following words and phrases in this Article shall have the following meanings, unless the context otherwise requires:

1. "Abandoned plat" means a plat for which a certificate or water report has been issued and that will not be developed because of one of the following:
 - a. The land has been developed for another use; or
 - b. Legal restrictions will preclude approval of the plat.
2. "ADEQ" means the Arizona Department of Environmental Quality.
3. "Adequate delivery, storage, and treatment works" means:
 - a. A water delivery system with sufficient capacity to deliver enough water to meet the needs of the proposed use;
 - b. Any necessary storage facilities with sufficient capacity to store enough water to meet the needs of the proposed use; and
 - c. Any necessary treatment facilities with sufficient capacity to treat enough water to meet the needs of the proposed use.
4. "Adequate storage facilities" means facilities that can store enough water to meet the needs of the proposed use.
5. "Affiliate" means a person who, directly or indirectly through one or more intermediaries, controls, is controlled by or is under common control with the person specified.
6. "AMA" means an active management area as defined in A.R.S. § 45-402.
7. "Analysis" means an analysis of assured water supply or an analysis of adequate water supply.
8. "Analysis holder" means a person to whom an analysis of assured water supply or an analysis of adequate water supply is issued and any current owner of land included in the analysis.
9. "Analysis of adequate water supply" means a determination issued by the Director stating that one or more criteria required for a water report pursuant to R12-15-713 have been demonstrated for a development.
10. "Analysis of assured water supply" means a determination issued by the Director stating that one or more criteria required for a certificate of assured water supply pursuant to R12-15-704 have been demonstrated for a development.
11. "Annual authorized volume" means, for an approved remedial action project, the annual authorized volume specified in a consent decree or other document approved by ADEQ or the EPA, except that:
 - a. If no annual authorized amount is specified in a consent decree or other document approved by ADEQ or the EPA, the annual authorized volume is the largest volume of groundwater withdrawn pursuant to the approved remedial action project in any year prior to January 1, 1999.
 - b. If the Director increases the annual authorized volume pursuant to R12-15-729(C), the annual authorized volume is the amount approved by the Director.
12. "Annual estimated water demand" means the estimated water demand divided by 100.
13. "Approved remedial action project" means a remedial action project approved by ADEQ under A.R.S. Title 49, or by the EPA under CERCLA.
14. "Authorized remedial groundwater use" means, for any year, the amount of remedial groundwater withdrawn pursuant to an approved remedial action project and used by a municipal provider during the year, not to exceed the annual authorized volume of the project.
15. "Build-out" means a condition in which all water delivery mains are in place and active water service connections exist for all lots.
16. "CAP water" means:
 - a. All water from the Colorado River or from the Central Arizona Project works authorized in P.L. 90-537, excluding enlarged Roosevelt reservoir, which is made available pursuant to a subcontract with a multi-county water conservation district.
 - b. Any additional water not included in subsection 16(a) of this Section that is delivered by the United States Secretary of the Interior pursuant to an Indian water rights settlement through the Central Arizona Project.
17. "Central Arizona Groundwater Replenishment District" or "CAGR" means a multi-county water conservation district acting in its capacity as the entity established pursuant to A.R.S. § 48-3771, et seq., and responsible for replenishing excess groundwater.
18. "Central distribution system" means a water system that qualifies as a public water system pursuant to A.R.S. § 49-352.
19. "CERCLA" or "Comprehensive Environmental Response, Compensation, and Liability Act of 1980" has the same meaning as prescribed in A.R.S. § 49-201.
20. "Certificate" means a certificate of assured water supply issued by the Director for a subdivision pursuant to A.R.S. § 45-576 et seq. and this Article.
21. "Certificate holder" means any person included on a certificate, except the following:
 - a. Any person who no longer owns any portion of the property included in the certificate, and
 - b. Any potential purchaser for whom the purchase contract has been terminated or has expired.
22. "Certificate of convenience and necessity" means a certificate required by the Arizona Corporation Commission, pursuant to A.R.S. § 40-281, which allows a private water company to serve water to customers within its certificated area.
23. "Colorado River water" means water from the main stream of the Colorado River. For purposes of this Article, Colorado River water does not include CAP water.
24. "Committed demand" means the 100-year water demand at build-out of all recorded lots that are not yet served water within the service area of a designation applicant or a designated provider.
25. "County water augmentation authority" means an authority formed pursuant to A.R.S. Title 45, Chapter 11.
26. "Current demand" means the 100-year water demand for existing uses within the service area of a designation applicant or designated provider, based on the annual report for the previous calendar year.
27. "Depth-to-static water level" means the level at which water stands in a well when no water is withdrawn by pumping or by free flow.
28. "Designated provider" means:
 - a. A municipal provider that has obtained a designation of assured or adequate water supply; or
 - b. A city or town that has obtained a designation of adequate water supply pursuant to A.R.S. § 45-108(D).
29. "Designation" means a decision and order issued by the director designating a municipal provider as having an assured water supply or an adequate water supply.
30. "Determination of adequate water supply" means a water report, a designation of adequate water supply, or an analysis of adequate water supply.
31. "Determination of assured water supply" means a certificate, a designation of assured water supply, or an analysis of assured water supply.
32. "Development" means either a subdivision or an unplatted development plan.
33. "Diversion works" means a structure or well that allows or enhances diversion of surface water from its natural course for other uses.
34. "Drought response plan" means a plan describing a variety of conservation and augmentation measures, especially the use of backup water supplies, that a municipal provider will utilize in operating its water supply system in times of a water supply shortage. The plan may include the following:
 - a. An identification of priority water uses consistent with applicable public policies.
 - b. A description of sources of emergency water supplies.
 - c. An analysis of the potential use of water pressure reduction.
 - d. Plans for public education and voluntary water use reduction.
 - e. Plans for water use bans, restrictions, and rationing.
 - f. Plans for water pricing and penalties for excess water use.
 - g. Plans for coordination with other cities, towns, and private water companies.
35. "Drought volume" means 80% of the volume of a surface water supply, determined by the director under R12-15-716 to be physically available on an annual basis to a certificate holder or a designated provider.
36. "Dry lot development" means a development or subdivision without a central water distribution system.
37. "EPA" means the United States Environmental Protection Agency.
38. "Estimated water demand" means:
 - a. For a certificate or water report, the Director's determination of the 100-year water demand for all uses included in the subdivision;
 - b. For a designation, the sum of the following:
 - i. The Director's determination of the current demand;
 - ii. The Director's determination of the committed demand; and
 - iii. The Director's determination of the projected demand during the term of the designation; or
 - c. For an analysis, the Director's determination of the water demand for all uses included in the development.
39. "Existing municipal provider" means a municipal provider that was in operation and serving water for non-irrigation use on or before January 1, 1990.
40. "Extinguish" means to cause a grandfathered right to cease to exist through a process established by the director pursuant to R12-15-723.
41. "Extinguishment credit" means a credit that is issued by the Director in exchange for the extinguishment of a grandfathered right and that may be used to make groundwater use

consistent with the management goal of an AMA.

42. "Firm yield" means the minimum annual diversion for the period of record which may include runoff releases from storage reservoirs, and surface water withdrawn from a well.
43. "Management plan" means a water management plan adopted by the director pursuant to A.R.S. § 45-561 et seq.
44. "Master-planned community" has the same meaning as provided in A.R.S. § 32-2101.
45. "Median flow" means the flow which is represented by the middle value of a set of flow data that are ranked in order of magnitude.
46. "Member land" has the same meaning as provided in A.R.S. § 48-3701.
47. "Member service area" has the same meaning as provided in A.R.S. § 48-3701.
48. "Multi-county water conservation district" means a district established pursuant to A.R.S. Title 48, Chapter 22.
49. "Municipal provider" has the same meaning as provided in A.R.S. § 45-561.
50. "New municipal provider" means a municipal provider that began serving water for non-irrigation use after January 1, 1990.
51. "Owner" means:
 - a. For an analysis, certificate, or water report applicant, a person who holds fee title to the land described in the application; or
 - b. For a designation applicant, the person who will be providing water service pursuant to the designation.
52. "Perennial" means a stream that flows continuously.
53. "Persons per household" means a measure obtained by dividing the number of persons residing in housing units by the number of housing units.
54. "Physical availability determination" means a letter issued by the Director stating that an applicant has demonstrated all of the criteria in R12-15-702(C).
55. "Plat" means a preliminary or final map of a subdivision in a format typically acceptable to a platting entity.
56. "Potential purchaser" means a person who has entered into a purchase agreement for land that is the subject of an application for a certificate or an assignment of a certificate.
57. "Projected demand" means the 100-year water demand at build-out, not including committed or current demand, of customers reasonably projected to be added and plats reasonably projected to be approved within the designated provider's service area and reasonably anticipated expansions of the designated provider's service area.
58. "Proposed municipal provider" means a municipal provider that has agreed to serve a proposed subdivision.
59. "Purchase agreement" means a contract to purchase or acquire an interest in real property, such as a contract for purchase and sale, an option agreement, a deed of trust, or a subdivision trust agreement.
60. "Remedial groundwater" means groundwater withdrawn pursuant to an approved remedial action project, but does not include groundwater withdrawn to provide an alternative water supply pursuant to A.R.S. § 49-282.03.
61. "Service area" means:
 - a. For an application for an analysis of adequate water supply, a water report, or a designation of adequate water supply, the area of land actually being served water for a non-irrigation use by the municipal provider and additions to the area that contain the municipal provider's operating distribution system for the delivery of water for a non-irrigation use;
 - b. For an application for a designation of adequate water supply pursuant to A.R.S. § 45-108(D), the area of land actually being served water for a non-irrigation use by each municipal provider that serves water within the city or town, and additions to the area that contain each municipal provider's operating distribution system for the delivery of water for a non-irrigation use; or
 - c. For an application for a certificate or designation of assured water supply, "service area" has the same meaning as prescribed in A.R.S. § 45-402.
62. "Subdivision" has the same meaning as prescribed in A.R.S. § 32-2101.
63. "Superfund site" means the site of a remedial action undertaken pursuant to CERCLA.
64. "Surface water" means any surface water as defined in A.R.S. § 45-101, including CAP water and Colorado River water.
65. "Water Quality Assurance Revolving Fund site" or "WQARF site" means a site of a remedial action undertaken pursuant to A.R.S. Title 49, Chapter 2, Article 5.
66. "Water report" means a letter issued to the Arizona Department of Real Estate by the Director for a subdivision stating whether an adequate water supply exists pursuant to A.R.S. § 45-108 and this Article.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Amended by emergency rulemaking at 11 A.A.R. 2706, effective June 29, 2005 for 180 days (Supp. 05-2). Emergency renewed for 180 days at 12 A.A.R. 144, effective December 23, 2005 (Supp. 05-4). Emergency expired. Amended by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-702. Physical Availability Determination

- A. A person may apply for a physical availability determination by submitting an application on a form prescribed by the Director with the fee required by R12-15-730, and providing the following information with the application:
 1. The proposed source of water for which the applicant is seeking a determination of physical availability.
 2. Evidence that the applicant has complied with subsection (C) of this Section, and
 3. Any other information that the Director reasonably deems necessary to determine whether water is physically available in the area that is the subject of the application.
- B. Each applicant shall sign an application for a physical availability determination. If an applicant is not a natural person, the applicant's authorized officer, managing member, partner, trust officer, trustee or other person who performs similar decision-making functions for the applicant shall sign the application. If the applicant submits a letter, signed by the applicant and dated within 90 days of the date the application is submitted, authorizing a representative to submit applications for permits regarding the land to be included in the determination, the authorized representative may sign the application on the applicant's behalf.
- C. An applicant for a physical availability determination shall demonstrate the following:
 1. The volume of water that is physically available for 100 years in the area that is the subject of the application, according to the criteria in R12-15-716.
 2. That the proposed sources of water will be of adequate quality, according to the criteria in R12-15-719.
- D. After a complete application is submitted, the Director shall review the application and associated evidence to determine whether the applicant has demonstrated all of the criteria in subsection (C) of this Section. If the Director determines that the applicant has demonstrated all of the criteria in subsection (C) of this Section, the Director shall issue a physical availability determination.
- E. Any person applying for a determination of assured water supply or a determination of adequate water supply may use an existing physical availability determination for purposes of R12-15-716. The Director shall consider any changes in hydrologic conditions for purposes of R12-15-716.
- F. The issuance of a physical availability determination does not reserve any water for purposes of this Article.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-703. Analysis of Assured Water Supply

- A. A person proposing to develop land that will not be served by a designated provider may apply for an analysis of assured water supply before applying for a certificate. An applicant for an analysis must be the owner of the land that is the subject of the application or have the written consent of the owner. The commissioner of the Arizona State Land Department may apply for an analysis for land owned by the state of Arizona or may consent to the inclusion of such land in an application.
- B. An applicant for an analysis shall submit an application on a form prescribed by the Director with the fee required by R12-15-730, and attach the following:
 1. A title report, condition of title report, limited search title report, or recorded deed, dated within 90 days of the date the application is submitted, demonstrating the ownership of the land that is the subject of the application;
 2. A description of the development, including:
 - a. A map of the land uses included in the development,
 - b. A list of water supplies proposed to be used by the development,
 - c. A summary of land use types included in the development, and
 - d. An estimate of the water demand for the land uses included in the development; and
 3. Evidence that the applicant has complied with subsection (E) of this Section.
- C. An applicant shall sign the application for an analysis. If an applicant is not a natural person, the applicant's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant shall sign the application. If the applicant submits a letter, signed by the applicant and dated within 90 days of the date the application is submitted, authorizing a representative to submit applications for permits regarding the land to be included in the analysis, the authorized representative may sign the application on the applicant's behalf.
- D. After a complete application is submitted, the Director shall determine the estimated water demand of the development.
- E. The Director shall issue an analysis if an applicant demonstrates one or more of the following:
 1. Sufficient supplies of water are physically available to meet all or part of the estimated water demand of the development for 100 years, according to the criteria in R12-15-716.
 2. Sufficient supplies of water are continuously available to meet the estimated water demand of the development for 100 years, according to the criteria in R12-15-717.
 3. Sufficient supplies of water are legally available to meet the estimated water demand of the development for 100 years, according to the criteria in R12-15-718.
 4. The proposed sources of water are of adequate quality, according to the criteria in R12-15-719.
 5. Any proposed groundwater use is consistent with the management plan in effect at the time of the application, according to the criteria in R12-15-721.
 6. Any proposed groundwater use is consistent with the management goal, according to the criteria in R12-15-722.
- F. For 10 years after the Director issues an analysis, or a longer period allowed under subsections (H) or (I) of this Section:
 1. If groundwater is a source of supply in the analysis and the applicant demonstrates that groundwater is physically available under subsection (E)(1) of this Section, the Director shall consider that supply of groundwater reserved for the use of the proposed development in subsequent determinations of physical availability pursuant to R12-15-716(B).
 2. If an analysis holder applies for a certificate for a subdivision located on land included in the analysis, the Director shall presume that a criterion demonstrated in the analysis remains satisfied with respect to the subdivision, unless the Director has received new evidence demonstrating that the criterion is not satisfied. If the Director issues the certificate, the Director shall reduce the volume of groundwater reserved pursuant to subsection (F)(1) of this Section by the amount of the estimated water demand for the certificate that will be met with groundwater.
- G. The Director shall reduce the amount of groundwater considered reserved for use of the development upon request by the analysis holder. If the analysis holder requesting a reduction is not the person to whom the analysis was issued, the Director shall reduce the amount of reserved groundwater only if the person to whom the analysis was issued or that person's designee consents to the request for reduction. The person to whom the analysis was issued shall notify the Director in writing of the name of the person's designee for purposes of this subsection.
- H. The analysis holder may apply to the Director for a five-year extension of the time period in subsection (F) of this Section by submitting an application on a form prescribed by the Director no

earlier than 36 months before the end of the time period and no later than 30 days before the end of the time period. If an extension is granted, the analysis holder may apply to the Director for an additional five-year extension by submitting an application on a form prescribed by the Director no earlier than 36 months before the end of the extended time period and no later than 30 days before the end of the extended time period. The Director shall extend the time period for no more than two successive five-year periods under this subsection if the analysis holder demonstrates one of the following:

1. The analysis holder has made a substantial capital investment in developing the land included in the analysis.
 2. The analysis holder has made material progress in developing the land included in the analysis.
 3. Progress in developing the land included in the analysis has been delayed for reasons outside the control of the analysis holder.
- I. After the Director grants two five-year extensions pursuant to subsection (H) of this Section, the Director may extend the time period for additional five-year periods if the analysis holder files a timely application pursuant to subsection (H) of this Section and demonstrates one of the criteria in subsections (H)(1), (H)(2), or (H)(3) of this Section.
- J. The Director shall review an application for an analysis or an application for an extension pursuant to subsections (H) or (I) of this Section pursuant to the licensing time-frame provisions in R12-15-401.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Amended by emergency rulemaking at 11 A.A.R. 2706, effective June 29, 2005 for 180 days (Supp. 05-2). Emergency renewed for 180 days at 12 A.A.R. 144, effective December 23, 2005 (Supp. 05-4). Emergency expired. Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-703.01. Repealed

Historical Note

New Section made by final rulemaking at 7 A.A.R. 3038, effective June 18, 2001 (Supp. 01-2). Section repealed by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-704. Certificate of Assured Water Supply

- A. An application for a certificate shall be filed by the current owner of the land that is the subject of the application. Potential purchasers and affiliates may also be included as applicants.
- B. An applicant for a certificate shall submit an application on a form prescribed by the Director with the fee required by R12-15-730 and provide the following:
1. One of the following forms of proof of ownership for each applicant to be listed on the certificate:
 - a. For an applicant that is the current owner, one of the following:
 - i. A title report, condition of title report, limited search title report, or recorded deed, dated within 90 days of the date the application is filed, demonstrating that the applicant is the owner of the land that is the subject of the application; or
 - ii. Evidence that the CAGRD has reviewed and approved evidence that the applicant is the owner of the land that is the subject of the application;
 - b. For an applicant that is a potential purchaser, evidence of a purchase agreement; or
 - c. For an applicant that is an affiliate of another applicant, a certification by the other applicant of the affiliate status;
 2. A plat of the subdivision;
 3. An estimate of the 100-year water demand for the subdivision;
 4. A list of all proposed sources of water that will be used by the subdivision;
 5. Evidence that the criteria in subsections (F) or (G) of this Section are met; and
 6. Any other information that the Director reasonably determines is necessary to decide whether an assured water supply exists for the subdivision.
- C. Each applicant shall sign the application for a certificate. If an applicant is not a natural person, the applicant's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant shall sign the application. If an applicant submits a letter, signed by the applicant and dated within 90 days of the date the application is submitted, authorizing a representative to submit applications for permits regarding the land to be included in the certificate, the authorized representative may sign the application on the applicant's behalf.
- D. The Director shall give public notice of an application for a certificate as provided in A.R.S. § 45-578.
- E. After a complete application is submitted, the Director shall review the application and associated evidence to determine:
1. The estimated water demand of the subdivision;
 2. The amount of the groundwater allowance for the subdivision, as provided in R12-15-724 through R12-15-727; and
 3. Whether the applicant has demonstrated all of the requirements in subsection (F) or subsection (G) of this Section.
- F. Except as provided in subsection (G) of this Section, the Director shall issue a certificate if the applicant demonstrates all of the following:
1. Sufficient supplies of water are physically available to meet the estimated water demand of the subdivision, according to the criteria in R12-15-716;
 2. Sufficient supplies of water are continuously available to meet the estimated water demand of the subdivision, according to the criteria in R12-15-717;
 3. Sufficient supplies of water are legally available to meet the estimated water demand of the subdivision, according to the criteria in R12-15-718;
 4. The sources of water are of adequate quality, according to the criteria in R12-15-719;
 5. The applicant has the financial capability to construct adequate delivery, storage, and treatment works for the subdivision, according to the criteria in R12-15-720;
 6. The proposed use of groundwater withdrawn within an AMA is consistent with the management plan in effect at the time of the application, according to the criteria in R12-15-721; and
 7. The proposed use of groundwater withdrawn within an AMA is consistent with the achievement of the management goal, according to the criteria in R12-15-722.
- G. If the Director previously issued a certificate for the subdivision, the Director shall issue a new certificate to the applicant if the applicant demonstrates that all of the requirements in subsection (F) are met or that all of the following apply:
1. Any changes to the plat for which the previous certificate was issued are not material, according to the criteria in R12-15-708;
 2. If groundwater is a proposed source of supply for the subdivision, the proposed groundwater withdrawals satisfied the physical availability requirements in effect at the time the complete and correct application for the previous certificate was submitted;
 3. Any proposed sources of water, other than groundwater, are physically available to satisfy the estimated water demand that will not be satisfied with groundwater, according to the criteria in R12-15-716;
 4. Any proposed sources of water other than groundwater are continuously available to satisfy the estimated water demand that will not be satisfied with groundwater, according to the criteria in R12-15-717;
 5. The proposed uses of groundwater withdrawn within an AMA were consistent with the achievement of the management goal according to the criteria in effect at the time the complete and correct application for the previous certificate was submitted; and
 6. The applicant demonstrates that the requirements in subsections (F)(3) through (F)(6) of this Section are met.
- H. Before issuing a certificate, the Director shall classify the certificate for the purposes of R12-15-705 and R12-15-706 as follows:
1. Type A certificate. The Director shall classify the certificate as a Type A certificate if the applicant meets the criteria in R12-15-720(A)(1) and all of the subdivision's estimated water demand will be met with one or more of the following:
 - a. Groundwater served by a proposed municipal provider pursuant to an existing service area right;
 - b. Groundwater served by a proposed municipal provider pursuant to a pending service area right, if the proposed municipal provider currently holds or will hold the well permit;
 - c. CAP water served by a municipal provider pursuant to the proposed municipal provider's non-declining, long-term municipal and industrial subcontract;
 - d. Surface water served by a proposed municipal provider pursuant to the proposed municipal provider's surface water right or claim;
 - e. Effluent owned and served by a proposed municipal provider; or
 - f. A Type 1 grandfathered right appurtenant to the land on which the groundwater will be used and held by a proposed municipal provider.
 2. Type B certificate. The Director shall classify all certificates that do not meet the requirements of subsection (H)(1) of this Section as Type B certificates.
- I. The Director shall review an application for a certificate pursuant to the licensing time-frame provisions in R12-15-401.
- J. An owner of six or more lots is not required to obtain a certificate if all of the following apply:
1. The lots comprise a subset of a subdivision for which:
 - a. A plat was recorded before 1980; or
 - b. A certificate was issued before February 7, 1995;
 2. No changes were made to the plat since February 7, 1995; and
 3. Water service is currently available to each lot.
- K. A new owner of all or a portion of a subdivision for which a plat has been recorded is not required to obtain a certificate if all of the following apply:
1. The Director previously issued a Type A certificate for the subdivision pursuant to subsection (H)(1) of this Section or R12-15-707;
 2. Water service is currently available to each lot; and
 3. There are no material changes to the plat for which the certificate was issued, according to the criteria in R12-15-708.
- L. An owner of six or more lots in the Pinal AMA is not required to obtain a certificate if all of the following apply:
1. A plat for the subdivision was recorded before October 1, 2007;
 2. There have been no material changes to the plat according to the criteria in R12-15-708, since October 1, 2007;
 3. The proposed municipal provider was designated as having an assured water supply when the plat was recorded, but is no longer designated as having an assured water supply; and
 4. Water service is currently available to each lot.
- M. A person may request a letter stating that the owner is not required to obtain a certificate pursuant to subsection (J), (K), or (L) of this Section by submitting an application on a form prescribed by the Director and attaching evidence that the criteria of subsection (J), (K), or (L) are met. Upon receiving an application pursuant to this subsection, the Director shall:
1. Review the application pursuant to the licensing time-frame provisions in R12-15-401.
 2. Determine whether the criteria of subsection (J), (K), or (L) of this Section are met.
 3. If the Director determines that the criteria of subsection (J) of this Section are met, issue a letter to the applicant and the Arizona Department of Real Estate stating that the current owner is not required to obtain a certificate.
 4. If the Director determines that the criteria of subsection (K) or (L) of this Section are met, issue a letter to the applicant and the Arizona Department of Real Estate stating that the current owner and any future owners are not required to obtain a certificate.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3). Amended by final rulemaking at 13 A.A.R. 1394, effective October 1, 2007 (Supp. 07-2).

R12-15-705. Assignment of Type A Certificate of Assured Water Supply

- A. The certificate holder of a Type A certificate and the assignee may apply for approval of an assignment of the Type A certificate within the time allowed by A.R.S. § 45-579(A). The assignee may file the application if there is no certificate holder. The application shall be submitted on a form prescribed by the Director with the fee required by R12-15-730, and the applicant shall provide the following:
1. One of the following forms of proof of ownership for each assignee:
 - a. A title report, condition of title report, limited search title report, or recorded deed, dated within 90 days of the date the application is submitted to the Director and demonstrating that the assignee is the owner of the land that is the subject of the proposed assignment; or
 - b. If the assignee is a potential purchaser, evidence of a purchase agreement;
 2. A current plat of the subdivision;
 3. An estimate of the 100-year water demand for the subdivision, based on the current plat;
 4. Certification by each applicant that:
 - a. The proposed municipal provider has not changed and has agreed to continue to serve the subdivision after the assignment; and
 - b. All water supplies listed on the current certificate are physically, continuously, and legally available to meet the estimated water demand of the subdivision after the assignment.
- B. Each applicant shall sign the application for an assignment of a Type A certificate. If an applicant is not a natural person, the entity's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant shall sign the application. If an applicant submits a letter, signed by the applicant and dated within 90 days of the date the application is submitted, authorizing a representative to submit applications for permits regarding the land included in the certificate, the authorized representative may sign the application on behalf of the applicant.
- C. Upon receiving an application for an assignment of a Type A certificate, the Director shall post the notice required by A.R.S. § 45-579(E).
- D. If the Director determines that the application meets the criteria of A.R.S. § 45-579(A), the Director shall issue a Type A certificate to each applicant. A Type A certificate issued under this subsection shall retain the issue date, the number of lots, and the estimated water demand shown on the original certificate, except as provided in subsection (E) of this Section. The Director shall determine that the application meets the criteria of A.R.S. § 45-579(A) if all of the following apply:
1. The application is submitted within the time allowed by A.R.S. § 45-579(A);
 2. The assignee is the owner or a potential purchaser of the portion of the subdivision that is the subject of the assignment;
 3. There have been no material changes to the plat for which the original certificate was issued, according to the criteria in R12-15-708;
 4. Neither the applicant nor a predecessor in interest has impaired the manner in which consistency with management goal requirements were satisfied when the original certificate was issued; and
 5. The applicant makes the certifications required in subsection (A)(4) of this Section.
- E. In the case of a partial assignment, the Director shall determine whether changes to the plat are material according to R12-15-708. The Director shall issue a Type A certificate to the assignee for the portion of the subdivision that is the subject of the assignment and for the number of lots and the estimated water demand of the current plat of the portion of the subdivision that is the subject of the assignment. The Director shall issue a Type A certificate to the certificate holder for the portion of the subdivision retained by the certificate holder and for the remainder of the number of lots and the remainder of the estimated water demand. The sum of the number of lots and the sum of the amount of the estimated water demand shown on each certificate shall equal the total number of lots and the total estimated water demand shown on the certificate being assigned.
- F. The Director shall review an application for an assignment of a Type A certificate of assured water supply pursuant to the licensing time-frame provisions in R12-15-401.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Amended by final rulemaking at 8 A.A.R. 4390, effective November 22, 2002 (Supp. 02-3). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-706. Assignment of Type B Certificate of Assured Water Supply

- A. The certificate holder of a Type B certificate or a certificate issued before the effective date of this Section that has not been classified pursuant to R12-15-707 and the assignee may apply for approval of an assignment of the certificate to another person within the time allowed by A.R.S. § 45-579(A). The assignee may file the application if there is no certificate holder. The application shall be submitted on a form prescribed by the Director with the fee required by R12-15-730, and the applicant shall provide the following:
1. One of the following forms of proof of ownership for each assignee:
 - a. A title report, condition of title report, limited search title report, or recorded deed, dated within 90 days of the date the application is submitted to the Director and demonstrating that the assignee is the owner of the land that is the subject of the proposed assignment; or
 - b. If the assignee is a potential purchaser, evidence of a purchase agreement;
 2. A current plat of the subdivision;
 3. An estimate of the 100-year water demand for the subdivision, based on the current plat;
 4. Evidence that all necessary water rights, permits, licenses, contracts, and easements have been or will be assigned to the assignee of the certificate;
 5. Evidence that the assignee has the financial capability to construct adequate delivery, storage, and treatment works for the subdivision according to the criteria in R12-15-720;
 6. Evidence that all water supplies listed on the current certificate are physically, continuously, and legally available to meet the estimated water demand of the subdivision after the assignment;
 7. Evidence that the proposed municipal provider has not changed and has agreed to serve the subdivision after the assignment;
 8. If the applicant requests that the Director classify the certificate pursuant to subsection (E) of this Section, evidence that the requirements of R12-15-704(H)(1) are satisfied;
 9. Any other information that the Director reasonably deems necessary to determine whether the application meets the criteria of A.R.S. § 45-579.
- B. Each applicant shall sign the application for an assignment of a certificate. If an applicant is not a natural person, the entity's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant shall sign the application. If an applicant submits a letter, signed by the applicant and dated within 90 days of the date the application is submitted, authorizing a representative to submit applications for permits regarding the land to be included in the certificate, the authorized representative may sign the application on the applicant's behalf.
- C. Upon receiving an application for an assignment, the Director shall post the notice required by A.R.S. § 45-579(E).
- D. Except as provided in subsection (E) of this Section, if the Director determines that the application meets the criteria of A.R.S. § 45-579(A), the Director shall issue a Type B certificate to each applicant. A Type B certificate issued under this subsection shall retain the issue date, the number of lots, and the estimated water demand shown on the original certificate, except as provided in subsection (F) of this Section. The Director shall determine that the application meets the criteria of A.R.S. § 45-579(A) if all of the following apply:
1. The application is submitted within the time allowed by A.R.S. § 45-579(A);
 2. The assignee is the owner or potential purchaser of the portion of the subdivision that is the subject of the assignment;
 3. There have been no material changes to the plat for which the original certificate was issued, according to the criteria in R12-15-708;
 4. The applicant demonstrates the financial capability to construct adequate delivery, storage, and treatment works for the subdivision according to the criteria in R12-15-720;
 5. All necessary water rights, permits, licenses, contracts, and easements have been or will be assigned to the assignee of the certificate;
 6. All water supplies listed on the current certificate are physically, continuously, and legally available to meet the estimated water demand of the subdivision after the assignment;
 7. Neither the applicant nor a predecessor in interest has impaired the manner in which consistency with management goal requirements were satisfied when the original certificate was issued; and
 8. The proposed municipal provider has agreed to serve the subdivision after the assignment.
- E. The applicant may include in the application a request to classify the certificate as a Type A certificate. If the Director determines that the request meets the requirements of R12-15-704(H)(1), the Director shall classify the certificate as a Type A certificate.
- F. In the case of a partial assignment, the Director shall determine whether changes to the plat are material according to R12-15-708. The Director shall issue a Type B certificate to the assignee for the portion of the subdivision that is the subject of the assignment and for the number of lots and the estimated water demand of the current plat of the portion of the subdivision that is the subject of the assignment. The Director shall issue a Type B certificate to the certificate holder for the portion of the subdivision retained by the certificate holder and for the remainder of the number of lots and the remainder of the estimated water demand. The sum of the number of lots and the sum of the amount of the estimated water demand shown on each certificate shall equal the total number of lots and the total estimated water demand shown on the certificate that is being assigned.
- G. The Director shall review an application for an assignment of a Type B certificate pursuant to the licensing time-frame provisions in R12-15-401.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-707. Application for Classification of a Type A Certificate

- A. A holder of a Type B certificate or a certificate issued before the effective date of this Section may apply to the Director to classify the certificate as a Type A certificate by submitting an application on a form prescribed by the Director with the fee prescribed in R12-15-730 and attaching evidence that the certificate meets the requirements of R12-15-704(H)(1).
- B. At least one certificate holder shall sign the application for classification of a certificate as a Type A certificate. If the applicant is not a natural person, the applicant's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant shall sign the application. If the applicant submits a letter, signed by the applicant and dated within 90 days of the date the application is submitted, authorizing a representative to submit applications for permits regarding the land to be included in the certificate, the authorized representative may sign the application on behalf of the applicant.
- C. If the applicant demonstrates that the requirements of R12-15-704(H)(1) are met, the Director shall classify the certificate as a Type A certificate and issue a Type A certificate to each certificate holder.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-708. Material Plat Change; Application for Review

- A. A certificate or a water report is applicable to the original plat for which the certificate or water report was issued and to a revised plat, unless the plat changes are material according to subsections (C) and (D) of this Section.
- B. If a plat is revised after the Director issues a certificate or a water report and the changes to the plat are material according to subsection (C) or (D) of this Section, the holder may:

1. Apply for a new certificate or water report for the revised plat,
 2. Use the original plat for which the certificate or water report was issued, or
 3. Revise the plat so that any changes are not material according to subsections (C) and (D) of this Section.
- C. Changes to the plat for which a certificate or a water report has been issued are material if any of the following apply:
1. The number of lots on the plat has increased by more than:
 - a. For subdivisions of 6 to 10 lots: one lot;
 - b. For subdivisions of 11 to 499 lots: 10%, rounding up to the nearest whole number; or
 - c. For subdivisions of 500 lots or more: 50 lots.
 2. The 100-year water demand for the revised plat exceeds the estimated water demand for the certificate, unless all of the following apply:
 - a. The 100-year water demand for the revised plat does not exceed the estimated water demand for the certificate by more than 10%, rounding to the nearest whole acre-foot, or by more than 25 acre-feet per year, whichever is less;
 - b. The 100-year water demand is not greater than the supply demonstrated to be physically, continuously, and legally available at the time of issuance of the certificate or water report, and that water supply remains physically, continuously, and legally available; and
 - c. For a certificate, one of the following applies:
 - i. The subdivision is enrolled as a member land in the CAGRDR;
 - ii. Groundwater is not included as a source of supply; or
 - iii. The subdivision is located in the Pinal AMA and the 100-year water demand for the revised plat will not exceed the sum of the amount of the groundwater allowance and the amount of any extinguishment credits pledged to the certificate, including extinguishment credits pledged after the certificate was issued.
 3. For a certificate, additional land is included in the plat, unless all of the following apply:
 - a. The land included in the original plat for which the certificate was issued is located in a master-planned community;
 - b. The outer boundaries of the master-planned community have not expanded;
 - c. If the land included in the original plat for which the certificate was issued is enrolled as a member land in the CAGRDR, the additional land has also been enrolled in the CAGRDR; and
 - d. A certificate has been issued for the additional land.
- D. Changes to a portion of a plat are not material if one of the following applies:
1. The changes to the portion of the plat being reviewed are not material according to subsection (C) of this Section when compared to the equivalent portion of the plat for which the certificate was issued;
 2. The changes to the entire revised plat are not material according to subsection (C) of this Section when compared to the entire plat for which the certificate was issued; or
 3. For a partial assignment pursuant to R12-15-705 or R12-15-706, the plat for the portion of the subdivision retained by the certificate holder could be configured so that changes to the total number of lots and the estimated water demand for the entire subdivision, including the portion under consideration, are not material according to subsection (C) of this Section. For purposes of this subsection, the Director may require the applicant to submit evidence demonstrating whether changes to the plat are material. However, the Director shall not require the applicant to submit a plat for the retained portion of a subdivision, unless the materiality of changes to the plat cannot be determined with any other evidence.
- E. A person may apply for a review of a revised plat to determine whether any changes to the plat are material as follows:
1. The applicant shall submit an application on a form prescribed by the Director with the fee required by R12-15-730 and shall attach the revised plat.
 2. The Director shall review the revised plat and the plat for which the certificate or water report was originally issued to determine whether any changes are material according to the criteria in subsections (C) and (D) of this Section.
 3. The Director shall issue a letter to the applicant stating whether any changes to the plat are material and identifying which changes, if any, are material. If the Director determines that the changes to the plat are not material, the Director's letter shall state that the certificate or water report is applicable to the revised plat.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-709. Certificate of Assured Water Supply; Revocation

- A. The Director may revoke a certificate if an assured water supply does not exist.
- B. The Director shall not revoke a certificate if any of the residential lots within the plat have been sold.
- C. If the Director determines that a certificate should be revoked, the Director shall provide for an administrative hearing, in accordance with A.R.S. Title 41, Chapter 6, Article 10. To determine whether a certificate should be revoked, the Director shall use the standards in place at the time the original application was submitted for the certificate.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-710. Designation of Assured Water Supply

- A. A municipal provider applying for a designation of assured water supply shall submit an application on a form prescribed by the Director with the fee required by R12-15-730 and provide the following:
 1. The applicant's current demand;
 2. The applicant's committed demand;
 3. The applicant's projected demand for the proposed term of the designation;
 4. The proposed term of the designation, which shall not be less than two years;
 5. Evidence that the criteria in subsection (E) of this Section are met; and
 6. Any other information that the Director determines is necessary to decide whether an assured water supply exists for the municipal provider.
- B. An application for a designation shall be signed by:
 1. If the applicant is a city or town, the city or town manager or a person employed in an equivalent position. The application shall also include a resolution of the governing body of the city or town, authorizing that person to sign the application; or
 2. If the applicant is a private water company, the applicant's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant.
- C. The Director shall give public notice of an application for designation in the same manner as provided for certificates in A.R.S. § 45-578.
- D. After a complete application is submitted, the Director shall review the application and associated evidence to determine:
 1. The annual volume of water physically, continuously, and legally available for at least 100 years;
 2. The term of the designation, which shall not be less than two years;
 3. The applicant's estimated water demand;
 4. The applicant's groundwater allowance; and
 5. Whether the applicant has demonstrated compliance with all requirements in subsection (E) of this Section.
- E. The Director shall designate the applicant as having an assured water supply if the applicant demonstrates all of the following:
 1. Sufficient supplies of water are physically available to meet the applicant's estimated water demand, according to the criteria in R12-15-716;
 2. Sufficient supplies of water are continuously available to meet the applicant's estimated water demand, according to the criteria in R12-15-717;
 3. Sufficient supplies of water are legally available to meet the applicant's estimated water demand, according to the criteria in R12-15-718;
 4. The proposed sources of water are of adequate quality, according to the criteria in R12-15-719;
 5. The applicant has the financial capability to construct adequate delivery, storage, and treatment works in a timely manner according to the criteria in R12-15-720;
 6. Any proposed groundwater use is consistent with the management plan in effect at the time of the application, according to the criteria in R12-15-721; and
 7. Any proposed use of groundwater withdrawn within an AMA is consistent with the management goal, according to the criteria in R12-15-722.
- F. The Director shall review an application for a designation of assured water supply pursuant to the licensing time-frame provisions in R12-15-401.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-711. Designation of Assured Water Supply; Annual Report Requirements, Review, Modification, Revocation

- A. A designated provider shall include in the annual report required by A.R.S. § 45-632 the following information for the preceding calendar year:
 1. The designated provider's committed demand;
 2. The demand at build-out for customers with which the designated provider has entered into an agreement to serve water, other than committed demand;
 3. A report regarding the designated provider's compliance with water quality requirements;
 4. The depth-to-static water level of all wells from which the designated provider withdrew water; and
 5. Any other information the Director may reasonably require to determine whether the designated provider continues to meet the criteria for a designation of assured water supply.
- B. If there is a change of ownership, the subsequent owner of a designated provider shall notify the Director in writing of the change in ownership within 90 days.
- C. The Director shall review a designation at least every 15 years following issuance of the designation to determine whether the designation should be modified or revoked. To determine whether the designation should be modified or revoked, the Director shall use the standards in place at the time of review.
- D. The Director may modify a designation for good cause, including a merger, division of the designated provider, or a change in ownership of the designated provider.
- E. A designated provider may request a modification of the designation at any time pursuant to R12-15-710.
- F. The Director may revoke a designation if:
 1. After notifying the designated provider and initiating a review of the designated provider's status, the Director determines that the designated provider has less water, according to the criteria in R12-15-710(E), than the amount required for a 100-year supply for the provider's:
 - a. Current demand,
 - b. Committed demand, and
 - c. Projected demand during the next two calendar years;

2. The designated provider fails to construct adequate delivery, storage, and treatment works in a timely manner;
 3. ADEQ or another governmental entity with equivalent jurisdiction has determined, after notice and an opportunity for a hearing, that the designated provider is in significant noncompliance with A.A.C. Title 18, Chapter 4 and is not taking action to resolve the noncompliance; or
 4. The designated provider has violated its management plan requirements for two or more consecutive calendar years, and one of the following applies:
 - a. The provider fails to amend its water use plan in a manner that the Director determines will achieve compliance, or
 - b. The provider fails to sign a stipulated agreement to remedy the violation.
- G. If the Director determines that a designation of assured water supply should be revoked, the Director shall provide for an administrative hearing, in accordance with A.R.S. Title 41, Chapter 6, Article 10.
- H. If a designated provider's designated status terminates, the provider may apply for re-designation at anytime after termination.
- I. Notwithstanding any other provision in this Article, a decision and order of the Director designating a city, town, or private water company as having an assured water supply is not affected by this Article solely because the rule numbers cited in the decision and order may have changed after the effective date of the decision and order.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-712. Analysis of Adequate Water Supply

- A. A person proposing to develop land outside an AMA that will not be served by a designated provider may apply for an analysis of adequate water supply before applying for a water report. An applicant for an analysis must be the owner of the land that is the subject of the application or have the written consent of the owner. The commissioner of the Arizona State Land Department may apply for an analysis for land owned by the state of Arizona outside an AMA or may consent to the inclusion of such land in an application.
- B. An applicant for an analysis shall submit an application on a form prescribed by the Director with the fee required by R12-15-730, and attach the following:
1. A title report, condition of title report, limited search title report, or recorded deed, dated within 90 days of the date the application is submitted to the Director, demonstrating the ownership of the land that is the subject of the application;
 2. A description of the development, including:
 - a. A map of the land uses included in the development,
 - b. A list of water supplies proposed to be used by the development,
 - c. A summary of land use types included in the development, and
 - d. An estimate of the water demand for the land uses included in the development; and
 3. Evidence that the applicant has complied with subsection (E) of this Section.
- C. An applicant shall sign the application for an analysis. If an applicant is not a natural person, the applicant's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant shall sign the application. If the applicant submits a letter, signed by the applicant and dated within 90 days of the date the application is submitted, authorizing a representative to submit applications for permits regarding the land that is the subject of the water report, the authorized representative may sign the application on the applicant's behalf.
- D. After a complete application is submitted, the Director shall determine the estimated water demand of the development.
- E. The Director shall issue an analysis if an applicant demonstrates one or more of the following:
1. Sufficient supplies of water are physically available to meet all or part of the estimated water demand of the development for 100 years, according to the criteria in R12-15-716;
 2. Sufficient supplies of water are continuously available to meet the estimated water demand of the development for 100 years, according to the criteria in R12-15-717;
 3. Sufficient supplies of water are legally available to meet the estimated water demand of the development for 100 years, according to the criteria in R12-15-718;
 4. The proposed sources of water are of adequate quality, according to the criteria in R12-15-719.
- F. For 10 years after the Director issues an analysis, or a longer period allowed under subsections (H) or (I) of this Section:
1. If groundwater is a source of supply in the analysis and the applicant demonstrates that groundwater is physically available under subsection (E)(1), the Director shall consider that supply of groundwater reserved for the use of the proposed development in subsequent determinations of physical availability pursuant to R12-15-716(B).
 2. If an analysis holder applies for a water report for a subdivision located on land included in the analysis, the Director shall presume that a criterion demonstrated in the analysis remains satisfied with respect to the subdivision, unless the Director has received new evidence demonstrating that the criterion is not satisfied. If the Director issues the water report, the Director shall reduce the volume of groundwater reserved pursuant to subsection (F)(1) of this Section by the amount of the estimated water demand for the water report that will be met with groundwater.
- G. The Director shall reduce the amount of water considered reserved for use of the development upon request by the analysis holder. If the analysis holder requesting a reduction is not the person to whom the analysis was issued, the Director shall reduce the amount of reserved groundwater only if the person to whom the analysis was issued or that person's designee consents to the request for reduction. The person to whom the analysis was issued shall notify the Director in writing of the person's designee for purposes of this subsection.
- H. The analysis holder may apply to the Director for a five-year extension of the time period in subsection (F) of this Section by submitting an application on a form prescribed by the Director no earlier than 36 months before the end of the time period and no later than 30 days before the end of the time period. If an extension is granted, the analysis holder may apply to the Director for an additional five-year extension by submitting an application on a form prescribed by the Director no earlier than 36 months before the end of the extended time period and no later than 30 days before the end of the extended time period. The Director shall extend the time period for no more than two successive five-year periods under this subsection if the analysis holder demonstrates one of the following:
1. The analysis holder has made a substantial capital investment in developing the land included in the analysis.
 2. The analysis holder has made material progress in developing the land included in the analysis.
 3. Progress in developing the land included in the analysis has been delayed for reasons outside the control of the analysis holder.
- I. After the Director grants two five-year extensions pursuant to subsection (H) of this Section, the Director may extend the time period for additional five-year periods if the analysis holder files a timely application pursuant to subsection (H) of this Section and demonstrates one of the criteria in subsections (H)(1), (H)(2), or (H)(3) of this Section.
- J. The Director shall review an application for an analysis or an application for an extension pursuant to subsections (H) or (I) of this Section pursuant to the licensing time-frame provisions in R12-15-401.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-713. Water Report

- A. An application for a water report shall be filed by the current owner of the land that is the subject of the application.
- B. An applicant for a water report shall submit an application on a form prescribed by the Director with the fee required by R12-15-730 and provide the following:
1. A title report, condition of title report, limited search title report, or recorded deed, dated within 90 days of the date the application is filed and demonstrating that the applicant is the owner of the land that is the subject of the application;
 2. A plat of the subdivision;
 3. An estimate of the 100-year water demand for the subdivision;
 4. A list of all proposed sources of water that will be used by the subdivision;
 5. If the applicant is seeking a finding that the subdivision has an adequate water supply, evidence that the criteria in subsection (E) of this Section are met; and
 6. Any other information that the Director reasonably determines is necessary to decide whether an adequate water supply exists for the subdivision.
- C. Each applicant shall sign the application for a water report. If an applicant is not a natural person, the applicant's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant shall sign the application. If an applicant submits a letter, signed by the applicant and dated within 90 days of the date the application is submitted, authorizing a representative to submit applications for permits regarding the land to be included in the water report, the authorized representative may sign the application on the applicant's behalf.
- D. After a complete application is submitted, the Director shall review the application and associated evidence to determine:
1. The estimated water demand of the subdivision;
 2. Whether the applicant has demonstrated all of the requirements in subsection (E) of this Section.
- E. The Director shall determine that the subdivision has an adequate water supply if the applicant demonstrates all of the following:
1. Sufficient supplies of water are physically available to meet the estimated water demand of the subdivision, according to the criteria in R12-15-716;
 2. Sufficient supplies of water are continuously available to meet the estimated water demand of the subdivision, according to the criteria in R12-15-717;
 3. Sufficient supplies of water are legally available to meet the estimated water demand of the subdivision, according to the criteria in R12-15-718;
 4. The proposed sources of water will be of adequate quality, according to the criteria in R12-15-719;
 5. The applicant has the financial capability to construct adequate delivery, storage, and treatment works for the subdivision according to the criteria in R12-15-720.
- F. The Director shall issue a water report to the applicant that states whether the applicant has complied with the requirements in subsection (E) of this Section.
- G. The Director shall review an application for a water report pursuant to the licensing time-frame provisions in R12-15-401.
- H. The Director may review or modify a water report if the Director receives new evidence regarding the criteria in subsection (E) of this Section. The Director shall not modify a water report pursuant to this subsection if any of the residential lots included in the plat have been sold. To determine whether a water report should be modified pursuant to this subsection, the Director shall use the standards in place at the time the original application was submitted for the water report. If the Director modifies a water report, the Director shall:
1. Provide for an administrative hearing pursuant to A.R.S. Title 41, Chapter 6, Article 10; and
 2. Notify the Arizona Department of Real Estate.
- I. An owner of land that is the subject of a water report may request a modification of the water report at any time by submitting an application in accordance with subsection (B) of this Section. To determine whether a water report should be modified pursuant to this Section, the Director shall use the standards in place at the time of review.
- J. A water report is subject to the provisions of R12-15-708.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-714. Designation of Adequate Water Supply

- A. A municipal provider applying for a designation of adequate water supply shall submit an application on a form prescribed by the Director with the fee required by R12-15-730 and the

following:

1. The applicant's current demand;
 2. The applicant's committed demand;
 3. The applicant's projected demand for the proposed term of the designation;
 4. The proposed term of the designation, which shall not be less than two years;
 5. Evidence that the criteria in subsection (E) of this Section are met; and
 6. Any other information that the Director determines is necessary to decide whether an adequate water supply exists for the municipal provider.
- B. A city or town, other than a municipal provider, that is applying for a designation shall submit an application on a form prescribed by the Director with the fee required in R12-15-730, and provide the following:
1. The current demand of the applicant's service area;
 2. The committed demand of the applicant's service area;
 3. The projected demand of the applicant's service area for the proposed term of the designation;
 4. The proposed term of the designation, which shall not be less than two years; and
 5. Evidence that the requirements in A.R.S. § 45-108(D) are met.
- C. An application for a designation shall be signed by:
1. If the applicant is a city or town, the city or town manager or a person employed in an equivalent position. The application shall also include a resolution of the governing body of the city or town, authorizing that person to sign the application; or
 2. If the applicant is a private water company, the applicant's authorized officer, managing member, partner, trust officer, trustee, or other person who performs similar decision-making functions for the applicant.
- D. After a complete application is submitted, the Director shall review the application and associated evidence to determine:
1. The annual volume of water that is physically, continuously, and legally available for at least 100 years;
 2. The term of the designation, which shall not be less than two years;
 3. The estimated water demand for the applicant's service area for 100 years; and
 4. Whether the applicant has demonstrated compliance with all requirements in subsection (E) or (F) of this Section.
- E. The Director shall designate the applicant has having an adequate water supply pursuant to subsection (A) of this Section if the applicant demonstrates all of the following:
1. Sufficient supplies of water are physically available to meet the applicant's estimated water demand, according to the criteria in R12-15-716;
 2. Sufficient supplies of water are continuously available to meet the applicant's estimated water demand, according to the criteria in R12-15-717;
 3. Sufficient supplies of water are legally available to meet the applicant's estimated water demand, according to the criteria in R12-15-718;
 4. The proposed sources of water are of adequate quality, according to the criteria in R12-15-719; and
 5. The applicant has the financial capability to construct adequate delivery, storage, and treatment works in a timely manner according to the criteria in R12-15-720.
- F. The Director shall issue a designation pursuant to subsection (B) of this Section if the applicant demonstrates that the requirements of A.R.S. § 45-108(D) are met.
- G. The Director shall review an application for a designation of adequate water supply pursuant to the licensing time-frame provisions in R12-15-401.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-715. Designation of Adequate Water Supply; Annual Report Requirements, Review, Modification, Revocation

- A. By March 31 of each calendar year, a designated provider shall submit the following information for the preceding calendar year on a form provided by the Director:
1. The designated provider's committed demand;
 2. The demand at build-out for customers with which the designated provider has entered into an agreement to serve water, other than committed demand;
 3. A report regarding the designated provider's compliance with water quality requirements;
 4. The depth-to static water level of all wells from which the designated provider withdrew water;
 5. A report regarding volume of water withdrawn, diverted, or received from each source for delivery to customers;
 6. Any other information the Director may reasonably require to determine whether the designated provider continues to meet the criteria for a designation of adequate water supply.
- B. If there is a change of ownership, the subsequent owner of a designated provider shall notify the Director in writing of the change in ownership within 90 days.
- C. The Director shall review a designation at least every 15 years following issuance of the designation to determine whether the designation should be modified or revoked.
- D. The Director may modify a designation for good cause, including a merger, division of the designated provider, or a change in ownership of the designated provider. A designated provider may request a modification of the designation at any time pursuant to R12-15-714. To determine whether the designation should be modified, the Director shall use the standards in place at the time of review.
- E. The Director may revoke a designation if:
1. After notifying the designated provider and initiating a review of the designated provider's status, the Director determines that the designated provider has less water, according to the criteria in R12-15-714(E), than the amount required for a 100-year supply for the provider's:
 - a. Current demand,
 - b. Committed demand, and
 - c. Projected demand for the next two calendar years;
 2. The designated provider fails to construct adequate delivery, storage, and treatment works in a timely manner; or
 3. ADEQ or another governmental entity with equivalent jurisdiction has determined, after notice and an opportunity for a hearing, that the designated provider is in significant noncompliance with A.A.C. Title 18, Chapter 4 and is not taking action to resolve the noncompliance.
- F. To determine whether the designation should be revoked, the Director shall use the standards in place at the time of review. If the Director determines that a designation of adequate water supply should be revoked, the Director shall provide for an administrative hearing, in accordance with A.R.S. Title 41, Chapter 6, Article 10.
- G. If a designated provider's designated status terminates, the provider may apply for re-designation at anytime after termination.
- H. Notwithstanding any other provision in this Article, a decision and order of the Director designating a city, town, or private water company as having an assured water supply is not affected by this Article solely because the rule numbers cited in the decision and order may have changed after the effective date of the decision and order.

Historical Head

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-716. Physical Availability

- A. The volume of a proposed source of water that is physically available to an applicant for a determination of assured water supply or a determination of adequate water supply is the amount determined by the Director to be physically available pursuant to subsections (B) through (L) of this Section.
- B. If the proposed source is groundwater, the applicant shall submit a hydrologic study, using a method of analysis approved by the Director, that accurately describes the hydrology of the affected area. Except as provided in subsection (D) of this Section, the Director shall determine that the proposed volume of groundwater will be physically available for the proposed use if both of the following apply:
1. The groundwater will be withdrawn as follows:
 - a. Except as provided in subsection (B)(1)(b) of this Section, from wells owned by the applicant or the proposed municipal provider that are located within the service area of the applicant or the proposed municipal provider or from proposed wells that the Director determines are likely to be constructed for future uses of the applicant or the proposed municipal provider.
 - b. If the application is for a dry lot development, from wells that the Director determines are likely to be constructed on individual lots.
 2. Except as provided in subsection (C) of this Section, the groundwater will be withdrawn from depths that do not exceed the applicable maximum 100-year depth-to-static water level according to the following:

Type and location of development	Maximum 100-year depth-to-static water level
a. Developments in Phoenix, Tucson, or Prescott AMAs, except dry lot developments	1000 feet below land surface
b. Developments in Pinal AMA, except dry lot developments	1100 feet below land surface
c. Developments outside AMAs, except dry lot developments	1200 feet below land surface
d. Dry lot developments	400 feet below land surface

3. The Director shall calculate the projected 100-year depth-to-static water level by adding the following for the area where groundwater withdrawals are proposed to occur:
 - a. The depth-to-static water level on the date of application.
 - b. The projected declines caused by existing uses, using the projected decline in the 100-year depth-to-static water level during the 100-year period after the date of application, calculated using records of declines for the maximum period of time for which records are available up to 25 calendar years before the date of application. If evidence is provided to the Director of likely changes in pumpage patterns and aquifer conditions, as opposed to those patterns and conditions occurring historically, the Director may determine projected declines using a model rather than evidence of past declines.
 - c. The projected decline in the depth-to-static water level during the 100-year period after the date of application, calculated by adding the projected decline from each of the following that are not accounted for in subsection (B)(3)(b) of this Section:
 - i. The estimated water demand of issued certificates and water reports that will be met with groundwater or stored water recovered outside the area of impact of the stored water, not including the demand of subdivided lots included in abandoned plats;

- ii. The estimated water demand of designations that will be met with groundwater or stored water recovered outside the area of impact of the stored water; and
 - iii. The groundwater reserved for developments for which the Director has issued an analysis pursuant to R12-15-703 or R12-15-712.
- d. The projected decline in depth-to-static water level that the Director projects will result from the applicant's proposed use over a 100-year period.
- C. The Director shall lower the maximum 100-year depth-to-static water level requirement specified in subsection (B)(2) of this Section for an applicant seeking a determination of adequate water supply if the applicant demonstrates both of the following:
 1. Groundwater is available at the lower depth; and
 2. The applicant has the financial capability to obtain the groundwater at the lower depth, according to the criteria in R12-15-720.
- D. If the proposed source is groundwater that will be withdrawn from a groundwater basin outside an AMA and transported into an AMA, the Director shall determine that the proposed volume of groundwater will be physically available if both of the following apply:
 1. The groundwater will be withdrawn from wells owned by the applicant or the proposed municipal provider or from proposed wells that the Director determines are likely to be constructed for the future uses of the applicant or the proposed municipal provider.
 2. Withdrawal of the groundwater will comply with any depth-to-static water level criteria, decline rate criteria, and volume limitation criteria prescribed by statute. If there are no applicable depth-to-static water level criteria prescribed by statute, withdrawal of the groundwater shall comply with the depth-to-static water level criteria in subsection (B)(2) of this Section.
- E. Subject to subsection (L) of this Section, if the proposed source of water is surface water, other than CAP water, or Colorado River water, the Director shall determine the annual volume of water that is physically available for the proposed use, taking into consideration the priority date of the right or claim, by calculating 120% of the firm yield of the proposed source at the point of diversion as limited by the capacity of the diversion works; except that if the applicant demonstrates that an alternative source of water will be physically available during times of shortage in the proposed surface water supply, the Director shall determine the annual volume of water available by calculating 100% of the median flow of the proposed source at the point of diversion as limited by the capacity of the diversion works. The Director shall determine the firm yield or median flow as follows:
 1. By calculating the firm yield or median flow at the point of diversion based on at least 20 calendar years of flow records from the point of diversion, unless 20 calendar years of records are unavailable and the Director determines that a shorter period of record provides information necessary to determine the firm yield or median flow; or
 2. By calculating the firm yield or median flow at the point of diversion using a hydrologic model that projects the firm yield or median flow, taking into account at least 20 calendar years of historic river flows, changes in reservoir storage facilities, and projected changes in water demand. The yield available to any applicant may be composed of rights to stored water, direct diversion, or normal flow rights. If the permit for the water right was issued less than five years before the date of application, the Director shall require the applicant to submit evidence, as applicable, in accordance with this subsection.
- F. Subject to subsection (L) of this Section, if the proposed source of water is CAP water, the Director shall determine the annual volume of water that is physically available for the proposed use as follows:
 1. If the applicant or the proposed municipal provider has a non-declining, long-term municipal and industrial subcontract for CAP water, calculate 100% of the annual amount of water established in the subcontract.
 2. If the applicant has a lease for Indian priority CAP water, calculate 100% of the annual amount of water established in the lease.
 3. If the applicant has a subcontract for CAP water other than a non-declining, long-term municipal and industrial subcontract or a lease for Indian priority CAP water:
 - a. If the applicant submits evidence of sufficient backup water supplies, calculate 100% of the annual amount of water established in the subcontract. The applicant may establish backup water supplies by one or more of the following:
 - i. A drought response plan;
 - ii. Long-term storage credits;
 - iii. A contract for water with a multi-county water conservation district; or
 - iv. Evidence of other backup supplies that are physically, continuously, and legally available.
 - b. If the applicant does not submit evidence of sufficient backup water supplies pursuant to subsection (F)(3)(a) of this Section, calculate the percentage of the annual amount of water established in the subcontract that reasonably reflects the reliability of the applicant's CAP water supply.
- G. Subject to subsection (L) of this Section, if the proposed source of water is Colorado River water, the Director shall determine the annual volume of water that is physically available for the proposed use as follows:
 1. If the priority of the contract for Colorado River water provides reliability equal to or better than CAP municipal and industrial water, calculate 100% of the annual amount of water established in the contract.
 2. If the contract for Colorado River water provides reliability that is less than CAP municipal and industrial water:
 - a. If the applicant submits evidence of sufficient backup water supplies, calculate 100% of the annual amount of water in the contract. The applicant may establish backup water supplies by one or more of the following:
 - i. A drought response plan;
 - ii. Long-term storage credits;
 - iii. A contract for water with a multi-county water conservation district; or
 - iv. Evidence of other backup supplies that are physically, continuously, and legally available.
 - b. If the applicant does not submit evidence of sufficient backup water supplies pursuant to subsection (G)(2)(a) of this Section, calculate the percentage of the annual amount of water established in the contract that reasonably reflects the reliability of the applicant's Colorado River water supply.
- H. Subject to subsection (I) of this Section, if the proposed source of water is effluent, the Director shall determine the annual volume of water that will be physically available by evaluating the current, metered production or the projected production of effluent. The volume of effluent that is physically available shall not include the following:
 1. If the effluent will be delivered directly from a wastewater treatment plant, the volume of effluent that exceeds the applicant's estimated water demand that will be met with effluent; and
 2. The volume of effluent that does not comply with any applicable water quality requirements for the proposed use of the effluent.
- I. If the proposed source of water is stored water to be recovered from recovery wells, the Director shall determine the volume of water that is physically available for the proposed use as follows:
 1. If the stored water is represented by long-term storage credits in existence on the date of application, the amount that is physically available is the amount that may be recovered pursuant to the credits in a manner consistent with A.R.S. Title 45, Chapter 3.1, subject to subsection (I)(3) of this Section.
 2. If the applicant proposes to use long-term storage credits that do not exist on the date of application or recover stored water on an annual basis pursuant to A.R.S. § 45-851.01, the Director shall evaluate the following in determining whether to include the proposed credits or the water proposed to be stored and recovered annually in the amount of water that is physically available for the applicant's proposed use:
 - a. The terms of a contract to obtain water to store in a storage facility;
 - b. The physical, continuous, and legal availability of the water proposed to be stored;
 - c. The presence of an existing storage facility that will be available for use for the proposed storage;
 - d. The existence of all required permits of an adequate duration; and
 - e. Whether recovery of the stored water will comply with subsection (I)(3) of this Section.
 3. If the applicant proposes to recover the stored water from recovery wells located outside the area of impact of storage, the stored water will be considered physically available only if sufficient water exists for the withdrawals consistent with both of the following:
 - a. The maximum 100-year depth-to-static water level requirements established in subsection (B)(2) of this Section; and
 - b. Any criteria for the withdrawals prescribed in the management plan in effect at the time of the application.
- J. If the applicant will obtain the source of water through a water exchange agreement, the Director shall determine that the water is physically available for the proposed use if the applicant submits evidence that the source of water the applicant or the applicant's customers will use will be physically available in accordance with the terms of this Section.
- K. In the case of two or more pending, conflicting, complete and correct applications for determinations of assured water supply or determinations of adequate water supply, the Director shall give priority to the application with the earliest priority date. The priority date of an application for a determination of assured water supply or determination of adequate water supply shall be the date that a complete and correct application is filed with the Director. The Director shall consider an application complete and correct if it contains all the information required and the Director verifies that the information is accurate.
- L. For a certificate applicant that proposes to use surface water, the Director shall determine that the proposed source is physically available only if the applicant demonstrates one of the following:
 1. The land that is the subject of the application is a member land of the CAGRD.
 2. The applicant has independently obtained the surface water supply.
 3. The proposed municipal provider would satisfy the criteria in R12-15-722 if the municipal provider were subject to those requirements.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-717. Continuous Availability

- A. The Director shall determine that an applicant will have sufficient supplies of water that will be continuously available for 100 years if the applicant submits sufficient evidence that adequate delivery, storage, and treatment works will be in place in a timely manner to make the water available to the applicant or the applicant's customers for 100 years and the applicant meets any applicable requirements in subsections (B) through (G) of this Section.
- B. If the proposed source of water is groundwater, the applicant shall demonstrate that wells of a sufficient capacity will be constructed in a timely manner to serve the proposed uses on a continuous basis for 100 years.
- C. If the proposed source of water is surface water other than CAP water or Colorado River water, the applicant shall demonstrate that a continuous supply will exist because of one or more of the following:
 1. The projected volume to be diverted from the source is perennial at the point of diversion;
 2. Adequate storage facilities will be available to the applicant in a timely manner to store water for use when a volume of surface water is not available at the point of diversion to satisfy the applicant's water demands;
 3. The applicant has presented evidence of supplies of other sources of water that the Director has determined will be physically, continuously, and legally available to supplement the applicant's proposed surface water supplies;
 4. The applicant or the proposed municipal provider will withdraw surface water from wells of sufficient capacity to meet the applicant's estimated water demand on a continuous basis for 100 years; or

5. The applicant has submitted a drought response plan that the Director has determined will conserve or augment a volume of water equal to the volume of water that is subject to drought.
- D. If the proposed source of water is CAP water or Colorado River water, the applicant shall demonstrate that a continuous supply is available because of one or more of the following:
1. Adequate storage facilities will be available to the applicant in a timely manner to store water when a volume of CAP water or Colorado River water is not available to meet the applicant's water demands;
 2. The applicant has presented evidence of supplies of other sources of water that the Director has determined will be physically, continuously, and legally available to the applicant to supplement the proposed CAP water or Colorado River water supplies; or
 3. The applicant has submitted a drought response plan that the Director has determined will conserve or augment a volume of water equal to the volume subject to drought.
- E. If the proposed source of water is effluent, the applicant shall demonstrate that the capability to use the effluent to meet the demands of the proposed use will not be affected by any fluctuations in the supply of the effluent.
- F. If the proposed source of water is stored water to be recovered from recovery wells, the applicant shall demonstrate that recovery wells of a sufficient capacity will be constructed in a timely manner to serve the proposed use on a continuous basis for 100 years.
- G. If an applicant will obtain the source of water through a water exchange agreement, the applicant shall demonstrate that the source of water the applicant or the applicant's customers will use will be continuously available in accordance with the terms of this Section.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Amended by emergency rulemaking at 11 A.A.R. 2706, effective June 29, 2005 for 180 days (Supp. 05-2). Emergency renewed for 180 days at 12 A.A.R. 144, effective December 23, 2005 (Supp. 05-4). Emergency expired. Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-718. Legal Availability

- A. The Director shall determine that an applicant will have sufficient supplies of water that will be legally available for at least 100 years if the applicant submits all of the applicable information required by this Section.
- B. If the applicant is an applicant for a certificate or a water report, the applicant shall submit the following, as applicable:
1. A Notice of Intent to Serve agreement between the owner of the land to be included in the subdivision and the proposed municipal provider, stating the proposed municipal provider's intent to serve the subdivision;
 2. If the proposed municipal provider is a city or town, evidence indicating that the proposed subdivision is located within the incorporated limits of the city or town or evidence of the legal right of the city or town to serve water to the subdivision outside the city or town's incorporated limits; or
 3. If the proposed municipal provider is a private water company, one of the following:
 - a. Evidence that the proposed municipal provider has a certificate of convenience and necessity approved by the Arizona Corporation Commission and the subdivision is located within the geographic area described in the certificate of convenience and necessity or any other area in which the Arizona Corporation Commission authorizes the private water company to serve water;
 - b. Evidence that the proposed municipal provider has an order preliminary issued by the Arizona Corporation Commission authorizing the municipal provider to provide water service and the proposed subdivision is located within the area described in the order preliminary; or
 - c. Evidence that the proposed municipal provider is not a public service corporation regulated by the Arizona Corporation Commission.
- C. If the applicant is a private water company applying for a designation, the applicant shall submit evidence that the applicant has a certificate of convenience and necessity approved by the Arizona Corporation Commission, or has been issued an order preliminary by the Arizona Corporation Commission for a certificate of convenience and necessity, authorizing the applicant to serve the proposed use.
- D. If a proposed source of water is groundwater to be withdrawn within an AMA, the applicant shall submit evidence that the applicant or the proposed municipal provider has one or more of the following:
1. A service area right;
 2. An applicable non-irrigation grandfathered right to withdraw groundwater, in an amount sufficient to serve the proposed use; or
 3. A pending notice of intent to establish a new service area and all of the following apply:
 - a. The notice of intent to establish a new service area identifies the proposed subdivision,
 - b. The applicant or the proposed municipal provider has obtained a permit for any wells used to establish the service area right,
 - c. The proposed municipal provider has obtained a water right or recovery well permit to establish the service area right, and
 - d. The water right is of sufficient volume and duration to meet the estimated water demand of the proposed subdivision until the anticipated date of issuance of a service area right.
- E. If a proposed source of water is surface water other than CAP water or Colorado River water:
1. The applicant shall submit evidence that the applicant or the proposed municipal provider has a certificated surface water right, decreed water right, or a pre-1919 claim for the proposed source. If the applicant or the proposed municipal provider does not hold a surface water right or claim, but will receive water pursuant to a water right or claim that is appurtenant to the land that is the subject of the application, the applicant shall submit evidence of the water right or claim and evidence that the water right or claim may neither be legally withheld nor severed and transferred by the right holder or claimant.
 2. If the certificated surface water right or decreed water right pre-dates the date of application by at least five years, or the applicant submits a pre-1919 claim, the applicant shall submit one of the following:
 - a. Evidence that the surface water supply has been used pursuant to the applicable water right or claim within the five years before the date of application;
 - b. Evidence that a court has determined that the right has not been abandoned; or
 - c. Evidence that the non-use would not have resulted in an abandonment of the right pursuant to A.R.S. § 45-189.
 3. The Director shall determine that the volume of water that is legally available pursuant to a certificated surface water right, a decreed water right, or a pre-1919 claim is equal to the face value of the right or claim. If the right or claim is subsequently adjudicated, the Director shall determine the volume of water that is legally available based on the adjudicated amount of water.
- F. Subject to subsections (M) and (N) of this Section, if a proposed source of water is CAP water, the applicant shall submit evidence that the applicant or the proposed municipal provider has entered into a subcontract with a multi-county water conservation district for the proposed volume of CAP water. The Director shall presume that a 50-year long-term, non-declining municipal and industrial subcontract is sufficient evidence of the legal availability of the volume of CAP water specified in the subcontract for 100 calendar years.
- G. Subject to subsections (M) and (N) of this Section, if a proposed source of water is Colorado River water, the applicant shall submit evidence of one of the following:
1. The applicant or the proposed municipal provider has a contract with the United States Secretary of the Interior for the proposed supply; or
 2. The applicant has obtained an allocation of Colorado River water from an entity to which all of the following apply:
 - a. The entity holds a contract for Colorado River water with the United States Secretary of the Interior;
 - b. The entity provides Colorado River water to the proposed municipal provider;
 - c. The entity has allocated a sufficient volume of the Colorado River water to the subdivision; and
 - d. The area that the entity may serve, described in the contract with the United States Secretary of the Interior, includes the subdivision.
- H. If a proposed source of water is effluent, the applicant shall submit evidence that the applicant or the proposed municipal provider has the legal right to use the effluent.
- I. If the applicant will obtain a proposed source of water through a written contract other than a water exchange agreement, a contract between a certificate applicant and the municipal provider proposed to serve the applicant, a contract with the United States Secretary of the Interior for Colorado River water, or a subcontract with a multi-county water conservation district, the applicant shall submit evidence that the person providing the water under the contract has a legal right to the water in accordance with the terms of this Section and that the terms of the contract will ensure that the proposed source of water will be delivered to the applicant or to the proposed subdivision. The Director shall determine the term of years for which the proposed source of water is legally available based on the term of years remaining in the contract. The Director shall determine the quantity of water legally available based on the volume established in the contract.
- J. If the applicant will obtain a proposed source of water through a water exchange agreement, the applicant shall submit evidence that the water exchange agreement satisfies the requirements of A.R.S. Title 45, Chapter 4.
- K. If the Director can determine the proposed source of water to be physically and continuously available only because of the use of storage facilities by the applicant or by the proposed municipal provider, the applicant shall submit evidence of the applicant's or the proposed municipal provider's legal right to store water in the storage facilities.
- L. If the applicant proposes to use long-term storage credits, the applicant shall submit evidence that the applicant or the proposed municipal provider has the legal right to use the credits under A.R.S. Title 45, Chapter 3.1.
- M. If a proposed supply of water is Colorado River water or CAP water leased from an Indian community, the applicant shall submit evidence that the water leased has a priority equal to or higher than CAP municipal and industrial water, evidence that the Indian community is expressly authorized by an Act of Congress to lease the water for use off Indian community lands, evidence of the lease, and evidence of one of the following:
1. The proposed water supply is available under the lease for at least 100 years from any time during the year in which the applicant submits the application.
 2. The term of the lease has less than 100 years remaining in the year in which the applicant submits the application and a supplemental water supply, together with the leased water, provides a 100-year water supply. The applicant shall demonstrate that the supplemental water supply is physically, continuously, and legally available and, if such supplemental supply is groundwater, that use of the groundwater is consistent with the management goal of the AMA. If the supplemental supply is water recovered through the use of long-term storage credits, the applicant shall also submit the following, as applicable:
 - a. If the applicant is to use the long-term storage credits before the beginning of the lease term, evidence that the applicant or the proposed municipal provider has obtained a recovery well permit that allows the applicant or the proposed municipal provider to recover water pursuant to the long-term storage credits; or
 - b. If the long-term storage credits will be accrued in the future, evidence that the applicant or the proposed municipal provider will accrue the long-term storage credits within 20 years after the effective date of the designation, certificate, or water report by storing the water under an issued water storage permit at a permitted storage facility and that no more than 20 years of the applicant's supplemental water supply will be provided by the long-term storage credits.
- N. If the Director previously determined that Colorado River water or CAP water leased from an Indian community was legally available to a designated provider for 100 years, the Director shall determine that the designated provider continues to have a legally available supply of water for 100 years for the annual amount of water available under the lease if:
1. The lease has at least 50 years remaining in its term or the lease has at least 40 years remaining in its term and the designated provider submits evidence to the Director of active and ongoing negotiations with the Indian community to renew or re-negotiate the lease; and
 2. One of the following applies:
 - a. No more than 15% of the total water supplies that the designated provider establishes as physically, continuously, and legally available during any year are obtained through leases

with Indian communities;

- b. Groundwater will be physically, continuously, and legally available to the designated provider at the end of the lease term to substitute for the leased water for the remainder of the 100-year period, and the projected use of groundwater is consistent with the management goal of the AMA. For purposes of this subsection, the designated provider may demonstrate that the proposed use is consistent with the management goal by entering into a written agreement with the Director under which the designated provider agrees to replace through replenishment or underground storage any groundwater used at the end of the lease term if groundwater use is not consistent with the management goal. The written agreement shall provide that specific performance is the only remedy in the event of default;
- c. A non-groundwater source of water will be physically, continuously, and legally available at the end of the lease term to substitute for the leased water for the remainder of the 100-year period; or
- d. The designated provider's governing board or council submits a resolution requesting that the designated provider be allowed to increase its projected use of Indian lease water from 15%, as allowed by subsection (N)(2)(a) of this Section, to 20%, and the Director finds that all of the following apply:
 - i. No more than 20% of the total water supplies that the designated provider establishes as physically, continuously, and legally available during any year are obtained through leases with Indian communities;
 - ii. No more than 15% of the total water supplies that the designated provider establishes as physically, continuously, and legally available during any year are obtained through any single lease with an Indian community; and
 - iii. The designated provider does not meet the requirements of subsections (N)(2)(a), (b), or (c) of this Section.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-719. Water Quality

- A. Except as provided in subsection (B) of this Section, when reviewing an application for a determination of assured water supply or a determination of adequate water supply, the Director shall determine that the water supply is of adequate quality if one of the following applies:
 - 1. The applicant certifies on the application that the applicant or the proposed municipal provider will be regulated by ADEQ, or another governmental entity with equivalent jurisdiction, as a public water system pursuant to A.R.S. § 49-351, et seq., unless ADEQ, or another governmental entity with equivalent jurisdiction, has determined, after notice and an opportunity for a hearing, that the public water system is in significant noncompliance with A.A.C. Title 18, Chapter 4 and is not taking action to resolve the noncompliance; or
 - 2. The applicant has submitted results of a lab analysis demonstrating that the water meets water quality requirements in accordance with A.A.C. Title 18, Chapter 4, or that the water will meet these requirements after treatment that is required by law. The lab analysis shall be based on water withdrawn from a well representative of the well or wells from which water will be withdrawn for the proposed use, conducted in compliance with sample collection and analysis requirements in A.A.C. Title 18, Chapter 4, and completed within 60 days of the date the application is submitted to the Director. If ADEQ waives any of the water quality or sample collection and analysis requirements in A.A.C. Title 18, Chapter 4, the Director shall not require the applicant to meet the waived requirements.
- B. If a well or a proposed well from which water will be withdrawn for the proposed use is located within one mile of a WQARF site or Superfund site, the Director shall determine that the water supply is of adequate quality only if the applicant submits a contaminant migration and mitigation analysis, demonstrating that the water supply will continue to meet the requirements in A.A.C. Title 18, Chapter 4 for 100 years. The contaminant migration and mitigation analysis may include the impact of any mitigation or treatment, including mitigation or treatment required pursuant to a consent decree.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-720. Financial Capability

- A. The Director shall determine that an applicant for a certificate or a water report has the financial capability to construct adequate delivery, storage, and treatment works if the applicant demonstrates one or more of the following:
 - 1. The applicant will submit its final plat to a qualified platting authority;
 - 2. The applicant has constructed adequate delivery, storage, and treatment works, and water service is available to each lot; or
 - 3. The applicant has posted a performance bond with the platting authority for the entire cost of adequate delivery, storage, and treatment works.
- B. Upon receiving evidence that a platting authority has established standards for proof of financial capability to construct adequate delivery, storage, and treatment works, pursuant to A.R.S. § 9-463.01(C)(8) or A.R.S. § 11-806.01(G), the Director shall classify the platting authority as a qualified platting authority. The Director shall maintain a list of qualified platting authorities.
- C. The Director shall determine that an applicant for a designation has the financial capability to construct adequate delivery, storage, and treatment works if the applicant demonstrates one or more of the following for each of those facilities:
 - 1. The applicant has constructed adequate delivery, storage, and treatment works;
 - 2. The applicant has entered into written agreements requiring a potential developer to construct adequate delivery, storage, and treatment works;
 - 3. If the applicant is a city or town, the applicant has:
 - a. Adopted a five year capital improvement plan that provides for the construction, or the commencement of construction, of adequate delivery, storage, and treatment works in a timely manner, and has submitted a certification by the applicant's chief financial officer that finances are available to implement that portion of the five-year plan; or
 - b. Submitted evidence demonstrating that financing mechanisms are in place to construct adequate delivery, storage, and treatment works in a timely manner; or
 - 4. If the applicant is a private water company, the applicant has received approval from the Arizona Corporation Commission for financing the construction of adequate delivery, storage, and treatment works.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-721. Consistency with Management Plan

- A. The Director shall determine whether a designation applicant's projected use of groundwater withdrawn within an active management area is consistent with the management plan as follows:
 - 1. If the applicant is providing water to customers as of the date of application, the applicant's projected water use is consistent with the management plan if either of the following apply:
 - a. The applicant is in compliance with its applicable management plan requirements in the most recent calendar year for which data is available before the date of application; or
 - b. The applicant has signed a stipulation and consent order that is in effect on the date of the application, or that becomes effective during the time of review of the application, to remedy non-compliance with the management plan requirements and the applicant is in compliance with the terms of the stipulation and consent order.
 - 2. If the applicant has not commenced serving water to customers as of the date of application, the applicant shall submit a water use plan that demonstrates to the Director that compliance with management plan requirements will be achieved through the use of conservation or augmentation measures.
 - 3. If the applicant has a pending request for an administrative review or variance from its management plan requirements, the Director shall not make a finding regarding compliance with this Section until the Director has issued a final decision and order on the request or the request has been withdrawn.
- B. The Director shall determine that a certificate applicant's projected use of groundwater withdrawn within an AMA is consistent with the management plan if the applicant submits a water use plan for the subdivision that includes both of the following:
 - 1. Information demonstrating that compliance with management plan requirements will be achieved through conservation or augmentation measures; and
 - 2. All information required to calculate the water requirements for each proposed water use.
- C. A certificate applicant for a subdivision of 50 or fewer lots is exempt from the requirements of this rule.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-722. Consistency with Management Goal

- A. For the Phoenix, Prescott, or Tucson AMAs, the Director shall calculate the volume of groundwater that may be used consistent with the management goal of the AMA in which the proposed use is located for at least 100 years by adding the following:
 - 1. The amount of the groundwater allowance, according to R12-15-724(A), R12-15-726(A), or R12-15-727(A).
 - 2. The amount of any extinguishment credits pledged to the certificate or designation, according to R12-15-724(B), R12-15-726(B), or R12-15-727(B).
 - 3. Any groundwater that is consistent with the achievement of the management goal pursuant to A.R.S. Title 45, Chapter 2.
- B. The Director shall determine that a proposed groundwater use in the Phoenix, Prescott, or Tucson AMA is consistent with the management goal of the AMA if the volume calculated in subsection (A) of this Section is equal to or greater than the portion of the applicant's estimated water demand to be met with groundwater.
- C. For a certificate in the Pinal AMA, the Director shall calculate the volume of groundwater that may be used consistent with the management goal of the AMA for at least 100 years by adding the following:
 - 1. The amount of the groundwater allowance, according to R12-15-725(A)(1).
 - 2. The amount of any extinguishment credits pledged to the certificate for a grandfathered right that was extinguished on or after October 1, 2007, according to R12-15-725(B).
 - 3. The amount of any extinguishment credits pledged to the certificate for a grandfathered right that was extinguished before October 1, 2007. The Director shall calculate the amount of the extinguishment credits by multiplying the annual amount of the credits by 100.
 - 4. Any groundwater that is consistent with the achievement of the management goal pursuant to A.R.S. Title 45, Chapter 2.
- D. For a certificate in the Pinal AMA, the Director shall determine that the proposed groundwater use is consistent with the management goal of the AMA if the volume calculated in subsection (C) of this Section is equal to or greater than the portion of the applicant's estimated water demand to be met with groundwater.
- E. For a designation in the Pinal AMA, the Director shall calculate the volume of groundwater that may be used consistent with the management goal of the Pinal AMA on an annual basis by adding the following:
 - 1. The amount of the groundwater allowance, according to R12-15-725(A)(2). If any of the groundwater allowance is not used during a year, the unused groundwater allowance shall not be added to the volume calculated under this subsection for the following year.
 - 2. The amount of any extinguishment credits pledged to the designation for a grandfathered right that was extinguished on or after October 1, 2007, according to R12-15-725(B), divided by 100. Extinguishment credits for a grandfathered right that was extinguished on or after October 1, 2007 may be used in any year.
 - 3. The annual amount of any extinguishment credits pledged to the designation for a grandfathered right that was extinguished before October 1, 2007. The following shall apply if any of the extinguishment credits are not used during a calendar year:

- a. If the extinguishment credits were pledged to the designation before October 1, 2007, any extinguishment credits not used during a calendar year shall be added to the volume calculated under this subsection for the following calendar year.
 - b. If the extinguishment credits are pledged to the designation on or after October 1, 2007, any of the extinguishment credits not used during a calendar year shall not be added to the volume calculated under this subsection for the following calendar year, except that if the extinguishment credits were originally pledged to a certificate before October 1, 2007 and are used to support the municipal provider's designation pursuant to R12-15-723(G)(2), any of the extinguishment credits not used during a calendar year shall be added to the volume calculated under this subsection for the following calendar year.
4. Any groundwater that is consistent with the achievement of the management goal pursuant to A.R.S. Title 45, Chapter 2.
- F. For a designation in the Pinal AMA, the Director shall determine that the proposed groundwater use is consistent with the management goal of the Pinal AMA if the annual volume calculated in subsection (E) of this Section is equal to or greater than the portion of the applicant's annual estimated water demand to be met with groundwater.
- G. Upon application, the following volumes of groundwater used by an applicant are considered consistent with the management goal:
1. If the Director determines that a surface water supply is physically available under R12-15-716 and the volume of the supply actually available during a calendar year is equal to or less than the drought volume for the supply, the volume of groundwater, other than the groundwater that is accounted for under subsection (A), (C), or (E) of this Section, withdrawn within the AMA that, when combined with the available surface water supply, is equal to or less than the drought volume.
 2. Any volume of groundwater withdrawn within a portion of an AMA that is exempt from conservation requirements under A.R.S. Title 45 due to waterlogging. The Director shall review the application of this exclusion on a periodic basis, not to exceed 15 years.
 3. Remedial groundwater that is consistent with the management goal according to the requirements of R12-15-729.
- H. An applicant for a certificate of assured water supply for a dry lot subdivision of 20 lots or fewer is exempt from the requirements of this Section.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3). Amended by final rulemaking at 13 A.A.R. 1394, effective October 1, 2007 (Supp. 07-2).

R12-15-723. Extinguishment Credits

- A. Except as provided in subsection (D) of this Section, the owner of a grandfathered right may extinguish the right in exchange for extinguishment credits by submitting the following:
1. A notarized statement of extinguishment of a grandfathered right on a form provided by the Director;
 2. The grandfathered right number;
 3. If the right being extinguished is a type 1 non-irrigation grandfathered right or an irrigation grandfathered right, evidence of ownership of the land to which the grandfathered right is appurtenant;
 4. If the grandfathered right is located in the Prescott AMA, evidence that all of the following conditions are met:
 - a. The land to which the right is appurtenant has not been and will not be subdivided pursuant to a preliminary plat or a final plat that was approved by a city, town, or county before August 21, 1998; and
 - b. The land to which the right is appurtenant is not and will not be the location of a subdivision for which a complete and correct application for a certificate of assured water supply was submitted to the Director before August 21, 1998;
 5. If the right being extinguished is an irrigation grandfathered right, evidence that the development of the land to which the right is appurtenant is not completed; and
 6. Any additional information the Director may reasonably require to process the extinguishment.
- B. The Director shall calculate the amount of extinguishment credits pursuant to R12-15-724(B), R12-15-725(B), R12-15-726(B) or R12-15-727(B). The Director shall notify the owner of the amount of extinguishment credits in writing. If the owner is extinguishing only a portion of the right, the Director shall issue a new certificate of grandfathered right for the remainder of the right.
- C. A type 1 non-irrigation grandfathered right or an irrigation grandfathered right may be extinguished in whole or in part. A type 2 non-irrigation grandfathered right may be extinguished only in whole.
- D. The following rights may not be extinguished in exchange for extinguishment credits:
1. An irrigation grandfathered right that is appurtenant to land that has been physically developed for a non-irrigation use. The Director shall not consider the land to be physically developed until the development is completed.
 2. A type 1 non-irrigation grandfathered right, if the Director determines that the holder is likely to continue to receive groundwater from an undesignated municipal provider for the same use pursuant to the provider's service area right or pursuant to a groundwater withdrawal permit.
 3. A type 2 non-irrigation grandfathered right that was issued based on the withdrawal of groundwater for mineral extraction or processing or for the generation of electrical energy.
 4. On or after January 1, 2025, any grandfathered right that is in the Phoenix, Prescott, or Tucson AMAs.
 5. Any grandfathered right in the Pinal AMA beginning in the first calendar year in which the allocation factor for the extinguishment of a grandfathered right is zero, pursuant to R12-15-725(B)(3) or (4).
 6. A type 1 non-irrigation grandfathered right that was requested to be included by a city or town in the Tucson AMA in the determination made under A.R.S. § 45-463(F).
- E. The owner of extinguishment credits may pledge the credits to a certificate or to a designation before the certificate or designation is issued by submitting with the application for the certificate or designation a notice of intent to pledge extinguishment credits on a form provided by the Director. The extinguishment credits shall be pledged to the certificate or designation upon issuance of the certificate or designation.
- F. The owner of extinguishment credits may pledge the credits to a certificate or to a designation after the certificate or designation is issued by submitting a notice of intent to pledge extinguishment credits on a form provided by the Director. The Director shall notify the owner of the extinguishment credits and the certificate holder or designated provider that the credits have been pledged to the certificate or designation.
- G. Extinguishment credits that have not been pledged to a certificate or designation may be conveyed within the same AMA. Extinguishment credits pledged to a certificate or designation shall not be conveyed to another person, except that:
1. If extinguishment credits are pledged to a certificate that is later assigned or reissued, any unused credits are transferred, by operation of this subsection, to the assigned or reissued certificate. If the certificate is partially assigned or reissued, a pro rata share of the unused extinguishment credits is transferred to each assigned or reissued certificate according to the estimated water demand.
 2. If extinguishment credits are pledged to a certificate for a subdivision that is later served by a designated provider or a municipal provider that is applying for a designation, any unused extinguishment credits may be used to support the municipal provider's designation as long as the municipal provider serves the subdivision and remains designated. If the municipal provider is no longer serving the subdivision or if the municipal provider loses its designated status, any unused extinguishment credits shall revert, by operation of this subsection, to the certificate to which they were originally pledged.
- H. The Director shall review a statement of extinguishment of a grandfathered right and a notice of intent to pledge extinguishment credits pursuant to the licensing time-frame provisions in R12-15-401.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3). Amended by final rulemaking at 13 A.A.R. 1394, effective October 1, 2007 (Supp. 07-2).

R12-15-724. Phoenix AMA Calculation of Groundwater Allowance and Extinguishment Credits

- A. The Director shall calculate the groundwater allowance for a certificate or designation in the Phoenix AMA as follows:
1. If the application is for a certificate, multiply the applicable allocation factor in the table below by the annual estimated water demand for the proposed subdivision.

MANAGEMENT PERIOD	ALLOCATION FACTOR
Third	4
Fourth	2
Fifth	1
After Fifth	0

2. If the application is for a designation and the applicant provided water to its customers prior to February 7, 1995, multiply 7.5 by the total volume of water provided by the applicant to its customers from any source during calendar year 1994, consistent with the municipal conservation requirements established for the applicant pursuant to Section 5-103(A)(1) of the Second Management Plan for the Phoenix AMA.
 3. If the application is for a designation and the applicant commenced providing water to its customers on or after February 7, 1995, the applicant's groundwater allowance is zero acre-feet.
 4. For each calendar year of a designation, the Director shall calculate the volume of incidental recharge for a designated provider within the Phoenix AMA and add that volume to the designated provider's groundwater allowance. The Director shall calculate the volume of incidental recharge by multiplying the provider's total water use from any source in the previous calendar year by the standard incidental recharge factor of 4%. A designated provider may apply for a variance from the standard incidental recharge factor as provided in A.R.S. § 45-566.01(E)(1). The Director may establish a different incidental recharge factor for the designated provider if the provider demonstrates to the satisfaction of the Director that the ratio of the average annual amount of incidental recharge expected to be attributable to the provider during the management period, to the average amount of water expected to be withdrawn, diverted, or received for delivery by the provider for use within its service area during the management period, is different than 4%.
- B. The Director shall calculate the extinguishment credits for the extinguishment of a grandfathered right in the Phoenix AMA as follows:
1. For the extinguishment of a type 2 non-irrigation grandfathered right, multiply the number of acre-feet indicated on the certificate by the difference between 2025 and the calendar year of extinguishment.
 2. For the extinguishment of all or part of an irrigation grandfathered right, or all or part of a type 1 non-irrigation grandfathered right, multiply 1.5 acre-feet per acre by the number of irrigation acres associated with the extinguished irrigation grandfathered right or the number of acres to which the extinguished type 1 non-irrigation grandfathered right is appurtenant, and then multiply the product by the difference between 2025 and the calendar year of extinguishment, except that:
 - a. If only a portion of an irrigation grandfathered right or a type 1 non-irrigation grandfathered right is extinguished, the Director shall include in the calculation only those acres associated with the portion of the right that is extinguished; and
 - b. If an extinguished irrigation grandfathered right has a debit balance in the corresponding flexibility account established under A.R.S. § 45-467, the Director shall subtract the amount of the debit from the amount of the extinguishment.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-725. Pinal AMA - Groundwater Allowance and Extinguishment Credits Calculation

A. The Director shall calculate the groundwater allowance for a certificate or designation in the Pinal AMA as follows:

1. If the application is for a certificate, multiply the applicable allocation factor in the table below for the management period in effect on the date of application by the annual estimated water demand for the proposed subdivision.

MANAGEMENT PERIOD/DATE OF APPLICATION	ALLOCATION FACTOR
Third	10
Fourth	10
Fifth	5
After Fifth	0

2. If the application is for a designation:

- a. If the applicant was designated as having an assured water supply as of October 1, 2007:
 - i. Multiply the applicant's service area population as of October 1, 2007 by 125 gallons per capita per day and multiply the product by 365 days. The service area population shall be determined using the methodology set forth in Section 5-103(D) of the Third Management Plan for the Pinal AMA.
 - ii. Convert the number of gallons determined in subsection (A)(2)(a)(i) into acre-feet by dividing the number by 325,851 gallons.
 - iii. Determine the number of residential lots within plats that were recorded as of October 1, 2007 but not served water as of that date, and to which the applicant commenced water service by January 1, 2010.
 - iv. Multiply the number of lots determined in subsection (A)(2)(a)(iii) of this Section by 0.35 acre-foot per lot.
 - v. Add the volume from subsection (A)(2)(a)(ii) of this Section and the volume from subsection (A)(2)(a)(iv) of this Section.
- b. If the applicant provided water to its customers before October 1, 2007 but was not designated as having an assured water supply as of that date, and a complete and correct application for designation is filed before January 1, 2012, multiply the applicant's service area population as of October 1, 2007 by 125 gallons per capita per day and multiply the product by 365 days. The service area population shall be determined using the methodology in Section 5-103(D) of the Third Management Plan for the Pinal AMA.
- c. If the applicant provided water to its customers before October 1, 2007 but was not designated as having an assured water supply as of that date, and a complete and correct application for designation is filed on or after January 1, 2012, the applicant's groundwater allowance is zero acre-feet.
- d. If the applicant commenced providing water to its customers on or after October 1, 2007, the applicant's groundwater allowance is zero acre-feet.

3. For each calendar year of a designation, the Director shall calculate the volume of incidental recharge for a designated provider within the Pinal AMA and add that volume to the designated provider's groundwater allowance. The Director shall calculate the volume of incidental recharge by multiplying the provider's total water use from any source in the previous calendar year by the standard incidental recharge factor of 4%. A designated provider may apply for a variance from the standard incidental recharge factor by submitting a hydrologic study demonstrating, to the satisfaction of the Director, that the ratio of the average annual amount of incidental recharge expected to be attributable to the designated provider during the management period to the average annual amount of water expected to be withdrawn, diverted or received for delivery by the designated provider for use within its service area during the management period is different than 4%. The hydrologic study shall include the amount of water withdrawn, diverted or received for delivery by the designated provider for use within its service area during each of the preceding five years and the amount of incidental recharge that was attributable to the designated provider during each of those years. The Director may establish a different incidental recharge factor for the designated provider upon such demonstration.

B. The Director shall calculate the extinguishment credits for the extinguishment of a grandfathered right in the Pinal AMA as follows:

1. For the extinguishment of a type 2 non-irrigation grandfathered right, multiply the number of acre-feet indicated on the certificate by the applicable allocation factor as determined under subsection (B)(3) or (B)(4) of this Section.
2. For the extinguishment of all or part of an irrigation grandfathered right, or all or part of a type 1 non-irrigation grandfathered right, an amount calculated by multiplying 1.5 acre-feet by the number of irrigation acres associated with the extinguished irrigation grandfathered right or the number of acres to which the extinguished type 1 non-irrigation grandfathered right is appurtenant, and then multiply that product by the applicable allocation factor as determined under subsection (B)(3) or (B)(4) of this Section, except that:
 - a. If only a portion of an irrigation grandfathered right or a type 1 non-irrigation grandfathered right is extinguished, the Director shall include in the calculation only those acres associated with the portion of the right that is extinguished; and
 - b. If an extinguished irrigation grandfathered right has a debit balance in the corresponding flexibility account established under A.R.S. § 45-467, the Director shall subtract the amount of the debit from the amount of the extinguishment credits.
3. Except as provided in subsection (B)(4) of this Section, in calculating the extinguishment credits for the extinguishment of a grandfathered right under subsection (B)(1) or (B)(2) of this Section, the Director shall use the allocation factor associated with the year in which the grandfathered right is extinguished, as shown in the table below.

Year	Allocation Factor
2007	100
2008	100
2009	100
2010	90
2011	88
2012	86
2013	84
2014	82
2015	80
2016	78
2017	76
2018	74
2019	72
2020	70
2021	68
2022	66
2023	64
2024	62
2025	60
2026	58
2027	56
2028	54
2029	52
2030	50
2031	48
2032	46
2033	44
2034	42
2035	40
2036	38
2037	36

2038	34
2039	32
2040	30
2041	28
2042	26
2043	24
2044	22
2045	20
2046	18
2047	16
2048	14
2049	12
2050	10
2051	8
2052	6
2053	4
2054	2
After 2054	0

4. If, before January 1, 2055, there is a moratorium on adding new member lands and member service areas in the Pinal AMA pursuant to A.R.S. § 45-576.06(A), in calculating the extinguishment credits for the extinguishment of a grandfathered right under subsection (B)(1) or (B)(2) of this Section, the Director shall use an allocation factor determined as follows:
- If the grandfathered right is extinguished while the moratorium is in effect, the Director shall use the allocation factor associated with the year in which the moratorium first became effective, as shown in the table in subsection (B)(3) of this Section.
 - If the grandfathered right is extinguished when the moratorium is no longer in effect, the Director shall use the allocation factor associated with the year determined pursuant to this subsection, as shown in the table in subsection (B)(3) of this Section. The Director shall determine the year as follows:
 - Subtract the year in which the moratorium first became effective from the year in which the moratorium ended.
 - Subtract the difference in subsection (B)(4)(b)(i) of this Section from the year in which the grandfathered right was extinguished.

Historical Note

Adopted effective February 7, 1995 (Supp. 95-1). Section repealed; new Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3). Section repealed; new Section made by final rulemaking at 13 A.A.R. 1394, effective October 1, 2007 (Supp. 07-2).

R12-15-726. Prescott AMA Calculation of Groundwater Allowance and Extinguishment Credits

- A. The Director shall calculate the groundwater allowance for a certificate or designation in the Prescott AMA as follows:
- If the application is for a certificate of assured water supply, the Director shall:
 - Subtract the year of application from 2025.
 - Multiply the number determined in subsection (A)(1)(a) by the applicant's annual estimated water demand, and
 - Divide that product by two. The minimum volume that may be calculated in this subsection is zero acre-feet.
 - If the application is for a designation of assured water supply:
 - Except as provided in subsections (A)(3) and (A)(5), if the applicant was in existence as of January 12, 1999, and the application is filed before calendar year 2026, the Director shall:
 - Multiply by 100 the largest volume of groundwater determined by the Director to have been withdrawn by the applicant from within the Prescott AMA for use within the applicant's service area in any calendar year from 1995 through 1998, consistent with the municipal conservation requirements applicable under the second management plan for the Prescott active management area;
 - Determine the volume of the applicant's total water demand, from any source, for 1999, consistent with the municipal conservation requirements established for the applicant in the management plan in effect on the date of application;
 - Determine the volume of the applicant's total water demand, from any source, for 2014, consistent with the municipal conservation requirements established for the applicant in the management plan in effect on the date of application;
 - Subtract the volume calculated in subsection (A)(2)(a)(ii) from the volume calculated in subsection (A)(2)(a)(iii) and then multiply the difference by 26;
 - Divide the product obtained in subsection (A)(2)(a)(iv) by two;
 - If any residential groundwater uses, including residential groundwater uses served by an exempt well, in existence on August 21, 1998, have been replaced by permanent water service from the applicant after August 21, 1998, multiply one-half acre-foot of groundwater by the number of housing units receiving the service and then multiply that product by 100;
 - Determine the volume of groundwater withdrawn by the applicant from within the Prescott active management area during the period beginning January 1, 1999, and ending December 31 of the calendar year before the date of the application;
 - Multiply the volume of groundwater withdrawn by the applicant from within the Prescott active management area in 1999 by the number of calendar years in the period beginning with 1999 and ending with the calendar year before the date of application;
 - Subtract from the volume calculated in subsection (A)(2)(a)(vii) the volume calculated in subsection (A)(2)(a)(viii). The volume calculated in this subsection shall not be less than zero; and
 - Add the volumes calculated in subsections (A)(2)(a)(i), (A)(2)(a)(v), and (A)(2)(a)(vi), and then subtract from the sum the volume calculated in subsection (A)(2)(a)(ix).
 - If the applicant did not exist as of January 12, 1999, or the date of application occurs after calendar year 2025, the groundwater allowance is zero acre-feet, except that if any residential groundwater uses, including residential groundwater uses served by an exempt well, in existence on August 21, 1998, have been replaced by permanent water service from the applicant after August 21, 1998, the groundwater allowance is a volume of groundwater computed by multiplying one-half acre-foot of groundwater by the number of housing units receiving the service and multiplying that product by 100.
 - For the purpose of determining the groundwater allowance under subsection (A)(2)(a), at the request of the applicant, the Director shall replace the volume of groundwater calculated in subsection (A)(2)(a)(i) through (v) with the amount of groundwater necessary for the applicant to serve the residential lots described in subsection (A)(4):
 - To compute this amount of groundwater, the Director shall:
 - Determine the average dwelling occupancy within the applicant's service area and multiply that average occupancy by an amount of groundwater, calculated by multiplying 150 gallons per capita per day by 365 days; and
 - Multiply the product in subsection (A)(3)(a)(i) by the number of residential lots described in subsection (A)(4), and then multiply that product by 100.
 - The Director shall not include the amount computed in subsection (A)(3)(a) within the amount of groundwater that the applicant may use under subsection (A)(2)(a) until a final plat for the lots has been recorded.
 - The Director shall include residential lots that will be served by the applicant in the calculation made under subsection (A)(3) if the lots meet all of the following criteria:
 - A preliminary plat for the lots was submitted to the city, town, or county on or before August 21, 1998, and the final plat is subsequently recorded;
 - The lots were not being served water on or before August 21, 1998; and
 - Any one of the following applies:
 - The lots were included within an application for certificate of assured water supply that was filed before August 21, 1998, the Director determined that the application was complete and correct as of August 21, 1998, and the Director subsequently issued a certificate of assured water supply for the lots.
 - A preliminary plat for the lots was approved by a city, town, or county on or before August 21, 1998. At the time the preliminary plat was approved, the subdivider of the lots obtained a written commitment of water service from a municipal provider that was designated as having an assured water supply and the provider demonstrated to the satisfaction of the Director that sufficient water is physically available to serve the lots under the criteria in R12-15-716.
 - For the purpose of determining the groundwater allowance under subsection (A)(2)(a), if the applicant makes the request described in subsection (A)(3), the Director shall replace the volume of groundwater calculated in subsection (A)(2)(a)(viii) with an amount of groundwater calculated as follows. The Director shall:
 - Determine the number of calendar years in the period beginning with 1999 and ending with the calendar year before the date of application and multiply that number of years by the largest volume of groundwater determined by the Director to have been withdrawn by the applicant from within the Prescott active management area for use within the applicant's service area in any calendar year from 1995 through 1998, consistent with the municipal conservation requirements applicable under the second management plan for the Prescott active management area;
 - Determine the average dwelling occupancy within the applicant's service area and multiply that average dwelling occupancy by an amount of groundwater calculated by multiplying 150 gallons per capita per day by 365 days;
 - For each year in the period beginning with 1999 and ending with the calendar year before the date of application, determine the number of the residential lots that meet the criteria in subsection (A)(4) and were served water by the applicant as of July 1 of the relevant year and add the number of these residential lots determined for each year;
 - Multiply the volume of groundwater calculated in subsection (A)(5)(b) by the number of residential lots in subsection (A)(5)(c); and
 - Add the volumes of groundwater from subsections (A)(5)(a) and (A)(5)(d).

- B. The Director shall calculate the extinguishment credits for extinguishing a grandfathered right in the Prescott AMA as follows:
1. For the extinguishment of a type 2 non-irrigation grandfathered right, multiply the number of acre-feet indicated on the certificate by the difference between 2025 and the calendar year of extinguishment.
 2. For the extinguishment of an irrigation grandfathered right or a type 1 non-irrigation grandfathered right:
 - a. Through December 31, 2010:
 - i. If the irrigation acres associated with the extinguished right were irrigated for at least four of the six calendar years preceding January 1, 2000, multiply 1.5 acre-feet per acre by the number of irrigation acres associated with the extinguished right or the number of acres to which the extinguished right is appurtenant and multiply that product by 25.
 - ii. If the irrigation acres associated with the extinguished right were not irrigated for at least four of the six calendar years preceding January 1, 2000, multiply 1.5 acre-feet per acre by the number of irrigation acres associated with the extinguished right or the number of acres to which the extinguished right is appurtenant and multiply the product by the difference between 2025 and the year in which the statement of intent to extinguish is filed.
 - b. After December 31, 2010, multiply 1.5 acre-feet per acre by the number of irrigation acres associated with the extinguished right or the number of acres to which the extinguished right is appurtenant and multiply the product by the difference between 2025 and the year in which the statement of intent to extinguish is filed.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-727. Tucson AMA Calculation of Groundwater Allowance and Extinguishment Credits

- A. The Director shall calculate the groundwater allowance for a certificate or designation in the Tucson AMA as follows:
1. If the application is for a certificate, multiply the applicable allocation factor in the table below by the annual estimated water demand for the proposed subdivision.

MANAGEMENT PERIOD	ALLOCATION FACTOR
Third	8
Fourth	4
Fifth	2
After Fifth	0

2. If the application is for a designation and the applicant provided water to its customers before February 7, 1995, multiply 15 by the total volume of water provided by the applicant to its customers from any source during calendar year 1994, consistent with the municipal conservation requirements established for the applicant pursuant to Section 5-103(A)(1) of the Second Management Plan for the Tucson AMA.
 3. If the application is for a designation and the applicant commenced providing water to its customers on or after February 7, 1995, the applicant's groundwater allowance is zero acre-feet.
 4. For each calendar year of the designation, the Director shall calculate the volume of incidental recharge for a designated provider within the Tucson AMA and add that volume to the designated provider's groundwater allowance. The Director shall calculate the volume of incidental recharge by multiplying the provider's total water use from any source in the previous calendar year by the standard incidental recharge factor of 4%. A designated provider may apply for a variance from the standard incidental recharge factor as provided in A.R.S. § 45-566.01(E)(1). The Director may establish a different incidental recharge factor for the designated provider if the provider demonstrates to the satisfaction of the Director that the ratio of the average annual amount of incidental recharge expected to be attributable to the provider during the management period, to the average amount of water expected to be withdrawn, diverted, or received for delivery by the provider for use within its service area during the management period, is different than 4%.
- B. The Director shall calculate the extinguishment credits for the extinguishment of a grandfathered right in the Tucson AMA as follows:
1. For the extinguishment of a type 2 non-irrigation grandfathered right, multiply the number of acre-feet indicated on the certificate by the difference between 2025 and the calendar year of extinguishment.
 2. For the extinguishment of all or part of an irrigation grandfathered right, or all or part of a type 1 non-irrigation grandfathered right, multiply 1.5 acre-feet per acre by the number of irrigation acres associated with the extinguished irrigation grandfathered right or the number of acres to which the extinguished type 1 non-irrigation grandfathered right is appurtenant, and then multiply the product by the difference between 2025 and the calendar year of extinguishment, except that:
 - a. If only a portion of an irrigation grandfathered right or a type 1 non-irrigation grandfathered right is extinguished, the Director shall include in the calculation only those acres associated with the portion of the right that is extinguished; and
 - b. If an extinguished irrigation grandfathered right has a debit balance in the corresponding flexibility account established under A.R.S. § 45-467, the Director shall subtract the amount of the debit from the amount of the extinguishment.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-728. Reserved

R12-15-729. Remedial Groundwater; Consistency with Management Goal

- A. Use of remedial groundwater by a municipal provider before January 1, 2025, is deemed consistent with the management goal of the AMA in which the remedial groundwater is withdrawn and is excluded when determining compliance with management goal requirements in this Article if all of the following apply:
1. The Director determines that the remedial groundwater use is consistent with the management goal under subsection (F) or (H) of this Section and the remedial groundwater use is consistent with the management goal under subsection (J) of this Section; and
 2. The municipal provider complies with the metering and reporting requirements in subsection (K) of this Section.
- B. A municipal provider that is using remedial groundwater or that has agreed in a consent decree or other document approved by ADEQ or the EPA to use remedial groundwater may apply to the Director for a determination that the municipal provider's use of the remedial groundwater is consistent with the management goal of the active management area by submitting an application on a form provided by the Director with the information required in subsection (D) of this Section before January 1, 2010.
- C. A municipal provider filing an application under subsection (B) of this Section for remedial groundwater use associated with a treatment plant in operation before June 15, 1999, may request an increase in the project's annual authorized volume at the time the application is filed. The Director shall grant the request and increase the annual authorized volume up to the maximum treatment capacity of the treatment plant if the municipal provider submits evidence that an increase in the annual authorized volume is necessary to further the purpose of the remedial action project and that the increase is not in violation of the consent decree or other document approved by ADEQ or the EPA for the remedial action project.
- D. An applicant shall provide the following with an application submitted under subsection (B) of this Section:
1. A document evidencing ADEQ's or EPA's approval of the municipal provider's withdrawal and use of remedial groundwater, such as a remedial action plan, record of decision, or consent decree;
 2. The volume of remedial groundwater that will be withdrawn and used annually by the municipal provider and the purpose for which the remedial groundwater will be used;
 3. The time period during which the remedial groundwater will be withdrawn and used by the municipal provider;
 4. A reference to the annual authorized volume provided in the document submitted pursuant to subsection (D)(1) of this Section or, if the document submitted pursuant to subsection (D)(1) does not specify the annual authorized volume for the project, the annual authorized volume claimed by the municipal provider and a written justification for that volume;
 5. If the approved remedial action project is currently operating, the volume of remedial groundwater withdrawn pursuant to the project for each year before the year in which the application is filed;
 6. The designated provider or certificate to which the remedial groundwater will be pledged;
 7. If the municipal provider is requesting an increase in the annual authorized volume of the project pursuant to subsection (C) of this Section, evidence that the increase is necessary to further the purpose of the remedial action project and that the increase is not in violation of the consent decree or other document approved by ADEQ or the EPA for the project;
 8. The name and telephone number of a person the Department may contact regarding the application; and
 9. Any other information reasonably required to assist the Director in making the determination under subsection (F) of this Section.
- E. After receiving an application under subsection (B) of this Section, the Director shall determine that the application is complete and correct if it contains all the information required in subsection (D) of this Section and the Director verifies that the information is accurate. If the Director determines that the application is complete and correct, the Director shall assign a priority date to the application according to the following:
1. If the Director determines that the application was complete and correct when filed, the priority date of the application is the date the application was filed.
 2. If the Director determines that the application was not complete or correct when filed because of minor deficiencies, the Director shall notify the applicant of the deficiencies in writing and give the applicant 30 days to correct the deficiencies. If the applicant submits the necessary information to correct the deficiencies within 30 days after the date of the notice, the priority date of the application is the date the application was filed.
 3. If the Director determines that the application was not complete or correct when filed and that the deficiencies are not minor, the Director shall notify the applicant of the deficiencies and give the applicant at least 60 days to submit the necessary information to correct the deficiencies. If the applicant submits the necessary information to correct the deficiencies within the time allowed by the Director, the priority date of the application is the date the applicant submits the necessary information to correct the deficiencies.
- F. The Director shall approve a complete and correct application filed under subsection (B) of this Section if the Director determines that the applicant will use remedial groundwater before January 1, 2025. If the Director approves a municipal provider's application, the Director shall calculate the annual amount of remedial groundwater use that is deemed consistent with the management goal of the AMA as follows:
1. The Director shall determine the total annual amount of remedial groundwater use in all AMAs that is deemed to be consistent with the management goal under this subsection and subsections (H) and (I) of this Section for applications with a priority date earlier than the priority date of the municipal provider's application.
 2. If the amount determined in subsection (F)(1) of this Section is less than 65,000 acre-feet and the difference between those amounts is equal to or greater than the municipal provider's authorized remedial groundwater use during the year, the amount of remedial groundwater use by the municipal provider that is deemed to be consistent with the management goal during the year is the amount of the municipal provider's authorized remedial groundwater use during the year.
 3. If the amount determined in subsection (F)(1) of this Section is less than 65,000 acre-feet and the difference between those amounts is less than the municipal provider's authorized remedial groundwater use during the year, the amount of remedial groundwater use by the municipal provider that is deemed consistent with the management goal during the year is the amount of the municipal provider's authorized remedial groundwater use during the year up to the difference between the amount determined in subsection (F)(1) and 65,000 acre-feet, plus a percentage of the municipal provider's authorized remedial groundwater use during the year that exceeds the difference. The percentage is 50 percent for calendar years 2000 through 2009, 25 percent for calendar years 2010 through 2019, and 10 percent for calendar years 2020 through 2024.

4. If the amount determined in subsection (F)(1) of this Section is equal to or greater than 65,000 acre-feet, the amount of remedial groundwater use by the municipal provider that is deemed consistent with the management goal during the year is a percentage of the municipal provider's authorized remedial groundwater use during the year. The percentage is 50 percent for calendar years 2000 through 2009, 25 percent for calendar years 2010 through 2019, and 10 percent for calendar years 2020 through 2024.
- G. If the Director determines that remedial groundwater use by a municipal provider is consistent with the management goal of the active management area under subsection (F) of this Section, the determination shall apply to remedial groundwater used by the municipal provider between the priority date of the application and January 1, 2025.
- H. If, before the effective date of this Section, a municipal provider filed an application with the Director requesting that the Director determine that the provider's use of remedial groundwater pursuant to an approved remedial action project is consistent with the management goal of the active management area under Laws 1997, Ch. 287, § 52, as amended by Laws 1999, Ch. 295, § 50, the following shall apply:
1. If the Director approved the application before the effective date of this Section and determined the annual amount of remedial groundwater use by the applicant that will be considered consistent with the management goal, the Director's determination shall apply after the effective date of this Section and the Director shall include the annual amount of remedial groundwater use determined by the Director to be consistent with the management goal in the total amount of remedial groundwater determined in subsection (F)(1) of this Section.
 2. If the Director did not approve the application before the effective date of this Section, the Director shall process the application under subsections (E) and (F) of this Section. If the Director approves the application, the Director's determination shall apply to remedial groundwater withdrawn and used by the municipal provider pursuant to the approved remedial action project from the priority date of the application until January 1, 2025.
- I. A municipal provider that is using remedial groundwater that has been determined by the Director to be consistent with the management goal under subsection (F) or (H) of this Section may apply to the Director for an increase in the annual authorized volume of the approved remedial action project as follows:
1. The applicant shall submit an application on a form provided by the Director.
 2. The Director shall determine that the application is complete and correct if it contains all of the required information and the Director verifies that the information is accurate.
 3. If the Director determines that an application filed under this subsection is complete and correct, the Director shall assign a priority date to the application using the criteria in subsection (E) of this Section.
 4. The Director shall approve the application if the municipal provider submits information that demonstrates one of the following:
 - a. The annual authorized volume of the approved remedial action project has been increased in a consent decree or other document approved by ADEQ or the EPA; or
 - b. An increase is necessary to further the purpose of the approved remedial action project, and the increase is not in violation of the consent decree or other document approved by ADEQ or the EPA for the project.
 5. If the Director approves the application, the Director shall determine the additional annual amount of remedial groundwater use by the municipal provider that is deemed consistent with the management goal of the active management area, using the criteria in subsections (F) and (G) of this Section. The Director shall include the annual amount of remedial groundwater use determined by the Director to be consistent with the management goal under this subsection in the total amount of remedial groundwater determined in subsection (F)(1) of this Section.
- J. Until January 1, 2025, use of remedial groundwater by a municipal provider during a year is deemed consistent with the management goal of the AMA in which the remedial groundwater was withdrawn without approval of the Director under subsection (F) or (H) of this Section if:
1. The total annual amount of remedial groundwater withdrawn from all wells pursuant to the approved remedial action project does not exceed 250 acre-feet; and
 2. If remedial groundwater withdrawals pursuant to the approved remedial action project commenced before June 15, 1999, the municipal provider notified the Director in writing of the volume and duration of the anticipated withdrawals on or before August 15, 1999. If remedial groundwater withdrawals pursuant to the approved remedial action project commenced on or after June 15, 1999, the municipal provider gave written notice of the volume and duration of the anticipated withdrawals on or before August 15, 1999, or before the date the withdrawals commenced, whichever is later. If the municipal provider gives notice after the effective date of this Section, the municipal provider shall include or attach all of the following:
 - a. A copy of a document evidencing ADEQ's or EPA's approval of the municipal provider's withdrawal and use of remedial groundwater, such as a remedial action plan, record of decision, or consent decree;
 - b. The volume of remedial groundwater that will be withdrawn and used annually by the municipal provider and the purpose for which the remedial groundwater will be used;
 - c. The time period during which the remedial groundwater will be withdrawn and used by the municipal provider;
 - d. If the approved remedial action project is currently operating, the volume of remedial groundwater withdrawn pursuant to the project for each year before the year in which the application is filed;
 - e. The designated provider or certificate of assured water supply to which the remedial groundwater will be pledged; and
 - f. The name and telephone number of a person the Department may contact regarding the exemption.
- K. A municipal provider withdrawing remedial groundwater that has been determined to be consistent with the management goal under subsection (F) or (H) of this Section or that is consistent with the management goal under subsection (J) of this Section shall meter the remedial groundwater withdrawals separately from groundwater withdrawn pursuant to another groundwater withdrawal authority. The municipal provider shall include in its annual reports, filed under A.R.S. § 45-632, the amount of remedial groundwater withdrawn during the reporting year that is consistent with the management goal under this Section and the purposes for which the remedial groundwater was used.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

R12-15-730. Assured and Adequate Water Supply Fees

A. With respect to an application listed in subsection (B) of this Section, the Director shall accept or take action on the application only upon payment of the applicable fee as listed.

B. An applicant shall pay the following fees, as applicable:

APPLICATION	FEE (\$)
1. Certificate	3000.00 for the first 20 lots; 3.00 for each additional lot; maximum 5000.00
2. Assignment of certificate issued after effective date of this Section	None
3. Reissuance of certificate issued after effective date of this Section, pursuant to R12-15-704(G)	None
4. Assignment of certificate issued before effective date of this Section, with or without request for classification as Type A certificate	250.00 for the first 20 lots; 0.50 for each additional lot; maximum 1000.00
5. Reissuance of certificate issued before effective date of this Section, pursuant to R12-15-704(G)	250.00 for the first 20 lots; 0.50 for each additional lot; maximum 1000.00
6. Classification as Type A, for certificate issued before the effective date of this Section (not included in assignment application)	250.00 for the first 20 lots; 0.50 for each additional lot; maximum 1000.00
7. Material plat change review	250.00
8. Designation or modification of designation that includes evaluation of physical, legal, and continuous availability or consistency with management goal	1000.00 for the first 1000 acre-feet; 0.50 for each additional acre-foot; maximum 10,000.00
9. Modification of designation that does not include evaluation of physical, legal, and continuous availability or consistency with management goal	500.00
10. Water report	900.00 for the first 20 lots; 2.00 for each additional lot; maximum 2000.00
11. Analysis	7500.00
12. Physical availability determination	5000.00

Historical Note

New Section made by final rulemaking at 12 A.A.R. 3475, effective September 12, 2006 (Supp. 06-3).

ARTICLE 8. WELL CONSTRUCTION AND LICENSING OF WELL DRILLERS

R12-15-801. Definitions

In addition to the definitions set forth in A.R.S. §§ 45-101, 45-402, and 45-591 and in R12-15-202, the following words and phrases in this Article shall have the following meanings, unless the context otherwise requires:

1. "Annular space" means the space between the outer well casing and the borehole wall. An annular space also means the space between an inner well casing and outer well casing.
2. "Aquifer" means an underground formation capable of yielding or transmitting usable quantities of water.
3. "Artesian aquifer" means an aquifer which is overlain by a confining formation and which contains groundwater under sufficient pressure for the water to rise above the top of the aquifer.
4. "Artesian well" means a well that penetrates an artesian aquifer.
5. "Bentonite" means a colloidal clay composed mainly of sodium montmorillonite, a hydrated aluminum silicate.
6. "Cap" means a tamper-resistant, watertight steel plate of at least one-quarter inch thickness on the top of all inside and outside casings of a well.
7. "Casing" means the tubing or pipe installed in the borehole during or after drilling to support the sides of the well and prevent caving.
8. "Confining formation" means the relatively impermeable geologic unit immediately overlying an artesian aquifer.
9. "Consolidated formation" means a naturally occurring geologic unit through or into which a well is drilled, having a composition, density, and thickness which will provide a natural hydrologic barrier.
10. "Department" means the Arizona Department of Water Resources.
11. "Director" means the Director of the Arizona Department of Water Resources.
12. "Drilling card" means a card which is issued by the Director to the well drilling contractor or single well licensee designated in the notice of intent or permit, authorizing the well drilling

contractor or licensee to drill the specific well or wells in the specific location as noticed or permitted.

13. "Exploration well" means a well drilled in search of geophysical, mineralogical or geotechnical data.

14. "Flowing artesian well" means an artesian well in which the pressure is sufficient to cause the water to rise above the land surface.

15. "Grout" or "cement grout" means cement mixed with no more than 50% sand by volume, and containing no more than six gallons of water per 94 pound sack of cement.

16. "Mineralized water" means any groundwater containing over 3000 milligrams per liter (mg/l) of total dissolved solids or containing any of the following chemical constituents above the indicated concentrations:

Constituent Concentration (mg/l)

Arsenic 0.05

Barium 1.0

Cadmium 0.01

Chromium (total) 0.05

Fluoride 4.0

Lead 0.05

Mercury 0.002

Nitrate (as N) 10.0

Selenium 0.01

Silver 0.05

17. "Monitor well" means a well designed and drilled for the purpose of monitoring water quality within a specific depth interval.

18. "Open well" means a well which is not equipped with either a cap or a pump.

19. "Perforations" means a series of openings in a casing, made either before or after installation of the casing, to permit the entrance of water into the well.

20. "Piezometer well" means a well that is designed and drilled for the purpose of monitoring water levels within a specific depth interval.

21. "Pitless adaptor" means a commercially manufactured watertight unit or device designed for attachment to a steel well casing which permits discharge from the well below the land surface and allows access into the well casing while preventing contaminants from entering the well.

22. "Polluted water" means water whose chemical, physical, biological, or radiological integrity has been degraded through the artificial or natural infusion of chemicals, radionuclides, heat, biological organisms, or mineralogical or other extraneous matter.

23. "Pressure grouting" means a process by which a grout is confined within the borehole or casing of a well by the use of retaining plugs, packers, or a displacing fluid by which sufficient pressure is applied to drive the grout into and within the annular space or interval to be grouted.

24. "Qualifying party" means a partner, officer, or employee of a well drilling contractor, who has significant supervisory responsibilities and who has been designated to take the licensing examination for that well drilling contractor.

25. "Single well license" means a license issued to a person which allows the drilling or modification of a single exempt well on land owned by that person.

26. "Vadose zone well" means a well constructed in the interval between the land surface and the top of the static water level.

27. "Vault" means a tamper-resistant watertight structure used to complete a well below the land surface.

28. "Well abandonment" means the modification of the structure of a well by filling or sealing the borehole so that water may not be withdrawn or obtained from the well.

29. "Well drilling" means the construction or repair of a well, or the modification, except for abandonment, of a well, regardless of whether compensation is involved, including any deepening or additional perforating, any addition of casing or change to existing casing construction, and any other change in well construction not normally associated with well maintenance, pump replacement, or pump repair.

30. "Well drilling contractor" means an individual, public or private corporation, partnership, firm, association, or any other public or private organization or enterprise that holds a well driller's license pursuant to A.R.S. § 45-595(B).

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-802. Scope of Article

This Article shall apply to man-made openings in the earth through which water may be withdrawn or obtained from beneath the surface of the earth, including all water wells, monitor wells and piezometer wells. It shall also apply to geothermal wells to the extent provided by A.R.S. § 45-591.01, and all exploration wells and grounding or cathodic protection holes greater than 100 feet in depth. However, this Article shall not apply to the following:

1. Man-made openings in the earth not commonly considered to be wells, such as construction and mining blast holes, underground mines and mine shafts, open pit mines, tunnels, septic tank systems, caissons, basements, and natural gas storage cavities.
2. Injection wells and vadose zone wells which are subject to regulation by the Arizona Department of Environmental Quality.
3. Oil, gas, and helium wells drilled pursuant to the provisions of A.R.S. Title 27.
4. Drilled boreholes in the earth less than 100 feet in depth which are made for purposes other than withdrawing or encountering groundwater, such as exploration wells and grounding or cathodic protection holes; except that in the event that groundwater is encountered in the drilling of a borehole, this Article shall apply.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-803. Well Drilling and Abandonment Requirements; Licensing and Supervision Requirements

- A. A person shall not drill or abandon a well, or cause a well to be drilled or abandoned, in a manner which is not in compliance with A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder.
- B. A person, other than a single well licensee or a bona fide employee of a well drilling contractor, shall not engage in well drilling or abandonment without first securing a well drilling license in accordance with R12-15-804, R12-15-805 and R12-15-806.
- C. A qualifying party of a well drilling contractor shall provide direct and personal supervision of the contractor's employees to ensure that all wells are constructed and abandoned in accordance with this Article.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Section 12-15-803 amended and the text of former Section R12-15-804 renumbered to subsections (B) and (C) and amended effective June 18, 1990 (Supp. 90-2).

R12-15-804. Application for well drilling license

- An applicant for a well drilling license shall submit a verified application of a form prescribed and furnished by the Director which contains the following information:
 1. A designation of the classification of license sought by the applicant.
 2. If the applicant is an individual, the individual's name, address and telephone number.
 3. If the applicant is a partnership, the names, addresses, and telephone numbers of all partners, with a designation of any limited partners.
 4. If the applicant is a corporation, association or other organization, the names, addresses and telephone numbers of the directors and of the president, vice president, secretary and treasurer, or the names, addresses and telephone numbers of the functional equivalent of such officers.
 5. The address or location of the applicant's place of business, the mailing address if it is different from the applicant's place of business, and if applicant is a corporation, the state in which it is incorporated.
 6. The name, address and telephone number of each qualifying party, the qualifying party's relationship to the applicant, and a detailed history of each qualifying party's supervisory responsibilities and well drilling experience, including previous employers, job descriptions, duties and types of equipment utilized.
 7. The names, addresses and telephone numbers of three persons not members of each qualifying party's immediate family, who can attest to each qualifying party's good character and reputation, experience in well drilling, and qualifications for licensing.
 8. Such additional information relevant to the applicant's or qualifying party's experience and qualifications in well drilling as the Director may require.
- B. An applicant shall notify the Director in writing of any change in the information contained in the application within 30 days after such change.
- C. The Director shall not issue a license under this Article if the applicant or a qualifying party lacks good character and reputation.
- D. Prior to the issuance of a license, a qualifying party shall demonstrate three years of experience, dealing specifically with the type of drilling for which the applicant is applying for a license. This experience requirement may be reduced if the Director finds that the qualifying party has clearly and convincingly demonstrated a high degree of understanding and knowledge of well drilling techniques for the type of drilling for which the applicant is applying for a license. In no case, however, shall the practical experience requirement be less than two years.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Former Section R12-15-804 renumbered to R12-15-803(B) and (C), new Section R12-15-804 adopted effective June 18, 1990 (Supp. 90-2).

R12-15-805. Examination for Well Drilling License

- The Director shall offer an examination for a well drilling license no less than six times yearly. The examination shall be administered to those eligible applicants whose applications were submitted at least 20 days prior to the date of the examination. The examination shall consist of a section on legal requirements, a section on general knowledge and one or more of six specialized sections. The section on legal requirements shall test the qualifying party's knowledge of A.R.S. Title 45, Chapter 2, Article 10, and the rules adopted thereunder. The section on general knowledge shall test the qualifying party's knowledge of general hydrologic concepts, principles, and practices in the well construction industry, and shall test knowledge of groundwater protection, pollution, water quality and public health effects. The specialized sections shall test the qualifying party's knowledge in the following classifications:
 1. Cable tool drilling in rock and unconsolidated material.
 2. Air rotary drilling in rock and unconsolidated material.
 3. Mud rotary drilling in rock and unconsolidated material.
 4. Reverse rotary drilling in rock and unconsolidated material.
 5. Jetting and driving wells in unconsolidated material.
 6. Boring and augering in unconsolidated material.
- B. Only the qualifying party, department personnel, and persons having the express permission of the Director shall be permitted in the examination room while the examination is in progress.

- The qualifying party shall not bring books or notes into the examination room, or communicate by any means whatsoever while the examination is in progress without the express permission of the presiding examiner. The qualifying party shall not leave the examination room while the examination is in progress without first obtaining the permission of the presiding examiner. The Director may disqualify an applicant for violation of this subsection.
- C. To obtain a well drilling license, a qualifying party of the applicant shall pass the section on legal requirements, the section on general knowledge, and one or more specialized sections. Each section of the examination shall be graded separately. The passing grade on each section shall be 70 percent.
- D. No person may take the examination more than twice during any 12 months.
- E. The Director may exempt a qualifying party from taking the section on general knowledge, and one or more of the specialized sections, if the qualifying party provides proof of passing an equivalent examination given by the National Ground Water Association.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Section repealed, new Section adopted effective June 18, 1990 (Supp. 90-2). Amended by final rulemaking at 13 A.A.R. 3022, effective October 6, 2007 (Supp. 07-3).

R12-15-806. License Fee; Issuance and Term of Licenses; Renewal; Display of License

- A. The fee for a well driller's license shall be fifty dollars. No additional fee shall be charged for amendments to licenses pursuant to subsection (B).
- B. Upon submittal of the license fee and satisfactory completion of an examination, the Director shall issue the applicant a well drilling license. The license shall be numbered and shall state the specialized classifications of drilling activities for which the applicant is qualified and licensed. The applicant shall be licensed in only those classifications for which the qualifying party has passed the specialized sections of the examination. If the qualifying party subsequently passes other specialized sections, the applicant's license shall be amended.
- C. A well drilling contractor shall notify the Director in writing within 30 days of the date on which the well drilling contractor no longer has a qualifying party for one or more of its specialized drilling classifications. Upon such notification, the Director may revoke or suspend part or all of the well drilling license of the well drilling contractor and require a new qualifying party to take and pass the examination.
- D. A well drilling license shall expire each year on June 30th, unless renewed pursuant to subsection (E).
- E. A person may renew a well drilling license by submitting an application for renewal on forms prescribed and furnished by the Director. The renewal fee shall be ten dollars. If the application and renewal fee are postmarked on or before June 30, the well drilling contractor may operate as a licensee until actual issuance of the renewal license. A license which has expired may be reactivated and renewed within one year of its expiration by filing the required application and 20 dollars. If a license has been expired for one or more years for failure to renew, the well drilling contractor shall apply for a new license and repeat the examination.
- F. A well drilling contractor shall prominently display the well drilling license number on all well drilling rigs owned or operated by the contractor in this state. Good quality paint or commercial decal numbers shall be used in placing each identification number on the drilling rig. The license number shall not be inscribed in crayon, chalk, pencil, or other temporary markings.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-807. Single Well License

- A. An applicant for a single well license pursuant to A.R.S. § 45-595(D) shall submit a verified application on forms prescribed and furnished by the Director, which shall include:
1. The name and address of the applicant.
 2. The location of the well and whether the applicant owns the land.
 3. The type of drill rig to be used and the owner of the rig.
 4. The proposed design of the well or method of abandonment.
 5. The names of any people who will be assisting the applicant in the drilling or abandonment of the well, and whether the applicant will compensate them for their efforts.
 6. The applicant's experience, if any, in well drilling or abandonment.
 7. Such other information as the Director may require relevant to the applicant's experience and qualifications in well drilling or abandonment.
- B. The Director shall offer the single well examination no less than six times yearly and shall administer the examination to those eligible applicants whose applications were submitted at least 20 days prior to the date of the examination.
- C. The single well examination shall be of a form prescribed and furnished by the Director and shall test the applicant's knowledge of abandonment techniques, or those minimum well construction requirements and drilling techniques applicable to the proposed design of the well. The passing grade on the sections of the examination dealing with construction requirements and drilling techniques, respectively, shall be 70 percent.
- D. Rule R12-15-805 relating to testing procedures shall be fully applicable.
- E. Applicants who twice fail the examination shall wait a minimum of 90 days before re-testing.
- F. Upon passing the examination, the applicant shall be issued a single well license, authorizing the applicant to drill or abandon one exempt well at the location specified in the application. The license shall be valid for a period of one year from issuance.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-808. Revocation of License

The Director may revoke, suspend, or place on probationary status a well drilling license issued pursuant to R12-15-806, or a single well license, for good cause, including:

1. Intentionally making a misstatement of fact on any filing with the Department.
2. Violating any provision of A.R.S. Title 45, Chapter 2, Article 10, and the rules promulgated thereunder, or aiding and abetting in such a violation.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2). Section number corrected (Supp. 93-1).

R12-15-809. Notice of Intention to Drill

A notice of intention to drill required to be filed pursuant to A.R.S. § 45-596 shall be signed by the owner or lessee of the property upon which the well is to be drilled.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2).

R12-15-810. Authorization to Drill

- A. A well drilling contractor or single well licensee may commence drilling a well only if the well drilling contractor or licensee has possession of a drilling card at the well site issued by the Director in the name of the well drilling contractor or licensee, authorizing the drilling of the specific well in the specific location.
- B. In extraordinary situations not requiring a permit but only a notice of intention to drill, the Director may grant a request by telephone for emergency authorization of commencement of drilling prior to the actual receipt by the well driller of the drilling card. Within seventy-two hours after such a request is granted, the well driller shall file a written statement indicating the nature and reasons for the request, and the date, time and Department employee granting the request, and the well owner shall file a notice of intent to drill if such a notice has not previously been filed.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2). Amended to correct typographical error under A.A.C. R1-1-109 (Supp. 01-2). Amended by final rulemaking at 13 A.A.R. 3022, effective October 6, 2007 (Supp. 07-3).

R12-15-811. Minimum Well Construction Requirements

- A. Well casing
1. Casing shall be of a sufficient strength and wall thickness to hold the borehole open and survive any necessary grouting. A person shall use only steel or thermoplastic casing in the construction of a well, unless the person has received a variance from the Director pursuant to R12-15-820. The well casing or an extension of the casing shall extend a minimum of one foot above ground level. When installing a pitless adaptor, the casing may be terminated below ground level for aesthetic reasons or freeze protection purposes. Casing made of, or which has been exposed to, hazardous or potentially harmful materials, such as asbestos, shall not be used.
 2. All well casing joints or overlaps shall be made watertight to prevent the degradation of the water supply by the migration of inferior quality water. Except as provided in subsection (H) of this rule, any openings in the casing that will be above the water level in the well, such as bar holes, cracks or perforations, shall be completely plugged or sealed.
 3. Thermoplastic casing shall be installed only in an over sized drillhole without driving. Thermoplastic casing shall conform with American Society for Testing and Materials Standard Specification F480-89 (1989), which is incorporated herein by reference and is on file with the Office of the Secretary of State. Rivets or screws used in the casing joints shall not penetrate the inside of the casing.
 4. Steel casing shall be new or in like-new condition, free from pits or breaks, and shall conform with American Society for Testing and Materials Standard Specification A53-89a (1989), A139-89b (1989) or A312/A312M-89a (1989), whichever is applicable, all of which are incorporated herein by reference and are on file with the Office of the Secretary of State.
 5. Copies of The American Society for Testing and Materials standard specifications referred to in subsections (3) and (4) above may be obtained with these rules at the Office of the Secretary of State of the State of Arizona, State Capitol, West Wing, Phoenix, Arizona 85007; from the Department of Water Resources, 3550 N. Central Avenue, Phoenix, AZ 85012; and from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. This rule does not include any later amendments or editions of those standard specifications.
- B. Surface seal
1. Except as provided in subsections (2) and (4) of this subsection, and R12-15-817(B)(1), all wells shall be constructed with a surface seal as herein provided. The seal shall consist of steel casing, one foot of which shall extend above ground level, and cement grout placed in one continuous application from the bottom of the zone to be grouted to the land surface. If a pitless adaptor is utilized, the cement grout may terminate at the bottom of the pitless adaptor. The minimum length of the steel casing shall be 20 feet. The minimum annular space between the casing and the borehole for placement of grout shall be one and one-half inches. Curing additives, such as calcium chloride, shall not exceed ten percent of the total volume of grout. Bentonite as an additive shall not exceed five percent of the total volume. The minimum length of the surface seal shall be 20 feet. Any annular space between the outer casing and an inner casing shall be completely sealed to prevent contamination of the well.
 2. All hand-dug wells shall be constructed with a watertight curbing extending, at a minimum, from one foot above the natural ground level to the static water level, or into the confining formation if the aquifer is artesian. The curbing shall consist of poured cement grout or casing surrounded by cement grout. Concrete block with cement grout and rock with cement

- grout may also be used. The poured cement grout shall not be less than six inches thick. If casing is to be used, the minimum annular space between the casing and the borehole shall be three inches. Hand-dug wells shall be sealed at the surface with a watertight, tamper-resistant cover to prevent contaminants from entering the well.
3. All wells constructed by jetting or driving shall have cement grout placed in the annular space to a minimum depth of six feet. The minimum annular space between the casing and the borehole for placement of the grout shall be one and one-half inches.
 4. All horizontal wells, to prevent leakage, shall be constructed with a surface seal consisting of steel casing and cement grout extending a minimum of ten feet into the land surface.
- C. Access port. Every well with casing four inches in diameter or larger shall be equipped with a functional watertight access port with a minimum diameter of one-half inch so that the water level or pressure head in the well can be monitored at all times.
- D. Gravel packed wells
1. If a gravel pack has been installed, the annular space between the outer casing and the inner casing shall be sealed, either by welding a cap at the top or by filling with cement grout from the bottom of the outer casing to the surface.
 2. If a gravel tube is installed, it shall be sealed with a cap.
- E. Vents. All vents installed in the well casing shall open downward and be screened to prevent the entrance of foreign material.
- F. Removal of drilling materials
1. In constructing a water well, the well driller shall take all reasonable precautions to protect the producing aquifer from contamination by drilling materials. Upon completion of the well, the well driller shall remove all foreign substances and materials introduced into the aquifer or aquifers during well construction. For purposes of this subsection, "substances and materials" means all drilling fluids, filter cake, lost circulation materials, and any other organic or inorganic substances.
 2. Materials known to present a health hazard, such as chrome-based mud thinners, asbestos products, and petroleum-based fluids, shall not be used as construction, seal or fill materials or drilling fluids.
 3. Drilling fluids and cuttings shall be contained in a manner which prevents discharge into any surface water.
- G. Repair of existing wells
1. If, in the repair of a well, the old casing is withdrawn, the well shall be recased in conformance with these rules.
 2. If an inner casing is installed to prevent leakage of undesirable water into a well, the annular space between the casings shall be completely sealed by packers, casing swedging, pressure grouting or other methods which will prevent the movement of water between the casings.
- H. Monitor wells
1. A monitor well may be screened up to ten feet above the highest seasonal static water level of record for the purpose of monitoring contaminants.
 2. A monitor well shall be identified as such on the vault cover or at the top of the steel casing. Identification information shall include the well registration number.
- I. Completion at the surface. In areas of traffic or public rights-of-way, wells may be constructed below the land surface in a vault. All other requirements in this Article shall apply.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2). The reference to R12-14-817(B)(1) in subsection (B)(1) corrected to read R12-15-817(B)(1) (Supp. 93-1). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-812. Special Aquifer Conditions

- A. Artesian wells
1. The well casing shall extend into the confining formation immediately overlying the artesian aquifer and shall be grouted from a minimum of ten feet into the confining formation to the land surface to prevent surface leakage into and subsurface leakage from the artesian aquifer.
 2. If leaks occur adjacent to the well or around the well casing, within 30 days the well shall be completed with the seals, packers, or casing and grouting necessary to eliminate such leakage or the well shall be abandoned according to R12-15-816.
 3. If the well flows at land surface, the well shall be equipped with a control valve, or suitable alternative means of completely controlling the flow, which must be available for inspection at the well site at all times.
- B. Mineralized or polluted water. In all water-bearing geologic units containing mineralized or polluted water as indicated by available data, the borehole shall be cased and grouted so that contamination of the overlying or underlying groundwater zones will not occur.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-813. Unattended Wells

All wells, when unattended during well drilling, shall be securely covered for safety purposes and to prevent the introduction of foreign substances into the well.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Section number corrected (Supp. 93-1).

R12-15-814. Disinfection of Wells

A well drilling contractor shall disinfect any well from which the water to be withdrawn is intended to be utilized for human consumption or culinary purposes without prior treatment before removing the drill rig from the well site in accordance with the requirements contained in Engineering Bulletin No. 8, "Disinfection of Water Systems", issued by the Arizona Department of Health Services in August 1978, and Engineering Bulletin No. 10, "Guidelines for the Construction of Water Systems", issued by the Arizona Department of Health Services in May 1978, both of which are incorporated by reference and are on file with the Office of the Secretary of State. Copies of the Engineering Bulletins referred to above may be obtained with these rules at the Office of the Secretary of State of the State of Arizona, State Capitol, West Wing, Phoenix, Arizona 85007, and from the Department of Water Resources, 3550 N. Central Avenue, Phoenix, AZ 85012. This rule does not include any later amendments or editions of those Bulletins.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-815. Removal of Drill Rig from Well Site

The drilling rig shall not be removed from the well site unless the well is in one of the following conditions:

1. Constructed in full conformance with R12-15-811 and R12-15-812 and either sealed with a cap or equipped with a pump.
2. Abandoned in accordance with R12-15-816.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-816. Abandonment

- A. Well abandonment shall be performed only by a licensed well drilling contractor or single well licensee.
- B. Except as provided in subsection (F) of this Section, the owner of a well shall file a notice of intent to abandon the well prior to abandonment, on a form prescribed and furnished by the Director, which shall include:
1. The name and mailing address of the person filing the notice.
 2. The legal description of the land upon which the well proposed to be abandoned is located and the name and mailing address of the owner of the land.
 3. The legal description of the location of the well on the land.
 4. The depth, diameter and type of casing of the well.
 5. The well registration number.
 6. The materials and methods to be used to abandon the well.
 7. When abandonment is to begin.
 8. The name and well drilling license number of the well drilling contractor or single well licensee who is to abandon the well.
 9. The reason for the abandonment.
 10. Such other information as the Director may require.
- C. The Director shall, upon receipt of a proper notice of intent to abandon, mail a well abandonment authorization card to the designated well drilling contractor or single well licensee.
- D. Except as described in subsection (F) of this Section, a well drilling contractor or single well licensee may commence abandoning a well only if the driller has possession of an abandonment card at the well site, issued by the Director in the name of the driller, authorizing the abandonment of that specific well or wells in that specific location.
- E. Within 30 days after a well is abandoned pursuant to this Section, the well drilling contractor or single well licensee shall file with the Director a Well Abandonment Completion Report on a form prescribed and furnished by the Director which shall include the date the abandonment of the well was completed and such other information as the Director may require.
- F. In the course of drilling a new well, the well may be abandoned without first filing a notice of intent to abandon and without an abandonment card. If the well is abandoned pursuant to this subsection without first filing a notice of intent to abandon and without an abandonment card, the well drilling contractor or single well licensee shall provide the following information in the Well Abandonment Completion Report:
1. The legal description of the land upon which the well was abandoned and the name and mailing address of the owner of the land.
 2. The legal description of the location of the well on the land.
 3. The depth, diameter and type of casing of the well prior to abandonment.
 4. The well registration number.
 5. The materials and methods used to abandon the well.
 6. The name and well drilling license number of the well drilling contractor or single well licensee who abandoned the well.
 7. The date of completion of the abandonment of the well.
 8. The reason for the abandonment.
 9. Such other information as the Director may require.
- G. The abandonment of a well shall be accomplished through filling or sealing the well so as to prevent the well, including the annular space outside the casing, from being a channel allowing the vertical movement of water.
- H. A well drilling contractor or single well licensee shall construct a surface seal for a well that does not penetrate an aquifer, as follows:

1. If the casing is removed from the top 20 feet of the well, a cement grout plug shall be set extending from two feet below the land surface to a minimum of 20 feet below the land surface, and the well shall be backfilled above the top of the cement grout plug to the original land surface.
 2. If the casing is not removed from the top 20 feet of the well, a cement grout plug shall be set extending from the top of the casing to a minimum of 20 feet below the land surface and the annular space outside the casing shall be filled with cement from the land surface to a minimum of 20 feet below the land surface.
- I. In addition to the surface seal required in subsection (H):
1. A well penetrating a single aquifer system with no vertical flow components shall be filled with cement grout, concrete, bentonite drilling muds, clean sand with bentonite, or cuttings from the well.
 2. A well penetrating a single or multiple aquifer system with vertical flow components shall be sealed with cement grout or a column of bentonite drilling mud of sufficient volume, density, and viscosity to prevent fluid communication between aquifers.
- J. Materials containing organic or toxic matter shall not be used in the abandonment of a well.
- K. The owner or operator of the well shall notify the Director in writing no later than 30 days after abandonment has been completed. The notification shall include the well owner's name, the location of the well, and the method of abandonment.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2). Amended by final rulemaking at 13 A.A.R. 3022, effective October 6, 2007 (Supp. 07-3).

R12-15-817. Exploration Wells

- A. Notification. Prior to drilling one or more exploration wells, the well owner, lessee, or exploration firm shall file a notice of intention to drill on forms provided by the Director. If the notice of intention to drill is filed for the project as a whole, the drilling card shall be issued for the project as a whole.
- B. Construction and abandonment.
1. If an exploration well which is to be left open for re-entry at a later date encounters groundwater, it shall be cased and capped in accordance with R12-15-811, R12-15-812, and R12-15-822. The minimal length of surface seal shall be either 20 feet, or five feet into the first encountered consolidated formation, whichever is less. If no groundwater is encountered, the well shall be cased, grouted and capped in such a manner so as to prevent contamination of the well bore from the surface.
 2. Exploration wells not left open for re-entry shall be abandoned in accordance with R12-15-816.
- C. Completion report. Within 30 days of project completion, the well owner, lessee, or exploration firm shall submit a project completion report on forms provided by the Director. The report shall include:
1. The exact number of wells drilled.
 2. The depth to water encountered or detected, with reference to specific wells.
 3. The abandonment method utilized, or construction details if completed for re-entry.
 4. Any other information which the Director may require.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-818. Well Location

Except for monitor wells and piezometer wells, no well shall be drilled within 100 feet of any septic tank system, sewage disposal area, landfill, hazardous waste facility, storage area of hazardous materials or petroleum storage areas and tanks, unless authorized in writing by the Director.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-819. Use of Well as Disposal Site

No well may be used as a storage or disposal site for sewage, toxic industrial waste, or other materials that may pollute the groundwater, except as authorized by the Arizona Department of Environmental Quality.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-820. Request for Variance

- A. If extraordinary or unusual conditions exist, a well drilling contractor or owner may request a variance from the provisions of this Article.
- B. The request for variance shall be in writing and shall set forth the location of the well site, the reasons for the request, and the recommended requirements to be applied. The Director may approve the request only if the well drilling contractor or owner has clearly demonstrated that the variance will not adversely affect other water users or the local aquifers.
- C. A variance shall not be effective until the well drilling contractor or owner receives from the Director a written approval of the variance and a new drilling card stamped "variance issued."

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-821. Special Requirements

If the Director determines that the literal application of the minimum well construction requirements contained in this Article would not adequately protect the aquifer or other water users, the Director may require that further additional measures be taken, such as increasing the length of the surface seal or increasing the well's minimum distance from a potential source of contamination.

Historical Note

Adopted effective March 5, 1984 (Supp. 84-2). Amended effective June 18, 1990 (Supp. 90-2).

R12-15-822. Capping of Open Wells

- A. The owner of an open well shall either install a cap on the well or abandon the well in accordance with R12-15-816. Within five days after capping the well, the owner of the well shall file with the Department a notice of well capping on a form approved by the Director which shall include the following information:
1. The name and address of the well owner.
 2. The name and address of the person installing the cap.
 3. The well registration number.
 4. The legal description of the location of the well.
 5. The date the well was capped.
 6. The method of capping.
 7. The type and diameter of casing.
- B. If no casing exists in an open well, or if the integrity of the existing casing is insufficient to allow installation of a cap, the well owner shall install a surface seal in accordance with R12-15-811(B) prior to capping.
- C. The owner of a well on which a cap is installed shall make the cap tamper resistant by welding the cap to the top of the casing by the electric arc method of welding, except that the owner of a well may make the cap tamper resistant by securing the cap to the top of the casing with a lock during temporary periods of well maintenance, modification or repair, not to exceed 30 days, or at any time if the well is a monitor well or piezometer well.

Historical Note

Adopted as an emergency effective March 2, 1989, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 89-1). Emergency expired. Readopted without change as an emergency effective June 2, 1989, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 89-2). Emergency expired. Readopted without change as an emergency effective September 5, 1989, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 89-3). Emergency expired. Readopted without change as an emergency effective December 1, 1989, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 89-4). Emergency expired. Readopted without change as an emergency effective March 23, 1990, pursuant to A.R.S. § 41-1026, valid for only 90 days (Supp. 90-1). Permanent rule adopted with changes effective June 18, 1990 (Supp. 90-2). Amended by final rulemaking at 13 A.A.R. 3022, effective October 6, 2007 (Supp. 07-3).

R12-15-823. Reserved

through

R12-15-849. Reserved**R12-15-850. Evaluation of Notices of Intention to Drill; Notification of Registered Site Locations; Vertical Cross-Contamination Evaluation**

- A. The Director shall, upon receipt of a complete and correct notice of intention to drill form required under A.R.S. § 45-596, or upon receipt of an application for a permit under A.R.S. § 45-597 through 45-599, identify whether the proposed well will be drilled within a groundwater basin or subbasin in which there exists a site listed on the registry established under A.R.S. § 49-287.01(D). If the proposed well is situated within such a groundwater basin or subbasin, the Director shall notify the applicant and the authorized well drilling contractor in writing of the existence of the site and shall enclose a map indicating the boundaries of all listed sites within the groundwater basin or subbasin. The notification letter shall include the name, address, and telephone number of a Department contact person, along with a reference to the provision in R12-15-851 that requires the applicant to notify the Department in advance of the date drilling of the well will commence. The Department shall also specify in the notification letter whether the applicant is subject to the requirements of R12-15-851.
- B. The Director shall, upon receipt of a complete and correct notice of intention to drill form required under A.R.S. § 45-596, or upon receipt of an application for a permit under A.R.S. § 45-597 through 45-599, identify whether the proposed well will be drilled within an area where existing or anticipated future groundwater contamination presents a risk of vertical cross-contamination, as defined in A.R.S. § 49-281(15). If the Director determines that the proposed well will be drilled in such an area, and if the Director finds that the requirements of R12-15-811 are insufficient to prevent the risk of vertical cross-contamination, the Director shall establish site-specific requirements pursuant to R12-15-812 and R12-15-821.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 469, effective January 3, 2000 (Supp. 00-1).

R12-15-851. Notification of Well Drilling Commencement

A well owner who has been issued a drilling card for a notice of intent to drill authorizing the drilling of a well located within a site listed on the registry established under A.R.S. § 49-287.01, shall provide written notice to the Director indicating the date drilling will commence. The well owner shall coordinate with the contracted well driller to ensure that the Department receives proper notification under this Section. This notification shall consist of a letter or facsimile transmission received by the Department at least 2 business days before drilling commences at the well site. The Department shall use notification letters required by R12-15-850(A) to inform well owners whether they are subject to the requirements of this Section.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 469, effective January 3, 2000 (Supp. 00-1).

R12-15-852. Notice of Well Inspection; Opportunity to Comment

A. At least 30 days before the beginning of a well inspection under A.R.S. § 45-605(A), the Director shall notify in writing all potentially affected well owners of record within a community involvement area established under A.R.S. § 49-289.02 or within other areas that the Director has selected for inspection of wells that may be contributing to vertical cross-contamination. The notices shall include a map of the community involvement area, remedial site, or a subsection of either, that the Department intends to inspect, indicating the location of affected wells of record. The notice shall indicate the approximate date the inspection will start, the approximate duration of the inspection, an access agreement defining what specific activities will occur during a well inspection, and the name, address, and telephone number of a Department contact person.

B. Once the Director has given notice of a well inspection under A.R.S. § 45-605(A), potentially affected well owners have 30 days from the date the letter is postmarked to comment on the proposed inspection. The Director, upon receiving a written request, may extend the comment period for a maximum of 30 additional days.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 469, effective January 3, 2000 (Supp. 00-1).

ARTICLE 9. WATER MEASUREMENT**R12-15-901. Definitions**

In addition to the definitions set forth in A.R.S. §§ 45-101 and 45-402, the following words and phrases shall have the following meanings, unless the context otherwise requires:

1. "Approved measuring device" means an instrument, approved by the Director pursuant to R12-15-903 or R12-15-909(A) which measures the volume or flow rate of water withdrawn, delivered, received, transported, recharged, stored, recovered, or used, and which measurements, when used with an approved measuring method, allow for accurate computation of a volume of water.
2. "Approved measuring method" means a procedure, approved by the Director in R12-15-903 or R12-15-909(A), which, when used with an approved measuring device, will accurately calculate a volume of water.
3. "Flow rate" or "discharge" means the volume of water, including any sediment or other solids that may be dissolved or mixed with it, which passes through a particular reference section in a unit of time.
4. "Measured system" means a system through which water passes for the purpose of withdrawal, delivery, receipt, transportation, recharge, storage, replenishment, recovery or use.
5. "Responsible party" means an irrigation district or a person required by A.R.S. Title 45 or by a permit, rule, or order issued pursuant to A.R.S. Title 45, to use a measuring device or method approved by the Director.

Historical Note

Adopted effective December 27, 1982 (Supp. 82-6). Amended effective June 15, 1995 (Supp. 95-2). Amended to correct typographical error under A.A.C. R1-1-109 (Supp. 01-2).

R12-15-902. Installation of Approved Measuring Devices

A. A responsible party shall install an approved measuring device to monitor the volume of water withdrawn, delivered, transported, recharged, stored, replenished, recovered, and used.

B. A responsible party shall install and use a sufficient number of approved measuring devices to allow for the separate monitoring and reporting of the volume of water passing through the measured system pursuant to the following categories of rights:

1. Irrigation grandfathered rights,
2. Non-irrigation grandfathered rights,
3. Service area rights,
4. Groundwater withdrawal permits, and
5. Recovery well permits or water storage permits.

This subsection does not require separate measuring devices for rights within each category unless otherwise required by A.R.S. Title 45, a permit, rule, or order pursuant to that Title.

C. An approved measuring device which measures groundwater withdrawals shall be installed as close to the wellhead as is practical, consistent with the manufacturer's instructions. An approved measuring device which measures another point in the measured system shall be installed as close as is practical to the point of delivery, receipt, transportation, recharge, storage, replenishment, recovery, or use which the device is intended to measure, consistent with the manufacturer's instructions.

Historical Note

Adopted effective December 27, 1982 (Supp. 82-6). Amended effective June 15, 1995 (Supp. 95-2). Amended to correct typographical error under A.A.C. R1-1-109 (Supp. 01-2).

R12-15-903. Approved Water Measuring Devices and Methods

A. Any measuring device is approved by the Director if it is installed, maintained, and used in accordance with the manufacturer's recommendations, and if it meets the accuracy requirements set forth in R12-15-905(A).

B. An approved measuring device shall be used with an approved measuring method set forth in R12-15-903(C) or an alternative measuring method approved by the Director as provided in R12-15-909(A).

C. The following water measuring methods are approved by the Director:

1. Totalizing measuring method: This method requires an approved measuring device which continuously records the volume of water passing through the measured system;
2. Electrical consumption measuring method: This method requires measurements of either pipeflow rates or open-channel flow rates used in combination with electrical energy records;
3. Natural gas consumption measuring method: This method requires measurements of either pipe flow rates or open channel flow rates used in combination with natural gas energy records;
4. Hour meter measuring method: This method requires measurements of either pipe flow rates or open-channel flow rates used in combination with hour meter readings;
5. Elapsed time of flow method: This method requires measurements of flow rates used in combination with elapsed time of the flow. This method may be used only by a responsible party who receives water from an open channel or by a person or entity who delivers water in an open channel to one or more grandfathered rightholders or permit holders, if it is not possible to use the electrical or gas consumption measurement methods or hour meter measuring method.

Historical Note

Adopted effective December 27, 1982 (Supp. 82-6). Amended effective June 15, 1995 (Supp. 95-2).

R12-15-904. Water Measuring Method Reporting Requirements

A. A responsible party using one of the water measuring methods described in R12-15-903 shall file, with the annual report required by A.R.S. Title 45 and on a form prescribed by the Director, the following information, unless that information has not changed from that submitted in the annual report filed in the previous calendar year.

1. The approved measuring method used;
2. The type of approved measuring device used;
3. The make, model, and size of the approved measuring device used.

B. Except as provided in R12-15-904(B)(5) and R12-15-909(B) and (D), a responsible party shall file with the annual report the information required in subsection (A) of this Section and the following information on a form prescribed by the Director:

1. Totalizing measuring method:
 - a. The initial totalizing meter reading for the reporting year taken prior to the first use of the measured system during the reporting year;
 - b. The end totalizing meter reading for the year taken subsequently to the last use of the measured system during the reporting year;
 - c. The units in which the water is measured;
 - d. Whether the power meter serves uses other than the pump motor or engine;
 - e. An estimate of the amount of any water passing through the measured system during measuring device malfunctions;
 - f. If the well is in operation for more than a 30-day period, the results of a minimum of two flow-rate measurements per reporting year taken under normal system operating conditions. The responsible party shall not submit the results of the flow-rate measurements with the annual report unless a meter malfunction continues longer than 72 hours during the reporting year;
 - g. The installation or overhaul date of the totalizing meter; and
 - h. The name of the energy company supplying energy to the responsible party's measured system, its power account number, meter number, total energy consumption for the year, and the type of energy unit.
2. Electrical consumption measuring method:
 - a. The results of a minimum of two flow-rate measurements per reporting year taken at least 30 days apart and under normal system operating conditions or, if the measured system is used during a single period of 30 days or less during the year, the result of one flow-rate measurement taken during that single period in that year under normal system operating conditions;
 - b. The dates of the measurements;
 - c. The discharges in gallons per minute;
 - d. The time, in seconds, of ten cycles of the electric meter disk, power indicator pulse, or an alternative measurement, provided that the alternative means of measurement is approved in advance by the Director;
 - e. The inside diameter of the discharge pipe;
 - f. The multiplier (Kr) and disk constant (Kh) of the electric meter; and
 - g. The name of the energy company supplying energy to the responsible party's measured system, its power account number, meter number, total energy consumption for the year, and the type of energy unit.
3. Natural gas consumption measuring method:

- a. The results of a minimum of two flow-rate measurements per reporting year taken at least 30 days apart and under normal system operating conditions or, if the measured system is used during a single period of 30 days or less during the year, the result of one flow-rate measurement taken during that single period in that year under normal system operating conditions;
 - b. The dates of the measurements;
 - c. The discharges in gallons per minute;
 - d. The amounts of gas per second in cubic feet indicated by the gas meter;
 - e. The billing factors (F);
 - f. The inside diameter of the discharge pipe; and
 - g. The name of the energy company supplying energy to the responsible party's measured system, its power account number, meter number, total energy consumption for the year, and the type of energy unit.
4. Hour meter measuring method:
- a. The results of a minimum of two flow-rate measurements per reporting year taken at least 30 days apart and under normal system operating conditions or, if the measured system is used during a single period of 30 days or less during the year, the result of one flow-rate measurement taken during that single period in that year under normal system operating conditions;
 - b. The dates of the measurements;
 - c. The discharges in gallons per minute;
 - d. The initial hour meter reading for the reporting year taken prior to the first use of the measured system during the reporting year;
 - e. The end hour meter reading taken subsequently to the last use of the measured system during the reporting year;
 - f. Whether the energy meter serves uses other than the pump motor or engine;
 - g. The installation or overhaul date of the hour meter; and
 - h. The name of the energy company supplying energy to the responsible party's measured system, its power account number, meter number, total energy consumption for the year, and the type of energy unit.
5. Elapsed time of flow measuring method: A responsible party using this measuring method shall not be required to submit the following information with the annual report but instead shall record and retain it for three years after the reporting year.
- a. The responsible party or agent shall measure and record an initial flow rate taken at the start of flow for each delivery of water;
 - b. If the flow rate continues for more than eight hours, a subsequent measured flow-rate measurement shall be taken. If any subsequently measured flow-rate differs by more than 10% from the initial flow rate, and the delivery is not adjusted to conform with the initial flow rate, the responsible party or agent shall record the subsequent flow rate;
 - c. The time the flow begins and the time the flow ends for each delivery of water; and
 - d. The dates of the measurements.
- C. A responsible party or person or entity who uses an approved measuring method or an approved alternative water measurement method shall save the records required by subsections (A) and (B) of this Section for three years after the reporting year.

Historical Note

Adopted effective December 27, 1982 (Supp. 82-6). Former Section R12-15-904 renumbered to R12-15-905, new Section adopted effective June 15, 1995 (Supp. 95-2). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-905. Accuracy of Approved Measuring Devices

- A. A responsible party shall install, maintain, and use an approved measuring device and method in a manner which will ensure that its measurement error does not exceed 10% of the actual flow rate.
- B. All measured systems shall be installed or constructed and thereafter maintained so as to allow the Director, using another measuring device, to check readily the accuracy of the measuring device utilized by the responsible party.

Historical Note

Adopted effective December 27, 1982 (Supp. 82-6). Former Section R12-15-905 renumbered to R15-15-906, new Section R12-15-905 renumbered from R12-15-904 and amended effective June 15, 1995 (Supp. 95-2).

R12-15-906. Repair and Replacement of Approved Measuring Devices

If an approved measuring device fails to perform its designated function for more than 72 hours, the responsible party shall notify the Director of the failure, in writing, within seven calendar days after the discovery of the failure of the device. The reason for such failure shall be stated, as well as the estimated date of return to service of the device. If the malfunction is discovered by the Director and the malfunction does not appear to be the result of an attempt to render the device inaccurate, the Director shall notify the responsible party of the malfunction. The responsible party shall return the measuring device to full service within 30 days of either original notice by the responsible party to the Director or by the Director to the responsible party, unless repair or replacement service or parts are not available. In such case, the responsible party shall notify the Director of the delay within seven days and the reasons for it. The responsible party shall take corrective action in such cases as soon as practical. In all cases, the responsible party shall notify the Director within seven days when the measuring device is returned to full service and shall submit on a form prescribed by the Director estimates of the volume of water, if any, passing through the measured system during the period the measuring device was out of service and a description of the method used to calculate the estimates.

Historical Note

Section R12-15-906 renumbered from R12-15-905 and amended effective June 15, 1995 (Supp. 95-2).

R12-15-907. Calculation of Irrigation Water Deliveries

If one or more irrigation grandfathered rights receive water by a common distribution system where water is measured with an approved device or method at the point of delivery to the common distribution system, but not at a point of delivery to each irrigation grandfathered right, each irrigation grandfathered rightholder or agent shall report the water used by either of the following methods:

1. Estimate the amount of water used based on a pro rata share of the acres irrigated, or
2. Estimate the amount of water used based on a combination of the pro rata share of the acres irrigated and the consumptive use of each crop grown.

Historical Note

Adopted effective June 15, 1995 (Supp. 95-2).

R12-15-908. Measurement of Water by One Person on Behalf of Another

A responsible party shall be liable for any fines, penalties, or other sanctions resulting from the installation, monitoring, use, or accuracy of any measuring device, method, or recordkeeping, notwithstanding that the installation, monitoring, use, or recordkeeping may have been done by an agent of the responsible party.

Historical Note

Adopted effective June 15, 1995 (Supp. 95-2).

R12-15-909. Alternative Water Measuring Devices, Methods, and Reporting

- A. A responsible party may use an alternative water measuring device or method that differs from those described in R12-15-903 provided the device or method is approved in advance by the Director. The Director shall approve an alternative water measuring device or method if the device meets the requirements of R12-15-905. The Director may require from the responsible party such information as may be necessary to demonstrate that the alternative device or method meets the requirements of R12-15-905.
- B. Responsible parties may substitute equivalent information for the information required on the annual report form or use reporting formats that differ from that required in R12-15-904, provided the substituted information or format is approved in advance by the Director.
- C. Responsible parties may use estimation methods that differ from those described in R12-15-907 provided they are approved in advance by the Director.
- D. A municipal provider is exempted from the reporting requirements under R12-15-904 and the provisions under R12-15-906 pertaining to notification to the Director of measuring device malfunctions regarding metered service connections, unless required to report by A.R.S. Title 45 or by a permit, rule, or order issued pursuant to A.R.S. Title 45.
- E. Municipal providers and irrigation districts may notify the Director of measuring device malfunctions at the time of filing the annual report and in a manner that differs from the requirements of R12-15-906, provided the municipal provider or irrigation district implements a schedule of regular maintenance of measuring devices, repairs or replaces malfunctioning measuring devices within seven days of discovery of the malfunction, and the alternative notification is approved in advance by the Director.

Historical Note

Adopted effective June 15, 1995 (Supp. 95-2).

ARTICLE 10. REPORTING REQUIREMENTS FOR ANNUAL REPORTS, ANNUAL ACCOUNTS, OPERATING FLEXIBILITY ACCOUNTS, AND CONVEYANCES OF GROUNDWATER RIGHTS

R12-15-1001. Definitions

In addition to the definitions in A.R.S. §§ 45-101 and 45-402, the following words and phrases in this Article have the following meanings, unless the context otherwise requires:

1. "Annual account" means an accounting of water required to be filed pursuant to A.R.S. § 45-468.
2. "Annual report" means an annual report of water withdrawn, delivered, received, transported, recharged, stored, recovered, replenished or used as required by A.R.S. §§ 45-437, 45-467, 45-632, 45-875.01, 45-876.01, 45-877.01, 45-878.01 or 45-1004.
3. "Central Arizona project water" means Colorado River water delivered through the facilities of the central Arizona project, and surface water from any other source conserved and developed by dams and reservoirs in the central Arizona project and lawfully delivered by the United States or a multi-county conservation district.
4. "Decreed or appropriative surface water" means surface water which is delivered or used pursuant to a decreed or appropriative water right, except any such water which is included in central Arizona project water.
5. "Farm" means an area of irrigated land under the same ownership as defined in A.R.S. § 45-402, including the area of land described in a certificate of irrigation grandfathered right, as well as contiguous land that the owner is legally entitled to irrigate only with decreed or appropriative surface water.
6. "Maximum annual groundwater allotment" means the quantity of water in acre-feet obtained by multiplying the number of water duty acres for a farm by the current irrigation water duty

for the farm unit.

7. "Normal flow" means water delivered or used pursuant to a right to appropriate an unstored, natural flow of surface water.
8. "Operating flexibility account" means an accounting of water use pursuant to an irrigation grandfathered right as provided in A.R.S. § 45-467.
9. "Responsible party" means a person required by law to file an annual account or annual report.
10. "Spillwater" means surface water, other than Colorado River water, released for beneficial use from storage, diversion, or distribution facilities to avoid spilling that would otherwise occur due to uncontrolled surface water inflows that exceed facility capacity and to which one of the following applies:
 - a. The water is released from the facility under written criteria for releasing water to avoid spilling that have been approved in writing by the Director.
 - b. The water is released from the facility because an unreasonable risk exists that the storage capacity of the facility will be exceeded within the next 30 days because the facility is near capacity and either the inflow to the facility or the forecast runoff into the facility is equal to or greater than the quantity of water ordered from the facility.
 - c. The water is released from the facility because an unreasonable risk exists that the storage capacity of the facility will be exceeded more than 30 days in the future because the forecast runoff into the facility exceeds current unused storage capacity and projected water demand during the forecast period, provided that the Director has made a written finding before the release that the forecast is reasonable.
11. "Surface water right acre" means land to which the owner is legally entitled to apply decreed or appropriate surface water.
12. "Tailwater" means water which, after having been applied to a farm for irrigation purposes,
 - a. Is subsequently used for the irrigation of a different farm, without having entered the distribution system of a city, town, private water company or irrigation district, or
 - b. Is delivered to an irrigation district in accordance with R12-15-1010. Such water, once having entered the distribution system of the irrigation district, loses its characterization as tailwater.
13. "Water deliverer" means a city, town, private water company or irrigation district delivering a combination of groundwater and any other type of water for irrigation purposes.

Historical Note

Adopted effective December 27, 1982 (Supp. 82-6). Section R12-15-1001 renumbered to R12-15-1003, new Section R12-15-1001 adopted effective December 12, 1990 (Supp. 90-4). Amended to correct typographical error under A.A.C. R1-1-109 (Supp. 01-2). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1002. Form of Annual Account or Annual Report

- A. A person filing an annual account or an annual report shall do so on a form prescribed by the Director, unless the person has requested and received the Director's prior written approval to use an alternative form.
- B. A person may file both an annual account and an annual report in one document. A person required to file an annual account shall designate in the annual account whether the annual account is being filed also as an annual report.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4).

R12-15-1003. Accuracy of Annual Reports

The quantity of water a responsible party reports in an annual report as having been withdrawn, delivered, received, transported, recharged, replenished, stored, recovered, or used during a year shall not deviate from the quantity of water actually withdrawn, delivered, received, transported, recharged, replenished, stored, recovered, or used by the responsible party during the year unless both of the following apply:

1. The deviation is 10 percent or less.
2. The deviation is not the result of an intentional act of misrepresentation by the responsible party.

Historical Note

Section R12-15-1003 renumbered from R12-15-1001 effective December 12, 1990 (Supp. 90-4). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1004. Annual Reports Filed on Behalf of a Responsible Party

- A. A responsible party is liable for any fines, penalties, or other sanctions resulting from or attributable to the filing or content of an annual report filed on behalf of the responsible party by an irrigation district pursuant to A.R.S. § 45-632, or by another person in a form acceptable to the Director.
- B. If a responsible party has not filed an annual report for a calendar year, and the Department receives an annual report for that calendar year purportedly filed on behalf of the responsible party by an irrigation district pursuant to A.R.S. § 45-632, or by another person in a form acceptable to the Director, there is a rebuttable presumption that the annual report was filed with the responsible party's knowledge, consent, and authorization.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4). Amended to correct typographical error under A.A.C. R1-1-109 (Supp. 01-2). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1005. Management Plan Monitoring and Reporting Requirements

A responsible party who is required by a provision of a management plan to comply with monitoring and reporting requirements shall comply with such requirements and shall include all such information in an annual account or annual report.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4).

R12-15-1006. Reporting Requirements for Holders of Recovery Well Permits

A responsible party recovering water during a year pursuant to a recovery well permit shall include in the annual report required by A.R.S. § 45-875.01 the names of any persons, other than non-irrigation customers of cities, towns, private water companies and irrigation districts, to whom the responsible party delivered the recovered water during the year, the quantity of recovered water delivered to each person named, and the uses to which the recovered water was applied. If the recovered water included commingled groundwater, decreed or appropriate surface water other than spillwater, central Arizona project water, effluent or spillwater, the responsible party shall include in the annual report an estimate of the quantity of each type of water delivered to each person named in the annual report or put to a specific use by the responsible party.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1007. Reporting Requirements for Annual Account

A person required to file an annual account pursuant to A.R.S. § 45-468 shall account for water provided to the following classes of users:

1. Cities and towns,
2. Private water companies,
3. Irrigation districts,
4. Dairies,
5. Metal mining facilities,
6. Cattle feed lots,
7. Turf-related facilities,
8. Sand and gravel facilities,
9. Electrical power generation facilities,
10. Other industrial users.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4).

R12-15-1008. Information Required to Maintain an Operating Flexibility Account

- A. A responsible party who withdraws, receives, or uses groundwater during a calendar year pursuant to an irrigation grandfathered right, including any in lieu water received pursuant to a groundwater savings facility permit issued pursuant to A.R.S. § 45-812.01, shall include the following information for the calendar year in an annual report filed pursuant to A.R.S. § 45-467 or 45-632:
 1. The quantity of groundwater withdrawn from each well.
 2. The quantity of groundwater withdrawn and delivered to another person for irrigation purposes.
 3. The quantity of groundwater received from a city, town, private water company, or irrigation district, including any in lieu water received pursuant to a groundwater savings facility permit issued pursuant to A.R.S. § 45-812.01.
 4. The quantity of groundwater received from a person other than a city, town, private water company, or irrigation district, including any in lieu water received pursuant to a groundwater savings facility permit issued pursuant to A.R.S. § 45-812.01.
 5. The quantity of effluent received.
 6. The quantity of decreed or appropriate surface water received, other than normal flow and spillwater.
 7. The quantity of normal flow received.
 8. The quantity of spillwater received.
 9. The quantity of tailwater used.
 10. The quantity of tailwater delivered in accordance with the provisions of R12-15-1010(A), and the farm or irrigation district to which the tailwater was delivered.
 11. The quantity of central Arizona project water received.
 12. The quantity of any surface water received and not accounted for pursuant to subsections (6) through (11) of this subsection.
 13. The number of surface water right acres in the farm to which the irrigation grandfathered right is appurtenant.
 14. The quantity of water used for the legal irrigation of acres in the farm to which irrigation grandfathered rights are not appurtenant. If the responsible party omits this information, the Director shall presume that the total amount of water received or used for the irrigation of the farm was applied to acres to which irrigation grandfathered rights are appurtenant.

15. Any other information the Director may reasonably require to accomplish the management goals of the applicable active management area.
- B. A water deliverer shall include the following information for an accounting period in an annual account filed pursuant to A.R.S. § 45-468:
1. The quantity of groundwater delivered to each farm, including any in lieu water delivered pursuant to a groundwater savings facility permit issued pursuant to A.R.S. § 45-812.01.
 2. The quantity of normal flow delivered to each farm.
 3. The quantity of spillwater delivered to each farm.
 4. The quantity of decreed or appropriate surface water, other than normal flow and spillwater, delivered to each farm.
 5. The quantity of central Arizona project water delivered to each farm.
 6. The quantity of decreed or appropriate surface water, other than normal flow and spillwater, delivered for use within the service area of the water deliverer, including all farm and non-farm deliveries.
 7. The number of surface water right acres within the service area of the water deliverer.
 8. The quantity of effluent delivered to each farm.
 9. Any other information the Director may reasonably require to accomplish the purposes of A.R.S. § 45-468.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1009. Credits to Operating Flexibility Account

- A. Except as provided in subsection (B) of this Section and in R12-15-1010, if the total amount of water from all sources other than spillwater used by a farm for irrigation purposes in a calendar year is less than the farm's maximum annual groundwater allotment for the year, the Director shall register the difference as a credit to the farm's operating flexibility account.
- B. If a farm is within the service area of a water deliverer, the Director shall reduce the credit as calculated pursuant to subsection (A) of this Section by an amount equal to the difference between the farm's pro rata share of the total quantity of decreed or appropriate surface water, other than normal flow or spillwater, delivered by the water deliverer during the year for use within its service area, and the quantity of water actually received by the farm during the year. The Director shall determine the farm's pro rata share by dividing the number of surface water right acres in the farm that are within the service area of the water deliverer by the total number of surface water right acres within the service area of the water deliverer, and multiplying the quotient by the total quantity of decreed or appropriate surface water, other than normal flow or spillwater, delivered by the water deliverer during the year for use within its service area.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1010. Operating Flexibility Account; Tailwater

- A. When calculating credits or debits to a farm's operating flexibility account for a year, the Director shall exclude from the total amount of water used on the farm during that year the amount of any tailwater that originated on the farm and was delivered from the farm to another farm or to an irrigation district for irrigation purposes during the year if all of the following apply:
1. Prior to January 1 of the year in which the deliveries of tailwater take place, the Director approves a written plan to measure and record the tailwater deliveries. The plan shall include:
 - a. The installation and use of a totalizing water measuring device that will record tailwater deliveries with no greater than a 10 percent margin of error.
 - b. Procedures for keeping accurate records of the tailwater deliveries.
 - c. A description of how the tailwater will be delivered.
 - d. An identification of the farm or irrigation district to which the tailwater will be delivered.
 2. The person has measured, recorded, and delivered the tailwater in accordance with the plan approved under subsection (A)(1) of this Section.
 3. The tailwater was delivered directly from the farm on which it originated to:
 - a. A specified farm that used the tailwater for the legal irrigation of irrigation acres or surface water right acres on that farm, or
 - b. A specified irrigation district that delivered the tailwater for the legal irrigation of irrigation acres or surface water right acres within that district.
- B. A person who delivers tailwater in accordance with subsection (A) of this Section, and a person who directly receives and uses the tailwater pursuant to subsection (A)(3)(a) of this Section, shall account for and report the tailwater as if it were comprised of a mixture of groundwater, decreed and appropriate surface water other than normal flow, central Arizona project water, spillwater, other surface water, and effluent, as applicable, in the same proportions as those types of water comprise the total amount of water other than normal flow received or withdrawn for irrigation use during the calendar year on the farm on which the tailwater originated.
- C. A person who uses tailwater that has not been delivered and accounted for as provided in subsections (A) and (B) of this Section may credit against the person's use of groundwater in a calendar year the amount of the tailwater used during the calendar year if the use of such tailwater would cause a debit to be incurred. The credit shall be applied only against the person's operating flexibility account debits that otherwise would have been incurred that year and shall not be used to discharge debits from prior years or accumulate credits for future years. For purposes of calculating credits to the person's operating flexibility account, the Director shall treat tailwater as groundwater, unless reported otherwise according to its source.
- D. An irrigation district that receives tailwater pursuant to subsection (A)(3)(b) shall account for the water in the same manner as other water in the district's distribution system.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1011. Statement of Operating Flexibility Account

- A. The Director shall annually issue to each owner or user of an irrigation grandfathered right for which a current annual report has been filed a statement of the operating flexibility account setting forth the status of the operating flexibility account for the farm, based on the information submitted in the annual report filed for the right.
- B. Upon a motion or on the initiative of the Director, the Director may amend a statement of operating flexibility account at any time to correct clerical mistakes or to adjust the balance of the account based on information submitted in an amended or late annual report. The Director shall give written notice of any amendments made pursuant to this subsection to the person to whom the statement of operating flexibility account was issued.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1012. Rule of Construction

Nothing in A.A.C. R12-15-1001 through R12-15-1011 shall be construed to determine the legality of any water use for which an accounting is required under these rules.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4).

R12-15-1013. Retention of Records for Annual Accounts and Annual Reports

The responsible party shall keep and maintain, for at least three calendar years following the filing of an annual account or an annual report, all records which may be necessary to verify the information and data contained therein.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4).

R12-15-1014. Late Filing or Payment of Fees; Extension Penalties

- A. An annual account, an annual report, or a request for extension pursuant to subsection (E) of this rule shall be deemed to be filed at the time a complete annual account, a complete annual report or a request for extension is hand-delivered to any Department office, or at the time the envelope in which it is mailed is postmarked.
- B. Except as provided in subsection (C) of this Section, groundwater withdrawal fees and long-term storage credit recovery fees are deemed paid at the time the fees are hand-delivered to any Department office, or at the time the envelope in which they are mailed is postmarked.
- C. If any groundwater withdrawal fees or long-term storage credit recovery fees are paid with a negotiable instrument that is not honored and paid upon the Department's initial demand, the fees are deemed paid at the time the Department actually receives the fees in cash or when the negotiable instrument is honored and paid to the Department.
- D. If an annual account or an annual report filed on or before the date required by the applicable statute is found by the Director to be incomplete, the Director shall notify the responsible party of the inadequacies and allow the responsible party 30 days from the date of the notice to provide the missing information in a form prescribed by the Director. If the responsible party does not provide the missing information within 30 days from the date of the notice, late penalties under A.R.S. §§ 45-437, 45-632, 45-875.01, 45-876.01, 45-877.01, 45-878.01 or 45-1004 shall begin to accrue on the 31st day following the date of the notice. The Director shall not recommend to a court, pursuant to A.R.S. §§ 45-634, 45-635, 45-881.01, 45-882.01, 45-1062 or 45-1063, that civil penalties be imposed through the first 30 days following the date of the notice. However, if the inadequacy included the failure to pay all groundwater withdrawal fees due or all long-term storage credit recovery fees due, late penalties under A.R.S. §§ 45-614 or 45-874.01 shall begin to accrue on April 1, except as provided in subsection (E) of this Section.
- E. A responsible party required to file an annual account or annual report for a year may request a 30-day extension of the first day of accrual of the late penalties under A.R.S. §§ 45-437, 45-614, 45-632, 45-874.01, 45-875.01, 45-876.01, 45-877.01, 45-878.01 or 45-1004 and of the civil penalties that the Director may recommend that a court impose pursuant to A.R.S. §§ 45-634, 45-635, 45-881.01, 45-882.01, 45-1062 or 45-1063. The request shall be filed no later than the date the annual account or annual report is required to be filed under the applicable statute. The Director shall grant a request for a 30-day extension if good cause is shown. If the Director grants the request, the late penalties and civil penalties shall begin to accrue on the first day after the 30-day extension period, except that if the Director finds that the person making the request presented false or misleading information to the Director and the Director relied on that information in granting the request, the late penalties and civil penalties shall begin to accrue as if the request was not granted. The Director shall not grant an extension to a responsible party who was granted an extension in the preceding calendar year and who subsequently failed to file a complete annual account or annual report and pay all groundwater withdrawal fees and all long-term storage credit recovery fees due within the 30-day extension period.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1015. Reporting Requirements for Conveyances of Grandfathered Rights and Groundwater Withdrawal Permits

- A. A person who is required by A.R.S. § 45-482 to notify the Director of a conveyance of a grandfathered right shall file a notice of conveyance, on a form prescribed by the Director, within 30 days of the conveyance. All parties to the conveyance may use a single form for the required notice. Except provided in subsection (B) of this rule, the notice of conveyance shall include an accounting of the amount of water withdrawn or received pursuant to that grandfathered right from January 1 to the date of conveyance for that calendar year.
- B. If the person to whom a grandfathered right is conveyed is unable, because of extraordinary circumstances and good cause shown, to perform the accounting otherwise required by subsection (A) of this rule, the Director may waive the requirement for that person.

- C. If a person, including a person who is granted a waiver pursuant to subsection (B) of this rule, fails to include the required accounting in a timely filed notice of conveyance pursuant to subsection (A) of this rule, the Director shall determine the amount of groundwater withdrawn or received pursuant to the grandfathered right from January 1 to the date of conveyance for that calendar year. Such a person shall bear the burden, in any subsequent administrative or judicial proceeding, of establishing by clear and convincing evidence that the Director's determination was incorrect.
- D. A person requesting the Director's approval of a proposed conveyance of a groundwater withdrawal permit pursuant to A.R.S. § 45-520(B) shall include with such request the quantity of groundwater withdrawn pursuant to the groundwater withdrawal permit for that calendar year and all other information required to be submitted pursuant to A.R.S. § 45-632.

Historical Note

Adopted effective December 12, 1990 (Supp. 90-4).

R12-15-1016. Spillwater Reporting by Water Deliverers

A water deliverer that delivers spillwater during a year shall include the following information in the annual account or annual report submitted by the water deliverer for that year:

1. The total quantity of spillwater delivered for non-irrigation uses during the year.
2. The total quantity of spillwater delivered for irrigation uses during the year.
3. Any other information the Director may reasonably require to determine whether the water qualifies as spillwater under R12-15-1001(10).

Historical Note

New Section made by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1017. Maintenance and Filing of Annual Reports Required by A.R.S. § 45-343

A community water system required to file an annual report under A.R.S. § 45-343 shall maintain the report on a calendar year basis and shall file the report with the Director no later than June 1 of each year for the preceding calendar year.

Historical Note

New Section made by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

ARTICLE 11. INSPECTIONS AND AUDITS**R12-15-1101. Inspections**

- A. For the purpose of this rule, "inspection" means an entry by the Director at reasonable times onto private or public property for any of the following purposes:
1. To obtain factual data or access to records required to be kept under A.R.S. §§ 45-632, 45-879.01, or 45-1004.
 2. To inspect a well or another facility for the withdrawal, transportation, use, measurement, or recharge of groundwater under A.R.S. § 45-633.
 3. To inspect a facility that is used for the purpose of water storage, stored water recovery, or stored water use under A.R.S. § 45-880.01(A).
 4. To inspect a body of water under A.R.S. § 45-135 or to ascertain compliance with A.R.S. Title 45, Chapter 1, Article 3.
 5. To inspect or to obtain factual data or access to records pursuant to any Section of A.R.S. Title 45 that requires the Director to adopt rules for conducting inspections, examining records, and obtaining warrants.
 6. To inspect facilities used for the withdrawal, diversion, or use of water pursuant to a water exchange under A.R.S. § 45-1061.
- B. Not less than seven days prior to an inspection, the Director shall mail notice of the inspection by first class letter to the owner, manager or occupant of the property. The notice shall include the statutory authorization and purpose for the inspection. The notice shall specify a date and time certain or a seven-day period within which the inspection may take place. If a request is made before the seven-day period, the Director shall schedule the inspection for a time certain within the seven-day period to allow an opportunity for a representative of the property to be present at the inspection. The notice shall include the name and telephone number of a Department employee who may be contacted to arrange such an appointment.
- C. Whenever practical, Department employees shall minimize disruptions to on-going operations caused by an inspection.
- D. If the property is controlled or secured against entry at the time specified in the notice of inspection but consent to the inspection was not denied, the Director shall give a second notice in the manner prescribed in subsection (B) before seeking a search warrant or its equivalent. The second notice shall request that a representative of the property be present at the inspection to accompany Department personnel.
- E. If the Director gives notice of an inspection and is not permitted to conduct an inspection, the Director may apply for and obtain a search warrant or its equivalent.
- F. Notice of inspection shall not be required under subsections (B) and (D) of this rule if the Director reasonably believes that notice would frustrate the enforcement of A.R.S. Title 45, or where entry is sought for the sole purpose of inspecting water measuring devices required pursuant to A.R.S. § 45-604.
- G. The Director shall mail a copy of the report of the inspection either to the person to whom the notice of inspection was directed, or to the owner, manager or occupant of the property if no notice of inspection was given. The report shall include the date of the inspection and a short summary of the findings. If no notice was given, the report shall include an explanation of the reason for determining that notice would not be given, unless providing the explanation would frustrate enforcement of A.R.S. Title 45. An aggrieved person may file with the Director written comments on the report within 30 days after the report is mailed.
- H. The owner, manager or occupant of the property may waive the provisions for notice contained in this rule.
- I. The Director shall comply with the requirements of A.R.S. § 41-1009 when conducting inspections under this Section.

Historical Note

Adopted effective August 31, 1992 (Supp. 92-3). Amended effective July 22, 1994 (Supp. 94-3). Amended by final rulemaking at 11 A.A.R. 5395, effective February 4, 2006 (Supp. 05-4).

R12-15-1102. Audits

- A. For the purpose of this rule, "representative" means
1. An officer or director of a corporation subject to the audit,
 2. A general partner of a partnership subject to the audit, or
 3. A person who appears at an audit and produces a signed authorization to act on behalf of the person subject to the audit.
- B. This rule applies to audits conducted pursuant to A.R.S. §§ 45-633(C), 45-880.01, and any other Section of A.R.S. Title 45 that authorizes the Director to require a person to appear at the Director's office and produce records and information and that also requires the Director to adopt rules for conducting inspections, examining records, and obtaining warrants.
- C. No less than 20 days prior to an audit, the Director shall mail notice of the audit by first class letter to the person that is the subject of the audit. The notice shall state the date, time and place of the audit. The notice shall specify the records or information which the person must produce. The notice shall also include the statutory authorization and purpose for the audit and the name and telephone number of a Department employee who may be contacted for further information. The audit shall be held at the Department's offices, unless the Director grants a request to have the audit conducted at a different location.
- D. The person subject to the audit or a representative shall appear at the scheduled time and shall produce the records and information specified in the notice. The person subject to the audit or a representative may make one request to reschedule the audit, which the Department shall grant if practicable.
- E. The Director shall mail a copy of the report of the audit to the person subject to the audit. An aggrieved person may file with the Director written comments on the report within 30 days after the report is mailed.
- F. The person subject to the audit may waive the provisions for notice contained in this rule.

Historical Note

Adopted effective August 31, 1992 (Supp. 92-3). Amended effective July 22, 1994 (Supp. 94-3).

ARTICLE 12. DAM SAFETY PROCEDURES**R12-15-1201. Applicability**

- A. This Article applies to any artificial barrier meeting the specifications of A.R.S. § 45-1201(1) as interpreted by R12-15-1204. This Article applies to an application for the construction of a dam and reservoir; an application to reconstruct, repair, alter, enlarge, breach, or remove an existing dam and reservoir, including a breached or damaged dam; operation and maintenance of an existing dam and reservoir; and enforcement. A structure identified in R12-15-1203 is exempt from this Article.
- B. This Article is applicable to any dam regardless of hazard potential classification, with the following exceptions:
1. R12-15-1208, R12-15-1209, R12-15-1213, R12-15-1221, R12-15-1225, and R12-15-1226 apply only to a dam classified as a high or significant hazard potential dam.
 2. R12-15-1210 applies only to a dam classified as a low hazard potential dam. A low hazard potential dam is exempt from R12-15-1208, R12-15-1209, R12-15-1211, R12-15-1213, R12-15-1221, R12-15-1225, and R12-15-1226.
 3. R12-15-1211 applies only to a dam classified as a very low hazard potential dam. A very low hazard potential dam is exempt from R12-15-1208, R12-15-1209, R12-15-1210, R12-15-1212, R12-15-1213, R12-15-1215, R12-15-1216, R12-15-1221, R12-15-1225, and R12-15-1226.
 4. R12-15-1216(B) applies only to an embankment dam.

Historical Note

Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-01 renumbered without change as Section R12-15-1201 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1202. Definitions

In addition to the definitions provided in A.R.S. § 45-1201, the following definitions are applicable to this Article:

1. "Alteration or repair of an existing dam or appurtenant structure" means to make different from the originally approved construction drawings and specifications or current condition without changing the height or storage capacity of the dam or reservoir, except for ordinary repairs and general maintenance as prescribed in R12-15-1217.
2. "Appurtenant structure" means any structure that is contiguous and essential to the safe operation of the dam including embankments, saddle dikes, outlet works and controls, diversion ditches, spillway and controls, access structures, bridges, and related housing at a dam.
3. "Classification of dams" means the placement of dams into categories based upon an evaluation of the size and hazard potential, regardless of the condition of the dam.
4. "Concrete dam" means any dam constructed of concrete, including arch, gravity, arch-gravity, slab and buttress, and multiple arch dams. A dam that only has a concrete facing is not a concrete dam.
5. "Construction" means any activity performed by the owner or someone employed by the owner that is related to the construction, reconstruction, repair, enlargement, removal, or

alteration of any dam, unless the context indicates otherwise. Construction is performed after approval of an application and before issuance of a license.

6. "Dam failure inundation map" means a map depicting the maximum area downstream from a dam that would be flooded in the event of the worst condition failure of the dam.
7. "Department" means the Arizona Department of Water Resources.
8. "Director" means the Director of the Arizona Department of Water Resources or the Director's designee.
9. "Embankment dam" means a dam that is constructed of earth or rock material.
10. "Emergency spillway" means a spillway designed to safely pass the inflow design flood routed through the reservoir. If the flow is controlled by gates, it is a controlled spillway. If the flow is not controlled by gates, it is an uncontrolled spillway.
11. "Engineer" means a Professional Engineer registered and licensed in accordance with A.R.S. Title 32, Chapter 1, with proficiency in engineering and knowledge of dam technology.
12. "Enlargement to an existing dam or appurtenant structure" means any alteration, modification, or repair that increases the vertical height of a dam or the storage capacity of the reservoir.
13. "Flashboards" mean timber, concrete, or steel sections placed on the crest of a spillway to raise the retention water level that may be quickly removed at time of flood either by a tripping device or by designed failure of the flashboards or their supports.
14. "Flood control dam" means a dam that uses all of its reservoir storage capacity for temporary impoundment of flood waters and collection of sediment or debris.
15. "Hazard potential" means the probable incremental adverse consequences that result from the release of water or stored contents due to failure or improper operation of a dam or appurtenances.
16. "Hazard potential classification" means a system that categorizes dams according to the degree of probable incremental adverse consequences of failure or improper operation of a dam or appurtenances. The hazard potential classification does not reflect the current condition of the dam with regard to safety, structural integrity, or flood routing capacity.
17. "Height" means the vertical distance from the lowest elevation of the outside limit of the barrier at its intersection with the natural ground surface to the spillway crest elevation. For the purpose of determining jurisdictional status, the lowest elevation of the outside limit of the barrier may be the outlet pipe invert elevation if the outlet is constructed below natural ground.
18. "Impound" means to cause water or a liquid to be confined within a reservoir and held with no discharge.
19. "Incremental adverse consequences" means under the same loading conditions, the additional adverse consequences such as economic, intangible, lifeline, or human losses, that would occur due to the failure or improper operation of the dam over those that would have occurred without failure or improper operation of the dam.
20. "Inflow design flood" or "IDF" means the reservoir flood inflow magnitude selected on the basis of size and hazard potential classification for emergency spillway design requirements of a dam.
21. "Intangible losses" means incremental adverse consequences to property that are not economic in nature, including property related to social, cultural, unique, or resource-based values, including the loss of irreplaceable and unique historic and cultural features; long-lasting pollution of land or water; or long-lasting or permanent changes to the ecology, including fish and endangered species habitat identified and evaluated by a public natural resource management or protection agency.
22. "Jurisdictional dam" means a barrier that meets the definition of a dam prescribed in A.R.S. § 45-1201 that is not exempted by R12-15-1203 over which the Department of Water Resources exercises jurisdiction.
23. "Levee" means an embankment of earth, concrete, or other material used to prevent a watercourse from spreading laterally or overflowing its banks. A levee is not used to impound water.
24. "License" means license of final approval issued by the Director upon completion or enlargement of a dam under A.R.S. § 45-1209.
25. "Lifeline losses" mean disruption of essential services such as water, power, gas, telephone, or emergency medical services.
26. "Liquid-borne material" means mine tailings or other milled ore products transported in a slurry to a storage impoundment.
27. "Maximum credible earthquake" means the most severe earthquake that is believed to be possible at a point on the basis of geologic and seismological evidence.
28. "Maximum water surface" means the maximum elevation of the reservoir water level attained during routing of the inflow design flood.
29. "Natural ground surface" means the undisturbed ground surface before excavation or filling, or the undisturbed bed of the stream or river.
30. "Outlet works" means a closed conduit under or through a dam or through an abutment for the controlled discharge of the contents normally impounded by a dam and reservoir. The outlet works include the inlet and outlet structures appurtenant to the conduit. Outlet works may be controlled or uncontrolled.
31. "Probable" means likely to occur, reasonably expected, and realistic.
32. "Probable maximum flood" or "PMF" means the flood runoff expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the region, including rain and snow where applicable. 1/2 PMF is that flood represented by the flood hydrograph with ordinates equal to 1/2 the corresponding ordinates of the PMF hydrograph.
33. "Probable maximum precipitation" means the greatest depth of precipitation for a given duration that is theoretically physically possible over a particular size storm area at a particular geographical location at a particular time of year.
34. "Reservoir" means any basin that contains or is capable of containing water or other liquids impounded by a dam.
35. "Residual freeboard" means the vertical distance between the highest water surface elevation during the inflow design flood and the lowest point at the top of the dam.
36. "Restricted storage" means a condition placed on a license by the Director to reduce the storage level of a reservoir because of a safety deficiency.
37. "Saddle dike or saddle dam" means any dam constructed in a topographically low area on the perimeter of a reservoir, required to contain the reservoir at the highest water surface elevation.
38. "Safe" means that a dam has sufficient structural integrity and flood routing capacity to make failure of the dam unlikely.
39. "Safe storage level" means the maximum reservoir water surface elevation at which the Director determines it is safe to impound water or other liquids in the reservoir.
40. "Safety deficiency" means a condition at a dam that impairs or adversely affects the safe operation of the dam.
41. "Safety inspection" means an investigation by an engineer or a person under the direction of an engineer to assess the safety of a dam and determine the safe storage level for a reservoir, which includes review of design reports, construction documents, and previous safety inspection reports of the dam, spillways, outlet facilities, seepage control and measurement systems, and permanent monument or monitoring installations.
42. "Spillway crest" means the highest elevation of the floor of the spillway along a centerline profile through the spillway.
43. "Storage capacity" means the maximum volume of water, sediment, or debris that can be impounded in the reservoir with no discharge of water, including the situation where an uncontrolled outlet becomes plugged. The storage capacity is reached when the water level is at the crest of the emergency spillway, or at the top of permanently mounted emergency spillway gates in the closed position. Storage capacity excludes dead storage below the natural ground surface.
44. "Surcharge storage" means the additional water storage volume between the emergency spillway crest or closed gates, and the top of the dam.
45. "Total freeboard" means the vertical distance between the emergency spillway crest and the top of the dam.
46. "Unsafe" means that safety deficiencies in a dam or spillway could result in failure of the dam with subsequent loss of human life or significant property damage.

Historical Note

Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-02 renumbered without change as Section R12-15-1202 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2). Amended to correct typographical error under A.A.C. R1-1-109 (Supp. 01-2).

R12-15-1203. Exempt Structures

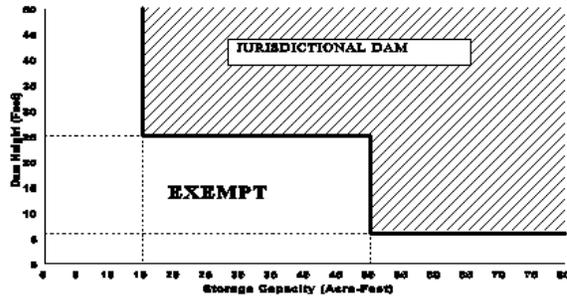
The following structures are exempt from regulation by the Department:

1. Any artificial barrier identified as exempt on Table 1 and defined as follows:
 - a. Less than 6 feet in height, regardless of storage capacity.
 - b. Between 6 and 25 feet in height with a storage capacity of less than 50 acre-feet.
 - c. Greater than 25 feet in height with 15 acre-feet or less of storage capacity.
2. A dam owned by the federal government. A dam designed by the federal government for any non-federal entity or person that will subsequently be owned or operated by a person or entity defined as an owner in A.R.S. § 45-1201 is subject to jurisdiction, beginning with design and construction of the dam.
3. A dam owned or operated by an agency or instrumentality of the federal government, if a dam safety program at least as stringent as this Article is applicable to and enforced against the agency or instrumentality.
4. A transportation structure such as a highway, road, or railroad fill that exists solely for transportation purposes. A transportation structure designed, constructed, or modified with the intention of impounding water on an intermittent or permanent basis and meeting the definition of dam in A.R.S. § 45-1201 is subject to jurisdiction.
5. A levee constructed adjacent to or along a watercourse, primarily to control floodwater.
6. A self-supporting concrete or steel water storage tank.
7. An impoundment for the purpose of storing liquid-borne material.
8. A release-contained barrier as defined by A.R.S. § 45-1201(5).

Historical Note

Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-03 renumbered without change as Section R12-15-1203 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

Table 1. Exempt Structures

**Historical Note**

New Table adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1204. Provision for Guidelines

The Department may develop and adopt substantive policy statements that serve as dam safety guidelines to aid a dam owner or engineer in complying with this Article. The Department recommends that dam owners and engineers consult design guidelines published by agencies of the federal government, including the U.S. Bureau of Reclamation, the U.S. Army Corps of Engineers, the Natural Resources Conservation Service, and the Federal Energy Regulatory Commission, for the design of concrete, roller compacted concrete, stone masonry, timber, inflatable rubber, and mechanically-stabilized earth dams. The Director may require that other criteria be used or revise any of the specific criteria for the purpose of dam safety. An owner shall obtain advance approval by the Director of design criteria.

Historical Note

Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-04 renumbered without change as Section R12-15-1204 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1205. General Responsibilities

- A. Each owner is responsible for the safe design, operation, and maintenance of a dam. The owner shall operate, maintain, and regularly inspect a dam so that it does not constitute a danger to human life or property. The owner of a high or significant hazard potential dam shall provide timely warning to the Department and all other persons listed in the emergency action plan of problems at the dam. The owner shall develop and maintain effective emergency action plans and coordinate those plans with local officials as prescribed in R12-15-1221.
- B. The owner shall conduct frequent observation of the dam, as prescribed in the emergency action plan and as follows:
1. The owner shall increase the frequency of observation when the reservoir is full, during heavy rains or flooding, and following an earthquake.
 2. The owner shall report to the Director any condition that threatens the safety of the dam as prescribed in R12-15-1224(A). The owner shall make the report as soon as possible, but not later than 12 hours after discovery of the conditions.
 3. If dam failure appears imminent, the owner shall notify the county sheriff or other emergency official immediately.
 4. The owner is responsible for the safety of the dam and shall take action to lower the reservoir if it appears that the dam has weakened or is in danger of failing.
- C. The owner of a dam shall install, maintain, and monitor instrumentation to evaluate the performance of the dam. The Director shall require site-specific instrumentation that the Director deems necessary for monitoring the safety of the dam when failure may endanger human life and property. Conditions that may require monitoring include land subsidence, earth fissures, embankment cracking, phreatic surface, seepage, and embankment movements.
- D. The owner shall perform timely maintenance and ordinary repair of a dam. The owner shall implement an annual plan to inspect the dam and accomplish the maintenance and ordinary repairs necessary to protect human life and property.
- E. If a change of ownership of a dam occurs, the new owner shall notify the Department within 15 days after the date of the transaction and provide the mailing address and telephone number where the new owner can be contacted. Within 90 days after the date of the transaction, the new owner shall provide the name and telephone number of the individual or individuals who are responsible for operating and maintaining the dam.

Historical Note

Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-05 renumbered without change as Section R12-15-1205 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1206. Classification of Dams

- A. Size Classification. Dams are classified by size as small, intermediate, or large. Size is determined with reference to Table 2. An owner or engineer shall determine size by storage capacity or height, whichever results in the larger size.
- B. Hazard Potential Classification
1. The Department shall base hazard potential classification on an evaluation of the probable present and future incremental adverse consequences that would result from the release of water or stored contents due to failure or improper operation of the dam or appurtenances, regardless of the condition of the dam. The evaluation shall include land use zoning and development projected for the affected area over the 10 year period following classification of the dam. The Department considers all of the following factors in hazard potential classification: probable loss of human life, economic and lifeline losses, and intangible losses identified and evaluated by a public resource management or protection agency.
 - a. The Department bases the probable incremental loss of human life determination primarily on the number of permanent structures for human habitation that would be impacted in the event of failure or improper operation of a dam. The Department considers loss of human life unlikely if:
 - i. Persons are only temporarily in the potential inundation area;
 - ii. There are no residences or overnight campsites; and
 - iii. The owner has control of access to the potential inundation area and provides an emergency action plan with a process for warning in the event of a dam failure or improper operation of a dam.
 - b. The Department bases the probable economic, lifeline, and intangible loss determinations on the property losses, interruptions of services, and intangible losses that would be likely to result from failure or improper operation of a dam.
 2. The 4 hazard potential classification levels are very low, low, significant, and high, listed in order of increasing probable adverse incremental consequences, as prescribed in Table 3. The Director shall classify intangible losses by considering the common or unique nature of features or habitats and temporary or permanent nature of changes.
 - a. Very Low Hazard Potential. Failure or improper operation of a dam would be unlikely to result in loss of human life and would produce no lifeline losses and very low economic and intangible losses. Losses would be limited to the 100 year floodplain or property owned or controlled by the dam owner under long-term lease. The Department considers loss of life unlikely because there are no residences or overnight camp sites.
 - b. Low Hazard Potential. Failure or improper operation of a dam would be unlikely to result in loss of human life, but would produce low economic and intangible losses, and result in no disruption of lifeline services that require more than cosmetic repair. Property losses would be limited to rural or agricultural property, including equipment, and isolated buildings.
 - c. Significant Hazard Potential. Failure or improper operation of a dam would be unlikely to result in loss of human life but may cause significant or high economic loss, intangible damage requiring major mitigation, and disruption or impact on lifeline facilities. Property losses would occur in a predominantly rural or agricultural area with a transient population but significant infrastructure.
 - d. High Hazard Potential. Failure or improper operation of a dam would be likely to cause loss of human life because of residential, commercial, or industrial development. Intangible losses may be major and potentially impossible to mitigate, critical lifeline services may be significantly disrupted, and property losses may be extensive.
 3. An applicant shall demonstrate the hazard potential classification of a dam before filing an application to construct. The Department shall review the applicant's demonstration early in the design process at pre-application meetings prescribed in R12-15-1207(D).
 4. The Department shall review the hazard potential classification of each dam during each subsequent dam safety inspection and revise the classification in accordance with current conditions.

Historical Note

Adopted effective November 2, 1978 (Supp. 78-6). Former Section R12-15-06 renumbered without change as Section R12-15-1206 effective October 8, 1982 (Supp. 82-5). Section repealed; new Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

Exhibit A. Repealed**Historical Note**

Exhibit repealed by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000; a Historical Note for Exhibit A did not exist before this date (Supp. 00-2).

Table 2. Size Classification

Category	Storage Capacity (acre-feet)	Height (feet)
Small	50 to 1,000	25 to 40
Intermediate	greater than 1,000 and not exceeding 50,000	higher than 40 and not exceeding 100

Large greater than 50,000 higher than 100

Historical Note

New Table adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

Table 3. Downstream Hazard Potential Classification

Hazard Potential Classification	Probable Loss of Human Life	Probable Economic, Lifeline, and Intangible Losses
Very Low	None expected	Economic and lifeline losses limited to owner's property or 100-year floodplain. Very low intangible losses identified.
Low	None expected	Low
Significant	None expected	Low to high
High	Probable - One or more expected	Low to high (not necessary for this classification)

Historical Note

New Table adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1207. Application Process

- A. An applicant shall obtain written approval from the Director before constructing, reconstructing, repairing, enlarging, removing, altering, or breaching a dam. Application requirements differ according to the hazard potential of the dam.
- To construct, reconstruct, repair, enlarge, or alter a high or significant hazard potential dam, the applicant shall comply with R12-15-1208.
 - To breach or remove a high or significant hazard potential dam, the applicant shall comply with R12-15-1209.
 - To construct, reconstruct, repair, enlarge, alter, breach, or remove a low hazard potential dam, the applicant shall comply with R12-15-1210.
 - To construct, reconstruct, repair, enlarge, alter, breach, or remove a very low hazard potential dam, the applicant shall comply with R12-15-1211.
- B. An application shall not be filed with the Director under the following circumstances:
- The dam is exempt under R12-15-1203;
 - A dam owner starts repairs to an existing dam that are necessary to safeguard human life or property and the Director is notified without delay;
 - The owner performs general maintenance or ordinary repairs as prescribed in R12-15-1217(A) or (B); or
 - Breach, removal, or reduction of a very low hazard dam as prescribed in R12-15-1211(C).
- C. An applicant is not required to comply with a requirement in this Article if the Director finds that, considering the site characteristics and the proposed design, the requirement is unduly burdensome or expensive and is not necessary to protect human life or property. The Director shall consider the size, hazard potential classification, physical site conditions, and applicability of a requirement to a proposed dam. The Director shall state in writing the reason or reasons the applicant is not required to comply with a requirement.
- D. An applicant shall schedule pre-application conferences with the Department to discuss the requirements of this Article and to resolve issues essential to the design of a dam while the design is in preliminary stages. The Director shall view the dam site during the pre-application process. The following are examples of issues for pre-application conferences: the hazard potential classification, the approximate inflow design flood, the basic design concepts, and any requirements that may be found by the Director to be unduly burdensome or expensive and not necessary to protect human life or safety. In addition, the applicant may submit preliminary design calculations to the Department for review and comment. The Department shall comment as soon as practicable, depending on the size of the submittal and the current workload.
- E. The Department shall review applications as follows:
- Applications will be received by appointment. During this meeting the Department shall make a brief review of the application to determine that the application contains each of the items required by R12-15-1208, R12-15-1209, R12-15-1210, or R12-15-1211.
 - Following receipt of an application submitted under R12-15-1208, R12-15-1209, R12-15-1210, or R12-15-1211, the Director shall complete an administrative review as prescribed in R12-15-401(1) and notify the applicant in writing whether the application is administratively complete. If the application is not administratively complete, the notification shall include a list of additional information that is required to complete the application.
 - After finding the application submitted under R12-15-1208, R12-15-1209, R12-15-1210, or R12-15-1211 administratively complete, the Director shall complete a substantive review as prescribed in R12-15-401(3) and notify the applicant in writing of the Director's approval or disapproval. If during this review period, the Director determines that there are defects in the application that would impact human life and property, a written notice of the defects shall be sent to the applicant.
 - An applicant may request in writing that the Director expedite the review of an application by employing an expert consultant on a contract basis under A.R.S. § 45-104(D). The Director shall establish on-call contracts with expert consultants to facilitate the process of expediting review. The Director may retain a consultant to review all or a portion of the application as necessary to expedite the process in response to an owner's request or to comply with time-frame rules. Before conducting the review, the consultant shall provide the Director and the applicant with a proposed time schedule and cost estimate. If the applicant agrees to the consultant's proposal for an expedited review of an application and the Director employs the consultant, the applicant shall pay to the Department the cost of the consultant's services in addition to the application fees. The Director retains the authority to review and approve, disapprove, or modify the findings and recommendations of the consultant.
 - The Director shall not approve an application in less than 10 days from the date of receipt.
 - If the Director disapproves the application, the Director shall provide the applicant with a statement of the Director's objections.
 - If the Director approves an application, the applicant shall submit in triplicate revised drawings and specifications that incorporate any required changes.
 - The Director shall return to the applicant 1 set of final construction drawings and specifications with the Department's approval stamp to be retained onsite during construction;
 - The Director shall retain for permanent state record 1 set of final construction drawings and specifications with the Department's approval stamp; and
 - The Director shall retain for use by the Department during construction the 3rd set of final construction drawings and specifications with the Department's approval stamp.
 - The Director shall impose conditions and limitations that the Director deems necessary to safeguard human life and property. Examples of the conditions of approval include but are not limited to:
 - The applicant shall not cover the foundation or abutment with the material of the dam until the Department has been given notice and a reasonable time to inspect and approve them.
 - The applicant shall start construction within 1 year from the date of approval.
 - The applicant shall maintain a safe storage level for an existing dam being reconstructed, repaired, enlarged, altered, or breached.
- F. An approval to construct a new dam or repair, enlarge, alter, breach, or remove an existing dam is valid for 1 year.
- If construction does not begin within 1 year, the approval is void.
 - Upon written request and good cause shown by the owner, the time for commencing construction may be extended. An applicant shall not start construction before the Director reviews the application for changes and grants approval.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1208. Application to Construct, Reconstruct, Repair, Enlarge, or Alter a High or Significant Hazard Potential Dam

- A. An application package to construct, reconstruct, repair, enlarge, or alter a high or significant hazard potential dam shall include the following prepared by or under the supervision of an engineer as defined in R12-15-1202(11).
- A completed application filed in duplicate on forms provided by the Director.
 - A design information summary or checklist of items prepared in duplicate on forms provided by the Director.
 - An initial application fee based on the total estimated project cost and computed in accordance with A.R.S. § 45-1204 and R12-15-151(B)(11).
 - A detailed estimate of project costs. Project costs are all costs associated with construction of the dam and appurtenant works including preliminary investigations and surveys, engineering design, supervision of construction, and any other engineering costs.
 - Two complete sets of construction drawings as prescribed in R12-15-1215(1).
 - Two complete sets of construction specifications as prescribed in R12-15-1215(2).
 - An engineering design report that includes information needed to evaluate all aspects of the design of the dam and appurtenances, including references with page numbers to support any assumptions used in the design, as prescribed in R12-15-1215(3). The engineering design report shall recommend a safe storage level for existing dams being reconstructed, repaired, enlarged, or altered.
 - A construction quality assurance plan describing all aspects of construction supervision.
 - A description of the use for the impounded or diverted water, proof of a right to appropriate, and a permit to store water as prescribed in A.R.S. §§ 45-152 and 45-161.
 - A long-term budget plan and evidence of financing, prepared using customary accounting principles, that demonstrate that the applicant has the financial capability to construct, operate, and maintain the dam in a safe manner. If the applicant does not have evidence that can be verified by an independent audit of the financial capability to construct, operate, and maintain the dam in a safe manner, the Director may require a performance bond for the entire cost of the proposed construction work.
- B. The following may be submitted with the application or during construction.
- An emergency action plan as prescribed in R12-15-1221.
 - An operation and maintenance plan to accomplish the annual maintenance.
 - An instrumentation plan regarding instruments that evaluate the performance of the dam.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1209. Application to Breach or Remove a High or Significant Hazard Potential Dam

- A. An applicant shall excavate the dam down to the level of the natural ground at the maximum section. Upon approval of the Director, additional breaches may be made. This provision shall not

- be construed to require more than total removal of the dam regardless of the flood magnitude. The breach or breaches shall be of sufficient width to pass the greater of:
1. The 100 year flood at a depth of less than 5 feet, or
 2. The 100 year flood at a normal flood depth of not more than 2 feet at a distance of 2,000 feet downstream of the dam.
- B. The sides of each breach shall be excavated to a slope ratio that is stable and not steeper than 1 horizontal to 1 vertical.
- C. Each breach shall be designed to prevent silt that has previously been deposited on the reservoir bottom and the excavated material from the breach from washing downstream.
- D. Before breaching the dam, the reservoir shall be emptied in a controlled manner that will not endanger lives or damage downstream property. The applicant shall obtain approval from the Director for the method of breaching or removal.
- E. An application package to breach or remove a high or significant hazard potential dam shall include the following prepared by or under the supervision of an engineer as defined in R12-15-1202(11).
1. The construction drawing or drawings for the breach or removal of a dam, including the location, dimensions, and lowest elevation of each breach.
 2. A long-term budget plan and evidence of financing, prepared using customary accounting principles, that demonstrate that the applicant has the financial capability to breach or remove the dam in a safe manner. If the applicant does not have evidence that can be verified by an independent audit of the financial capability to breach or remove the dam in a safe manner, the Director may require a performance bond for the entire cost of the proposed construction work.
 3. A construction quality assurance plan describing all aspects of construction supervision.
- F. Reduction of a high or significant downstream hazard potential dam to nonjurisdictional size may be approved by letter under the following circumstances:
1. The owner shall submit a completed application form and construction drawings for the reduction and the appropriate specifications, prepared by or under the supervision of an engineer as defined in R12-15-1202(11).
 2. The construction drawings and specifications shall contain sufficient detail to enable a contractor to bid on and complete the project.
 3. The plans shall comply with all requirements of this Section except that the breach is not required to be to natural ground.
 4. Upon completion of an alteration to nonjurisdictional size, the engineer shall file as constructed drawings and specifications with the Department.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1210. Application to Construct, Reconstruct, Repair, Enlarge, Alter, Breach, or Remove a Low Hazard Potential Dam

- A. An application package to construct, reconstruct, repair, enlarge, or alter a low hazard potential dam shall include the following prepared by or under the supervision of an engineer as defined in R12-15-1202(11).
1. A completed application filed in duplicate on forms provided by the Director.
 2. An initial application fee based on the total estimated project cost, computed in accordance with A.R.S. § 45-1204 and R12-15-151(B)(11).
 3. A detailed estimate of project costs. Project costs are all costs associated with construction of the dam and appurtenant works, including preliminary investigations and surveys, engineering design, supervision of construction, and any other engineering costs.
 4. The seal and signature of the responsible engineer in accordance with A.A.C. R4-30-304.
 5. A statement by the responsible engineer that classifies the dam as low hazard in accordance with R12-15-1206(B). The responsible engineer shall submit a map of the area that would be inundated by failure or improper operation of the dam. The responsible engineer shall demonstrate that failure or improper operation of the dam would be unlikely to result in:
 - a. Loss of human life. The demonstration may be based on an emergency action plan for persons who may be in the area of inundation;
 - b. Significant incremental adverse consequences; or
 - c. Significant intangible losses, as defined in R12-15-1202(21) and identified and evaluated by a public natural resource management or protection agency.
 6. Two complete sets of construction drawings as prescribed by R12-15-1215(1).
 7. Two complete sets of construction specifications as prescribed by R12-15-1215(2).
 8. An engineering design report that includes information needed to evaluate all aspects of the design of the dam and appurtenances, including references with page numbers to support any assumptions used in the design, as prescribed in R12-15-1215(3).
 9. A description of the use for the impounded or diverted water, proof of a right to appropriate, and a permit to store water as prescribed in A.R.S. §§ 45-152 and 45-161.
 10. A construction quality assurance plan clearly describing all aspects of construction supervision.
 11. A long-term budget plan and evidence of financing, prepared using customary accounting principles, that demonstrate that the applicant has the financial capability to construct, operate, and maintain the dam in a safe manner. If the applicant does not have evidence that can be verified by an independent audit of the financial capability to construct, operate, and maintain the dam in a safe manner, the Director may require a performance bond for the entire cost of the proposed construction work.
- B. An application package for the breach or removal of a low hazard potential dam shall include the following:
1. A completed application filed in duplicate on forms provided by the Director that contains the following information:
 - a. The name and address of the owner of the dam or the agent of the owner.
 - b. A description of the proposed removal.
 - c. The proposed time for beginning and completing the removal.
 2. An initial application fee based on the total estimated project cost and computed in accordance with A.R.S. § 45-1204 and R12-15-151(B)(11).
 3. A statement by the responsible engineer demonstrating both of the following:
 - a. That the dam will be excavated to the level of natural ground at the maximum section; and
 - b. That the breach or breaches will be of sufficient width to pass the greater of:
 - i. The 100 year flood at a depth of less than 5 feet, or
 - ii. The 100 year flood at a normal flood depth of not more than 2 feet at a distance of 2,000 feet downstream of the dam.
 - iii. Subsection (b) shall not be construed to require more than a total removal of the dam regardless of flood magnitude.
 - c. That the sides of the breach will be excavated to a slope ratio that is stable and not steeper than 1 horizontal to 1 vertical.
 4. A detailed estimate of project costs. Project costs are all costs associated with the removal of the dam and appurtenant works, including preliminary investigations and surveys, engineering design, supervision of removal, and any other engineering costs.
- C. An applicant intending to reduce a low hazard potential dam to nonjurisdictional size shall submit a written notice to the Director at least no less than 60 days before the date that construction begins.
- D. Within 45 days after receipt of a complete application package as prescribed by subsection (A) or (B), the Director shall either:
1. Determine that the dam falls within the low hazard potential classification; or
 2. Issue a written notice that the dam does not fall within the low hazard potential classification.
- E. The Director's determination that the proposed dam does not fall within the low hazard classification is an appealable agency action and subject to administrative and judicial review under A.R.S. Title 41, Chapter 6, Article 10.
- F. Upon completion of construction, the owner shall notify the Department in writing. The owner shall not use the dam or reservoir before issuance of a license unless the Director issues written approval.
- G. Within 90 days after completing construction, reconstruction, repair, enlargement, or alteration of a low hazard potential dam, the owner shall file the following:
1. An affidavit showing the actual cost of construction, reconstruction, repair, enlargement, or alteration of the dam. The owner shall submit a detailed accounting of the costs, including all engineering costs.
 2. An additional fee or refund request computed in accordance with A.R.S. § 45-1209 and R12-15-151(B)(11), based on the actual cost of construction, reconstruction, repair, enlargement, or alteration.
 3. A brief completion report summarizing the salient features of the project, including a description of the causes for any changes or deviations from the approved application package prepared by the engineer who supervised the construction, in accordance with A.R.S. Title 32, Chapter 1. The engineer shall indicate:
 - a. That the dam has been designed and constructed in compliance with basic principles of dam construction currently being practiced in the industry;
 - b. That the dam as constructed has structural integrity and flood routing capacity consistent with its hazard potential classification; and
 - c. That the as constructed drawings and the report accurately represent the construction of the dam.
 4. As constructed drawings prepared and sealed by the engineer who supervised the construction. The owner and the engineer shall maintain a record of the drawings.
- H. Upon receiving the Director's written approval, the owner may operate the dam and appurtenant works. Within 30 days after receipt of the information in subsection (G), the Director shall issue to the owner either a license or a notice that the dam and appurtenant works shall not be operated because the dam and appurtenant works do not qualify as low hazard or were not built according to the submitted design. The license shall include conditions of operation, including:
1. The safe storage level of the reservoir;
 2. A requirement that the dam be operated and maintained so that it does not constitute a danger to human life and property;
 3. A requirement that the conditions resulting in the low hazard classification be maintained throughout the life of the dam; and
 4. A requirement that the owner demonstrate in writing the low hazard classification in the manner prescribed by subsection (A)(5) every 5 years.
- I. Within 90 days after completing removal of a low hazard potential dam, the owner shall file the following. The Director shall remove the dam from jurisdiction upon approval of the submittal.
1. An affidavit showing the actual cost of removal of the dam. The owner shall submit a detailed accounting of the costs, including all engineering costs.
 2. An additional fee or refund request computed in accordance with A.R.S. § 45-1209 and R12-15-151(B)(11) based on the actual cost of removal.
 3. A brief completion report, including a description of the causes for any changes or deviations from the approved application package prepared by the engineer who supervised the construction, in accordance with A.R.S. Title 32, Chapter 1. The engineer shall certify that the as removed drawings and the report accurately represent the actual removal of the dam.
 4. As-removed drawings prepared and sealed by the engineer who supervised the removal. The owner and the engineer shall maintain a record of the drawings.
- J. An owner shall immediately commence repairs necessary to safeguard human life and property and prevent failure and improper operation of a low hazard potential dam. The owner shall notify the Department as soon as reasonably possible and in all cases within 10 days of commencing the required repairs.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2). Amended by final rulemaking at 13 A.A.R. 3022, effective October 6, 2007 (Supp. 07-3).

R12-15-1211. Application to Construct, Reconstruct, Repair, Enlarge, Alter, Breach, or Remove a Very Low Hazard Potential Dam

- A. An application package to construct, reconstruct, repair, enlarge, or alter a very low hazard potential dam shall include the following prepared by an engineer or a person under the supervision

of an engineer as defined in R12-15-1202(11).

1. A completed application filed in duplicate on forms provided by the Director that contains the following information:
 - a. The name and address of the owner of the dam or the agent of the owner.
 - b. The location, type, size, and height of the proposed dam and appurtenant works.
 - c. The storage capacity of the reservoir associated with the proposed dam.
 - d. The proposed time for beginning and completing construction.
 - e. A description of the use for the impounded or diverted water and proof of a right to impound that water.
2. The means, plans, and specifications by which the stream or body of water is to be dammed, by-passed, or controlled during construction.
3. Maps, drawings, and specifications of the proposed dam.
4. An initial application fee based on the total estimated project cost and computed in accordance with A.R.S. § 45-1204 and R12-15-151(B)(11).
5. A detailed estimate of project costs. Project costs are all costs associated with construction of the dam and appurtenant works, including preliminary investigations and surveys, engineering design, supervision of construction, and any other engineering costs.
6. A statement by the responsible engineer that classifies the dam as very low hazard in accordance with R12-15-1206(B). The responsible engineer shall submit a map of the area that would be inundated by failure or improper operation of the dam. The responsible engineer shall demonstrate that failure or improper operation would be unlikely to result in:
 - a. Loss of human life. The demonstration may be based on an emergency action plan for persons who may be in the area of inundation;
 - b. Significant incremental adverse consequences; or
 - c. Significant intangible losses, as defined in R12-15-1202(21) and identified and evaluated by a public natural resource management protection agency, because the dam has a size classification of either small or intermediate under R12-15-1206(A) and any release would be limited to the 100 year floodplain or property owned or controlled by the dam owner under long-term lease.
7. The seal and signature of the responsible engineer in accordance with A.R.S. Title 32, Chapter 1.
8. The drawings required by subsection (A)(3) shall include a plan view and maximum section of the dam; the outlet works; and the spillway plan, profile, and cross section.
9. The specifications required by subsection (A)(3) shall include the construction materials, testing criteria, and installation techniques.
- B. The Director may make other requirements for drawings and specifications for the proposed repair or alteration of a very low hazard potential dam. In determining other requirements, the Director shall consider the size and extent of the repair or alteration, the portions of the dam that will be repaired or altered, and whether the requirements elicit a description of the proposed construction work that is adequate to allow the Director to evaluate the repair or alteration.
- C. An owner intending to breach, remove, or reduce a very low hazard potential dam to nonjurisdictional size shall submit written notice to the Director at least 60 days before the date that construction begins.
- D. After receipt of a complete application package as prescribed by subsection (A), the Director shall either:
 1. Determine that the dam falls within the very low hazard classification and approve the application in writing; or
 2. Issue a written notice that the dam does not fall within the very low hazard classification.
- E. The Director's determination that the proposed dam does not fall within the very low hazard classification is an appealable agency action and subject to administrative and judicial review under A.R.S. Title 41, Chapter 6, Article 10.
- F. Upon completion of construction, the owner shall notify the Department in writing. The owner shall not use the dam and reservoir before receipt of a license unless the Director issues written approval.
- G. Within 90 days after completion of the construction, reconstruction, repair, enlargement, or alteration of a very low hazard potential dam, the owner shall file the following:
 1. An affidavit showing the actual cost of construction, reconstruction, repair, enlargement, or alteration of the dam. The owner shall submit a detailed accounting of the costs, including all engineering costs.
 2. An additional fee or refund request computed in accordance with A.R.S. § 45-1209 and R12-15-151(B)(11) based on the actual cost of construction, reconstruction, repair, enlargement, or alteration.
 3. A brief completion report summarizing the salient features of the project, including a description of the causes for any changes or deviations from the approved application package prepared by the engineer who supervised the construction in accordance with A.R.S. Title 32, Chapter 1. The report shall include:
 - a. That the dam has been designed and constructed in compliance with basic principles of dam construction currently being practiced in the industry;
 - b. That the dam as constructed has structural integrity and flood routing capacity consistent with its hazard potential classification; and
 - c. That the as constructed drawings and the report accurately represent the construction of the dam.
 4. As constructed drawings prepared by the engineer who supervised the construction. The owner and the engineer shall maintain a record of the drawings.
- H. Within 30 days after receipt of the information in subsection (G), the Director shall issue to the owner either a license or a notice that the dam and appurtenant works shall not be operated because the dam and appurtenant works do not qualify as very low hazard or were not built according to the submitted design. Upon receiving the Director's written approval, the owner may operate the dam and appurtenant works. The license shall include conditions of operation, including:
 1. The safe storage level of the reservoir;
 2. A requirement that the conditions resulting in the very low hazard classification be maintained throughout the life of the dam; and
 3. A requirement that the owner demonstrate in writing the very low hazard classification in the manner prescribed by subsection (A)(6) every 5 years.
- I. An owner shall immediately commence repairs necessary to safeguard human life and property and prevent failure or improper operation of a very low hazard potential dam. The owner shall notify the Department as soon as reasonably possible and in all cases within 10 days of commencing the required repairs.
- J. The Department may periodically inspect construction to confirm that it is proceeding according to the approved design and that proper construction quality assurance is being exercised by the owner's engineer. The owner, or the owner's engineer under the direction of the owner, shall remedy any unsatisfactory condition using the contractor.
- K. The owner shall provide the Department access to the dam site for purposes of inspecting all phases of construction, including the foundation, embankment and concrete placement, inspection and test records, and mechanical installations.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1212. Construction of a High, Significant, or Low Hazard Potential Dam

- A. Before commencement of construction activities, the owner shall invite to a pre-construction conference all involved regulatory agencies, the prime contractor, and all subcontractors. At this meeting the Department shall identify, to the extent possible, the key construction stages at which an inspection will be made. At least 48 hours before each key construction stage identified for inspection, the owner or the owner's engineer shall provide notice to the Department.
- B. The owner and the owner's engineer shall oversee construction of a new dam or reconstruction, repair, enlargement, alteration, breach, or removal of an existing dam. Failure to perform the work in accordance with the construction drawings and specifications approved by the Director renders the approval revocable. The owner's engineer shall exercise professional judgment independent of the contractor.
- C. A professional engineer with proficiency in engineering and knowledge of dam technology shall supervise or direct the supervision of construction in accordance with the construction quality assurance plan.
- D. The owner's engineer shall submit summary reports of construction activities and test results according to a schedule approved by the Department.
- E. The owner shall immediately report to the Department any condition encountered during construction that requires a deviation from the approved plans and specifications.
- F. The owner shall promptly submit a written request for approval of any necessary change and sufficient information to justify the proposed change. The owner shall not commence construction without the written approval of the Director unless the change is a minor change. A minor change is a change that complies with the requirements of this Article and provides equal or better safety performance.
- G. Upon completion of construction, the owner shall notify the Department in writing. The Department shall make a final inspection. The owner shall correct any deficiencies noted during the inspection.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1213. Completion Documents for a Significant or High Hazard Potential Dam

- Within 90 days after completion of the construction or removal work for a significant or high hazard potential dam and final inspection by the Department, the owner shall file the following.
1. An affidavit showing the actual cost of the construction. The owner shall submit a detailed accounting of the costs, including all engineering costs.
 2. An additional fee or refund request based on the actual cost of the construction, computed in accordance with A.R.S. § 45-1209 and R12-15-151(B)(11).
 3. One set of full sized as constructed drawings prepared and sealed by the engineer who supervised the construction. If changes were made during construction, the owner shall file supplemental drawings showing the dam and appurtenances as actually constructed.
 4. Construction records, including grouting, materials testing, and locations and baseline readings for permanent bench marks and instrumentation, initial surveys, and readings.
 5. Photographs of construction from exposure of the foundation to completion of construction.
 6. A brief completion report summarizing the salient features of the project, including a description of the causes for any changes or deviations from the approved drawings and specifications that were made during the construction phase.
 7. A schedule for filling the reservoir, specifying fill rates, water level elevations to be held for observation, and a schedule for inspecting and monitoring the dam. The owner shall monitor the dam monthly during the first filling.
 8. An operating manual for the dam and its appurtenant structures. The operating manual shall include a process for safety inspections prescribed in R12-15-1219. The operating manual shall include schedules for surveillance activities and baseline information for any installed instrumentation as follows:
 - a. The frequency of monitoring;
 - b. The data recording format;
 - c. A graphical presentation of data; and
 - d. The person who will perform the work.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1214. Licensing

- A. Upon review and approval of the documents filed under R12-15-1213 and finding that the construction at the dam has been completed in accordance with the approved plans and specifications and finding that the dam is safe, the Director shall issue a license. The license shall specify the safe storage level for the reservoir and shall specify conditions for the safe operation of the dam. The dam and reservoir shall not be used before issuance of a license unless the Director issues written approval. Procedures for issuance of a license for low and very low hazard potential dams are prescribed in R12-15-1210(H) and R12-15-1211(H), respectively.
- B. A new license shall be issued in the following instances:
1. Upon change of ownership of a dam.
 2. Upon change of the safe storage level.
 3. Upon expiration of time to appeal a notice issued under R12-15-1223(B).
 4. Upon expiration of time to appeal an order issued by the Director under R12-15-1223(D).
 5. Upon expiration of time to appeal an order of a court.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1215. Construction Drawings, Construction Specifications, and Engineering Design Report for a High, Significant, or Low Hazard Potential Dam

The owner and engineer are responsible for complete and adequate design of a dam and for including in the application all aspects of the design pertaining to the safety of the dam.

1. Construction Drawing Requirements. The construction drawings required by R12-15-1208(5), R12-15-1209(E)(1), and R12-15-1210(A)(6) shall include the following:
 - a. The seal and signature of the responsible engineer in accordance with A.A.C. R4-30-304.
 - b. One or more topographic maps of the dam, spillway, outlet works, and reservoir on a scale large enough to accurately locate the dam and appurtenances, indicate cut and fill lines, and show the property lines and ownership status of the land. Contour intervals shall be compatible with the height and size of the dam and its appurtenances and shall show design and construction details.
 - c. A reservoir area and capacity curve that reflect area in acres and capacity in acre-feet in relation to depth of water and elevation in the reservoir. The construction drawings shall show the spillway invert and top of dam elevations. The construction drawings shall also show the reservoir volume and space functional allocations. The construction drawings may include alternate scales as required for the owner's use.
 - d. Spillway and outlet works rating curves and tables at a scale or scales that allow determination of discharge rate in cubic feet per second at both low and high flows as measured by depth of water passing over the spillway control section.
 - e. A location map showing the dam footprint and all exploration drill holes, test pits, trenches, adits, borrow areas, and bench marks with elevations, reference points, and permanent ties. This map shall use the same vertical and horizontal control as the topographic map.
 - f. Geologic information including 1 or more geologic maps, profile along the centerline, and other pertinent cross sections of the dam site, spillway or spillways, and appurtenant structures, aggregate and material sources, and reservoir area at 1 or more scales compatible with the site and geologic complexity, showing logs of exploration drill holes, test pits, trenches, and adits.
 - g. One or more plans of the dam to delineate design and construction details.
 - h. Foundation profile along the dam centerline at a true scale where the vertical scale is equal to the horizontal scale, showing the existing ground and proposed finished grade at cut and fill elevations, including anticipated geologic formations. The foundation profile shall include any proposed grout and drain holes.
 - i. Profile and a sufficient number of cross sections of the dam to delineate design and construction details. The drawings shall illustrate and show dimensions of camber, details of the top, core zone, interior filters and drains, and other zone details. The profile of the dam may be drawn to different horizontal and vertical scales if required for detail. A maximum section of the dam shall be drawn to a true scale, where the vertical scale is equal to the horizontal scale. The outlet conduit may be shown on the maximum section if this is typical of the proposed construction.
 - j. One or more dam foundation plans showing excavation grades and cut slopes with any proposed foundation preparation, grout and drain holes, and foundation dewatering requirements.
 - k. Plan, profile, and details of the outlet works, including the intake structure, the gate system, conduit, trashrack, conduit filter diaphragm, conduit concrete encasement, and the downstream outlet structure. The drawings shall include all connection and structural design details.
 - l. Plan, profile, control section, and cross sections of the spillway, including details of any foundation preparation, grouting, or concrete work that is planned. A complex control structure, a concrete chute, or an energy dissipating device for a terminal structure shall include both hydraulic and structural design details.
 - m. Hydrologic data, drainage area and flood routing, and diversion criteria.
2. Construction Specification Requirements. The construction specifications required by R12-15-1208(6) and R12-15-1210(A)(7) shall include the following:
 - a. The seal and signature of the responsible engineer in accordance with A.A.C. R4-30-304.
 - b. The statement that the construction drawings and specifications shall not be materially changed without the prior written approval of the Director.
 - c. A detailed description of the work to be performed and a statement of the requirements for the various types of materials and installation techniques that will enter into the permanent construction.
 - d. The statement that construction shall not be considered complete until the Director has approved the construction in writing.
 - e. The statement that the owner's engineer shall control the quality of construction.
 - f. The following construction information:
 - i. All earth and rock material descriptions, placement criteria, and construction requirements for all elements of the dam and related structures.
 - ii. All concrete, grout, and shotcrete material and mix descriptions, placement and consolidation criteria, temperature controls, and construction requirements for all elements of the dam and related structures.
 - iii. Material criteria and material testing, cleaning, and treatment. If foundation or curtain grouting is required, the specifications shall describe the type of grout, grouting method, special equipment necessary, recording during grouting, and foundation monitoring to avoid disturbance from grouting.
 - iv. All materials testing that will be performed by the contractor for pre-qualification of materials, including special performance testing, such as water pressure tests in conduits. The Director shall accept materials that are pre-tested successfully and constructed in-place in accordance with specifications.
 - v. A plan for control or diversion of surface water during construction. The design engineer may determine frequency of storm runoff to be controlled during construction, commensurate with the risk of economic loss during construction.
 - vi. Criteria for blast monitoring and acceptable blast vibration levels, including particle velocities for the dam and other critical appurtenances. Monitoring equipment and monitoring locations shall be specified.
 - vii. Instrumentation material descriptions, placement criteria, and construction requirements and a statement that instrumentation shall be installed by experienced speciality subcontractors.
3. Engineering Design Report Requirements. The engineering design report required by R12-15-1208(7) and R12-15-1210(A)(8) shall include the following:
 - a. The seal and signature of the responsible engineer in accordance with A.A.C. R4-30-304.
 - b. The classification under R12-15-1206 of the proposed dam, or for the proposed enlargement of an existing dam or reservoir.
 - c. Hydrologic considerations, including calculations and a summary table of data used in determining the required emergency spillway capacity and freeboard, and design of any diversion or detention structures. The design report shall include input and output listings on both hard copy and computer diskette.
 - d. Hydraulic characteristics, engineering data, and calculations used in determining the capacities of the outlet works and emergency spillway. The design report shall include input and output listings on both hard copy and computer diskette.
 - e. Geotechnical investigation and testing of the dam site and reservoir basin. Results and analysis of subsurface investigations, including logs of test borings and geologic cross sections.
 - f. Guidelines and criteria for blasting to be used by the contractor in preparing the blasting plan.
 - g. Details of the plan for control or diversion of surface water during construction.
 - h. Details of the dewatering plan for subsurface water during construction.
 - i. Testing results of earth and rock materials, including the location of test pits and the logs of these pits.
 - j. Discussion and design of the foundation blanket grouting, grout curtain, and grout cap based on foundation stability and seepage considerations.
 - k. Calculations and basic assumptions on loads and limiting stresses for reinforced concrete design. The design report shall include input and output listings on both hard copy and computer diskette.
 - l. A discussion and stability analysis of the dam including appropriate seismic loading, safety factors, and embankment zone strength characteristics. Analyses shall include both short-term and long-term loading on upstream and downstream slopes. The design report shall include input and output listings on both hard copy and computer diskette.
 - m. A discussion of seismicity of the project area and activity of faults in the vicinity. The design report shall use both deterministic and statistical methods and identify the appropriate seismic coefficient for use in analyses.
 - n. Discussion and design of the cutoff trench based on seepage and other considerations.
 - o. Permeability characteristics of foundation and dam embankment materials, including calculations for seepage quantities through the dam, the foundation, and anticipated in the internal drain system. The design report shall include input and output listings on both hard copy and computer diskette. The design report shall include copies of any flow nets used.
 - p. Discussion and design of internal drainage based on seepage quantity calculations. The design report shall include instrumentation necessary to monitor the drainage system and filter design calculations for protection against piping of foundation and embankment.
 - q. Erosion protection against waves and rainfall runoff for both the upstream and downstream slopes, as appropriate.
 - r. Discussion and design of foundation treatment to compensate for geological weakness in the dam foundation and abutment areas and in the spillway foundation area.
 - s. Post-construction vertical and horizontal movement systems.
 - t. Discussion of foundation conditions including the potential for subsidence, fissures, dispersive soils, collapsible soils, and sink holes.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1216. Design of a High, Significant, or Low Hazard Potential Dam

- A. General Requirements.

1. Emergency Spillway Requirements. An applicant shall:
 - a. Construct each spillway in a manner that avoids flooding in excess of the flooding that would have occurred in the same location under the same conditions before construction. The owner of a dam shall demonstrate that a spillway discharge would not result in incremental adverse consequences. In determining whether a spillway discharge of a dam would result in incremental adverse consequences, the Director shall evaluate whether the owner has taken any or all of the following actions: issuing public notice to downstream property owners, complying with flood insurance requirements, adopting emergency action plans, conducting mock flood drills, acquiring flow easements or other acquisitions of real property, or other actions appropriate to safeguard the dam site and flood channel.
 - b. Include a control structure to avoid head cutting and lowering of the spillway crest for spillways excavated in soils or soft rock. In the alternative, the design may provide evidence acceptable to the Director that erosion during the inflow design flood will not result in a sudden release of the reservoir.
 - c. Provide each spillway and channel with a minimum width of 10 feet and suitable armor to prevent erosion during the discharge resulting from the inflow design flood.
 - d. Ensure that downstream spillway channel flows do not encroach on the dam unless suitable erosion protection is constructed.
 - e. Ensure that each spillway, in combination with outlets, is able to safely pass the peak discharge flow rate, as calculated on the basis of the inflow design flood.
 - f. Not construct bridges or fences across a spillway unless the construction is approved in writing by the Director. The Director's approval may include conditions regarding the design and operation of the spillway and fencing, based on safety concerns.
 - g. Not use a pipe or culvert as an emergency spillway unless the Director approves the use following review of the dam design and site characteristics.
2. Inflow Design Flood Requirements
 - a. Unless directed otherwise in writing by the Director, the inflow design flood requirements for determining the spillway minimum capacity are stated in Table 4.
 - b. As an alternative to the requirements prescribed in Table 4, the Director may accept an inflow design flood determined by an incremental damage assessment study, based on the relative safety of the alternatives.
 - c. The Director may accept site-specific probable maximum precipitation studies in determination of the inflow design flood.
 - d. An applicant shall ensure that the total freeboard is the largest of the following:
 - i. The sum of the inflow design flood maximum water depth above the spillway crest plus wave run up.
 - ii. The sum of the inflow design flood maximum water depth above the spillway crest plus 3 feet.
 - iii. A minimum of 5 feet.
3. Outlet Works Requirements. An applicant shall ensure that a dam has a low level outlet works that:
 - a. Is capable of draining the reservoir to the sediment pool level. A low level outlet works for a high or significant hazard potential dam shall be a minimum of 36 inches in diameter. A low level outlet works for a low hazard potential dam shall be a minimum of 18 inches in diameter.
 - b. For a high or significant hazard potential dam, has the capacity to evacuate 90% of the storage capacity of the reservoir within 30 days, excluding reservoir inflows.
 - c. Has a filter diaphragm or other current practice measures to reduce the potential for piping along the conduit.
 - d. Has accessible outlet controls when the spillway is in use.
 - e. Has an emergency manual override system or can be operated manually.
 - f. Is constructed of materials appropriate for loading condition, seismic forces, thermal expansion, cavitation, corrosion, and potential abrasion. The applicant shall not use corrugated metal pipes or other thin-walled pipes except as a form for a cast-in-place concrete conduit. The applicant shall construct outlet conduits of cast-in-place reinforced concrete. The applicant shall design each outlet to maintain water tightness. The applicant shall construct each outlet to prevent the occurrence of piping adjacent to the outlet.
 - g. Has an operating or guard gate on the upstream end of any gated outlet.
 - h. Has an outlet conduit near the base of 1 of the abutments on native bedrock or other competent material. The applicant shall support the entire length of the conduit on foundation materials of uniform density and consistency to prevent adverse differential settlement.
 - i. Has an upstream valve or gate capable of controlling the discharge through all ranges of flow on any gated outlet conduit.
 - j. Has a trashrack designed for a minimum of 25% of the reservoir head to which it would be subjected if completely clogged at the upstream end of the outlet.
 - k. Has an air vent pipe just downstream of the control gate. The applicant shall include a blow-off valve at or near the downstream toe of the dam for an outlet conduit that is connected directly to a distribution system.
 - l. Has an outlet conduit designed for internal pressure equal to the full reservoir head and for superimposed embankment loads, acting separately.
4. Dam Site And Reservoir Area Requirements
 - a. An applicant shall demonstrate that reservoir storage during the inflow design flood will not result in incremental adverse consequences and that the design will not result in the inundation or wave damage of properties within the reservoir, except marina-type structures, during the inflow design flood. In determining whether a discharge will result in incremental adverse consequences, the Director shall evaluate whether the owner has taken any or all of the following actions: issuing public notice to upstream affected property owners, complying with flood insurance requirements, adopting emergency action plans, conducting mock flood drills, acquiring flow easements or other acquisitions of real property, or other actions appropriate to safeguard the dam site and reservoir. Permanent habitations are not allowed within the reservoir below the spillway elevation.
 - b. The applicant shall clear the reservoir storage area of logs and debris.
 - c. The applicant shall place borrow areas a safe distance from the upstream toe and the downstream toe of the dam to prevent a piping failure of the dam.
 - d. The applicant shall keep the top of the dam and appurtenant structures accessible by equipment and vehicles for emergency operations and maintenance.
5. Geotechnical Requirements
 - a. The applicant shall provide an evaluation of the static stability of the foundation, dam, and slopes of the reservoir rim and demonstrate that sufficient material is available to construct the dam as designed.
 - b. The applicant shall not construct a dam on active faults, collapsible soils, dispersive soils, sink holes, or fissures, unless the applicant demonstrates that the dam can safely withstand the anticipated offset or other unsafe effects on the dam.
6. Seismic Requirements
 - a. The applicant shall submit a review of the seismic or earthquake history of the area around the dam within a radius of 100 miles to establish the relationship of the site to known faults and epicenters. The review shall include any known earthquakes and the epicenter locations and magnitudes of the earthquakes.
 - b. The applicant shall identify the location of active or potentially active faults that have experienced Holocene or Late Pleistocene displacement within a radius of 100 miles of the site.
 - c. For a high or significant hazard potential dam, the applicant shall design the dam to withstand the maximum credible earthquake.
 - d. For a low hazard potential dam, the applicant shall use probabilistic or deterministic methods to determine the design earthquake. The magnitude of the design earthquake shall vary with the size of the dam, site condition, and specific location.
- B. Embankment Dam Requirements.
 1. Geotechnical Requirements. Table 5 states minimum factors of safety for embankment stability under various loading conditions. For an embankment dam an applicant shall provide a written analysis of minimum factors of safety for stability.
 - a. The analysis of minimum factors of safety shall include the effects of anisotropy on the phreatic surface position by using a ratio of horizontal permeability to vertical permeability of at least 10. The Director may require ratios of up to 100 if the material types and construction techniques will cause excessive stratification.
 - b. The applicant shall use tests modeling the conditions being analyzed to determine the strengths used in the stability analysis. The stability analysis shall include total and effective stress strengths appropriate for the different material zones and conditions analyzed. The stability analysis shall use undrained strengths or strength parameters for all saturated materials.
 - c. The applicant shall perform an analysis of the upstream slope stability for a partial pool with steady seepage considering the reservoir level that provides the lowest factor of safety.
 - d. A stability analysis is not required for low hazard potential dams if the owner or the owner's engineer demonstrates that conservative slopes and competent materials are included in the design.
 2. Seismic Requirements
 - a. The applicant shall determine the seismic characteristics of the site as prescribed in subsection (A)(6).
 - b. The applicant shall determine the liquefaction susceptibility of the embankment, foundation, and abutments. The applicant shall use standard penetration testing, cone penetration testing, shear wave velocity measurements, or a combination of these methods to make this determination. The applicant shall compute the minimum factor of safety against liquefaction at specific points and make a determination of whether the overall site is subject to liquefaction.
 - c. The applicant shall determine the safety of the dam under seismic loading using a pseudo static stability analysis, computing the minimum factor of safety if the embankment, foundation or abutment is not subject to liquefaction and has a maximum peak acceleration of 0.2g or less, or a maximum peak acceleration of 0.35g or less, and consists of clay on a clay or bedrock foundation. The applicant shall use in the pseudo static stability analysis a pseudo static coefficient that is at least 60% of the maximum peak bedrock acceleration at the site.
 - d. The applicant shall compute a minimum factor of safety against overtopping due to deformation and settlement in each of the following cases. The minimum factor of safety against overtopping can be no less than 2.5, determined by dividing the total pre-earthquake freeboard by the estimated vertical settlement in feet. The applicant shall determine the total vertical settlement by adding the settlement values of the upstream and downstream slopes.
 - i. The minimum factor of safety in a pseudo static analysis is less than 1.0;
 - ii. An embankment, foundation, or abutment is not subject to liquefaction, has a maximum peak acceleration of more than 0.2g or a maximum peak acceleration of more than 0.35g and consists of clay on a clay or bedrock foundation; or
 - iii. The embankment, foundation or abutment is subject to liquefaction.
 - e. The applicant shall perform a liquefaction analysis to establish approximate boundaries of liquefiable zones and physical characteristics of the soil following liquefaction for an embankment, foundation, or abutment subject to liquefaction. The applicant shall perform an analysis of the potential for flow liquefaction.
 - f. Other, more sophisticated analytical procedures may be required by the Director for sites with high seismicity or low strength embankment or foundation soils.
 3. Miscellaneous Design Requirements
 - a. The design of any significant or high hazard potential dam shall provide seepage collection and prevent internal erosion or piping due to embankment cracking or other causes.
 - b. The Director shall review the filter and permeability design for a chimney drain, drain blanket, toe drain, or outlet conduit filter diaphragms on the basis of unique site characteristics.
 - i. The minimum thickness of an internal drain is 3 feet.
 - ii. The minimum width of a chimney drain is 6 feet.
 - iii. The applicant shall filter match an internal drain to its adjacent material.
 - iv. The applicant shall design internal drains with sufficient capacity for the expected drainage without the use of drainpipes using only natural granular materials.
 - c. The use of a geosynthetic is not permitted in a design if it serves as the sole defense against dam failure. The use of geotextiles and geonets as a filter or drain material or a

- geomembrane liner is permitted only in a location that is easily accessible for repair or if its excavation cannot create an unsafe condition at the dam. A geosynthetic liner is allowed under special conditions and in specific situations if it is subject to monitoring and redundant safety controls. The Director may impose conditions, including monitoring appropriate to the hazard classification, inspection, and necessary repairs, each performed every 5 years.
- d. The applicant shall use armoring on any upstream slope of an embankment dam that impounds water for more than 30 days at a time. If the applicant uses rock riprap, it shall be well-graded, durable, sized to withstand wave action, and placed on a well-graded pervious sand and gravel bedding or geotextile with filtering capacity appropriate for the site.
 - e. The applicant shall protect the downstream slopes and groins of an embankment dam from erosion.
 - f. The minimum width of the top of an embankment dam is equal to the structural height of the dam divided by 5 plus an additional 5 feet. The required minimum width for any embankment dam is 12 feet. The maximum width for any embankment dam is 25 feet.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

Table 4. Inflow Design Flood

Dam Hazard Class	Dam Size Classification	IDF Magnitude
Very Low	All Sizes	100-year
Low	All Sizes	0.25 PMF
	Small	0.25 PMF
Significant	Intermediate	0.5 PMF
	Large	0.5 PMF
High*	All Sizes	*

* For a high hazard potential dam, the applicant shall design the dam to withstand an inflow design flood that varies from .5 PMF to the full PMF, with size increasing based on persons at risk and potential for downstream damage. The applicant shall consider foreseeable future conditions.

Historical Note

New Table adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

Table 5. Minimum Factors of Safety for Stability

Embankment Loading Condition	Minimum Factor of Safety
End of construction case - upstream and downstream slopes	1.3
End of construction case for embankments greater than 50 feet in height on weak foundations	1.4
Steady state seepage - upstream (critical partial pool) and downstream slope (full pool)	1.5
Instantaneous drawdown - upstream slope	1.2

1 Not applicable to an embankment on a clay shale foundation.

Historical Note

New Table adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1217. Maintenance and Repair; Emergency Actions

- A. An owner shall perform general maintenance and ordinary repairs that do not impair the safety of the dam. General maintenance and ordinary repair activities listed under this subsection do not require prior approval of the Director. These repair activities include:
1. Removing brush or tall weeds.
 2. Cutting trees and removing slash from the embankment or spillway. Small stumps may be removed provided no excavation into the embankment occurs.
 3. Exterminating rodents by trapping or other methods. Rodent damage may be repaired provided it does not involve excavation that extends more than 2 feet into the embankment and replacement materials are compacted as they are placed.
 4. Repairing erosion gullies less than 2 feet deep on the embankment or in the spillway.
 5. Grading the surface on the top of the dam embankment or spillway to eliminate potholes and provide proper drainage, provided the freeboard is not reduced.
 6. Placing additional riprap and bedding on the upstream slope, or in the spillway in areas that have sustained minor damage and restoring the original riprap protection where the damage has not yet resulted in erosion and weakening of the dam.
 7. Painting, caulking, or lubricating metal structures.
 8. Patching or caulking spalled or cracked concrete to prevent deterioration.
 9. Removing debris, rock, or earth from outlet conduits or spillway channels and basins.
 10. Patching to prevent deterioration within outlet works.
 11. Replacing worn or damaged parts on outlet valves or controls to restore them to original condition or its equivalent.
 12. Repairing or replacing fences intended to keep traffic or livestock off the dam or spillway.
- B. General maintenance and ordinary repair that may impair or adversely effect safety, such as excavation into or near the toe of the dam, construction of new appurtenant structures for the dam, and repair of damage that has already significantly weakened the dam shall be performed in accordance with this Article. The Director may approve maintenance performed according to a standard detail or method of repair on file with the Department upon submittal of a letter. The Director shall determine whether general maintenance and ordinary repair activities not listed in subsection (A) will impair safety.
- C. Emergency actions not impairing the safety of the dam may be taken before guidance can be provided by an engineer and do not require prior approval of the Director. Emergency actions do not excuse an owner's responsibility to promptly undertake a permanent solution. Emergency actions include:
1. Stockpiling materials such as riprap, earth fill, sand, sandbags, and plastic sheeting.
 2. Lowering the reservoir level by making releases through the outlet or a gated spillway, by pumping, or by siphoning.
 3. Armoring eroded areas by placing sandbags, riprap, plastic sheeting, or other available material.
 4. Plugging leakage entrances on the upstream slope.
 5. Increasing freeboard by placing sandbags or temporary earth fill on the dam.
 6. Diverting flood waters to prevent them from entering the reservoir basin.
 7. Constructing training berms to control flood waters.
 8. Placing sandbag ring dikes or reverse filter materials around boils at the downstream toe to provide back pressure.
 9. Removing obstructions from outlet or spillway flow areas.
- D. Emergency actions impairing the safety of the dam require prior approval of the Director. An owner shall not lower the water level by excavating the spillway or embankment unless failure is imminent.
- E. For all high and significant hazard potential dams, the emergency action plan shall be implemented with any emergency actions taken at the dam.
- F. The owner shall notify the Director immediately of any emergency condition that exists and any emergency action taken.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1218. Safe Storage Level

The Director has the authority to determine the safe storage level for the reservoir behind each dam, including the storage level of an existing dam while it is being repaired, enlarged, altered, breached, or removed. The elevation of the safe storage level is stated on the license. The owner shall not store water in excess of the level determined by the Director to be safe. The owner shall not place flashboards or other devices in the emergency spillway without approval of an alteration of the dam in accordance with this Article.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1219. Safety Inspections

- A. Except as provided in subsection (E), the Director shall conduct a dam safety inspection annually or more frequently for each high hazard potential dam, triennially for each significant hazard potential dam, and once every 5 years for each low and very low hazard potential dam.
- B. An engineer is considered qualified to provide information to the Director regarding the safe storage level of a reservoir if the engineer:
1. Meets the criteria in R12-15-1202(11);
 2. Has 3 years of experience in the field of dam safety; and
 3. Has actual experience in conducting dam safety inspections.
- C. A dam safety inspection includes:
1. Review of previous inspections, reports, and drawings;
 2. Inspection of the dam, spillways, outlet facilities, seepage control, and measurement systems;
 3. Inspection of any permanent monument or monitoring installations;
 4. Assessment of all parts of the dam that are related to the dam's safety; and
 5. A recommendation regarding the safe storage level of the reservoir.

- D. The engineer shall submit a safety inspection report that describes the findings and lists actions that will improve the safety of the dam. The report shall include the engineer's recommendation of the safe storage level. The engineer shall use a report form approved by the Director.
- E. Inspections by the Owner
1. An owner may provide to the Director, at the owner's expense, a safety inspection report that complies with the requirements of subsections (B), (C), and (D) in place of an inspection by the Department. The owner's engineer shall notify the Director and submit a written summary of the engineer's qualifications at least 14 days before the scheduled safety inspection.
 2. The Director may refuse to accept an inspection that does not conform to this Article.
- F. Inspections by the Department
1. The Director may enter at reasonable times upon private or public property and the owner shall permit such entry, where a dam is located, including a dam under construction, reconstruction, repair, enlargement, alteration, breach, or removal, for any of the following purposes:
 - a. To enforce the conditions of approval of the construction drawings and specifications related to an application for construction, reconstruction, repair, enlargement, alteration, breach, or removal.
 - b. To inspect a dam that is subject to this Article.
 - c. To investigate or assemble data to aid review and study of the design and construction of dams, reservoirs, and appurtenances or make watershed investigations to facilitate decisions on public safety to fulfill the duties of A.R.S. § 45-1214.
 - d. To ascertain compliance with this Article and A.R.S. Title 45, Chapter 6.
 2. Upon receipt of a complaint that a dam is endangering people or property:
 - a. The Director shall inspect the dam unless there is substantial cause to believe the complaint is without merit.
 - b. If the complainant files a complaint in writing and deposits with the Director sufficient funds to cover the costs of the inspection, the Director shall make an inspection.
 - c. The Director shall provide a written report of the inspection to the complainant and the dam owner.
 - d. If an unsafe condition is found, the Director shall cause it to be corrected and return the deposit to the complainant. If the complaint was without merit the deposit shall be paid into the general fund.
 3. The Director may employ qualified on-call consultants to conduct inspections.
 4. Inspections under subsection (A) shall comply with the requirements of A.R.S. § 41-1009.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1220. Existing Dams

- A. The requirements of this Article apply to existing dams, except as provided in subsections (B) and (C).
- B. If the Director has determined that an existing dam is in a safe condition, the owner is not required to comply with R12-15-1216 unless the Director determines that it is cost effective to upgrade the dam to comply with the requirements of R12-15-1216 at the time a major alteration or major repair is planned. In determining whether it is cost effective to upgrade a dam, the Director shall consider:
1. The hazard potential classification of the dam;
 2. Whether the cost of the upgrade would exceed 25% of the total cost of the major alteration or major repair; and
 3. Whether there is a more cost effective alternative that would provide an equivalent increase in safety.
- C. If the Director has determined that a dam is in an unsafe condition, the owner shall comply with the requirements in R12-15-1216. The owner is not required to comply with a requirement in this Article if the Director finds that, considering the site characteristics and the proposed design, the requirement is unduly burdensome or expensive and is not necessary to protect human life or property. The Director shall consider the size, hazard potential classification, physical site conditions, and applicability of a requirement to the dam. The Director shall state in writing the reason or reasons the owner is not required to comply with a requirement.
- D. The owner shall ensure that installation of utilities beneath or through an existing dam is accomplished by open cuts or jacking and boring methods.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1221. Emergency Action Plans

- A. Each owner of a high or significant hazard potential dam shall prepare, maintain, and exercise a written emergency action plan for immediate defensive action to prevent failure of the dam and minimize any threat to downstream development. The emergency action plan shall contain a:
1. Notification chart showing the priority for notification in an emergency situation. The owner shall notify local emergency response agencies, affected downstream populations, county emergency management agencies, and affected flood control districts;
 2. Description of the demand reservoir and scope of the emergency action plan;
 3. Delineation of potentially unsafe conditions, evaluation procedures, and triggering events that require the initiation of partial or full emergency notification procedures, based on the urgency of the situation;
 4. Delineation of areas of responsibility of the owner and other parties. The emergency action plan shall clearly identify individuals responsible for notifications and declaring an emergency;
 5. Specific notification procedure for each emergency situation anticipated;
 6. Description of emergency supplies and resources, equipment access to the site, and alternative means of communication. The emergency action plan shall also identify specific preparedness activities required, such as annual full or partial mock exercises and updates of the emergency action plan; and
 7. Map showing the area that would be subject to flooding due to spillway flows and dam failures.
- B. The owner shall use the Director's model emergency action plan, which is available at no cost, or an equivalent model, for guidance in preparing the emergency action plan.
- C. The owner shall submit a copy of the proposed emergency action plan for review by the Arizona Division of Emergency Management and all local emergency coordinators involved in the plan. The owner shall incorporate appropriate recommendations generated by the reviews and submit the revised emergency action plan to the Department.
- D. The owner shall review and update the emergency action plan annually or more frequently to incorporate changes such as new personnel, changing roles of emergency agencies, emergency response resources, conditions of the dam, and information learned from mock exercises. The owner shall send updated portions of the plan to persons and agencies holding copies of the plan within 15 days after preparation of an update.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1222. Right of Review

- A. An applicant or owner aggrieved by a decision of the Director regarding the determination of hazard classification, jurisdictional status, or the Director's application of this Article may seek review of an appealable agency action under A.R.S. Title 41, Chapter 6, Article 10.
- B. An applicant or owner aggrieved by a decision of the Director that requires the exercise of professional engineering judgment or discretion or the assessment of risk to human life or property, such as the adequacy of an applicant's project documentation, dam design, safe storage level, requirements for existing dams, or maintenance, may seek review by a board of review under A.R.S. §§ 45-1210 and 45-1211.
- C. The following actions are not subject to review:
1. Emergency measures taken under A.R.S. §§ 45-1212 or 45-1221.
 2. Agency decisions made under A.R.S. §§ 41-1009(E) or (F).
 3. Agency actions made exempt from review by law.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1223. Enforcement Authority

- A. The Department may exercise its discretion to take action necessary to prevent danger to human life or property. The Director may take any legal action that is proper and necessary for the enforcement of this Chapter.
- B. If the Director has cause to believe that a dam is unsafe or a person is violating or has violated a provision of this Article or A.R.S. Title 45, Chapter 6, Article 1, the Director may issue a notice directing the owner to remedy the safety deficiency or correct the violation. The owner may appeal a notice issued under this subsection as an appealable agency action in accordance with A.R.S. Title 41, Chapter 6, Article 10. If the owner does not appeal within 30 days after the date on the notice, the notice becomes final and may be incorporated as a condition of any license based on the duration of the requirement.
- C. If the Director has cause to believe that a dam is unsafe or a person is violating or has violated a provision of this Article or A.R.S. Title 45, Chapter 6, Article 1, the Director may proceed under A.R.S. § 45-1221 to initiate a contested case under A.R.S. Title 41, Chapter 6, Article 10 by requesting an administrative hearing.
- D. Following a written decision by an administrative law judge, the Director shall issue a decision and order accepting, rejecting, or modifying the administrative law judge's decision. Upon expiration of time to appeal, the decision and order becomes final and may be incorporated as a condition of any license based on the duration of the requirement.
- E. If the Director has cause to believe that a dam is unsafe or a person is violating or has violated a provision of this Article or A.R.S. Title 45, Chapter 6, Article 1 the Director may commence an action in a court of appropriate jurisdiction if:
1. The violation is an emergency requiring appropriate steps to be taken without delay; or
 2. The Director has cause to believe that use of the administrative procedure would be ineffective or that delay would ensue and a deterioration in the safety of the dam would occur.
- F. If the Director commences an action it shall be brought in a court of appropriate jurisdiction in which:
1. The cause or some part of the cause arose; or
 2. The owner or person complained of has his or her place of business; or
 3. The owner or person complained of resides.
- G. A person determined to be in violation of this Article; A.R.S. Title 45, Chapter 6; a license; or order may be assessed a civil penalty not exceeding \$1,000 per day of violation. The Director may offer evidence relating to the amount of the penalty in accordance with A.R.S. § 45-1222.
- H. A violation of A.R.S. Title 45, Chapter 6, Article 1 regarding Supervision of Dams, Reservoirs, and Projects is a class 2 misdemeanor, in accordance with A.R.S. § 45-1216.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1224. Emergency Procedures

- A. The owner of a dam shall immediately notify the Department and responsible authorities in adjacent and downstream communities, including emergency management authorities, of a condition that may threaten the safety of the dam. The owner shall take necessary actions to protect human life and property, including action required under an emergency action plan or order issued under this Article.
1. A condition that may threaten the safety of a dam includes:
 - a. Sliding of upstream or downstream slopes or abutments contiguous to the dam;
 - b. Sudden subsidence of the top of the dam;
 - c. Longitudinal or transverse cracking of the top of the dam;
 - d. Unusual release of water from the downstream slope or face of the dam;
 - e. Other unusual conditions at the downstream slope of the dam;
 - f. Significant landslides in the reservoir area;
 - g. Increasing volume of seepage;
 - h. Cloudy seepage or recent deposits of soil at seepage exit points;
 - i. Sudden cracking or displacement of concrete in a concrete or masonry dam spillway or outlet works;
 - j. Loss of freeboard or dam cross section due to storm wave erosion;
 - k. Flood waters overtopping an embankment dam; or
 - l. Spillway backcutting that threatens evacuation of the reservoir.
 2. In case of an emergency, the owner shall telephone the Arizona Department of Public Safety's emergency numbers at (800) 411-2336 or (602) 223-2000.
- B. The Director shall issue an emergency approval to repair, alter, or remove an existing dam if the Director finds that immediate remedial action is necessary to alleviate an imminent threat to human life or property.
1. The emergency approval shall be provided in writing on a form developed for this purpose.
 2. The emergency approval may contain conditions the Director determines are appropriate to protect human life or property.
 3. The emergency approval is effective immediately for 30 days after notice is issued unless extended in writing by the Director. The Director shall also send notice to the county flood control district of the county in which the dam is located, all municipalities within 5 miles downstream of the dam, and any additional persons identified in the emergency action plan.
 4. The Director may institute legal or administrative proceedings that the Director deems appropriate for violations of the emergency approval or conditions of the emergency approval.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1225. Emergency Repairs

- A. The Director shall use monies from the dam repair fund, established under A.R.S. § 45-1212.01 to employ any remedial measure necessary to protect human life and property resulting from a condition that threatens the safety of a dam if the dam owner is unable or unwilling to take action and there is not sufficient time to issue and enforce an order.
- B. The deputy director may authorize an expenditure not to exceed \$10,000 from the dam repair fund for remedial measures under A.R.S. § 45-1212. The expenditure of any additional funds shall be approved by the Director.
- C. The Director shall hold a lien against all property of the owner in accordance with A.R.S. § 45-1212.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

R12-15-1226. Non-Emergency Repairs; Loans and Grants

- A. If the Director determines that a dam represents a threat to human life and property but is not in an emergency condition, the Director may use the dam repair fund, established under A.R.S. § 45-1212.01, as prescribed in this Article to defray the costs of repair.
- B. Monies from the dam repair fund may be used for loans and grants to owners as provided in A.R.S. §§ 45-1218 and 45-1219.
- C. To qualify for a loan or grant from the dam repair fund, a dam shall be classified as unsafe by the Director.
- D. The Director may authorize grant funds for all or part of the cost of engineering studies or construction needed to mitigate the threat to human life and property created by a dam.
 1. The Director and the grantee shall execute a financial assistance agreement that includes terms of financial assistance, the work progress, and payment schedule.
 2. The Director shall disburse grant funds in accordance with the financial assistance agreement.
 3. The Director shall establish a priority ranking for grants based on factors including the potential for failure of a dam, the number of lives at risk, and the capability of the owner to pay a portion of the costs.
- E. The Director may loan funds for engineering studies or for all or part of construction as prescribed in A.R.S. § 45-1218.
 1. The Director and the dam owner shall execute a loan repayment agreement. The loan repayment agreement shall be delivered to and held by the Department.
 2. The Director shall establish a priority ranking for loans based on factors including the potential for failure of a dam, the number of human lives at risk, and the capability of the owner to pay a portion of the costs.

Historical Note

New Section adopted by final rulemaking at 6 A.A.R. 2558, effective June 12, 2000 (Supp. 00-2).

ARTICLE 13. WELL SPACING REQUIREMENTS; REPLACEMENT WELLS IN APPROXIMATELY THE SAME LOCATION

R12-15-1301. Definitions

- In addition to the definitions in A.R.S. §§ 45-101, 45-402, and 45-591, the following words and phrases in this Article shall have the following meanings, unless the context otherwise requires:
1. "Abandoned well" means a well for which a well abandonment completion report has been filed pursuant to R12-15-816(E) or for which a notification of abandonment has been filed pursuant to R12-15-816(K).
 2. "Additional drawdown" means a lowering in the water levels surrounding a well that is the result of the operation of the well and that is not attributable to existing regional rates of decline or existing impacts from other wells.
 3. "Applicant" means any of the following:
 - a. A person who has filed an application for a permit to construct a new well or a replacement well in a new location under A.R.S. § 45-599;
 - b. A person who has filed an application for a recovery well permit under A.R.S. § 45-834.01 for a new well as defined in A.R.S. § 45-591 or, except as provided in A.R.S. § 45-834.01 (B)(2) or (3), an existing well as defined in A.R.S. § 45-591;
 - c. A person who has filed an application for approval to use a well to withdraw groundwater for transportation to an active management area under A.R.S. § 45-559; or
 - d. A person, other than a city, town, private water company, or irrigation district, who has filed an application for a water exchange permit under A.R.S. § 45-1041.
 4. "ADEQ" means the Arizona Department of Environmental Quality.
 5. "Contaminated groundwater" means groundwater that has been contaminated by a release of a hazardous substance, as defined in A.R.S. § 49-201, or a pollutant, as defined in A.R.S. § 49-201.
 6. "DOD" means the United States Department of Defense.
 7. "EPA" means the United States Environmental Protection Agency.
 8. "LCR plateau groundwater transporter" means a person transporting groundwater from the Little Colorado River plateau groundwater basin to another groundwater basin pursuant to A.R.S. § 45-544(B)(1).
 9. "Notice of water exchange participant" means a person, other than a city, town, private water company, or irrigation district, named as a participant in a water exchange in a notice of water exchange filed under A.R.S. § 45-1051.
 10. "Original well" means the well replaced by a replacement well in approximately the same location, except that if the replacement well is the latest in a succession of two or more wells drilled as replacement wells in approximately the same location under R12-15-1308 or temporary rule R12-15-840 adopted by the director on March 11, 1983, "original well" means the well replaced by the first replacement well in approximately the same location.
 11. "Remedial action site" means any of the following:
 - a. The site of a remedial action undertaken pursuant to the comprehensive environmental response, compensation, and liability act ("CERCLA") of 1980, as amended, 42 U.S.C. 9601, et seq., commonly known as a "superfund" site;
 - b. The site of a corrective action undertaken pursuant to A.R.S. Title 49, Chapter 6, commonly known as a leaking underground storage tank ("LUST") site;
 - c. The site of a voluntary remediation action undertaken pursuant to A.R.S. Title 49, Chapter 1, Article 5;
 - d. The site of a remedial action undertaken pursuant to A.R.S. Title 49, Chapter 2, Article 5, commonly known as a water quality assurance revolving fund ("WQARF") site;
 - e. The site of a remedial action undertaken pursuant to the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. 6901, et seq.; or
 - f. The site of remedial action undertaken pursuant to the Department of Defense Environmental Restoration Program, 10 U.S.C. 2701, et seq., commonly known as a "Department of Defense site" or a "DOD site."
 12. "Replacement well" means a well drilled for the purpose of replacing another well.
 13. "Replacement well in a new location" means a replacement well that does not qualify as a replacement well in approximately the same location under R12-15-1308.
 14. "Replacement well in approximately the same location" means a replacement well that qualifies as a replacement well in approximately the same location under R12-15-1308.
 15. "Well" has the meaning prescribed in A.R.S. § 45-402. An abandoned well is not a well.
 16. "Well of record" means, with respect to an applicant, an LCR plateau groundwater transporter, or a notice of water exchange participant, any well or proposed well not owned by the applicant, LCR plateau groundwater transporter, or notice of water exchange participant, or proposed to be drilled by the applicant, LCR plateau groundwater transporter, or notice of water exchange participant, to which any of the following apply:
 - a. The well is an existing well as defined in A.R.S. § 45-591 and the owner or operator has registered the well with the Department, unless the current well information on file with the Department identifies the sole purpose or purposes of the well as one or more of the following:

- i. Cathodic protection;
 - ii. Use as a sump pump or heat pump;
 - iii. Air sparging;
 - iv. Injection of liquids or gasses into the aquifer or vadose zone, including injection wells that are part of an underground storage facility permitted under A.R.S. Title 45, Chapter 3.1;
 - v. Monitoring water levels or water quality, including a piezometer well;
 - vi. Obtaining geophysical, mineralogical, or geotechnical data;
 - vii. Grounding;
 - viii. Soil vapor extraction;
 - ix. Electrical energy generation pursuant to a temporary permit for electrical energy generation issued under A.R.S. § 45-517;
 - x. Dewatering pursuant to a dewatering permit issued under A.R.S. § 45-513 or a temporary dewatering permit issued under A.R.S. § 45-518;
 - xi. Drainage pursuant to a drainage water withdrawal permit issued under A.R.S. § 45-519; or
 - xii. Hydrologic testing pursuant to a hydrologic testing permit issued under A.R.S. § 45-519.01.
- b. The well is a new well as defined in A.R.S. § 45-591 for which a notice of intention to drill was not filed pursuant to A.R.S. § 45-596 and for which a permit was not issued pursuant to A.R.S. §§ 45-599 or 45-834.01, and the owner or operator has registered the well with the Department, unless the current well information on file with the Department identifies the sole purpose or purposes of the well as one or more of the purposes in subsection (16)(a)(i) through (xii) of this Section;
- c. A filing has been made for the well pursuant to A.R.S. § 45-596(A) or (B), unless any of the following apply:
- i. The filing has expired pursuant to A.R.S. § 45-596(E);
 - ii. The filing identifies the sole purpose or purposes of the well as one or more of the purposes in subsection (16)(a)(i) through (xii) of this Section; or
 - iii. The well is an exempt well and the director is prohibited by A.R.S. § 45-454(D)(4) from considering impacts on the well when determining whether to approve or reject a permit application filed under A.R.S. § 45-599.
- d. An application for a permit to drill the well has been received by the Department pursuant to A.R.S. § 45-599, unless the application has been rejected after exhaustion of all administrative and judicial appeals or the permit issued pursuant to the application has been revoked or has expired according to its terms or for failure to complete the well in a timely manner pursuant to A.R.S. § 45-599(G);
- e. An application for a permit pursuant to A.R.S. §§ 45-514 or 45-516 has been received by the Department pursuant to A.R.S. § 45-521, unless the application has been rejected after exhaustion of all administrative and judicial appeals or the permit issued pursuant to the application has been revoked or has expired according to its terms or for failure to complete the well before expiration of the drilling authority; or
- f. An application for a permit to drill a recovery well has been received by the Department pursuant to A.R.S. § 45-834.01, unless the application has been rejected after exhaustion of all administrative and judicial appeals or the permit issued pursuant to the application has been revoked or has expired according to its terms or for failure to complete the well in a timely manner pursuant to A.R.S. § 45-834.01(F).

Historical Note

New Section made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

R12-15-1302. Well Spacing Requirements - Applications to Construct New Wells or Replacement Wells in New Locations Under A.R.S. § 45-599

- A. The director shall not approve an application for a permit to construct a new well or a replacement well in a new location under A.R.S. § 45-599 if the director determines that the withdrawals from the proposed well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B) of this Section.
- B. The director shall determine that the withdrawals from the proposed well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells if any of the following apply:
1. Except as provided in subsection (D) of this Section, the director determines that the probable impact of the withdrawals from the proposed well or wells on any well of record in existence as of the date of receipt of the application will exceed 10 feet of additional drawdown after the first five years of operation of the proposed well or wells. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study delineating those areas surrounding the proposed well or wells in which the projected impacts on water levels will exceed 10 feet of additional drawdown after the first five years of operation of the proposed well or wells. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection;
 2. The director determines that the proposed well or wells will be located in an area of known land subsidence and the withdrawals from the proposed well or wells will likely cause unreasonably increasing damage from additional regional land subsidence. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study, which may include a geophysical evaluation, demonstrating the impact of the withdrawals from the proposed well or wells on regional land subsidence. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection; or
 3. Except as provided in subsection (E) of this Section, the director determines, after consulting with ADEQ, that withdrawals from the proposed well or wells will likely cause the migration of contaminated groundwater from a remedial action site to a well of record in existence as of the date of the receipt of the application, resulting in a degradation of the quality of the water withdrawn from the well of record so that the water will no longer be usable for the purpose for which it is currently being used without additional treatment, and that the damage to the owner of the well of record will not be prevented or adequately mitigated through the implementation of a program regulated under Title 49 of the Arizona Revised Statutes, or a program regulated by EPA or DOD. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study demonstrating whether the withdrawals from the proposed well or wells will have the effect described in this subsection. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection.
- C. In making a determination under subsection (B)(1), (B)(2), or (B)(3) of this Section, if the proposed well is a replacement well in a new location, the director shall take into account the collective effects of reducing or terminating withdrawals from the well being replaced combined with the proposed withdrawals from the replacement well if the applicant submits a hydrological study demonstrating those collective effects to the satisfaction of the director.
- D. If the director determines under subsection (B)(1) of this Section that the probable impact of the withdrawals from the proposed well or wells on one or more wells of record in existence as of the date of receipt of the application will exceed 10 feet of additional drawdown after the first five years of operation of the proposed well or wells, the director shall notify the applicant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the withdrawals from the proposed well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(1) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the applicant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the withdrawals from the proposed well or wells. The applicant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the applicant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- E. If the director determines that withdrawals from the proposed well or wells will have the effect described in subsection (B)(3) of this Section on one or more wells of record in existence as of the date of receipt of the application, the director shall notify the applicant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the withdrawals from the proposed well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(3) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the applicant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the withdrawals from the proposed well or wells. The applicant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the applicant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- F. At any time before a final determination under this Section, the applicant may:
1. Amend the application to change the location of the proposed well or wells or the amount of groundwater to be withdrawn from the proposed well or wells to lessen the degree of impact on wells of record or regional land subsidence; or
 2. Agree to construct or operate the proposed well or wells in a manner that lessens the degree of impact on wells of record or regional land subsidence. The director shall indicate in the well permit that compliance with the agreement is a condition of the well permit.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

R12-15-1303. Well Spacing Requirements - Applications for Recovery Well Permits Under A.R.S. § 45-834.01

- A. The director shall not approve an application for a recovery well permit under A.R.S. § 45-834.01 that is filed for a new well as defined in A.R.S. § 45-591 or, except as provided in A.R.S. § 45-834.01(B)(2) or (3), for an existing well as defined in A.R.S. § 45-591, if the director determines that the recovery of stored water from the proposed well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B) of this Section.
- B. The director shall determine that the recovery of stored water from the proposed well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells if any of the following apply:
1. Except as provided in subsection (D) of this Section, the director determines that the probable impact of the recovery of stored water from the proposed well or wells on any well of record in existence as of the date of receipt of the application will exceed 10 feet of additional drawdown after the first five years of the recovery of stored water from the proposed well or wells. To assist the director in making a determination under this subsection, the applicant shall submit with the application a hydrological study delineating those areas surrounding the proposed well or wells in which the projected impacts on water levels will exceed 10 feet of additional drawdown after the first five years of the recovery of stored water from the proposed well or wells;
 2. The director determines that the proposed recovery well or wells will be located in an area of known land subsidence and the recovery of stored water from the proposed well or wells will likely cause unreasonably increasing damage from additional regional land subsidence. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study, which may include a geophysical evaluation, demonstrating the impact of the recovery of stored water from the proposed recovery well or wells on regional land subsidence. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection; or

3. Except as provided in subsection (E) of this Section, the director determines, after consulting with ADEQ, that the recovery of stored water from the proposed well or wells will likely cause the migration of contaminated groundwater from a remedial action site to a well of record in existence as of the date of receipt of the application, resulting in a degradation of the quality of the water withdrawn from the well of record so that the water will no longer be usable for the purpose for which it is currently being used without additional treatment, and that the damage to the owner of the well of record will not be prevented or adequately mitigated through the implementation of a program regulated under Title 49 of the Arizona Revised Statutes, or a program regulated by EPA or DOD. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study demonstrating whether the recovery of stored water from the proposed well or wells will have the effect described in this subsection. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection.
- C. In making a determination under subsection (B)(1), (B)(2), or (B)(3) of this Section:
1. If the proposed recovery well is a replacement well in a new location, the director shall take into account the collective effects of reducing or terminating withdrawals from the well being replaced combined with the proposed recovery of stored water from the replacement well if the applicant submits a hydrological study demonstrating those collective effects to the satisfaction of the director.
 2. If the proposed recovery well will be located within the area of impact, as defined in A.R.S. § 45-802.01, of an underground storage facility and the applicant will account for all of the water recovered from the well as water stored at the facility, the director shall take into account the effects of water storage at the facility on the proposed recovery of stored water from the recovery well if the applicant submits a hydrological study demonstrating those effects to the satisfaction of the director.
- D. If the director determines under subsection (B)(1) of this Section that the probable impact of the recovery of stored water from the proposed recovery well or wells on any well of record in existence as of the date of receipt of the application will exceed 10 feet of additional drawdown after the first five years of operation of the proposed well or wells, the director shall notify the applicant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the recovery of stored water from the proposed recovery well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(1) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the applicant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the recovery of stored water from the proposed recovery well or wells. The applicant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the applicant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- E. If the director determines that the recovery of stored water from the proposed recovery well or wells will have the effect described in subsection (B)(3) of this Section on one or more wells of record in existence as of the date of receipt of the application, the director shall notify the applicant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the recovery of stored water from the proposed recovery well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(3) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the applicant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the recovery of stored water from the proposed recovery well or wells. The applicant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the applicant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- F. At any time before a final determination under this Section, the applicant may:
1. Amend the application to change the location of the proposed recovery well or wells or the amount of stored water to be recovered from the proposed recovery well or wells to lessen the degree of impact on wells of record or regional land subsidence; or
 2. Agree to construct or operate the proposed recovery well or wells in a manner that lessens the degree of impact on wells of record or regional land subsidence. The director shall indicate in the recovery well permit that compliance with the agreement is a condition of the recovery well permit.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

R12-15-1304. Well Spacing Requirements - Wells Withdrawing Groundwater From the Little Colorado River Plateau Groundwater Basin for Transportation to Another Groundwater Basin Under A.R.S. § 45-544(B)(1)

- A. An LCR plateau groundwater transporter may not withdraw groundwater from a well or wells drilled in the Little Colorado river plateau groundwater basin after January 1, 1991, except a replacement well in approximately the same location or a well drilled after that date pursuant to a notice of intention to drill filed on or before that date, for transportation away from the basin pursuant to A.R.S. § 45-544(B)(1) if the director determines that the withdrawals for that purpose will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B) of this Section.
- B. The director shall determine that the withdrawals of groundwater from the well or wells will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells if any of the following apply:
1. Except as provided in subsection (D) of this Section, the director determines that the probable impact of the withdrawals of groundwater from the well or wells on any well of record in existence when the withdrawals commenced or are proposed to commence will exceed 10 feet of additional drawdown after the first five years of the withdrawals. To assist the director in making a determination under this subsection, the LCR plateau groundwater transporter may submit to the director a hydrological study delineating those areas surrounding the LCR plateau groundwater transporter's well or wells in which the projected impacts on water levels will exceed 10 feet of additional drawdown after the first five years of the withdrawals. The director may require the LCR plateau groundwater transporter to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection;
 2. The director determines that the well or wells from which the groundwater is withdrawn are located in an area of known land subsidence and the withdrawals of groundwater will likely cause unreasonably increasing damage from additional regional land subsidence. To assist the director in making a determination under this subsection, the LCR plateau groundwater transporter may submit to the director a hydrological study, which may include a geophysical evaluation, demonstrating the impact of the withdrawals on regional land subsidence. The director may require the LCR plateau groundwater transporter to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection; or
 3. Except as provided in subsection (E) of this Section, the director determines, after consulting with ADEQ, that the withdrawals of groundwater from the well or wells will likely cause the migration of contaminated groundwater from a remedial action site to a well of record in existence when the groundwater withdrawals commenced or are proposed to commence, resulting in a degradation of the quality of the water withdrawn from the well of record so that the water will no longer be usable for the purpose for which it is currently being used without additional treatment, and that the damage to the owner of the well of record will not be prevented or adequately mitigated through the implementation of a program regulated under Title 49 of the Arizona Revised Statutes, or a program regulated by EPA or DOD. To assist the director in making a determination under this subsection, the LCR plateau groundwater transporter may submit to the director a hydrological study demonstrating whether the withdrawals of groundwater will have the effect described in this subsection. The director may require the LCR plateau groundwater transporter to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection.
- C. In making a determination under subsection (B)(1), (B)(2), or (B)(3) of this Section, if a well from which the groundwater is withdrawn is a replacement well in a new location, the director shall take into account the collective effects of reducing or terminating withdrawals from the well being replaced combined with the withdrawals from the replacement well if the LCR plateau groundwater transporter submits a hydrological study demonstrating those collective effects to the satisfaction of the director.
- D. If the director determines under subsection (B)(1) of this Section that the probable impact of the withdrawals of groundwater from the well or wells on any well of record in existence when the withdrawals commenced or are proposed to commence will exceed 10 feet of additional drawdown after the first five years of the withdrawals, the director shall notify the LCR plateau groundwater transporter in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the withdrawals will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(1) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the LCR plateau groundwater transporter submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the withdrawals. The LCR plateau groundwater transporter shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the LCR plateau groundwater transporter made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- E. If the director determines that the withdrawals of groundwater from the well or wells will have the effect described in subsection (B)(3) of this Section on one or more wells of record in existence when the groundwater withdrawals commenced or are proposed to commence, the director shall notify the LCR plateau groundwater transporter in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the withdrawals will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(3) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the LCR plateau groundwater transporter submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the withdrawals. The LCR plateau groundwater transporter shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the LCR plateau groundwater transporter made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- F. At any time before a final determination under this Section, the LCR plateau groundwater transporter may agree to construct or operate the well or wells in a manner that lessens the degree of impact on wells of record or regional land subsidence. Compliance with the agreement is a condition for the use of the well or wells to withdraw groundwater for transportation away from the basin pursuant to A.R.S. § 45-544(B)(1).

Historical Note

New Section made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

R12-15-1305. Well Spacing Requirements - Applications to Use a Well to Withdraw Groundwater for Transportation to an Active Management Area Under A.R.S. § 45-559

- A. The director shall not approve an application to use a well or wells constructed after September 21, 1991, to withdraw groundwater for transportation to an active management area under A.R.S. § 45-559 if the director determines that the withdrawals for that purpose will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B) of this Section.

- B. The director shall determine that the withdrawals of groundwater will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells if any of the following apply:
1. Except as provided in subsection (C) of this Section, the director determines that the probable impact of the groundwater withdrawals on any well of record in existence as of the date of receipt of the application will exceed 10 feet of additional drawdown after the first five years of the withdrawals. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study delineating those areas surrounding the proposed well or wells in which the projected impacts of the groundwater withdrawals on water levels will exceed 10 feet of additional drawdown after the first five years of the withdrawals. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection;
 2. The director determines that the proposed well or wells will be located in an area of known land subsidence and the groundwater withdrawals will likely cause unreasonably increasing damage from additional regional land subsidence. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study, which may include a geophysical evaluation, demonstrating the impact of the groundwater withdrawals on regional land subsidence. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection; or
 3. Except as provided in subsection (D) of this Section, the director determines, after consulting with ADEQ, that the groundwater withdrawals will likely cause the migration of contaminated groundwater from a remedial action site to a well of record in existence as of the date of receipt of the application, resulting in a degradation of the quality of the water withdrawn from the well of record so that the water will no longer be usable for the purpose for which it is currently being used without additional treatment, and that the damage to the owner of the well of record will not be prevented or adequately mitigated through the implementation of a program regulated under Title 49 of the Arizona Revised Statutes, or a program regulated by EPA or DOD. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study demonstrating whether the groundwater withdrawals will have the effect described in this subsection. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection.
- C. If the director determines under subsection (B)(1) of this Section that the probable impact of the groundwater withdrawals on any well of record in existence as of the date of receipt of the application will exceed 10 feet of additional drawdown after the first five years of the withdrawals, the director shall notify the applicant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the groundwater withdrawals will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(1) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the applicant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the withdrawals. The applicant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the applicant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- D. If the director determines that the groundwater withdrawals will have the effect described in subsection (B)(3) of this Section on one or more wells of record in existence as of the date of receipt of the application, the director shall notify the applicant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the groundwater withdrawals will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(3) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the applicant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the withdrawals. The applicant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the applicant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- E. At any time before a final determination under this Section, the applicant may:
1. Amend the application to change the location of the proposed well or wells or the amount of groundwater to be withdrawn from the proposed well or wells to lessen the degree of impact on wells of record or regional land subsidence; or
 2. Agree to construct or operate the proposed well or wells in a manner that lessens the degree of impact on wells of record or regional land subsidence. The director shall indicate in the permit that compliance with the agreement is a condition of the permit to use the well or wells to withdraw groundwater for transportation to an active management area under A.R.S. § 45-559.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

R12-15-1306. Well Spacing Requirements - Applications for Water Exchange Permits Under A.R.S. § 45-1041

- A. The director shall not approve an application for a water exchange permit filed under A.R.S. § 45-1041 by a person other than a city, town, private water company or irrigation district if the director determines that any new or increased pumping by the applicant from a well or wells within an active management area pursuant to the water exchange will cause unreasonably increasing damage to surrounding land or other water users under subsection (B) of this Section.
- B. The director shall determine that new or increased pumping by the applicant from a well or wells within an active management area will cause unreasonably increasing damage to surrounding land or other water users if any of the following apply:
1. Except as provided in subsection (C) of this Section, the director determines that the probable impact of the new or increased pumping on any well of record in existence as of the date of receipt of the application will exceed 10 feet of additional drawdown after the first five years of the pumping. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study delineating those areas surrounding the proposed well or wells in which the projected impacts of the new or increased pumping on water levels will exceed 10 feet of additional drawdown after the first five years of the pumping. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection;
 2. The director determines that the new or increased pumping will occur in an area of known land subsidence and the pumping will likely cause unreasonably increasing damage from additional regional land subsidence. To assist the director in making a determination under this subsection, the applicant may submit a hydrological study, which may include a geophysical evaluation, demonstrating the impact of the new or increased pumping on regional land subsidence. The director may require the applicant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection; or
 3. Except as provided in subsection (D) of this Section, the director determines, after consulting with ADEQ, that the new or increased pumping will likely cause the migration of contaminated groundwater from a remedial action site to a well of record in existence as of the date of receipt of the application, resulting in a degradation of the quality of the water withdrawn from the well of record so that the water will no longer be usable for the purpose for which it is currently being used without additional treatment, and that the damage to the owner of the well of record will not be prevented or adequately mitigated through the implementation of a program regulated under Title 49 of the Arizona Revised Statutes, or a program regulated by EPA or DOD. To assist the director in making a determination under this subsection, the applicant may submit with the application a hydrological study demonstrating whether the new or increased pumping will have the effect described in this subsection. If the applicant does not submit such a hydrological study with the application, the director may require the applicant to submit the study if the director determines that the study will assist the director in making a determination under this subsection.
- C. If the director determines under subsection (B)(1) of this Section that the probable impact of the new or increased pumping on any well of record in existence as of the date of receipt of the application will exceed 10 feet of additional drawdown after the first five years of the pumping, the director shall notify the applicant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the new or increased pumping will cause unreasonably increasing damage to surrounding land or other water users under subsection (B)(1) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the applicant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the new or increased pumping. The applicant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the applicant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- D. If the director determines that the new or increased pumping will have the effect described in subsection (B)(3) of this Section on one or more wells of record in existence as of the date of receipt of the application, the director shall notify the applicant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the new or increased pumping will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(3) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the applicant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the new or increased pumping. The applicant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the applicant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- E. At any time before a final determination under this Section, the applicant may:
1. Amend the application to change the location of the proposed well or wells or the amount of the new or increase pumping to lessen the degree of impact on wells of record or regional land subsidence; or
 2. Agree to construct or operate the proposed well or wells in a manner that lessens the degree of impact on wells of record or regional land subsidence. The director shall indicate in the water exchange permit that compliance with the agreement is a condition of the water exchange permit.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

R12-15-1307. Well Spacing Requirements - Notices of Water Exchange Under A.R.S. § 45-1051

- A. A notice of water exchange participant may not participate in a water exchange for which a notice is filed under A.R.S. § 45-1051 if the director determines that any new or increased pumping by the person from a well or wells within an active management area pursuant to the water exchange will cause unreasonably increasing damage to surrounding land or other water users under subsection (B) of this Section.
- B. The director shall determine that new or increased pumping from the well or wells in an active management area will cause unreasonably increasing damage to surrounding land or other water users if any of the following apply:
1. Except as provided in subsection (C) of this Section, the director determines that the probable impact of the new or increased pumping on any well of record in existence when the pumping commenced or is proposed to commence will exceed 10 feet of additional drawdown after the first five years of the pumping. To assist the director in making a determination under this subsection, the notice of water exchange participant may submit to the director a hydrological study delineating those areas surrounding the notice of water exchange

- participant's well or wells in which the projected impacts of the new or increased pumping on water levels will exceed 10 feet of additional drawdown after the first five years of the pumping. The director may require the notice of water exchange participant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection;
2. The director determines that the new or increased pumping is in an area of known land subsidence and the pumping will likely cause unreasonably increasing damage from additional regional land subsidence. To assist the director in making a determination under this subsection, the notice of water exchange participant may submit to the director a hydrological study, which may include a geophysical evaluation, demonstrating the impact of the pumping on regional land subsidence. The director may require the notice of water exchange participant to submit such a hydrological study if the director determines that the study will assist the director in making a determination under this subsection; or
 3. Except as provided in subsection (D) of this Section, the director determines, after consulting with ADEQ, that the new or increased pumping will likely cause the migration of contaminated groundwater from a remedial action site to a well of record in existence when the pumping commenced or is proposed to commence, resulting in a degradation of the quality of the water withdrawn from the well of record so that the water will no longer be usable for the purpose for which it is currently being used without additional treatment, and that the damage to the owner of the well of record will not be prevented or adequately mitigated through the implementation of a program regulated under Title 49 of the Arizona Revised Statutes, or a program regulated by EPA or DOD. To assist the director in making a determination under this subsection, the notice of water exchange participant may submit to the director a hydrological study demonstrating whether the new or increased pumping will have the effect described in this subsection. The director may require the notice of water exchange participant to submit such a study if the director determines that the study will assist the director in making a determination under this subsection.
- C. If the director determines under subsection (B)(1) of this Section that the probable impact of the new or increased pumping on any well of record in existence when the pumping commenced or is proposed to commence will exceed 10 feet of additional drawdown after the first five years of the pumping, the director shall notify the notice of water exchange participant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the new or increased pumping will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(1) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the notice of water exchange participant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the new or increased pumping. The notice of water exchange participant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the notice of water exchange participant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- D. If the director determines that the new or increased pumping will have the effect described in subsection (B)(3) of this Section on one or more wells of record in existence when the pumping commenced or is proposed to commence, the director shall notify the notice of water exchange participant in writing of the location of the wells of record and the names and addresses of the owners of the wells as shown in the Department's well registry. The director shall not determine that the new or increased pumping will cause unreasonably increasing damage to surrounding land or other water users from the concentration of wells under subsection (B)(3) of this Section if within 60 days after the date on the notice, or a longer time period approved by the director, the notice of water exchange participant submits one of the following for each well of record identified in the notice:
1. A signed and notarized consent form from the owner of the well of record consenting to the new or increased pumping. The notice of water exchange participant shall use the consent form furnished by the director; or
 2. Evidence satisfactory to the director that the address of the owner of the well of record as shown in the Department's well registry records is inaccurate and that the notice of water exchange participant made a reasonable attempt to locate the current owner of the well of record but was unable to do so.
- E. At any time before a final determination under this Section, the notice of water exchange participant may agree to construct or operate the well or wells in a manner that lessens the degree of impact on wells of record or regional land subsidence. Compliance with the agreement is a condition for the use of the well to pump water for the water exchange.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

R12-15-1308. Replacement Wells in Approximately the Same Location

- A. For purposes of A.R.S. §§ 45-544, 45-596, and 45-597, a replacement well in approximately the same location is a proposed well to which all of the following apply:
1. The proposed well will be located no greater than 660 feet from the original well, and the location of the original well can be determined at the time the notice of intention to drill the proposed well is filed;
 2. Except as provided in subsections (A)(3) and (A)(4) of this Section, the proposed well will not annually withdraw an amount of water in excess of the maximum annual capacity of the original well. The director shall determine the maximum annual capacity of the original well by multiplying the maximum pump capacity of the original well in gallons per minute by 525,600, and then converting the result into acre-feet by dividing the result by 325,851 gallons. The director shall presume that the maximum pump capacity of the original well is the maximum pump capacity of the well in gallons per minute as shown in the Department's well registry records, except that:
 - a. If the director has reason to believe that the maximum pump capacity as shown in the Department's well registry records is inaccurate, or if the applicant submits evidence demonstrating that the maximum pump capacity as shown in the Department's well registry records is inaccurate, the director shall determine the maximum pump capacity by considering all available evidence, including the depth and diameter of the well and any evidence submitted by the applicant; or
 - b. If the Department's well registry records do not show the maximum pump capacity of the original well, the director shall not approve the proposed well as a replacement well in approximately the same location unless the applicant demonstrates to the director's satisfaction the maximum pump capacity of the original well;
 3. If a well permit was issued for the original well under A.R.S. § 45-599, the proposed well will not annually withdraw an amount of groundwater in excess of the maximum annual volume set forth in the well permit;
 4. If a recovery well permit was issued for the well to be replaced pursuant to A.R.S. § 45-834.01(B) and the permit sets forth a maximum annual volume of stored water that may be recovered from the well, the proposed well will not annually recover an amount of stored water in excess of the maximum annual volume set forth in the recovery well permit;
 5. If the well to be replaced has been physically abandoned in accordance with R12-15-816, a notice of intention to drill the proposed well is filed no later than 90 days after the well to be replaced was physically abandoned; and
 6. If the proposed well will be used to withdraw groundwater from the Little Colorado river plateau groundwater basin for transportation away from the basin pursuant to A.R.S. § 45-544(B)(1), one of the following applies:
 - a. The original well was drilled on or before January 1, 1991, or was drilled after that date pursuant to a notice of intention to drill that was on file with the Department on that date; or
 - b. The director previously determined that the withdrawal of groundwater from the original well for transportation away from the Little Colorado river plateau groundwater basin complies with R12-15-1304.
- B. After a replacement well in approximately the same location is drilled, the replacement well may be operated in conjunction with the original well and any other wells that replaced the original well if the total annual withdrawals from all wells do not exceed the maximum amount allowed under subsection (A)(2), (A)(3), or (A)(4) of this Section, whichever applies.
- C. A proposed well may be drilled as a replacement well in approximately the same location for more than one original well if the criteria in subsections (A)(1), (A)(5), and (A)(6) of this Section are met with respect to each original well and if the total annual withdrawals from the proposed well will not exceed the combined maximum annual amounts allowed for each original well under subsections (A)(2), (A)(3), or (A)(4) of this Section, whichever apply.
- D. The director may include conditions in the approval of the notice of intention to drill the replacement well to ensure that the drilling and operation of the replacement well meets the requirements of this Section.

Historical Note

New Section made by final rulemaking at 12 A.A.R. 2193, effective August 7, 2006 (Supp. 06-2).

[Scott Cancelosi](#)
Director
Public Services Division

A.A.C. [Table of Contents](#)
[Commercial Use Fees of this Chapter](#)

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TITLE VII

RULES GOVERNING DESIGN AND OPERATION OF DAMS
[As Restated October, 1993]

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TITLE VII

*RULES GOVERNING
DESIGN AND OPERATON OF DAMS
[As Restated October, 1993]*

SUBTITLE I. GENERAL PROVISIONS

Section 701.1. 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.

Section 701.2. 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.

Section 701.3. SCOPE OF REGULATIONS.

All dams within the State of Arkansas, except those owned by the United State Government or those exempted by Section 701.4, must have a valid construction and operation permit issued under the provisions of this title.

Section 701.4. EXEMPTIONS.

Dams meeting either of the following criteria are not subject to rules contained in this title, unless Section 701.5 of this title is successfully invoked.

- A. Dams with height less than 25 feet.
- B. Dams with normal storage less than 50 acre-feet.
- C. Dams with crest elevations below the ordinary high water mark of the stream at that location.

Section 701.5. PETITION BY AFFECTED PERSONS.

Persons who believe themselves or their property to be endangered by failure of a dam which is below the size requirements specified in Section 701.4 may file a petition requesting that the Commission require permitting and compliance with dam safety regulations for that dam.

- A. Commission Investigation. Upon receipt of such petition, the Executive Director shall immediately begin an investigation of the petitioner's allegations.
- B. Public Hearing. As a part of the Commission's investigation, a Public Hearing shall be held within the county in which the dam is located. Notice of the hearing shall be published in a manner consistent with Section 702.8.
- C. Commission Order. Upon consideration of staff findings and testimony received, the Commission shall issue an order either approving or denying the petitioner's request.

Section 701.6. DUTIES, OBLIGATIONS, AND LIABILITIES OF DAM OWNERS.

Nothing in these rules 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.

Section 701.7. NO LIABILITY BY COMMISSION, EMPLOYEES, OR AGENTS.

No action shall be brought against the State or the 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:

- A. The approval of the dam or reservoir, or approval of flood-handling plans during construction;
- B. The issuance or enforcement of orders relative to maintenance and operation of the dam or reservoir;
- C. Inspection, control and regulation of the dam or reservoir;
- D. Measures taken to protect against failure during an emergency.

Section 701.8. EXCEPTIONS.

The Commission may grant exceptions to requirements contained within this title. Any variance from these rules must be supported by written approval of the Commission's Executive Director setting forth the reason for its granting and the limits placed thereon.

SUBTITLE II. PERMITS FOR DAMS

Section 702.1. CONSTRUCTION PERMIT.

A permit issued by the Commission is required prior to construction of any dam not exempted under Sections 701.3 or 701.4 of this title.

Section 702.2. OPERATION PERMIT.

- A. Before water is deliberately impounded by closing drain gates on a newly constructed dam, an operation permit must be issued by the Commission. An operation permit will be issued by the Chief Engineer upon completion of final inspection and receipt of the Certificate of Substantial Compliance by the owner's engineer. (See Section 706.6).
- B. An operation permit is required for all existing dams not exempted under Sections 701.3 or 701.4 of this title.

Section 702.3. TRANSFER OF PERMIT.

Within six (6) months after change of ownership of a permitted dam, the new owner shall notify the Commission. The Commission shall issue a dam permit in the name of the new owner.

Section 702.4. WATER PLAN COMPLIANCE.

Filing of an application to permit a proposed dam also serves as filing for Water Plan Compliance Certification as described in Section 602.5 of the Commission's rules. The water plan compliance process may run concurrently with the dam permit review.

Section 702.5. APPLICATION.

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

Section 702.6. COMMISSION REVIEW.

Upon receipt of application for dam permit, the Commission staff will review data presented to determine compliance with State law, Commission rules, and accepted engineering practices. If necessary, the staff may request additional data to insure compliance.

Section 702.7. PUBLIC NOTICE.

Upon completion of Commission review, the Executive Director will cause a Public Notice to be published two times, one week apart. The Public Notice will be placed in a newspaper having general circulation in the county in which the dam is/will be located. Information in the public notice will include: the owner's name and address, the dam's location and pertinent physical data describing the dam. 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.

Section 702.8. PUBLIC HEARING.

If requested, the Executive Director shall cause a Public Hearing to be conducted within the county in which the dam is/will be located. Said hearing will be for the purpose of describing the proposed actions and taking testimony regarding the public view of the proposal. The Executive Director shall cause publication of a public notice describing the time, place and purpose of the Public Hearing. Copies of the public notice shall be furnished to the owner(s), complainant(s) and adjacent landowners (if known). Publication shall be in a newspaper having general circulation in the county in which the dam is/will be located. Notice shall be published twice, one week apart.

Section 702.9. COMMISSION ACTION.

A. If no Public Hearing is requested as a result of the Public Notice, the Executive Director will either approve or deny the permit request.

B. If a Public Hearing is requested as a result of the Public Notice, the Executive 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 Title VI of the Commission's rules, if applicable.

SUBTITLE III. FEES

Section 703.1. 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 \$100.00, whichever is greater, except that no application review fee shall exceed \$1000.00.

Section 703.2. FINAL COST REPORT.

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

Section 703.3. 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 Commission.

Section 703.4. ANNUAL PERMIT FEE.

The annual permit fee shall be computed as specified in Ark. Code Ann. §15-22-219, as may be amended from time to time.

Excerpt from Ark. Code Ann. §15-22-219:

Any person obtaining a permit under the provisions of §15-22-210 shall, in consideration therefor, 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 (\$10,000.00). 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.

The volume "the dam involved is designed to impound" is defined as the billing volume. (See Subtitle XII, GLOSSARY)

SUBTITLE IV. ENFORCEMENT

Section 704.1. NOTICE OF NON-EMERGENCY DEFICIENCY.

Upon discovery of a deficiency, which does not immediately threaten the dam's safety, the Chief Engineer will issue a letter specifying actions necessary to remedy the problem and requesting a schedule for implementing the required actions. Based on mutual agreement a consent order will be issued which will embody the agreed upon actions and timetable.

Section 704.2. PUBLIC HEARINGS.

In the event remedial measures for non-emergency deficiencies cannot be accomplished through the means of consent orders, the Executive Director shall cause a Public Hearing to be conducted to present the staff's proposed order and accept testimony. The hearing shall be conducted in the county in which the dam is located. Public notice of the hearing shall be provided in a manner consistent with Section 702.8 of this title.

Section 704.3. COMMISSION ORDERS.

After review of findings of the Public Hearing, the Commission may issue orders compelling specified actions.

Section 704.4. PENALTIES.

Non-compliance with commission rules or disregard of Commission orders may result in fines of up to \$10,000. In general, penalties will be set by doubling the costs incurred by the Commission.

Section 704.5. EMERGENCY REMEDIAL ORDERS.

Upon discovery of a condition which renders a dam subject to rapid failure, the Executive Director may issue an Emergency Remedial Order describing actions which must be taken to protect life and property.

Failure to comply with these orders may result in penalties under Section 704.4.

Section 704.6. APPEALS.

Actions by the Commission may be appealed as described in Subtitle V of Title I, *rules of Organization and General Operation of the Arkansas Soil and Water Conservation Commission.*

SUBTITLE V. DESIGN CRITERIA

Section 705.1. GENERAL STANDARDS.

All dams must be designed in accordance with currently accepted engineering practices. Acceptable guidelines include those published and recommended by the U.S. Army Corps of Engineers; U.S. Department of Agriculture, Soil Conservation Service; U.S. Department of Interior, bureau of Reclamation; and Federal Energy Regulatory Commission.

Section 705.2. REGISTERED PROFESSIONAL ENGINEER.

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

Section 705.3. SIZE CLASSIFICATION CRITERIA.

Size classification is based on the more stringent of two 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 1000	25 to 40
Intermediate	• 1000 And < 50,000	•40 and < 100
Large	• 50,000	• 100

Section 705.4. HAZARD CLASSIFICATION CRITERIA.

All dams will be classified or reclassified as required to assure appropriate safety considerations. 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. If doubt exists concerning classification, the more hazardous category must be selected.

NOTE: The hazard classification does not indicate the physical condition of a dam.

Table 2

HAZARD CLASSIFICATION

CATEGORY	LOSS OF HUMAN LIFE	ECONOMIC LOSS
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.

Section 705.5. SPILLWAY DESIGN FLOOD (SDF) FOR DAMS.

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

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

B. 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 or less at, and downstream of, the first habitable structure or financially significant development.

Table 3

SPILLWAY DESIGN FLOOD FOR DAMS

<u>HAZARD CLASSIFICATION</u>	<u>SIZE</u>	<u>SPILLWAY DESIGN FLOOD</u>
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.

Section 705.6. DOWNSTREAM RELEASES.

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

A. Minimum release quantities shall be sufficient to maintain existing instream and offstream uses and shall be defined after consideration of the best available low flow information.

B. Minimum release ports must be designed to operate without manual intervention.

Section 705.7. RESERVOIR DRAIN CONDUIT.

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

A. Such conduit shall have a minimum diameter of twelve (12) inches for watershed areas less than one square mile and eighteen (18) inches for watershed greater than one square mile. Such

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

B. 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.

Section 705.8. STRUCTURAL CRITERIA.

As a minimum, the design must address the following:

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

SUBTITLE VI. CONSTRUCTION REQUIREMENTS

Section 706.1. PLANS AND SPECIFICATIONS.

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

Section 706.2. 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.

Section 706.3. CONSTRUCTION RECORDS.

The applicant (or applicant's engineer) must retain construction records throughout the life of the dam. As a minimum, the records must include:

- A. Daily log of construction activities.
- B. Record of personnel and equipment on site.
- C. Documentation of soil tests such as standard proctor, in-place density, and moisture.
- D. Documentation of concrete cylinder tests.
- E. Copies of all engineering change orders and field change notes.

SEISMIC RISK ZONES

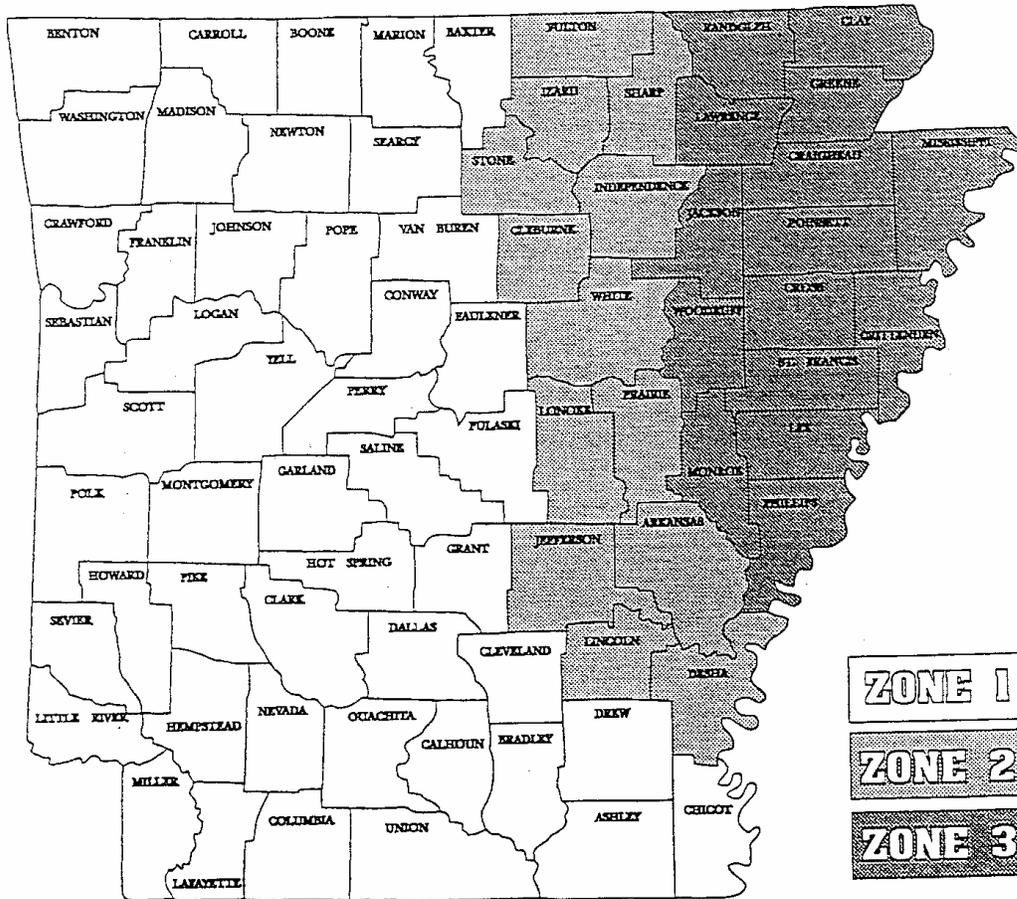


FIGURE 1

During construction, adequate measures must be taken to prevent excessive erosion and off site sedimentation. Suitable techniques include: temporary vegetation, mulching, staked straw bales, filter fences, and chemical stabilization. Other techniques may be used if approved by the Chief Engineer.

Section 706.5. FINAL INSPECTION.

Upon substantial completion of construction, the owner must notify the Commission and schedule a final inspection of the work.

Section 706.6. ENGINEER'S CERTIFICATION.

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

Section 706.7. RECORD DRAWINGS.

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

Section 706.8. PERMANENT REFERENCE MARKS.

Two or more permanent reference marks shall be established for future use near but not on the dam. Accurate longitude, latitude and elevation shall be shown on the record drawings. Elevations shall be referenced to the National Geodetic Vertical Datum of 1929.

SUBTITLE VII. EVALUATIONS OF EXISTING DAMS

Section 707.1. TYPES OF EVALUATIONS.

A. Spillway Design Flood. Existing dams will be evaluated periodically to determine if development of downstream areas warrants change in hazard classification and review of spillway design flood (SDF). Overtopping during the SDF may be allowed if properly prepared analyses demonstrate that: (1) overtopping will have a return interval greater than 25 years; and (2) the dam will withstand the projected overtopping without failure.

B. Structural. A complete evaluation of the structural integrity may include the following: geotechnical investigation, structural stability, seismic resistance, horizontal and vertical alignments, structural concrete reliability, erosion controls, inlet and outlet works, stilling basins, seepage, and others.

C. Operation and Maintenance. Evaluation of an existing structure shall include, but not be limited to: visual inspections and evaluations of potential problems such as leakage, seepage, cracks, slides, settlement, spillway blockages, conduit controls and other operational and maintenance deficiencies which could lead to failure of the dam. There may be sufficient evidence for a finding that an existing dam is inadequate.

Section 707.2. DEFICIENCIES.

Dams not meeting minimum acceptable standards (See Subtitle V and VIII) are deemed inadequate and therefore subject to necessary action under Subtitle IV.

Section 707.3. INTERIM ALTERNATIVES.

When the 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, temporary repairs, reservoir dewatering, insurance coverage, and downstream warning/evacuation plans. Consideration shall be given to the time required to overcome economic, physical and legal restraints to upgrading, the prospect of permanent repair, current use of the facility, degree of risk, and public welfare.

Section 707.4. VARIANCE.

Upon request by the owner of an existing dam which does not meet the minimum acceptable standards stated in Subtitles V and VIII of this title, the Chief engineer may authorize a variance from these criteria. The Chief Engineer's decision shall consider: (a) consequences of dam failure, (b) the owner's proposal for reduction of hazards, (c) barriers to upgrading of the structure, and (d) other pertinent factors.

SUBTITLE VIII. OPERATION AND MAINTENANCE

Section 708.1. 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.

Section 708.2. EROSION PROTECTION.

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

Section 708.3. WOODY VEGETATION PROHIBITED: EMBANKMENT DAMS.

Growth of woody vegetation is not permitted on the spillway, crest, upstream or downstream embankments, and within twenty (20) feet of the downstream toe or groin of the dam.

A. Remediation: Trees with roots likely to extend to the crest of the dam shall be removed. Trees whose roots are unlikely to extend to the crest may remain if erosion control vegetation can be maintained and inspections can be accomplished. Trees larger than six (6) inches in diameter which are to be removed from embankments, must be removed together with roots larger than two inches. The resulting voids shall be repaired with compacted soil similar to the remaining embankment material. Smaller trees and brush, and those not on embankments may be cut and/or treated with herbicide.

B. Time for compliance: New growth must be removed before it shades out desirable vegetation generally on a two-year cycle. Where extensive tree and brush growth were established prior to adoption of these rules, a compliance schedule of up to five years may be approved provided that: (a) No evidence of significant immediate hazard is detected; (b) The compliance schedule includes a reasonable estimate for costs, and a rational procedure for accumulating necessary funds; (c) Vegetation is not so dense that effective inspections are impossible; and (d) Appropriate annual efforts are scheduled. The long-term schedule may be cancelled if evidence of immediate hazards is discovered in subsequent inspections.

Section 708.4. WOODY VEGETATION PROHIBITED; CONCRETE OR MASONRY DAMS.

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

A. Remediation: Vegetation shall be removed by manual, mechanical or chemical means or a combination thereof. 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 months may be approved.

Section 708.5. OPERATION OF GATES AND CONTROLS.

All gates, valves and controls, must be maintained in operational condition. Operation of each such item must be tested at least annually, and such tests must be documented in the owner's permanent records. However, tests may be waived by the Chief Engineer 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.

Section 708.6. REPAIRS AND MODIFICATIONS.

Written approval by the Chief Engineer is required before repairs or modifications to a dam or appurtenances may be undertaken. Plans and specifications prepared by a registered professional engineer may be required for major actions.

Section 708.7. RECORDS.

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

SUBTITLE IX. INSPECTION

Section 709.1. OWNER INSPECTIONS.

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.

Section 709.2. COMMISSION INSPECTIONS.

Commission personnel will periodically perform inspections of each permitted dam. Commission inspections are of three types: Maintenance and Operation; Dam Safety Evaluation; and Emergency. The frequency of inspections and evaluations will vary according to the hazard rating, size and condition of the dam. Emergency inspections will be performed when conditions warrant.

Section 709.3. ACCESS.

The owner or owner's agent must provide Commission personnel access to the dam during reasonable working hours for Commission inspections. Access during emergency conditions must be available to Commission personnel.

Section 709.4. ASSISTANCE BY OWNER.

The owner or owner's agent may be requested to provide limited assistance to Commission personnel in performing inspections. Requested assistance may include:

- A. Operating gates, valves, and other controls.
- B. Cutting excessive vegetation in preparation for inspections.

SUBTITLE X. EMERGENCY ACTION PLANS

Section 710.1. EMERGENCY ACTION PLANS REQUIRED.

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

Section 710.2. APPROVAL OF EMERGENCY ACTION PLANS REQUIRED.

Written approval of the Chief Engineer must be obtained for all EAPs.

Section 710.3. CONTENTS OF EMERGENCY ACTION PLANS.

Site conditions will dictate exact contents of specific EAPs. Guidelines for preparation of EAPs are available from the Commission.

Section 710.4. ANNUAL EXERCISES AND DRILLS.

Implementation of EAPs must include at least one tabletop exercise per year and one test drill every three years. The Commission's Chief Engineer must be notified at least one week in advance of either procedure.

SUBTITLE XI. REMOVAL OF DAMS

Section 711.1. APPROVAL OF PLANS REQUIRED.

Prior to removal, a plan for removal and revegetation must be approved by the Chief Engineer.

Section 711.2. 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.

Section 711.3. 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.

Section 711.4. PROCEDURE FOR BREACHING.

The procedure for breaching must adequately guard against downstream flooding, erosion, and sedimentation.

Section 711.5. 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 100-year flood.

Section 711.6. 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.

SUBTITLE XII. GLOSSARY

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

- A. Billing volume - Normal storage designed to contain sediment accumulation over the life of the dam.
- B. Chief Engineer - The Deputy Director/Chief Engineer of the Arkansas Soil and Water Conservation Commission.
- C. Commission - The Arkansas Natural Resources Commission.
- D. Construction costs - Estimated or actual material and labor costs, including excavation, embankment placement, spillways, gates, valves, and conduits. Shall not include costs of: land, reservoir clearing, engineering, water treatment facilities, or other costs not directly related to construction of the dam.
- E. Dam - Any barrier, including one for flood detention, designed to impound liquid volumes. 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 Sections 701.3 or 701.4 of this title.
- F. Effective crest of the dam - The elevation of the lowest pint on the crest of the dam excluding spillways.
- G. Executive Director - The Executive Director of the Arkansas Natural Resources Commission.
- H. Height of dam - The vertical distance from the effective crest of the dam to the lowest elevation on the downstream toe of the dam.
- I. Maximum storage - The volume of the impoundment created by the dam at the effective crest of the dam.
- J. Minimum release - Daily quantity of water which must be released to preserve downstream riparian rights, permitted non-riparian rights or to meet instream water needs including, but not limited to those of fish and wildlife.
- K. Normal storage - The volume of the impoundment created by the dam at the lowest uncontrolled spillway crest.
- L. PMF (probable maximum flood) - The maximum runoff condition resulting from the most severe combination of hydrologic and meteorologic conditions that are reasonably possible for a given watershed. The PMF is the maximum runoff computed from the spatial and temporal distribution of the PMP over the watershed.
- M. PMP (probable maximum precipitation) - 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.
- N. Spillway design flood (SDF) - The largest flood the spillway must pass without overtopping a dam.

E.5. California



FEMA

HYDROLOGIC ANALYSIS WITHIN CALIFORNIA'S DAM SAFETY PROGRAM

By Emil R. Calzascia¹ and James A. Fitzpatrick²

Introduction

The topography and climate of California are extremely diverse, ranging from low elevations at the coast to the high altitudes of the Sierras, from less than 3 inches of annual rainfall in the southeast desert basins to over 120 inches on the extreme north coast. Drainage basins for dams vary in size from portions of an acre to thousands of square miles. Stream gages are sparse in most areas and are essentially nonexistent in the undeveloped areas. Accurate estimation of rare flood flows from recorded data is especially difficult due to the lack of basic site-specific flow data from which the flood producing potential of a drainage basin can be predicted. However, estimates of rare floods must be developed for all damsites to be used in evaluation of spillway capacities. To this end, precipitation records are employed in lieu of actual flow data. A method was developed by California's Division of Safety of Dams (DSOD) to estimate flood hydrographs for ungaged or poorly gaged watersheds for use in spillway evaluation.

Outline of Method

DSOD requires that all dams within its jurisdiction be capable of adequately passing a selected design flood. A method has been devised by DSOD to determine the hydrologic adequacy of any spillway in California on a rational and consistent basis (DSOD, 1981).

The procedure can be divided into eight parts:

1. Assessment of the potential downstream hazard
2. Determination of appropriate storm return period
3. Development of precipitation
4. Development of synthetic unit hydrograph parameters
5. Development of loss rate parameters
6. Computation of the flood hydrograph
7. Routing of the flood hydrograph through the reservoir
8. Evaluation of the spillway adequacy

The following discussion will, elaborate on the basic concepts underlying these procedures, but will not present detailed design formulas or criteria.

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Hazard Assessment

The hazard classification of any given dam is determined with respect to the dam's size and to the potential downstream damage due to failure of the structure. The classification is selected from a rating system that considers (1) reservoir capacity, (2) dam height, (3) estimated number of people that would be placed in peril and need to be evacuated in anticipation of dam failure, and (4) potential downstream property damage. Each factor is categorized as low, moderate, high or extreme. The method produces a composite numerical rating termed the Total Class Weight (TCW). The form, shown in Figure 1, is used as an aid to determine the TCW. With this system, small remote dams generally have a TCW of 2, while large urban dams might have a TCW of 36. The capacity of the reservoir and height of the dam are clearly defined. Estimated evacuation and potential downstream damage are uncertain and require an investigation of the potentially flooded area. This investigation includes estimating the population at risk, the possible loss of life, the physical property damage, the social consequences and the environmental impact. Through application to the many dams under its jurisdiction, DSOD has developed a coherent and uniform approach to conducting the damage investigations so that consistent total class weights are found.

DSOD does not allow the use of Economic Risk Analysis in the selection of a design flood for spillway evaluation. It is felt that the above procedure adequately addresses the issue of risk.

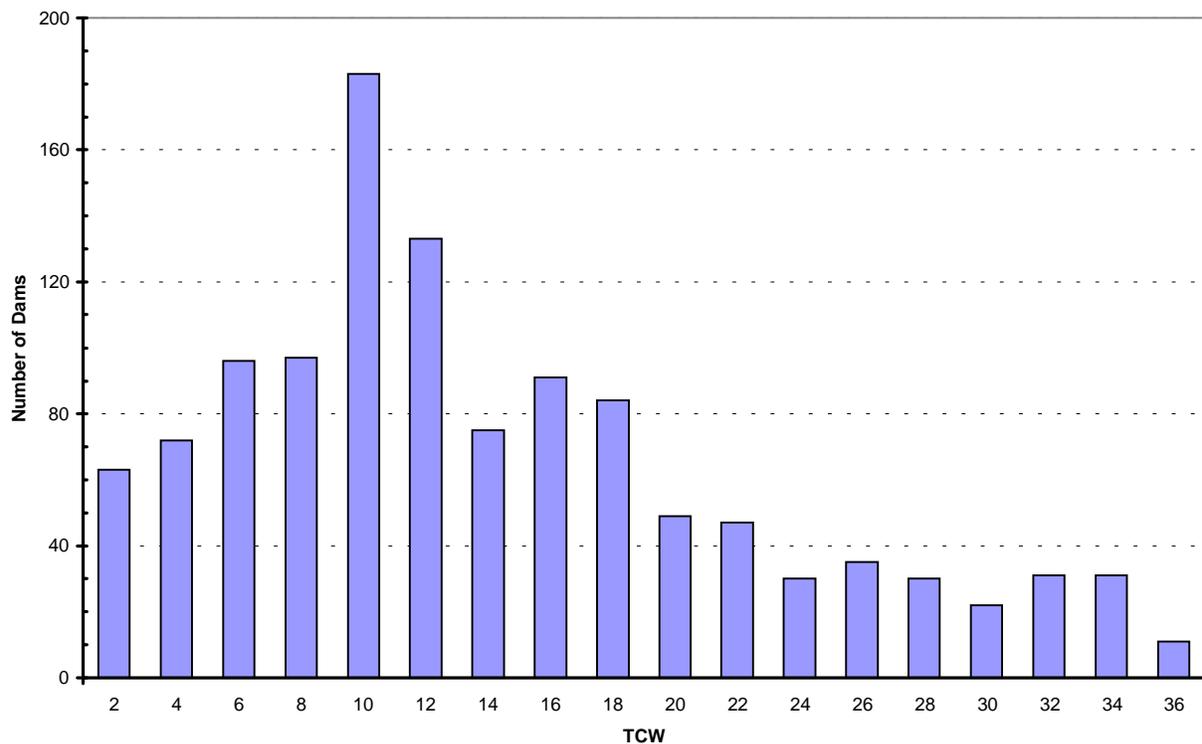
DAMAGE POTENTIAL CLASSIFICATION FOR FLOOD ESTIMATE AND SPILLWAY ANALYSIS					
Name of Dam _____	Type of Dam _____	Dam No. _____			
County _____	Located on _____				
Damage Potential Rating					
	Extreme	High	Moderate	Low	
Capacity _____ AF	100,000 & Over	1,000-99,999	100-999	15-99	
(circle weight)	6	4	2	0	
Height _____ Ft.	150 & Over	100-149	50-99	6-49	
(circle weight)	6	4	2	0	
Estimated Evacuation _____	1,000 & Over	100-999	1-99	None	
(circle weight)	12	8	4	0	
Potential D/S Damage	High	Moderate	Low	None	
(circle weight)	12	8	4	0	
Total Class Weight _____					

Figure 1

Precipitation

It is prudent to allow a continuous range of design floods corresponding to the developed Total Class Weights. The minimum allowable design event required is a 1000 year storm which corresponds with a TCW of 4. The maximum event is a storm derived from the Probable Maximum Precipitation and is equated with a TCW of 30. The design event is interpolated between these limits at the computed TCW. Typically, probable maximum precipitation storms are required only for dams that impound 1000 acre-feet or more, are at least 50 feet high, would require an estimated evacuation of at least 1000 people, and have a damage potential of \$25,000,000 or greater. However, most dams require a design storm falling between the 1000 year event and the probable maximum event. Figure 2 presents a histogram of TCW (as determined by DSOD) for all jurisdictional dams within California. As can be seen, less than 8 percent of all dams require a PMF.

Total Class Weight Histogram



If the TCW is 30 or greater, the design storm is the probable maximum precipitation (PMP) as determined by Hydrometeorological Report No. 36 (U.S. Weather Bureau, 1961) or Hydrometeorological Report No. 49 (National Weather Service, 1977), depending on geographical location. The estimated rainfall is determined directly for these reports.

If the TCW is less than 30, a statistical frequency estimate of the rainfall is chosen. It is assumed that extreme precipitation follows a Pearson Type III probability distribution, with a general skew of 1.3 for northern California and 1.5 for southern California.

The equation for precipitation is:

$$P_{ij} = M_i + k_j * S_i \\ = (1.0 + k_j * CV_i) * M_i$$

where:

P_{ij} = extreme precipitation value

M_i = average of extreme values

S_i = standard deviation

k_j = frequency factor

CV_i = coefficient of variation

where:

subscript i denotes the event duration

subscript j denotes the return period

The appropriate coefficient of variation for the drainage basin is obtained from Bulletin 195 (DWR, 1976). This publication is a statistical compilation of observed rainfall data for both long-term and short-term durations from measuring stations throughout California. The mean rainfall values for various time durations are found from Bulletin 195 or from other available rainfall records for stations in the vicinity of the given basin. These means combined with the proper number of standard deviations give the precipitation estimates.

The number of standard deviations (k_j) required for a 1000 year storm is 4.96 for northern California and 5.23 for southern California. The equivalent number of standard deviations for the PMP is obtained from a generalized contour plot relating this upper limit to geographical location. Using a nonlinear proration between these two points (k_{1000}, TCW_{1000} and k_{PMP}, TCW_{PMP}), the k_j for the given TCW is obtained. The corresponding return period is computed from the probability distribution.

The rainfall depth-duration values are estimated either by the PMP procedures or the above described statistical method. After adjustment for watershed area, the results are plotted on log-log scales and smoothed if necessary to obtain the depth-duration curve.

Unit Hydrograph

Where no known reliable hydrographs exist, recourse is made to the computation of a synthetic unit hydrograph by Clark's method (Clark, 1945). Clark's unitgraph parameters are obtained from a generalized study of observed rainfall and runoff events, which related these parameters to drainage basin characteristics by regression analysis (DWR, 1971). The study is applicable to the State of California except that area south of the Tehachapi Mountain Divide and the area east of the Sierra Nevada Divide. The study was limited to drainage basins approximately 30 square miles or less in area, in recognition that approximately 80 percent of the dams under jurisdiction of the Division of Safety of Dams have drainage areas of less than this size. Most of the damsites for large reservoirs have been exploited in California, and dams that will be constructed in the future will, for the most part, be smaller in size and have relatively small drainage areas. Future dams with large drainage basins will require special investigation.

The regression equations from the generalized study relate the drainage basin characteristics of

stream length, area, elevation, and ground cover to the time of concentration (t_c) and Clark's storage coefficient (R) for development of a basin-specific unit hydrograph. The study also presents guidelines for estimating loss rate parameters.

For coastal basins south of the Tehachapi Mountains, the unitgraph and loss rate parameters are obtained by the procedure given in the U. S. Army Corps of Engineers report entitled "Generalized Standard Project Rainflood Criteria-Southern California Coastal Streams", (Hydrologic Engineering Center, 1967).

Guidelines for southeastern California have been developed in a study (Mayer, 1987) similar to that for northern California. The region is subdivided into three subareas, with regression equations presented to develop unit hydrograph and loss rate parameters.

Flood Hydrograph

The flood hydrograph is developed using the computer program HEC-1 (Hydrologic Engineering Center, 1981). The program obtains the flood hydrograph by convolution of the effective rainfall increments with Clark's unitgraph.

Rainfall increments are determined from the depth-duration curve at specified time intervals and are then arranged into a storm pattern which places the maximum value at the center of the storm duration with successively smaller values placed alternately on each side (approximating a bell-shaped distribution). In general, the total precipitation duration is taken to be 72 hours. If routing will not significantly affect the peak outflow, a shorter storm (e.g., 24 hours) can be considered since the peak inflow will be about the same in either case.

It is assumed that antecedent storms have saturated the drainage basin so that loss rates are fairly low. For each time interval, the losses from rainfall due to surface retention and infiltration are estimated by the exponential loss rate function within HEC-1. These losses are deducted from the distributed precipitation to produce excess rainfall values for each time interval. The general criteria is that the percent runoff should not be less than 70 when the mean annual precipitation (MAP) at the basin is greater than 25 inches and should not be less than 60 when the MAP is 25 inches or less.

If applicable, allowances for snowmelt, base flow in the basin, runoff from prior storms, import of water etc., are added to the storm runoff hydrograph to obtain the design flood hydrograph for the watershed.

Flood Routing Through Reservoir

The design flood hydrograph is routed through the reservoir and spillway(s) to obtain the time-history of storage elevation, spillway discharge, tailwater elevation, etc. that describe passage of the flood through the reservoir. This is essentially a process of accounting for volumes of inflow, storage, and outflow throughout the duration of the flood. It is usually assumed that the reservoir is full at the beginning of the design flood. If there are several reservoirs in the watershed, the reservoir routing is repeated from the uppermost to the most downstream reservoir, in turn.

Evaluating Spillway Capacity

New embankment dams must pass the spillway design flood with a minimum of 1.5 feet of residual freeboard above the maximum reservoir flood stage. Additional freeboard is required for severe wave conditions from wind effects. Residual freeboard requirements for new concrete dams are based on the ability of the abutments and foundation to resist damage from overpour. Existing embankment dams must pass the spillway design flood without overtopping.

Refinements and Future Enhancements

It is the policy of DSOD to continually refine the developed methodology as new data becomes available and as the state-of-the-art advances. A reevaluation of the coefficients of variation, skew factors, and the appropriate probability distribution for precipitation is presently underway.

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STATE OF CALIFORNIA

The Resources Agency

Department of Water Resources

Division of Safety of Dams



STATUTES AND REGULATIONS

PERTAINING TO

SUPERVISION OF

DAMS AND RESERVOIRS

FOREWARD

Since August 14, 1929, the State of California has supervised dams to prevent failure, to safeguard life, and to protect property. The legislation was a result of the failure of St. Francis Dam in March of 1928. Legislation enacted in 1965 revised the Statutes to include off-stream storage reservoirs as a result of the failure of Baldwin Hills Reservoir in December 1963.

Dams and reservoirs are defined in the California Water Code Sections 6002, 6003, and 6004. Certain exemptions are included in Sections 6004 and 6025. All dams under these definitions are subject to State supervision unless they are owned and operated by the United States. A careful reading of all the California Water Code sections and the California Code of Regulations sections included herein is strongly recommended for those who are regulated by these provisions. The schedule of fees is periodically adjusted in accordance with Section 6307 of the Water Code. The current fee structure is listed on the Division website under "Fees."

This document contains Parts 1 and 2 of Division 3, Dams and Reservoirs, of the California Water Code (Statutes), Chapter 1 of Division 2, Title 23 Waters, of the California Code of Regulations (Regulations adopted by the Department of Water Resources), and an outline of Current Practices of the Department in Supervision of Dams and Reservoirs.

NOTICE

This compendium of laws governing dams and reservoirs has been compiled by the Department of Water Resources, Division of Safety of Dams, for convenient reference only and is not represented to be the official version of the statutes or the regulations. Notes, text, and history of repealed sections are not included in this reprint.

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CALIFORNIA WATER CODE
Division 3. Dams and Reservoirs

DIVISION 3. DAMS AND RESERVOIRS

PART 1. SUPERVISION OF DAMS AND RESERVOIRS

Chapter 1. Definitions

6000. Unless the context otherwise requires, the definitions in this chapter govern the construction of this part.

6002. "Dam" means any artificial barrier, together with appurtenant works, which does or may impound or divert water, and which either (a) is or will be 25 feet or more in height from the natural bed of the stream or watercourse at the downstream toe of the barrier, as determined by the department, or from the lowest elevation of the outside limit of the barrier, as determined by the department, if it is not across a stream channel or watercourse, to the maximum possible water storage elevation or (b) has or will have an impounding capacity of 50 acre-feet or more.

6003. Any such barrier which is or will be not in excess of 6 feet in height, regardless of storage capacity, or which has or will have a storage capacity not in excess of 15 acre-feet, regardless of height, shall not be considered a dam.

6004. a) No obstruction in a canal used to raise or lower water therein or divert water therefrom, no levee, including but not limited to a levee on the bed of a natural lake the primary purpose of which levee is to control floodwaters, no railroad fill or structure, and no road or highway fill or structure, no circular tank constructed of steel or concrete, or both, no tank elevated above the ground, and no barrier which is not across a stream channel, watercourse, or natural drainage area and which has the principal purpose of impounding water for agricultural use shall be considered a dam.

b) No obstruction in the channel of a stream or watercourse which is 15 feet or less in height from the lowest elevation of the obstruction and which has the single purpose of spreading water within the bed of the stream or watercourse upstream from the obstruction for percolation underground shall be considered a dam.

c) The levee of an island adjacent to tidal waters in the Sacramento-San Joaquin Delta, as defined in Section 12220, even when used to impound water, shall not be considered a dam and the impoundment shall not be considered a reservoir if the maximum possible water storage elevation of the impounded water does not

exceed four feet above mean sea level, as established by the United States Geological Survey 1929 datum.

d) No noncircular tank, constructed of steel or concrete, or both, that is constructed in a county of the third class by a public agency, under the supervision of a civil engineer registered in the state, that does not exceed 75 acre-feet in capacity or 30 feet in height, and no barrier that is not across a stream channel, watercourse, or natural drainage area and that has the principal use as a sewage sludge drying facility shall be considered a dam.

6004.5. "Reservoir" means any reservoir which contains or will contain the water impounded by a dam.

6005. "Owner" includes any of the following who own, control, operate, maintain, manage, or propose to construct a dam or reservoir:

- (a) The State and its departments, institutions, agencies, and political subdivisions.
- (b) Every municipal or quasi-municipal corporation.
- (c) Every public utility.
- (d) Every district.
- (e) Every person.
- (f) The duly authorized agents, lessees, or trustees of any of the foregoing.
- (g) Receivers or trustees appointed by any court for any of the foregoing.

"Owner" does not include the United States.

6006. "Alterations", "repairs", or either of them, mean only such alterations or repairs as may affect the safety of the dam or reservoir.

6007. "Enlargement" means any change in or addition to an existing dam or reservoir, which raises or may raise the water storage elevation of the water impounded by the dam or reservoir.

6008. Water storage elevation means that elevation of water surface which could be obtained by the existing dam or reservoir, as previously operated, were there no outflow and were the reservoir full of water.

Chapter 2. General Provisions

6025. It is the intent of the Legislature by this part to provide for the regulation and supervision of dams and reservoirs exclusively by the State.

6025.5 a) Notwithstanding any other provision, subject to subdivision (b), the requirements for state regulation and supervision of safety of dams, as contained in this division, shall not be applicable to waste water treatment and storage ponds constructed as a part of a waste water control facility.

b) This section applies to those ponds specified in subdivision (a) only after the governing body of the city, county, district, or other agency which operates the waste water control facility adopts a resolution which (1) finds that the ponds have been constructed and operated to standards adequate to protect life and property, and (2) provides that the city, county, district, or other agency shall supervise and regulate the design, construction, operation, enlargement, replacement, and removal of the ponds after the effective date of the resolution.

c) This section applies only to ponds specified in subdivision (a) which (1) have a maximum height of 15 feet or less and a maximum storage capacity of 1,500 acre-feet or less, (2) have been designed by, and constructed under the supervision of, a registered civil engineer, and (3) are not across a stream channel or watercourse.

6025.6 a) An owner of a structure defined as a dam pursuant to Section 6002, but excluded from that definition pursuant to subdivision (d) of Section 6004 or otherwise exempted from the requirements of this chapter pursuant to Section 6025.5, shall comply with the requirements of Section 8589.5 of the Government Code and shall employ a civil engineer who is registered in the state to supervise the structure for the protection of life and property for the full operating life of the structure.

b) (1) The civil engineer supervising a dam pursuant to subdivision (a) shall take into consideration, in determining whether or not a dam constitutes, or would constitute, a danger to life or property, the possibility that the dam might be endangered by seepage, earth movement, or other conditions that exist, or might occur, in any area in the vicinity of the dam.

(2) If the civil engineer determines that a dam under his or her supervision constitutes, or would constitute, a danger to life

or property, the civil engineer shall notify the owner of the dam and recommend appropriate action.

c) The owner shall submit to the department the name, business address, and telephone number of each supervising civil engineer.

d) The department shall submit the information provided pursuant to subdivision (c) to the Office of Emergency Services on or before January 1, 1995, and on or before each January 1 thereafter. Any change in the information shall be submitted to the department on or before July 1 of each year.

6026. No city or county has authority, by ordinance enacted by the legislative body thereof or adopted by the people under the initiative power, or otherwise, to regulate, supervise, or provide for the regulation or supervision of any dams or reservoirs in this state, or the construction, maintenance, or operation thereof, nor to limit the size of any dam or reservoir or the amount of water which may be stored therein. This part shall not prevent a city or county from adopting ordinances regulating, supervising, or providing for the regulation or supervision of dams and reservoirs that (a) are not within the state's jurisdiction, or (b) are not subject to regulation by another public agency or body.

6027. Whenever supervision of safety of design or construction of a proposed or existing dam or reservoir is exercised by the United States or any of its agencies pursuant to a jurisdiction superior to that of the state, and the requirements made under authority of such jurisdiction are so contradictory with requirements made by the department under this part that a compliance cannot be made which will meet both federal and state requirements, then the state requirements shall be modified by the department sufficiently to make possible compliance with both federal and state requirements.

6028. No action shall be brought against the state or the department or its agents or employees 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 ground that such defendant is liable by virtue of any of the following:

- (a) The approval of the dam or reservoir.
- (b) The issuance or enforcement of orders relative to maintenance or operation of the dam or reservoir.
- (c) Control and regulation of the dam or reservoir.
- (d) Measures taken to protect against failure during an emergency.

6029. 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 the ownership or operation of the dam or reservoir.

6030. The findings and orders of the department and the certificate of approval of any dam or reservoir issued by the department are final and conclusive and binding upon all state agencies, regulatory or otherwise, as to the safety of design, construction, maintenance, and operation of any dam or reservoir.

6031. Nothing in this part shall be construed to deprive any owner of such recourse to the courts as he may be entitled to under the laws of this State.

Chapter 3. Administrative Provisions

6052. The department shall employ such clerical, engineering, and other assistants as are necessary for carrying on the work of dam and reservoir supervision in accordance with this part.

6053. The department may employ consultants.

6054. When the safety and technical considerations pertaining to a certificate of approval, dam, reservoir, or plans and specifications require it, or when requested in writing to do so by the owner, the department shall appoint a consulting board of two or more consultants to report to the department on the safety features involved.

6055. The cost and expense of a consulting board if appointed on the request of an owner shall be paid by the owner.

6056. The department shall retain a board of three consultants who shall make an independent report to the director upon the issuance, modification, or renewal of any certificate of approval for any dam owned by the department.

Chapter 4. Powers of the Department

Article 1. Powers in General

6075. The department, under the police power of the state, shall supervise the construction, enlargement, alteration, repair, maintenance, operation, and removal of dams and reservoirs for the protection of life and property as provided in this part.

6076. All dams and reservoirs in the state are under the jurisdiction of the department.

6077. It is unlawful to construct, enlarge, repair, alter, remove, maintain, or operate any dam or reservoir except upon approval of the department as provided in this part.

6078. The department shall adopt and revise from time to time such rules and regulations and issue such general orders as may be necessary for carrying out, but not inconsistent with, the provisions of this part.

6079. In carrying out the provisions of this part the department may cooperate with the United States or any of its agencies.

6080. In making any investigations or inspections required or authorized by this part the department or its representatives may enter upon private property as may be necessary.

6081. In determining whether or not a dam or reservoir or proposed dam or reservoir constitutes or would constitute a danger to life or property, the department shall take into consideration the possibility that the dam or reservoir might be endangered by seepage, earth movement, or other conditions which exist or which might occur in any area in the vicinity of the dam or reservoir. Whenever the department deems that any such condition endangers a dam or reservoir, it shall order the owner to take such action as the department determines to be necessary to remove the resultant danger to life and property.

Article 2. Maintenance and Operation

6100. Supervision over the maintenance and operation of dams and reservoirs insofar as necessary to safeguard life and property from injury by reason of the failure thereof is vested in the department.

6101. The department may require owners to keep records of, and to report on, maintenance, operation, staffing, and engineering and geologic investigations and shall issue such rules and regulations and orders as necessary to secure maintenance and operation and to require staffing and engineering and geologic investigations which will safeguard life and property. In addition, the owner of a dam or reservoir or his agent shall fully and promptly advise the department of any sudden or unprecedented flood or unusual or alarming circumstance or occurrence affecting the dam or reservoir.

6102. The department, from time to time, shall make inspections of dams and reservoirs at state expense for the purpose of determining their safety but shall require owners to perform at their expense such work as necessary to disclose information sufficient to enable the department to determine conditions of dams and reservoirs in regard to their safety and to perform at their expense other work necessary to secure maintenance and operation which will safeguard life and property.

Article 3. Emergency Work

6110. The department shall immediately employ any remedial means necessary to protect life and property if either:

- (a) The condition of any dam or reservoir is so dangerous to the safety of life or property as not to permit time for the issuance and enforcement of an order relative to maintenance or operation.
- (b) Passing or imminent floods threaten the safety of any dam or reservoir.

6111. In applying the remedial means provided for in this article, the department may in emergency do any of the following:

- (a) Lower the water level by releasing water from the reservoir.
- (b) Completely empty the reservoir.
- (c) Take such other steps as may be essential to safeguard life and property.

6112. The department shall continue in full charge and control of such dam or reservoir, or both, and its appurtenances until they are rendered safe or the emergency occasioning the action has ceased.

6113. The cost and expenses of the remedial means provided in this article, including cost of any work done to render a dam or reservoir of its appurtenances safe, shall be recoverable by the state from the owner by action brought by the department in the superior court of the county wherein the dam or reservoir or any part thereof is situated.

Article 4. Investigations and Studies

6120. For the purpose of enabling it to make decisions as compatible with economy and public safety as possible the department

shall make or cause to be made such investigations and shall gather or cause to be gathered such data as may be needed for a proper review and study of the various features of the design and construction of dams, reservoirs, and appurtenances.

6121. The department shall also make or cause to be made such watershed investigations and studies as may facilitate its decisions.

Article 5. Action and Procedure To Restrain Violations

6150. The department may commence an action or proceeding under this article, either by mandamus or injunction, for the purpose of stopping or preventing violations or threatened violations.

6151. An action or proceeding under this article may be commenced whenever any owner or any person acting as a director, officer, agent, or employee of any owner, or any contractor or agent or employee of such contractor is:

- (a) Failing or omitting or about to fail or omit to do anything required of him by this part or by any approval, order, rule, regulation, or requirement of the department under the authority of this part; or
- (b) Doing or permitting anything or about to do or permit anything to be done in violation of or contrary to this part or any approval, order, rule, regulation, or requirement of the department under this part.

6152. Any action or proceeding under this article shall be commenced in the superior court in and for the county in which (a) the cause or some part thereof arose, (b) the owner or person complained of has its principal place of business or (c) the person complained of resides.

6153. Any action or proceeding under this article shall be brought by petition in the superior court, alleging the violation or threatened violation complained of, and praying for appropriate relief by way of mandamus or injunction.

6154. The court shall specify a time, not exceeding 20 days after the service of the copy of the petition, within which the owner or person complained of shall answer the petition, and in the meantime the owner or person may be restrained.

6155. In case of default in answer or after answer the court shall immediately inquire into the facts and circumstances of the case.

6156. The court may join such parties as it deems necessary or proper in order to make its judgment, order, or writ effective.

6157. The final judgment in such action or proceeding shall either dismiss the action or proceeding or direct that the writ of mandamus or injunction issue or be made permanent as prayed for in the petition, or in such modified or other form as will afford appropriate relief.

Chapter 5. Applications

Article 1. New Dams and Reservoirs or Enlargements of Dams and Reservoirs

6200. Construction of any new dam or reservoir or the enlargement of any dam or reservoir shall not be commenced until the owner has applied for and obtained from the department written approval of plans and specifications.

6201. A separate application for each dam or reservoir shall be filed with the department upon forms to be provided by it, except that only one application need be filed for a dam and the reservoir which will contain the water impounded by the dam.

6202. The application shall give the following information:

- (a) The name and address of the owner.
- (b) The location, type, size, and height of the proposed dam or reservoir and appurtenant works.
- (c) The storage capacity of the reservoir.
- (d) Such other pertinent information as the department requires.
- (e) As accurately as may be readily obtained, the area of the drainage basin, rainfall and streamflow records and floodflow records and estimates.

6203. The department may also require the following:

- (a) Data concerning subsoil and foundation conditions and the materials entering into construction of the dam or reservoir.
- (b) Investigations of, and reports on, subsurface conditions, involving such matters as exploratory pits, trenches and adits, drilling, coring, geophysical surveys, tests to determine leakage rates, and physical tests to measure in place the properties and behavior of foundation materials at the dam or reservoir site.
- (c) Investigations of, and reports on, the geology of the dam or reservoir site and its vicinity, possible geologic hazards, availability and quality of construction materials, and other pertinent features.
- (d) Such other appropriate information as may be necessary in a given instance.

6204. In instances wherein the physical conditions involved and the size of the dam or reservoir are such as to render the above requirements as to drainage areas, rainfall, streamflow, floodflow, and drilling or prospecting of site unnecessary, the department may waive the requirements.

6205. The application shall set forth the purpose for which the impounded or diverted water is to be used.

6206. The application shall be accompanied by maps and plans and specifications of such character and size and setting forth such pertinent details and dimensions as the department requires.

The maps and plans and specifications shall be a part of the application.

Article 2. Repairs, Alterations or Removals

6225. Before commencing the repair, alteration, or removal of a dam or reservoir, including the alteration or removal of a dam or reservoir so that it no longer constitutes a dam or reservoir as defined in this part, the owner shall secure the written approval of the department, except as provided in this article.

6226. The application shall give such pertinent information or data concerning the dam or reservoir, or both, as may be required by the department and such information as to other matters appropriate to a thorough consideration of the safety of such a change as may be required by the department.

6227. The application shall state the proposed time of commencement and of completion of construction.

6228. The application shall give the name and address of applicant, shall adequately detail, with appropriate references to the existing dam or reservoir, the changes which it is proposed to effect, and shall be accompanied by maps and plans and specifications which shall be a part of the application and which shall be of such character and size and set forth such pertinent details and dimensions as the department may require. The department may waive any of the requirements of this section if found by it unnecessary.

6229. In case of an emergency where repairs are necessary to safeguard life and property, repairs may be started immediately, but the department shall be notified at once of proposed repairs and of work under way.

6230. The proposed repairs and work shall be made to conform to such orders as the department issues.

Article 3. Dams Constructed Prior to August 14, 1929

6250. Unless application for approval of the dam has heretofore been made, every owner of a dam completed prior to August 14, 1929 shall, immediately after the effective date of this part, file an application for the approval of such dam.

6251. A separate application shall be made for each dam and shall be filed with the department upon forms to be supplied by it and shall supply such appropriate information concerning the dam as the department requires.

6252. The department shall give notice to file to owners who have failed to do so as required by this article, and a failure to file within 30 days after such notice shall be punishable as provided in this part.

6253. The notice provided for in this article may be given by registered mail and a return receipt signed by the owner shall constitute prima facie evidence of service.

Article 4. Approval of Applications

6260. Upon receipt of any application other than an application provided for in Article 3 of this chapter the department shall give its consideration thereto and shall approve or disapprove the same within the time provided in this article.

6261. A defective application made in a bona fide attempt to conform to the law and rules and regulations of the department shall not be rejected but notice of defect shall be sent to the applicant by ordinary and registered mail.

6262. If within 30 days of the date of mailing the notice the applicant does not file an amended and perfected application, the application shall be rejected and canceled unless for good cause shown the department allows the applicant further time.

6263. No application shall be approved in less than 10 days from its receipt but all applications shall be approved or disapproved as soon as practicable after the receipt of all data and information found necessary by the department.

6264. Approvals may be granted under terms, conditions, and limitations necessary to safeguard life and property.

6265. Actual construction shall be commenced within one year after date of approval, otherwise the approval becomes void.

6266. The department may, upon written application and for good cause shown, extend the time for commencing construction.

6267. Notice shall be given to the department at least 10 days before construction is to be commenced and such other notices shall be given to the department as it may require.

Chapter 6. Fees

6300. (a) The application for a new dam or reservoir or enlargement shall set forth the estimated cost, as defined in this article, of the dam or reservoir or enlargement and shall be accompanied by a filing fee based upon the estimated cost and according to the following schedule:

- (1) For the first three hundred thousand dollars (\$300,000), a fee of 3 percent of the estimated cost.

- (2) For the next seven hundred thousand dollars (\$700,000), a fee of 2 percent.
 - (3) For the next one million dollars (\$1,000,000) a fee of 1 ½ percent.
 - (4) For the next one million dollars (\$1,000,000), a fee of 1 ¼ percent.
 - (5) For the next two million dollars (\$2,000,000), a fee of 1 percent.
 - (6) For the next two million dollars (\$2,000,000), a fee of three-fourths of 1 percent.
 - (7) For all costs in excess of seven million dollars (\$7,000,000), a fee of one-half of 1 percent.
- (b) In no case, however, shall the minimum fee be less than three hundred dollars (\$300).

6301. One filing fee only shall be collected for an enlargement to be effected by flashboards, sandbags, earthen levees, gates, or other works, devices, or obstructions which are, from time to time, to be removed and replaced or opened and shut and thereby operated so as to vary the surface elevation of the impounded water.

6302. For the purposes of this part, the estimated cost of the dam or reservoir or enlargement involved shall include the following:

- (a) The cost of all labor and materials entering into the construction of the dam and appurtenant works or reservoir.
- (b) The cost of preliminary investigations and surveys.
- (c) The cost of the construction plant properly chargeable to the cost of the dam or reservoir.
- (d) Any and all other items entering directly into the cost of the dam or reservoir.

6303. The costs of right-of-way, detached powerhouses, electrical generating machinery, and roads and railroads affording access to the dam or reservoir shall not be included among the items used in the determination of cost.

6304. An application shall not be considered by the department until the filing fee is received.

6305. In the event the actual cost exceeds the estimated cost by more than 15 percent, a further fee shall be required by the department before final approval and shall be 115 percent of the amount by which the original fee is less than it would have been had the cost it was based upon been the same as the actual cost. No further fee shall be required, however if such fee is to be computed at less than twenty dollars (\$20).

6306. Applications for dams found by the department to have been less than 90 percent constructed on August 14, 1929, shall be accompanied by fees as much less than provided for dams commenced after that date as the percentage of construction found by the department to have been completed on that date.

6307. (a) (1) The department shall adopt, by regulation, a schedule of fees to cover the department's costs in carrying out the supervision of dam safety.

(2) The revenue generated by the fees imposed under this section shall be adjusted periodically for cost-of-living increases. If the director determines that the revenue collected during the preceding fiscal year was greater or less than the cost to operate the program, the director shall adjust the fees to compensate for the overcollection or undercollection of revenue. The department shall provide a schedule of fees to the Legislature and to every dam owner that has a permit or has applied for a permit, when any adjustment is made to the fees under this section.

(b) (1) An annual fee shall be paid on or before January 31, 2004, July 1, 2004, and on or before July 1 of each succeeding year, based upon a fixed rate and height of the dam, including all enlargements thereto, substantially completed by or in operation on June 30, 2003, and on June 30 of each succeeding year. The fees collected on December 31, 2003, will be credited toward the fees due January 31, 2004. The annual fee shall be four hundred dollars (\$400) per dam, plus one hundred ten dollars (\$110) per foot of height. This fee shall be periodically adjusted, as described in subdivision (a).

(2) A penalty plus interest, as set forth in Section 6428 of the Water Code, shall be imposed for fees received after July 1 in any year, except that for the year 2003, the penalty plus interest shall be imposed for any fees received after January 31, 2004.

(c) For the purposes of this section, "height of the dam" means the vertical distance, to the nearest foot, from the natural bed of the stream or watercourse at the downstream toe of the barrier, as determined by the department, or from the lowest elevation of the outside limit of the barrier, as determined by the department, if it is not across a stream channel or watercourse, to the maximum possible water storage elevation.

(d) Notwithstanding subdivision (b), the department shall limit the total annual fee per dam to not more than seventy-five (\$75) if both of the following apply:

(1) The dam has a storage capacity of not more than 100 acre-feet.

(2) The governing body of a private school or the governing board of a public school certifies that the dam is used as a subject of study by its students.

(e)(1) Notwithstanding subdivision (b), the department shall limit the total annual fee for dams or reservoirs located on farms or ranch properties to one hundred fifty dollars (\$150) per dam, and sixteen dollars (\$16) per foot of height.

(2) For purposes of this subdivision, "farm" has the same meaning as defined in Section 52262 of the Food and Agricultural Code.

(f)(1) Privately owned dams with less than 100 acre-feet of storage capacity shall be assessed an annual fee in accordance with paragraph (1) of subdivision (e).

(2) As used in this subdivision, "privately owned" does not include dams owned by municipalities, water districts or companies, irrigation districts, private, investor owned or publicly owned utilities, or public agencies.

6308. All fees, penalties, interest, fines, or charges collected by the department under this division shall be deposited in the Dam Safety Fund, which is hereby established in the State Treasury. The money in that fund shall be available to the department, upon appropriation by the Legislature, for the administration of the dam safety program.

6309. The fees provided for in this chapter shall be required of any "owner", as defined in Section 6005.

Chapter 7. Inspection and Approval

Article 1. New or Enlarged Dams and Reservoir

6350. Immediately upon completion of a new dam or reservoir or enlargement of a dam or reservoir, the owner shall give a notice of completion to the department and as soon thereafter as possible shall file with the department supplementary drawings or descriptive matter showing or describing the dam or reservoir as actually constructed, including the following:

- (a) A record of all grout holes and grouting.
- (b) A record of permanent location points and bench marks.
- (c) A record of tests of concrete or other material used in the construction of the dam or reservoir.
- (d) Any other items which may be of permanent value and have a bearing on the safety and permanency of the dam or reservoir.

6351. In connection with the enlargement of a dam or reservoir, the supplementary drawings and descriptive matter need apply only to the new work.

6352. As soon as possible after giving notice of completion, the owner shall file an affidavit with the department stating the actual cost of the dam or reservoir in such detail as the department requires to determine whether a further fee is due. In the event the owner of a new or enlarged dam or reservoir, because of loss of records, recent change of ownership, or other causes beyond his control, is unable to report the actual cost of construction or enlargement, he shall file an affidavit to this effect, stating the reasons therefore, within 30 days after receiving a written request therefore from the department. The department shall then make its own appraisal of the cost of construction or enlargement and determine what further fee, if any, is required. Upon making a determination that a further fee is required, the department shall notify the owner by certified mail of the amount of such fee within 15 days and shall notify the owner that he may appear within 60 days thereafter before an authorized representative of the department to protest the amount of the fee, in whole or in part, determined by the department to be required, and the sufficiency of the appraisal upon which such determination was based.

6354. As soon as practicable the completed dam or reservoir shall be inspected by the department.

6355. A certificate of approval shall be issued upon a finding that the dam or reservoir is safe to impound water within the limitations prescribed in the certificate. Upon written request by an owner for a certificate of approval, the department shall issue the certificate if it finds that the dam or reservoir is safe to impound water within the limitations prescribed in the certificate. Pending issuance of a certificate of approval by the department, the owner of the dam or reservoir shall not, through action or inaction, cause the dam or reservoir to impound water.

Article 1.5. Certificates of Approval

6357. Each certificate of approval issued by the department under this part may contain such terms and conditions as the department may prescribe.

6357.1 The department may revoke any certificate of approval whenever it determines that the dam or reservoir constitutes a danger to life and property. Whenever it deems such action necessary to safeguard life and property, the department may also amend the terms and conditions of any such certificate by issuing a new certificate containing the revised terms and conditions.

6357.2 The owner of a dam or reservoir for which a certificate of approval has been issued shall not, through action or inaction, cause the dam or reservoir to impound water after the certificate terminates unless a new certificate is issued for the dam or reservoir. A new certificate shall be issued upon a finding by the department that the dam or reservoir is safe to impound water within the limits prescribed in the certificate.

6357.3 With respect to each certificate of approval or written consent for use of a dam which has been issued by the department or a predecessor of the department and which is in effect prior to the effective date of this article, the department shall, within one year from such effective date, issue a new certificate of approval, which shall supersede the previous certificate or written consent for use, or shall revoke the existing certificate or written consent for use if it finds that the dam or reservoir is not safe to impound water.

6357.4 Before any certificate of approval is revoked by the department, the department shall hold a hearing. Written notice of the time and place of the hearing shall be mailed, at least 20 days prior to the date set for the hearing, to the holder of the certificate. Any interested persons may appear at the hearing and

present their views and objections to the proposed action. Any petition for a writ of mandate to inquire into the validity of action of the department revoking a certificate of approval shall be commenced within 30 days after service of notice of the revocation on the holder of the certificate.

Article 2. Repaired or Altered Dams and Reservoirs

6360. Immediately upon completion of the repair or alteration of any dam or reservoir, the owner shall give notice of completion to the department and as soon thereafter as possible shall file with it supplementary drawings or descriptive matter showing or describing the dam or reservoir as actually repaired or altered together with such maps, data, records, and information pertaining to the dam or reservoir as repaired or altered as the department requires.

6362. As soon as practicable the dam or reservoir as repaired or altered shall be inspected by the department.

6363. A certificate of approval shall be issued upon a finding that the dam or reservoir is safe to impound water within the limitations prescribed in the certificate. Pending issuance of a new certificate of approval, the owner of the dam or reservoir shall not, through action or inaction, cause the dam or reservoir to impound water beyond the limitations prescribed in the existing certificate.

6364. The certificate of approval shall supersede any previous certificate of approval issued for the dam or reservoir so repaired or altered.

Article 3. Removal of Dams and Reservoirs

6370. Upon completion of the removal of a dam or reservoir such evidence as to the manner in which the work was performed and as to the conditions obtaining after the removal as the department requires shall be filed with the department.

6371. This evidence shall show that a sufficient portion of the dam has been removed to permit the safe passage of floods down the watercourse across which the dam was located.

6372. Before final approval of the removal of a dam or reservoir is issued, the department shall inspect the work and determine that all danger to life and property has been eliminated.

Article 4. Dams Completed Prior
to August 14, 1929

6380. The department shall make inspections at State expense of all dams in the State completed prior to August 14, 1929.

6381. The department shall require owners to perform at their expense such work or tests as necessary to disclose information sufficient to enable the department to determine whether to issue certificates of approval or to issue orders directing further work at the owners' expense necessary to safeguard life and property.

6382. If, upon inspection or upon completion to the satisfaction of the department of all work that may be ordered, the department finds that the dam is safe to the full extent for which use is or will be made, a certificate of approval shall be issued.

Article 5. Complaints as to
Unsafe Conditions

6390. Upon receipt of a written complaint alleging that the person or property of the complainant is endangered by the construction, maintenance, or operation of any dam or reservoir the department shall cause an inspection to be made unless the data, records, and inspection reports on file with it are found adequate to enable a determination whether or not the complaint is meritorious.

6391. If the complainant insists upon an inspection and deposits with the department a sum estimated by it to be sufficient to cover costs of an inspection, the department shall cause an inspection to be made despite its finding as to the sufficiency of its records to determine the alleged danger.

6392. If it is found that an unsafe condition exists, the department shall take such action as is necessary to render or cause the condition to be rendered safe and any money deposited to secure an inspection shall be returned.

6393. If, after an inspection is made on account of a complaint, the complaint is found by the department to have been without merit, any money deposited therefore shall be payable into the State Treasury.

Article 6. Inspection During
Progress of Work

6400. During the construction, enlargement, repair, alteration, or removal of any dam or reservoir the department shall make continuous or periodical inspections at state expense for the purpose

of securing conformity with the approved plans and specifications but shall require the owner to perform at his expense such work or tests as necessary to disclose information sufficient to enable the department to determine that conformity with the approved plans and specifications is being secured.

6401. If, after any inspections, investigations, or examinations, or at any time as the work progresses, or at any time prior to issuance of a certificate of approval it is found by the department that amendments, modifications, or changes are necessary to insure safety, the department may order the owner to revise the plans and specifications.

6402. If conditions are revealed which will not permit the construction of a safe dam or reservoir the approval may be revoked.

6403. In the event that conditions imposed may be waived or made less burdensome without sacrificing a proper margin of safety, the department may authorize an owner to revise the plans and specifications accordingly.

6404. If at any time during construction, enlargement, repair, or alterations of any dam or reservoir the department finds that the work is not being done in accordance with the provisions of the approval and the approved plans and specifications or in accordance with the approval and revised plans and specifications, it shall give a written notice and order by registered mail or by personal service to the owner.

6405. The notice and order shall state the particulars in which the approval and approved plans and specifications or the approval and approved plans and specifications as revised are not being or have not been complied with shall order the immediate compliance with the approval and approved plans and specifications or with the approval and approved revised plans and specifications as the case may be.

6406. The department may order that no further work be done until such compliance has been effected and approved by the department.

6407. A failure to comply with the approval and approved plans and specifications as originally approved or as revised shall render the approval subject to revocation by the department, if compliance is not made in accordance therewith after notice and order from the department as provided in this article.

Chapter 8. Offenses and Punishment

6425. Every person who violates any of the provisions of this part or of any approval, order, rule, regulation, or requirement of the department is guilty of a misdemeanor and punishable by a fine of not more than two thousand dollars (\$2,000) or by imprisonment in the county jail not exceeding six months, or both. In the event of a continuing violation each day that the violation continues constitutes a separate and distinct offense.

6426. Any person who willfully obstructs, hinders, or prevents the department or its agents or employees from performing the duties imposed by this part or who willfully resists the exercise of the control and supervision conferred by this part upon the department or its agents or employees is guilty of a misdemeanor and punishable as provided in this article.

6427. Any owner or any person acting as a director, officer, agent, or employee of an owner, or any contractor or agent or employee of a contractor who engages in the construction, enlargement, repair, alteration, maintenance, or removal of any dam or reservoir, who knowingly does work or permits work to be executed on the dam or reservoir without an approval or in violation of or contrary to any approval as provided for in this part, or any inspector, agent, or employee of the department who has knowledge of such work being done and who fails to immediately notify the department thereof is guilty of a misdemeanor and punishable as provided in this article.

6428. Any owner who fails to pay any annual fee or any part of any annual fee required to be paid pursuant to Section 6307 within the time required shall pay a penalty of 10 percent of the annual fee or part of the annual fee, plus interest at the rate of one-half of 1 percent per month, or fraction thereof, from the date on which the annual fee or the part of the annual fee became due and payable to the state until the date of payment.

Chapter 9. Dams Under Construction Prior to August 14, 1929

6450. Any dam which the department finds was not 90 percent constructed on August 14, 1929 shall be subject to the same provisions as a dam commenced after that date.

6451. Construction work on such a dam may proceed, if an application for approval thereof is filed, until an order from the department is received approving the dam or specifying how its construction must be made or altered to render it safe. After

receipt of an order directing the construction of such a dam, work thereafter must be in accordance with the order.

6452. Dams found to be 90 percent or more constructed on August 14, 1929, shall be subject to the same supervision as dams which were completed prior to that date.

Chapter 10. Dams and Reservoirs Under
State Supervision Through 1965
Revisions of Part 1

Article 1. Dams and Reservoirs
Completed Before 1965 Revisions

6455. Every owner of a dam or reservoir that falls within the definition of a dam or reservoir in this part by virtue of the amendment of Section 6002 or the addition of Section 6004.5 at the 1965 Regular Session of the Legislature and that was completed prior to September 17, 1965, shall immediately file an application with the department for the approval of such dam or reservoir; provided that this Chapter 10 shall not apply to any reservoir which contains the water impounded by a dam for which a certificate of approval is in effect on September 17, 1965.

6456. A separate application shall be made for each dam or reservoir and shall be filed with the department upon forms to be supplied by it and shall include or be accompanied by such appropriate information concerning the dam or reservoir as the department requires.

6457. The department shall give notice to file an application to owners of such dams or reservoirs who have failed to do so as required by this article, and a failure to file within 30 days after such notice shall be punishable as provided in this part.

6458. The notice provided for in this article may be given by registered or certified mail and a return receipt signed by the owner shall constitute prima facie evidence of service.

6459. The department shall make inspections of such dams or reservoirs at state expense.

6460. The department shall require owners of such dams or reservoirs to perform at their expense such work or tests as necessary to disclose information sufficient to enable the department to determine whether to issue certificates of approval or to issue orders directing further work at the owner's expense necessary to safeguard life and property. For this purpose, the department may

require an owner to lower the water level of, or to empty, the reservoir.

6461. If, upon inspection or upon completion to the satisfaction of the department of all work that may be ordered, the department finds that the dam or reservoir is safe to impound water, a certificate of approval shall be issued. The owner of the dam or reservoir shall not, through action or inaction, cause the dam or reservoir to impound water following receipt by the owner of a written notice from the department that a certificate will not be issued because the dam or reservoir will not safely impound water. Before such notice is given by the department, the department shall hold a hearing. Written notice of the time and place of the hearing shall be mailed, at least 20 days prior to the date set for the hearing, to the owner of the dam or reservoir. Any interested persons may appear at the hearing and present their views and objections to the proposed action. Any petition for a writ of mandate to inquire into the validity of the action of the department shall be commenced within 30 days after receipt by the owner of a written notice from the department that a certificate of approval will not be issued.

Article 2. Dams and Reservoirs Under Construction Before 1965 Revisions

6465. Any dam or reservoir that falls within the definition of a dam or reservoir in this part by virtue of the amendment of Section 6002 or the addition of Section 6004.5 at the 1965 Regular Session of the Legislature and which the department finds was under construction and not 90 percent constructed on September 17, 1965, shall, except as provided in Section 6466, be subject to the same provisions in this part as a dam or reservoir commenced after that date. Every owner of such a dam or reservoir shall file an application with the department for the department's written approval of the plans and specifications of the dam or reservoir. Where an application for approval of the plans and specifications for a dam is pending before the department on September 17, 1965, such application shall be deemed to also constitute an application for approval of the plans and specifications of the reservoir which will contain the water impounded by the dam.

6466. Construction work on such a dam or reservoir may proceed, provided an application for approval of the plans and specifications therefore is filed, until a certificate of approval is received by the owner from the department approving the dam or reservoir or an order is received by the owner from the department specifying how the construction must be performed to render the dam or reservoir safe. After receipt of an order specifying how construction of a dam or

reservoir must be performed, work thereafter must be in accordance with the order.

6467. Such dams or reservoirs as are 90 percent or more constructed on September 17, 1965, shall be subject to the same supervision as dams or reservoirs which were completed prior thereto.

Article 3. Fees for Dams or Reservoirs Under
Construction Before 1965 Revisions

6470. The owners of completed dams or reservoirs and dams or reservoirs that are 90 percent or more constructed that are made subject to the provisions of this part by the amendment of Section 6002 or the addition of Section 6004.5 at the 1965 Regular Session of the Legislature shall not be required to pay a fee in relation to applications filed with the department for approval of their dams or reservoirs. Applications for the approval of dams or reservoirs that are made subject to this part by said amendment or addition that are found by the department to have been less than 90 percent constructed on September 17, 1965, shall be accompanied by fees as much less than provided for dams or reservoirs commenced after that date as the percentage of construction found by the department to have been completed on that date.

PART 2. FISHWAYS OVER DAMS

6500. Whenever an application for approval of plans and specifications for a new dam, or for the enlargement of any dam, in any stream in this State, is filed pursuant to Part 1 of this division, a copy of the application shall be filed with the Fish and Game Commission as required by the Fish and Game Code.

6501. The provisions for the installation of fishways over or around dams and for the protection and preservation of fish in streams obstructed by dams are contained in Chapter 3 (commencing with Section 5900), Part 1, Division 6 of the Fish and Game Code.

CALIFORNIA CODE OF REGULATIONS

Title 23. Waters

Division 2. Department of Water Resources

Chapter 1. Dams and Reservoirs

Article 1. General Provisions

301. Definitions.

As used in this subchapter, the terms “dam”, “reservoir”, “owner”, “alteration”, enlargement”, and “water storage elevation” shall have the meanings given in Sections 6002 and 6004.5 through 6008 of the Water Code.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Sections 6002-6008, Water Code.

302. Purpose and Effect of Regulations.

The regulations in this subchapter are not intended to limit the authority of the department to act under the police power of the state to the extent authorized by law, when necessary to protect life and property from a dam or reservoir which constitutes, or which may constitute a danger to life and property, and they shall not be interpreted as depriving the department of such authority.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Sections 6075, 6081, and 6110, Water Code.

303. Evidence of Water Rights.

- (a) The department will not issue a written approval to commence construction or enlargement of a dam or reservoir until the applicant or owner demonstrates evidence of adequate water rights in accordance with the requirements of this section.
- (b) The applicant or owner shall provide the department with either:
 - (1) A copy of an entitlement to the use of water issued by the State Water Resources Control Board pursuant to Division 2, Part 2 (commencing with Section 1200) of the Water Code; or
 - (2) If the right to divert or use water does not depend on an entitlement identified in subsection (1) above, a statement of the legal basis of the right.
- (c) The applicant or owner shall also provide the department with either:

- (1) Evidence that a statement of water diversion and use has been filed with the State Water Resources Control Board pursuant to Division 3, Part 1, Chapter 5 (commencing with Section 5100) of the Water Code, or
 - (2) A statement either establishing that a statement of water diversion and use is not legally required, or showing good cause for not filing one.
- (d) The department shall obtain a written statement from the staff of the State Water Resources Control Board stating whether the water right is adequate for the proposed dam and reservoir.
 - (e) If a right to divert or use water is based upon a claim of riparian rights, or rights to appropriate water established prior to 1914, and such claim is disputed by the State Water Resources Control Board, the department shall not withhold approval to commence construction solely upon the basis of such a dispute, provided that it is satisfied with the evidence of a water right provided pursuant to subsection (b) above.
 - (f) In the event that the State Water Resources Control Board has initiated proceedings to determine whether to authorize use of water, and no decision has been issued, written approval to commence construction or enlargement shall not be withheld pursuant to this section after the 120th day following either the date that the matter is submitted to the Board for decision after hearing or, if no hearing is held, the date on which the protest period closes.

NOTE: Authority cited: Section 6078, Water Code.

Reference: Sections 1052, 6075, 6202(d), 6205, and 6264, Water Code.

304. Civil Engineering Plans and Specifications.

Plans and specifications which are submitted to the department shall be prepared by, or under the direction of, a civil engineer who is registered pursuant to California law and authenticated by him as provided in the Business and Professions Code, or be prepared by such other person as may be permitted under the provisions of said code to prepare such plans and specifications, in which case satisfactory evidence of such other person's right to

so act shall be submitted to the department when the plans and specifications are submitted.

NOTE: Authority cited: Section 6078, Water Code. Reference: Section 6206 Water Code; and Sections 6371, 6374-6375, Business and Professions Code.

305. Civil Engineering Supervision of Construction.

The work of construction, enlargement, repair, alteration or removal of a dam or reservoir shall be under the responsible charge of a civil engineer who is registered pursuant to California law or of such other person as may be permitted under the provisions of the Business and Professions Code to assume responsible charge of such work.

NOTE: Authority cited: Section 6078, Water Code. Reference: Section 6206, Water Code; Sections 6731, 6374-6375, Business and Professions Code.

Article 2. Applications for Construction, Enlargement, Repair, Alteration, Removal of Dams or Reservoirs

310. Applications for Construction or Enlargement.

(a) This section shall apply to applications for the department's approval of plans and specifications for the construction or enlargement of dams and reservoirs.

(b) Applications for construction or enlargement of a dam and reservoir shall be made on printed forms provided by the department. The department shall also provide written instructions for completing the application.

(c) The amount of information required will depend on factors such as the size of the proposed dam and reservoir, potential hazards, hydrology of the watershed, complexity of the site and proximity to active faults.

(d) Plans, maps, specifications and other information required for an application shall be provided in sufficient clarity and detail to be readily interpreted and studied, and to permit an adequate evaluation of the safety of the proposed work.

(e) The department may require the filing of any information, in addition to that specified in this section which, in its opinion, it considers necessary to determine the safety of the dam and reservoir.

(f) In addition to the information required by the Water Code Sections 6201-6206, and subsections (b)-(e), an application shall also include the following:

(1) Evidence of water rights, as required by Section 303.

(2) Information necessary to enable the department to comply with the requirements of the California Environmental Quality Act (Public Resources Code Sections 21000-21174). This information shall be either:

(a) A copy of the environmental impact report (EIR) or negative declaration prepared by a lead agency, or evidence that a lead agency is preparing or will prepare environmental documentation, or

(b) Data and information necessary for the department to act as a lead agency to prepare environmental documentation, where it is required by law to do so.

(3) Where the department acts as a responsible agency, the lead agency's EIR or negative declaration must be submitted to the State Clearinghouse.

(4) The fee as required by Water Code Section 6300, as made specific by Section 314 of this subchapter.

NOTE: Authority cited: Section 6078, Water Code. Reference: Sections 6200-6206, Water Code; and Sections 21002.1(d) and 21083, Public Resources Code.

311. Criteria for Determining Completeness.

(a) Applications will be considered complete when the department has received the completed, signed application form, the information and fee required in Water Code Sections 6201 and 6206 and Section 310(d)-(f), and the fee required by Sections 6300-6302 of the Water Code.

(b) The department on its own motion may waive any information required for a complete application, including but not limited to the requirements of Section 303 where it determines that it has sufficient information to commence and complete a review within applicable time limits, and that all requirements for issuance of an approval will be met within such time limits.

(c) The requirements published by the department pursuant to Section 310 shall set forth the procedures that the department will follow to review an application.

(d) Failure to comply with a request for information pursuant to such procedures within a reasonable time and in a reasonably responsive manner shall be cause for the department to disapprove the application.

NOTE: Authority cited: Section 6078, Water Code. Reference: Section 65941, Government Code.

312. Standard Terms

(a) The following are standard terms and conditions included in any approval of a dam safety application:

(1) Construction work shall be started within one year from date of approval.

(2) No foundations or abutments shall be covered by the material of the dam until the Department has been given an opportunity to inspect and approve the same.

(b) General Safety Requirement. In addition to the above terms and conditions, the law requires that a dam shall at all times be designed, constructed, operated and maintained so that it shall not or would not constitute a danger to life or property, and the Department may, at any time, exercise any discretion with which it is vested, or take any action necessary to prevent such danger.

NOTE: Authority cited: Section 6078, Water Code. Reference: Sections 6075, 6260-6267, Water Code.

313. Automatic Approval of Applications.

Applications approved in accordance with Government Code Section 65956 shall contain the terms and conditions set forth in Section 311. Such approvals may be revoked or modified at any time and under any conditions which would apply to any other approval granted under Division 3, Part 1 of the Water Code.

NOTE: Authority cited: Section 6078, Water Code. Reference: Section 65956, Government Code; and Sections 6260-6267, Water Code.

314. Filing Fee.

(a) Amount of Fee. The estimated cost of the dam and reservoir or enlargement as specified in Section 6302 of the Water Code shall include engineering, geologic, surveying, construction supervision, and administrative costs.

NOTE: Authority cited: Section 21082, Public Resources Code; Section 6078, Water Code. Reference Section: 21089 Public Resources Code; Sections 6301-6305, Water Code.

Article 3. Annual Fee.

315. Annual Fee.

(a) Determination of Amount. The department shall determine the amount of the fee in accordance with Section 6307 of the Water Code. Each owner shall be informed of the amount of the fee by April 30 of each year.

(b) Penalty for Delinquent Payment of Annual Fee. An owner who fails to pay any part of any annual fee on or before July 1, as required by Section 6307 of the Water Code, shall be penalized in accordance with Section 6428 of the Water Code.

NOTE: Authority cited: Section 6078, Water Code. Reference: Section 161, Water Code; and Sections 6307 and 6428, Water Code.

316. Inoperative Dams.

A dam will not be considered to be substantially completed or in operation for annual fee purposes, where the department determined that it has been rendered inoperative on other than a temporary basis. In making its determination the department will consider the following circumstances, among others, with respect to the dam:

(a) Alteration of the outlet facilities to assure maximum possible uncontrolled water release through the outlet works.

(b) Absence of water impounding capability under reasonably foreseeable conditions, taking into account the size of the drainage area.

(c) Absence of benefit from the dam and reservoir to the owner or others.

The Department may determine that a dam is no longer inoperative when investigation reveals that conditions which rendered the dam inoperative on other than a temporary basis have changed. In this event the dam will be considered substantially completed or in operation on the date such determination is made, and the annual fee shall be charged on a pro rata basis.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Section 6307, Water Code.

Article 4. Small Dams Review Board

320. Small Dams Review Board.

In the Department there shall be a Small Dams Review Board consisting of a chairperson who shall be the Division Chief, Division of Design and Construction; a qualified engineer or geologist appointed by the Division Chief, Division of Safety of Dams; and, for each review, a consulting engineer who would be agreed upon by the Department and the dam owner.

NOTE: Authority cited: Section 6078, Water Code. Reference: Section 6054, Water Code.

321. Scope of Review

(a) The Board shall be convened upon the request of any owner of a small dam or proposed small dam to review any decision or order of the department respecting any technical standard, study requested, engineering requirement or other technical matter required by the department where the owner disputes the basis for such requirement, the need for such requirement, or the facts found by the department.

(b) No review shall be undertaken if, in the opinion of the department, there exists an immediate hazard to life or property. This subsection shall not be construed to bar a Small Dams Review Board proceeding after, in the judgment of the department, an immediate hazard to life and property no longer exists.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Section 6054, Water Code.

322. Small Dam Defined.

"Small Dam" means any dam less than 25 feet in height with a reservoir storage less than 2,000 acre-feet.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Sections 6054 and 6055, Water Code.

323. Time to Request Board Review; Filing Fee.

(a) The owner must request board review within 60 days of the disputed departmental action. The request must be made to the Division Chief, Division of Safety of Dams, and must state the facts and circum-stances on which such owner bases his grievance.

(b) The owner shall remit, at the time the grievance is filed the amount of \$250 to partially defray the cost and expense of the Board.

(c) If the Board meets for more than one day, the department shall bill the owner for its additional costs incurred for subsequent days.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Sections 6054 and 6055, Water Code.

324. Time and Conduct of Review.

The Board shall review the owner's grievance promptly after such grievance is filed. The review shall be conducted in an informal manner. The Board shall consider all relevant information and data presented by the owner, his engineer, or any other person.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Section 6054, Water Code.

325. Findings of the Board.

Based upon information and data secured during the review, the Board shall refer its findings to the Division Chief, Division of Safety of Dams, regarding the matter which led to the grievance. Decisions made by the Division Chief shall be final.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Section 6054, Water Code.

Article 5. Dams Owned by the Department
of Water Resources

330. Consulting Board.

Pursuant to Section 6056 of the Water Code, the department shall retain a board of three consultants to report to the Director on the safety of dams owned by the department.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Section 6056, Water Code.

331. Scope of Review.

The consulting board shall make independent findings with regard to conditions which may affect the safety of the dam and reservoir as specified in Section 6081 of the Water Code, and the board shall also make independent findings that the dam is safe to impound water, as specified in Section 6355 of the Water Code.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Sections 6056, 6081, 6355, Water Code.

332. Actions for Which Board is Retained.

(a) The department shall retain a consulting board:

(1) To review the adequacy of the design of a dam and reservoir the department proposes to construct, or

(2) To review the safety of the completed construction and the terms and conditions to be included

in a certificate of approval for any dam owned by the department as issued, renewed or modified, no later than six months following any such action.

(b) Where a board is retained to review the adequacy of the design of a dam and reservoir, it shall report its findings to the Director prior to the approval of an application to construct or enlarge the dam.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Section 6056, Water Code.

333. Periodic Review.

In addition to the times specified in Section 332, the department shall retain a review board at least once every five years to review the operational performance of department owned dams. The Federal Power Commission's five year independent review may be substituted if it is comparable to the review required by this article.

NOTE: Authority cited: Section 6078, Water Code.
Reference: Section 6056, Water Code.

CURRENT PRACTICES
OF THE
DEPARTMENT OF WATER RESOURCES
IN
SUPERVISION OF DAMS AND RESERVOIRS

Introduction

The following is provided to help the reader comply with the requirements of the foregoing sections of the Water Code (WC) and the California Code of Regulations (CCR). Current practices of the Department of Water Resources in supervision of dams and reservoirs in State jurisdiction are given. Information required for applications is outlined. (CCR 310)

Division of Safety of Dams

Responsibility for supervision of dams and reservoirs is assigned to the department and delegated to the Division of Safety of Dams (DSOD).

Dams and Reservoirs in State Jurisdiction

Water Code Sections 6000 to 6004.5 and 6025.5 identify dams and reservoirs that are in State jurisdiction. Note that dams and reservoirs owned by the United States are not subject to State jurisdiction except as otherwise provided by federal law.

The Division will review the physical description on request of existing or proposed impoundments and determine if they are or will be in State jurisdiction. Plans for proposed impoundments are usually required before determinations can be made.

Proposed Dams and Reservoirs

The Division of Safety of Dams inspects sites, reviews preliminary plans, and comments on firm proposals for proposed dams and reservoirs. It attempts to inspect representative field exploration, unique laboratory testing, etc., for proposed facilities. However, any comments based on preliminary plans and data are not binding on the Division's later consideration of applications.

In matters relating to the California Environmental Quality Act (CEQA), the Department of Water Resources is the lead or responsible agency for dams and reservoirs. Environmental consideration for dams and reservoirs not directly related to safety is assigned to the Department's four districts. Usually, the Division of Safety of Dams makes preliminary reviews of dam and reservoir proposals, as discussed above, before environmental documentation is prepared. Other water related concerns are handled by the appropriate district.

Procedure for Construction or Enlargement of Dams and Reservoirs

1. If adequate water rights are not already held, file an application for water rights with the State Water Resources Control Board, Division of Water Rights, 901 P Street, Sacramento, California 95814. Evidence of water rights is required before a construction or enlargement application can be approved. (CCR 303)
2. Pre-application meetings are not required by the statutes or regulations. Practice, however, has shown that early involvement

of DSOD in projects is most beneficial for aggressive project schedules. CEQA scoping meetings, early site visits to view exploration, preliminary design discussions, project schedule reviews, and submittal of preliminary 60 percent plans, specifications, and geologic data are recommended to expedite review leading to final approval.

3. File application for construction or enlargement of dam. (CCR 310) Include:
 - (a) Application forms (DWR 3) in duplicate to Department of Water Resources, Division of Safety of Dams, P.O. Box 942836, Sacramento, California 94236-0001, (2200 X Street, Suite 200), plus one copy to the Fish and Game Commission in-care of the State Department of Fish and Game, 12th Floor, Resources Building, 1416 Ninth Street, Sacramento, California 95814, if the dam is in a stream. (WC 6500) Sign all copies.
 - (b) Plans prepared by registered civil engineer pursuant to California law. (CCR 304) Such plans shall be filed in duplicate in the form of paper prints. Unsigned, nearly complete, prints should be submitted.
 - (c) Specifications in duplicate. Nearly complete specifications should be submitted.
 - (d) Filing Fee. (WC 6300-6309 and CCR 314). The Current fee structure is listed on the Division Website under "Fees."
 - (e) Certain additional information may be desirable, or may be required, depending upon the magnitude of the project. Such added information may include soils data, logs of borings or other exploratory data, geologic reports, hydrologic data, structural and hydraulic design notes, etc.
 - (f) Information to enable the department to comply with the California Environmental Quality Act and regulations. This information is as appropriate:
 - (1) A copy of the final adopted environmental impact report or initial study--negative declaration prepared by a lead agency, or
 - (2) Data and information necessary for the department to act as lead agency to prepare the environmental documentation.

The environmental documentation in either case must be submitted to the State Clearing-house for processing as required by State law.

4. Within 30 days after receipt of an application, the Division informs the applicant that the application is complete or of the information necessary to make it complete.
5. After review of plans, specifications, etc., and inspection of the site, changes in the plans and specifications, and any supplemental data necessary for approval, will be identified.
6. Submit signed drawings in triplicate and final specifications in duplicate for application approval when review comments are resolved.
7. All civil engineering work is to bear the seal or stamp of the responsible civil engineer and shall be signed across the face with the expiration of the certificate shown on or adjacent to the seal. Civil engineering work includes plans, specifications, reports, and documents which are prepared under the Civil Engineering Practice Act.
8. Notify the Division when construction is to begin and keep DSOD field engineers informed as to the status of construction work at all times. Inspections are made during construction as deemed necessary. No foundations or abutments shall be covered until the DSOD field engineer has inspected and approved them.
9. Upon completion of construction, notify the Division by letter. Final inspections are made as soon as practicable after notice is received.
10. As soon as possible after completion of the dam and final inspection by the division's field engineer, file the following:
 - (a) Affidavit of cost of construction. Attach breakdown of costs, including engineering.
 - (b) Additional filing fee if final cost exceeds estimated cost by more than 15 percent.
 - (c) As-constructed plans, if required, in the form of paper prints.
11. A Certificate of Approval will be issued upon a finding that the dam and reservoir are safe to impound water within the limitations prescribed in the certificate. Impoundment of water must not commence until this certificate is issued.

Procedure for Repair or Alteration of Dams or Reservoirs

The procedure is the same as for construction or enlargement except for the following:

1. Evidence of water rights is not required.
2. Use application form DWR 4.
3. Plans and specifications may not be required for minor repair work.
4. Repair and maintenance qualify for an exemption under the California Environmental Quality Act.
5. Only two sets of signed plans are required for application approval.
6. The Certificate of Approval is only modified when the alteration or repair lowers the approved water surface elevation.

Procedure for Removal of Dams and Reservoirs

The procedure is the same as for construction or enlargement except for the following:

1. Evidence of water rights is not required.
2. Use application form DWR 5.
3. Only two sets of signed plans are required for application approval.
4. The Certificate of Approval, if any, is returned to the Department.

Draft

Simplified Dam Failure Analysis for Inundation Mapping Using HEC-1

By
J. J. DeVries¹

Introduction

This paper describes a simplified approach to dam failure analysis using HEC-1 to provide input hydrographs for the hydrodynamic model Mike 21. Mike 21 was used in combination with digital elevation models (DEM) to analyze the dambreak flood and produce inundation maps.

The California Office of Emergency Services (CA OES) was directed by the Governor of the State of California to develop dam failure inundation maps for all non-federal dams in the state. The flood mapping was done using a 2-D hydrodynamic model (Mike 21) using existing topographic information available from the USGS. Nearly 500 dam failure inundation maps were produced in a four-month period. The purpose of this study was not to produce detailed dam-failure flood maps, but to reveal those dams for which detailed mapping studies are required. This was a screening study and not a study to provide the final detailed inundation maps for individual dams.

The modeling tools were chosen on the basis of convenience of use and the ability to link the generation of flood maps to the inundation process. CA OES selected two models: a modified version of NWS DAMBRK and the Danish Hydraulic Institute Mike 21 model for the dambreak flood analyses. However, nearly all of the maps were based on the 2-D Mike 21 modeling.

Mike 21 requires an input hydrograph since the program does not simulate a dam failure or provide reservoir routing to compute the outflow hydrograph through the breach as it develops with time. HEC-1 has these features so it was used to simulate the dam failures. HEC-1 also has an option for writing the calculated hydrograph data to user-formatted files. A utility program was used to reformat the HEC-1 output as Mike 21 input.

The database for dam and reservoir characteristics for the State of California is maintained by the Division of Dam Safety of the California Department of Water Resources for dams under their jurisdiction. The information includes the height of the dam, crest elevation and length, reservoir storage capacity, and reservoir area.

To simulate a dam failure HEC-1 requires breach characteristics, including total failure time, and an elevation-capacity curve for the reservoir. These were developed from the published values of crest elevation, crest length, dam height, and reservoir storage capacity.

Background

The California Office of Emergency Services dam failure inundation mapping and emergency procedure program applies to dams meeting specific size requirements making them subject to the jurisdiction of the State of California. Dams owned by agencies of the United States government are not under the jurisdiction of this program. The legislative intent of the original CA OES seismic safety of dams legislation was to establish emergency procedures for the evacuation and control of populated areas below

¹ David Ford Consulting Engineers and State of California

dams which could be used to save lives and reduce injury in the event of a dam failure. Dam owners submit inundation maps to CA OES for review and approval in accordance with guidance issued by CA OES. Inundation maps represent the best estimate of where water would flow if a dam failed completely and suddenly with a full reservoir. Based upon approved inundation maps, or the delineated areas, cities and counties with territory in the mapped areas are required to adopt emergency procedures for the evacuation and control of populated areas below the dams.

HEC-1 dam failure analysis

Breach analysis—Because a large number of dams had to be analyzed, it was not possible to define specific characteristics for each dam and reservoir. Dams were classified as either an earth or rockfill dam or a concrete dam. The following table shows the parameters for the two types of dams.

Assumptions concerning dam failure:

- “Sunny-day” failure
- Reservoir is full
- Failure is rapid
- Earth dam: 15 minutes for full failure
- Concrete dam: 9 minutes for full failure
- Failure is for full height of dam
- The maximum expected breach width occurs

Table 1. Dam breach parameters:

Parameter	Earth/rockfill Dams	Concrete Dams
Side slope of breach	1.0	0.2
Time until breach reaches its maximum size (hr)	0.25	0.15
Bottom width of breach (ft)	5 * H	1 * H
Discharge through turbines(cfs)	10, 100, 1000	Value kept as small as possible.
Elevation of water surface in reservoir at failure	Weir Crest Elevation	Weir Crest Elevation
Inflow at upstream end of reservoir	Small dams : 10 cfs Medium dams: 100 cfs Large dams : 1000 cfs	Inflow to reservoir = discharge through turbines

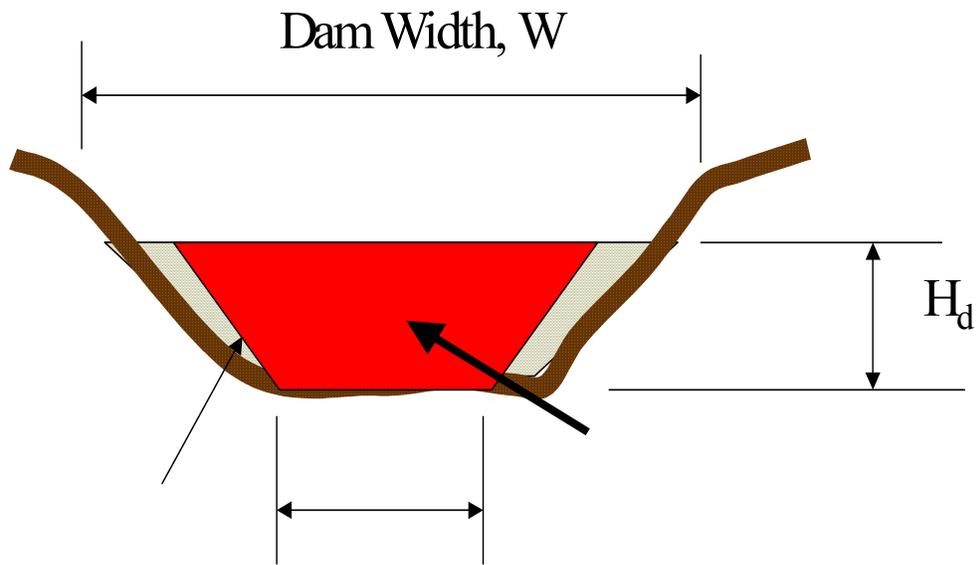


Figure 1. Breach geometry for earthen dams

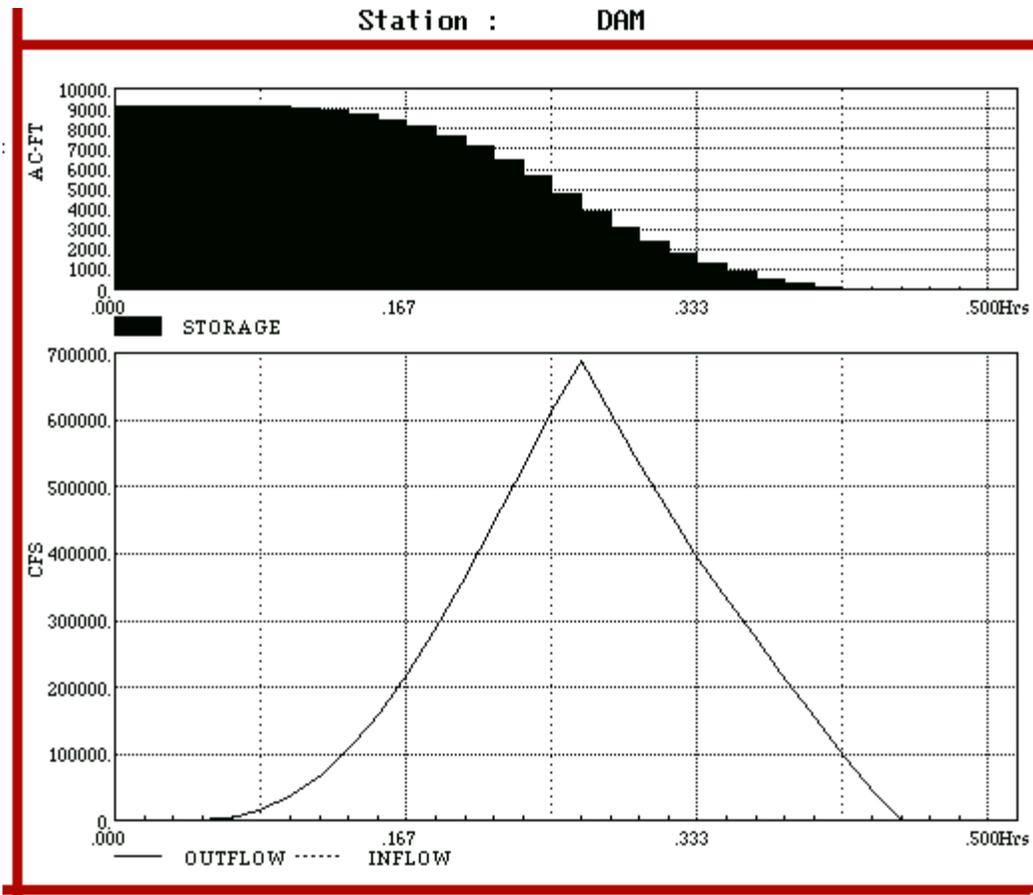


Figure 2: Dam failure hydrograph generated by HEC-1

Hydrodynamic model

MIKE 21 BACKGROUND

The version of Mike 21 used in this study simulates water level variations and flows in response to a variety of forcing functions in water bodies. The water levels and flows are resolved on a rectangular grid covering the area of interest when provided with the bathymetry, bed resistance coefficients, wind field, hydrographic boundary conditions, etc. The system solves the full time-dependent non-linear equations of continuity and conservation of momentum. The solution is obtained using an implicit ADI finite difference scheme of second-order accuracy.

Mike 21 parameters:

The only changes to the modeling parameters used for all individual inundation models were to the Manning's n values used for boundary resistance. Higher values were used in canyon areas than in the floodplains. A single value was used for the entire model. No effort was made to vary Manning's n by land use. Each 30-meter grid cell was represented by a single elevation value and a single roughness coefficient. The dam failure hydrograph generated by HEC-1 had an initial steady flow and a constant base flow added at the end of the hydrograph. Model stability problems occurred without adding these to the hydrograph.

Table 2. Parameters used in Mike 21.

Parameter	Value used
Eddy Viscosity	5 m ² /s
Wind Conditions	No wind
Dry Depth	0.04 m
Flood Depth	0.10 m
Manning's n - Canyons	0.06 to 0.08
Manning's n - Floodplain	0.04 to 0.05

Results

The assumptions used produced conservatively large flows from the simulated dam failure; the Manning's n-values were considered conservatively low; and many of the detailed features of the surface geometry were not represented in the 30-m DEMs. It was concluded that the inundation maps developed using these data typically over-predict expected inundation areas that could occur as a result of a dam failure.

A primary purpose of this study was to identify dams for which flooding due to dam failure could cause major risk to people and property. It is the dam owner's responsibility to submit inundation maps to CA OES for review and approval in accordance with guidance issued by CA OES. Based on the results of this study various dam owners were directed to have dam failure inundation studies made.

Several maps developed in this study were compared with inundation maps prepared by engineering firms for dam owners. None of the previous comparison studies used two-dimensional flood models. In general the tools used for dambreak flood analysis have been the one-dimensional unsteady-flow DAMBRK model or steady flow one-dimensional models (HEC-RAS or HEC-2). For the latter, dambreak flood hydrographs were generated by HEC-1 or the National Weather Service model BREACH.

Maps developed in this study showed good agreement with maps produced in previous studies, especially in steeper areas and areas with well-defined channelizing features. The results differed in flatter floodplain areas, especially where flow could split around small hills and other topographic forms.

More accurate definition of potential inundation areas could be obtained using two-dimensional hydrodynamic models. However, accurate topographic information is required. The widely available 30-m DEMs do not provide very accurate information on topography, and more detailed topographic data should be obtained.

Conclusions

This study was conducted to establish emergency procedures for the evacuation and control of populated areas below dams that could be used to save lives and reduce injury in case of a dam failure. Inundation maps represent the best estimate of where water would flow if a dam failed completely and suddenly with a full reservoir. Based upon approved inundation maps, or the delineated areas, cities and counties with territory in the mapped areas are required to adopt emergency procedures for the evacuation and control of populated areas below the dams.

More detailed investigations of individual dams would produce more accurate definition of potential inundation areas, and these are expected to be done in the future. The results from this study were judged to be appropriate in the light of the purpose of the study, and on the basis of comparisons of inundation maps submitted by dam owners appeared to provide approximately the same level of accuracy as obtained by commonly used inundation mapping methods.

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Current Hydrologic Practices, Problems, and Needs Within California's Dam Safety Program

By
Melissa Collord

Introduction

There are over 1,200 dams within the jurisdiction of the California Department of Water Resources (DWR), Division of Safety of Dams (DSOD). The dams are located throughout the state and have drainage basins that vary in size from portions of an acre to thousands of square miles. DSOD requires that all dams within its jurisdiction be capable of adequately passing a selected design flood. A method was developed by DSOD to estimate flood hydrographs for ungaged or poorly gaged watersheds for use in spillway evaluation.

Methodology

The procedure devised by DSOD in 1981 to determine the hydrologic adequacy of any spillway in California consists of eight parts:

1. Assessment of the potential downstream hazard
2. Determination of appropriate storm return period
3. Development of precipitation
4. Development of synthetic unit hydrograph parameters
5. Development of loss rate parameters
6. Computation of the flood hydrograph
7. Routing of the flood hydrograph through the reservoir
8. Evaluation of the spillway adequacy

The following discussion will focus on parts 4 thru 6, their basic concepts and shortcomings.

Unit Hydrograph

DSOD utilizes Clark's method to develop a synthetic unit hydrograph. Clark's unitgraph parameters are obtained from a generalized study, conducted in 1971, of observed rainfall and runoff events, which related these parameters to drainage basin characteristics by regression analysis. The study is applicable to the State of California except the area south of the Tehachapi Mountain Divide and the area east of the Sierra Nevada Divide. The regression equations relate the drainage basin characteristics of stream length, area, elevation, and ground cover to the time of concentration (t_c) and Clark's storage coefficient (R) for development of a basin-specific unit hydrograph. The study also presents guidelines for estimating loss rate parameters.

Flood Hydrograph

The flood hydrograph is developed using the computer program HEC-1 (Hydrologic Engineering Center, 1981). The program obtains the flood hydrograph by convolution of the effective rainfall increments with Clark's unitgraph. Losses due to surface retention and infiltration are estimated by the exponential loss rate function within HEC-1. The general criteria is that the percent runoff should not be less than 70 when the mean annual precipitation (MAP) at the basin is greater than 25 inches and should not be less than 60 when the MAP is 25 inches or less.

If applicable, allowances for snowmelt, base flow in the basin, runoff from prior storms, import of water, etc., are added to the storm runoff hydrograph to obtain the design flood hydrograph for the watershed.

Problems Faced

The regression equations provide a rational, consistent and simplistic method to developing a basin-specific synthetic unit hydrograph. However, with the advent of faster and more sophisticated computers and programs, such as HEC-HMS, calibration of basin models has become easier and a more widely used approach. The optimization feature in HEC-HMS estimates unit hydrograph and loss rate parameters with observed rainfall and flow data. Unfortunately, there still exists the problem of a lack of basic hydrologic data in most small drainage basins. This makes it impossible to calibrate a basin's unitgraph and loss rate or to check the reasonableness of a synthetic unit hydrograph. Therefore, we highly recommend that more research be conducted into developing unit hydrographs and determining loss rates for small ungaged basins.

Modeling large ungaged drainage basins that range in size from 100 to 1000 square miles present an even more difficult task. In addition to determining the unit hydrograph parameters for each subbasin, channel routing or lag time must now be included in the analysis. The methods that are available in determining routing parameters (DSOD typically uses the Muskingum routing method) are imprecise and our level of confidence in accurately defining the routing conditions is low.

Utilization of HEC-HMS as our primary tool to perform our hydrology and reservoir routing calculations will occur in a very gradual process as more staff members are exposed or are given training to operate the program. Several staff members have already received some training on HEC-HMS, but are unable to use the program since the exponential loss rate function is no longer available and in some cases snowmelt calculation is needed. DSOD can certainly modify loss rate assumptions to be compatible with HEC-HMS, but we do encourage HEC to incorporate snowmelt calculations into HMS as soon as practical.

