Title 8. Environmental Law

Chapter I. Arkansas Pollution Control and Ecology Commission, Department of Energy and Environment

Subchapter C. Water Quality

Part 21. Rule Establishing Water Quality Standards for Surface Waters of the State of Arkansas

Subpart 1. Authority, General Principles, and Coverage

8 CAR § 21-101. Authority.

Pursuant to the Arkansas Water and Air Pollution Control Act, Arkansas Code § 8-4-101 et seq., and in compliance with the requirements of the federal Water Pollution Control Act, 33 U.S.C. § 1251 et seq., (hereinafter "Clean Water Act"), the Arkansas Pollution Control and Ecology Commission hereby promulgates this rule establishing water quality standards for all surface waters, interstate and intrastate, of the State of Arkansas.

8 CAR § 21-102. Purpose.

(a)(1) The water quality standards herein set forth are based upon present, future, and potential uses of the surface waters of the state and criteria developed from statistical evaluations of past water quality conditions and a comprehensive study of least-disturbed, ecoregion reference streams.

(2) The standards are designed to enhance the quality, value, and beneficial uses of the water resources of the State of Arkansas, to aid in the prevention, control, and abatement of water pollution, to provide for the protection and propagation of fish and wildlife, and to provide for recreation in and on the water.

(b) In establishing these standards, the Arkansas Pollution Control and Ecology Commission has taken into consideration the use and value of the streams for public water supplies, commercial, industrial, and agricultural uses, aesthetics, recreational purposes, propagation of fish and wildlife, other beneficial uses, and views expressed at public hearings.

(c)(1) The State of Arkansas has an exceptionally large volume of high-quality water.

(2) With few exceptions the streams and lakes of Arkansas contain waters of a quality suitable for all legitimate uses without the necessity of unreasonable water treatment.

(3) Where man-made pollution exists, substantial progress has been made in abatement.

(d)(1) It is the purpose of this part to preserve and protect the quality of this water so that it shall be reasonably available for all beneficial uses and thus promote the social welfare and economic well-being of the people of the state.

(2) It is further the purpose of this part to designate the uses for which the various waters of the state shall be maintained and protected; to prescribe the water quality standards required to sustain the designated uses; and to prescribe rules necessary for implementing, achieving, and maintaining the prescribed water quality.

8 CAR § 21-103. Arkansas Pollution Control and Ecology Commission review.

(a) The water quality standards herein established will be reviewed by the Arkansas Pollution Control and Ecology Commission at least once each three-year period beginning as of October 18, 1972.

(b) Revisions may be made to take into account changing technology of waste production, treatment and removal, advances in knowledge of water quality requirements, and other relevant factors.

8 CAR § 21-104. Policy for compliance.

(a) It shall be the policy of the Division of Environmental Quality of the Department of Energy and Environment to provide, on a case-by-case basis, a reasonable time for an existing permittee to comply with new or revised water quality-based effluent limits.

(b) Consequently, compliance schedules may be included in National Pollutant Discharge Elimination System (NPDES) permits at the time of renewal or permit

modification initiated by the division to require compliance with new water quality standards.

(c) Compliance must occur at the earliest practicable time, in accordance with 40 C.F.R. §122.47.

8 CAR § 21-105. Environmental improvement projects.

The Arkansas Pollution and Ecology Control Commission may, after consideration of information provided pursuant to Appendix B and Arkansas Code § 8-5-901 et seq., grant temporary modifications to the General and Specific Standards or establish a subcategory or subcategories of use or uses for completion of long-term environmental improvement projects.

8 CAR § 21-106. Definitions.

As used in this part:

(1) "304(a) guidance" refers to Section 304(a) of the Clean Water Act, 33 U.S.C. § 1314(a), which requires the United States Environmental Protection Agency to publish and periodically update ambient water quality criteria which will be protective of human health and the environment;

(2) "Abatement" means the reduction in degree or intensity of pollution;

(3) "Acute toxicity" means a statistically significant difference (at the ninety-fifth percent (95%) confidence level) in mortality or immobilization between test organisms and a control measured during a specified period of time which is normally less than ninety-six (96) hours;

(4) "Algae" means simple plants (without roots, stems, or leaves) that contain chlorophyll and are capable of photosynthesis;

(5) "Aquatic biota" means all those life forms which inhabit the aquatic environment;

(6) "Aquatic life" means the designated use of a waterbody determined by the fish community and other associated aquatic biota;

(7) "Base flows" means that portion of the stream discharge that is derived

from natural storage (i.e., outflow from groundwater or swamps), or sources other than recent rainfall that creates surface runoff. Also called sustaining, normal, dry weather, ordinary, or groundwater flow;

(8) "Bioaccumulation" means the process by which a compound is taken up by an aquatic organism, both from water and through food;

(9) "Chronic toxicity" means a statistically significant difference (at the ninety-fifth percent (95%) confidence level) in mortality or immobilization, reduced reproduction or limited growth between test organisms and a control measured during a substantial segment of the life span of the test organism;

(10) "Commission" means the Arkansas Pollution Control and Ecology Commission;

(11) "Conventional pollutants", pursuant to section 304(a)(4) of the Clean Water Act, 33 U.S.C. § 1314(a)(4), includes biochemical oxygen demand (BOD), total suspended solids (nonfilterable) (TSS), pH, fecal coliform, and oil and grease;

(12) "Criterion continuous concentration (CCC)" means an estimate of the highest concentration of a material in ambient water to which an aquatic community can be exposed indefinitely without resulting in an unacceptable adverse effect. This is the chronic criterion;

(13) "Criterion maximum concentration (CMC)" means an estimate of the highest concentration of a material in ambient water to which an aquatic community can be exposed briefly without resulting in an unacceptable adverse effect. This is the acute criterion;

(14) "Critical flows" means the flow volume used as background dilution flows in calculating concentrations of pollutants from permitted discharges. These flows may be adjusted for mixing zones. The following critical flows are applicable:

(A) For a seasonal aquatic life - one cubic foot per second (1 ft^3/sec) minus the design flow of any point source discharge (may not be less than zero (0));

(B) For human health - harmonic mean flow or long-term average flow;

(C) For minerals - harmonic mean flow, except as follows:

(i) 8 CAR § 21-511(a) Site Specific Mineral Criteria listed with an

asterisk- 4 cubic feet per second; and

(ii) 8 CAR § 21-511(c) Domestic Water Supply: Q7-10; and

(D) For metals and conventional pollutants - Q7-10;

(15)(A) "Critical season" means that period of the year when water temperatures exceed twenty-two degrees Celsius (>22°C (71.6°F)).

(B) This is normally the hot, dry season and after the majority of the fish spawning activities have ceased.

(C) This season occurs during a different time frame in different parts of the state, but normally exists from about mid-May to mid-September;

(16) "Cumulative" means increasing by successive additions;

(17) "Degradation" means the act or process of causing any decrease in quality;

(18) "Design flow" means a facility discharge flow of process wastewater that is authorized in a NPDES permit;

(19) "Designated uses" means those uses specified in the water quality standards for each waterbody or assessment unit whether or not they are being attained;

(20) "Discharge" means a discrete point source of waste or wastewater entering into waters of the state;

(21) "Dissolved oxygen" (DO) means a measure of the concentration of oxygen in solution in a liquid;

(22) "Division" means the Division of Environmental Quality of the Department of Energy and Environment, or its successor;

(23) "Ecoregion" means a large area of landscape with relatively homogenous physical, chemical, and biological characteristics;

(24) "Effluent" means water that is not reused after flowing out of any wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastes;

(25) "*Escherichia coli*" means a rod-shaped gram-negative bacillus abundant in the large intestines of mammals;

(26) "Endemic" means native to and confined to a specific region;

(27) "Existing uses" means those uses listed in Section 303(c)(2) of the Clean Water Act, 33 U.S.C. § 1313(c)(2) (i.e., public water supplies, propagation of fish and wildlife, recreational uses, agricultural and industrial water supplies, and navigation), which were actually attained in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards;

(28) "Fishable/swimmable" refers to one of the national goals stated in Section 101(a)(2) of the Clean Water Act, 33 U.S.C. § 1251(a)(2), "...provides for the protection and propagation of fish, shellfish and wildlife and provides for recreation in and on the water.";

(29) "Groundwater" means water below the land surface in a zone of saturation;

(30) "Hardness" means a measure of the sum of multivalent metallic cations expressed as calcium carbonate (CaCO3);

(31) "Harmonic mean flow" means the reciprocal of the mean of the reciprocals of daily flow measurements;

(32) "Headwater" means the upper watershed area where streams generally begin; headwater typically consists of 1st- and 2nd-order streams;

(33) "Heavy metals" means a general name given to the ions of metallic elements heavier than iron, such as cadmium, lead, mercury, copper, zinc, and chromium;

(34) "Human health criteria" means levels of toxicants in ambient water which will not manifest adverse health effects in humans;

(35) "Hypolimnion" means that portion of a thermally stratified lake or reservoir below the zone in which the rate of temperature change is greatest. An area of minimal circulation and mixing;

(36) "Impairment" means exceedances of the water quality standards by a frequency and/or magnitude which results in any designated use of a waterbody to fail to be met as a result of physical, chemical, or biological conditions;

(37)(A) "Indicator species" means species of fish which may not be dominant

within a species group and may not be limited to one (1) area of the state, but which, because of their presence, are readily associated with a specific ecoregion.

(B) All indicator species need not be present to establish a normal or representative fishery;

(38) "Indigenous" means produced, growing, or living naturally in a particular region or environment;

(39) "Interstate" means of, connecting, or existing between two (2) or more states;

(40) "Intrastate" means existing or occurring within a state;

(41) "Ionizing radiation" means gamma rays and x-rays; alpha and beta particles, high speed electrons, neutrons, protons, and other nuclear particles; but not sound or radio waves, or visible, infrared, or ultraviolet light;

(42)(A) "Key species" means fishes which are normally the dominant species (except for some ubiquitous species) within the important groups such as fish families or trophic feeding levels.

(B) All specified key species need not be present to establish a normal or representative fishery;

(43) "Long term average flow" means an average annual stream flow based on a period of record which reflects the typical annual variability;

(44) "Milligrams per liter (mg/L)" means the concentration at which one milligram (1mg) is contained in a volume of one liter (1 L); one milligram per liter (1 mg/L) is equivalent to one part per million (1 ppm) at unit density;

(45)(A) "Mixing zone" means an area where an effluent discharge undergoes mixing with the receiving waterbody.

(B) For toxic discharges a zone of initial dilution may be allowed within the mixing zone;

(46) "Most probable number (MPN)" is used to estimate the concentration of viable microorganisms in a sample by means of replicating liquid broth growth in ten-fold dilutions;

(47) "Mouth" means the point of confluence where a stream enters a larger

body of water;

(48) "Natural background" means ambient conditions or concentrations of a parameter due to nonanthropogenic sources; natural background does not typically interfere with support of designated uses nor the level of aquatic biota expected to occur naturally at the site;

(49) "Naturally occurring excursions" means temporary deviation from natural background due to natural events such as severe storm events, drought, temperature extremes, etc.;

(50) "Nephelometric turbidity unit (NTU)" means a measure of turbidity based upon a comparison of the intensity of light scattered by a sample of water under defined conditions with the intensity of light scattered by a standard reference suspension; NTU are considered comparable to the previously reported Jackson Turbidity Units (JTU). May also be reported as Formazin Turbidity Units (FTU) in equivalent units;

(51)(A) "Noncritical season" means that period of the year when water temperatures are twenty- two degrees Celsius or below (≤22°C (71.5°F)).

(B) This includes the major part of the year from fall through spring, including the spawning season of most fishes.

(C) It normally occurs from about mid-September to mid-May;

(52) "Nonpoint source" means a contributing factor to water pollution that is not confined to an end-of-the-pipe discharge, i.e., stormwater runoff not regulated under Clean Water Act § 402(p)(1), 33 U.S.C. § 1342(p), agricultural or silvicultural runoff, irrigation return flows, etc.;

(53) "Nuisance species" means those organisms capable of interfering with the beneficial use of water;

(54) "Nutrient" means any substance assimilated by an organism which promotes growth and replacement of cellular constituents. The usual nutrient components of water pollution are nitrogen, phosphorus, and carbon;

(55) "Objectionable algal densities" means numbers of total algae which would interfere with a beneficial use;

(56) "Persistent" means degraded only slowly by the environment;

(57) "pH" means the negative logarithm of the effective hydrogen-ion concentration in gram equivalents per liter;

(58) "Picocurie" means one trillionth (10^{-12}) of a curie which is a unit of quantity of any radioactive nuclide in which 3.7 X 10^{10} disintegrations occur per second;

(59) "Point source" means a discharge from a discrete point;

(60) "Q7-10" means a flow volume equal to or less than the lowest mean discharge during seven (7) consecutive days of a year which, on the average, occurs once every ten (10) years;

(61) "Regulated-flow stream" means those streams restricted by structures which have the ability to control stream flow;

(62)(A) "Seasonal aquatic life" means the designated aquatic life use that occurs in some waterbodies only during the period when stream flows increase substantially and water temperatures are cooler.

(B) This is normally during the months of December through May;

(63)(A) "State of Arkansas Continuing Planning Process (CPP)" is a document setting forth the principal procedures of the state's water quality management programs, developed pursuant to Section 303(e) of the Clean Water Act, 33 U.S.C. § 1313(e), and 40 C.F.R. § 130.5.

(B) The CPP is not a rule;

(64) "Storm flows" takes into account all flows and data collected throughout the year, including elevated flows due to rainfall events;

(65) "Surface water" means the water contained on the exterior or upper portion of the earth's surface as opposed to groundwater;

(66) "Synergism" means cooperative action of discrete agents such that the total effect is greater than the sum of the effects taken independently;

(67) "Total dissolved solids (TDS)" means the total soluble organic and inorganic material contained in water; includes those materials, both liquid and solid, in solution and otherwise, which pass through a standard glass fiber filter disk and are not volatilized during drying at one hundred eighty degrees Celsius (180°C);

(68) "Trout fishery" means water that is suitable for the growth and survival of trout, usually characterized as high-quality water having a maximum summer temperature of sixty-eight degrees Fahrenheit (68°F) or less;

(69) "Use attainability analysis" means a structured scientific assessment of the factors affecting the attainment of the fishable/swimmable use which may include physical, chemical, biological, and economic factors;

(70) "Waterbodies, waterways, waters", in this part, refers to surface waters of the state as described in the Arkansas Water and Air Pollution Control Act, Arkansas Code § 8-4-101 et seq.;

(71) "Water effects ratio (WER)" means a specific pollutant's acute or chronic value measured from a specific site ambient water, divided by the respective acute or chronic toxicity of the same pollutant in laboratory water; and

(72)(A) "Zone of initial dilution (ZID)" means an area within the mixing zone where a toxic effluent discharge initiates mixing in the receiving waterbody.

(B) This is an area where acute water quality criteria may be exceeded, but acute toxicity may not occur.

Subpart 2. Antidegradation Policy

8 CAR § 21-201. Existing uses.

Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.

8 CAR § 21-202. High quality waters.

(a) Where the quality of the waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water, that quality shall be maintained and protected unless the state finds, after full satisfaction of the intergovernmental coordination and public participation provisions of the State of Arkansas' Continuing Planning Process, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the

waters are located.

(b) In allowing such degradation or lower water quality, the state shall assure water quality adequate to protect existing uses fully.

(c) Further, the state shall assure that:

(1) There shall be achieved the highest statutory and regulatory requirements for all new and existing point sources; and

(2) The provisions of the Arkansas Water Quality Management Plan be implemented with regard to nonpoint sources.

8 CAR § 21-203. Outstanding resource waters.

(a) Where high quality waters constitute an outstanding state or national resource, such as those waters designated as Extraordinary Resource Waters, Ecologically Sensitive Waterbodies, or Natural and Scenic Waterways, those uses and water quality for which the outstanding waterbody was designated shall be protected by:

(1) Water quality controls;

(2) Maintenance of natural flow regime;

(3) Protection of instream habitat; and

(4) Encouragement of land management practices protective of the watershed.

(b) It is not the intent of the Extraordinary Resource Waters (ERW) designated use definition to imply that ERW status dictates regulatory authority over private land within the watershed, other than what exists under local, state, or federal law.

(c) The Arkansas Natural Resources Commission has responsibility for the regulation of the withdrawal of water from streams and reservoirs, and such withdrawals are not within the jurisdiction of this part.

8 CAR § 21-204. Thermal discharges.

In those cases where potential water quality impairment associated with a thermal discharge is involved, the antidegradation policy and implementing method shall be consistent with Section 316 of the Clean Water Act, 33 U.S.C. § 1326.

Subpart 3. Waterbody Uses

8 CAR § 21-301. Introduction.

(a) Substantially all the waters of the state have been designated for specific uses as shown in Appendix A.

(b) In those instances where waters are classified for multiple uses and different criteria are specified for each use, the criteria to protect the most sensitive use shall be applicable.

8 CAR § 21-302. Designated uses.

The designated uses are defined as follows:

(1) **Extraordinary Resource Waters.** This beneficial use is a combination of the chemical, physical and biological characteristics of a waterbody and its watershed that is characterized by scenic beauty, aesthetics, scientific values, broad scope recreation potential, and intangible social values. (For specific listings, refer to Appendices A and D).

(2) **Ecologically Sensitive Waterbody.** This beneficial use identifies segments known to provide habitat within the existing range of threatened, endangered or endemic species of aquatic or semi-aquatic life forms. (For specific listings, refer to Appendices A and D).

(3) **Natural and Scenic Waterways.** This beneficial use identifies segments that have been legislatively adopted into a state or federal system. (For specific listings, refer to Appendices A and D).

(4) **Primary Contact Recreation.** This beneficial use designates waters where full body contact is involved. Any streams with watersheds of greater than ten square miles (>10 mi^2) are designated for full body contact. All streams with watersheds less than ten square miles (<10 mi^2) may be designated for primary contact recreation after site verification. (April 1 to October 31).

(5) **Secondary Contact Recreation.** This beneficial use designates waters where secondary activities like boating, fishing or wading are involved. (Year-round).

(6) **Aquatic Life.** This beneficial use provides for the protection and propagation of fish, shellfish, and other forms of aquatic biota. It is further subdivided into the following subcategories:

(A) **Trout Waters.** Water that is suitable for the growth and survival of trout (Family: Salmonidae);

(B) **Lakes and Reservoirs.** Water that is suitable for the protection and propagation of fish and other forms of aquatic biota adapted to impounded waters. Generally characterized by a dominance of sunfishes such as bluegill or similar species, black basses and crappie. May include substantial populations of catfishes such as channel, blue and flathead catfish and commercial fishes including carp, buffalo and suckers. Forage fishes are normally shad or various species of minnows. Unique populations of walleye, striped bass and/or trout may also exist; and

(C) **Streams.** Water that is suitable for the protection and propagation of fish and other forms of aquatic biota adapted to flowing water systems whether or not the flow is perennial.

(i) **Ozark Highlands Ecoregion.** Streams supporting diverse communities of indigenous or adapted species of fish and other forms of aquatic biota. Fish communities are characterized by a preponderance of sensitive species and normally dominated by a diverse minnow community followed by sunfishes and darters. The community may be generally characterized by the following fishes:

Key Species	Indicator Species
Duskystripe, Bleeding or Cardinal Shiner	Banded Sculpin
Northern Hogsucker	Ozark Madtom
Slender Madtom	Southern Redbelly Dace
"Rock" basses	Whitetail Shiner
Rainbow and/or Orangethroat darters	Ozark Minnow
Smallmouth Bass	

(ii) **Boston Mountains Ecoregion.** Streams supporting diverse

communities of indigenous or adapted species of fish and other forms of aquatic biota. Fish communities are characterized by a major proportion of sensitive species; a diverse, often darter-dominated community exists but with nearly equal proportions of minnows and sunfishes. The community may be generally characterized by the following fishes:

Key Species	Indicator Species
Bigeye Shiner	Shadow Bass
Black Redhorse	Wedgespot Shiner
Slender Madtom	Longnose Darter
Longear Sunfish	Fantail Darter
Greenside Darter	
Smallmouth Bass	

(iii) **Arkansas Valley Ecoregion.** Streams supporting diverse communities of indigenous or adapted species of fish and other forms of aquatic biota. Fish communities are characterized by a substantial proportion of sensitive species; a sunfish- and minnow-dominated community exists but with substantial proportions of darters and catfishes (particularly madtoms). The community may be generally characterized by the following fishes:

Key Species	Indicator Species
Bluntnose Minnow	Orangespotted Sunfish
Golden Redhorse	Blackside Darter
Yellow Bullhead	Madtoms
Longear Sunfish	
Redfin Darter	
Spotted Bass	

(iv) **Ouachita Mountains Ecoregion.** Streams supporting diverse communities of indigenous or adapted species of fish and other forms of aquatic biota. The fish community is characterized by a major proportion of sensitive species; a minnow-sunfish-dominated community exists, followed by darters. The community may be generally characterized by the following fishes:

Key Species	Indicator Species
Bigeye Shiner	Shadow Bass
Northern Hogsucker	Gravel Chub
Freckled Madtom	Northern Studfish
Longear Sunfish	Striped Shiner
Orangebelly Darter	
Smallmouth Bass	

(v) **Typical South Central Plains Ecoregion.** Streams supporting diverse communities of indigenous or adapted species of fish and other forms of aquatic biota. Fish communities are characterized by a limited proportion of sensitive species; sunfishes are distinctly dominant followed by darters and minnows. The community may be generally characterized by the following fishes:

Key Species	Indicator Species
Redfin Shiner	Pirate Perch
Spotted Sucker	Flier
Yellow Bullhead	Red spotted Sunfish
Warmouth	Dusky Darter
Slough Darter	Creek Chubsucker
Redfin Pickerel	Banded Pygmy Sunfish

(vi) **Springwater-influenced South Central Plains Ecoregion.** Streams supporting diverse communities of indigenous or adapted species of fish and other forms of aquatic biota. Fish communities are characterized by a substantial proportion of sensitive species; sunfishes normally dominate the community and are followed by darters and minnows. The community may be generally characterized by the following fishes:

Key Species	Indicator Species
Redfin Shiner	Pirate Perch
Blacktail Redhorse	Golden Redhorse
Freckled Madtom	Spotted Bass
Longear Sunfish	Scaly Sand Darter
Creole Darter	Striped Shiner
Redfin Pickerel	Banded Pygmy Sunfish

(vii) **Least-altered Mississippi Alluvial Plain Ecoregion.** Streams supporting diverse communities of indigenous or adapted species of fish and other forms of aquatic biota. Fish communities are characterized by an insignificant proportion of sensitive species; sunfishes are distinctly dominant followed by minnows. The community may be generally characterized by the following fishes:

Key Species	Indicator Species
Ribbon Shiner	Pugnose Minnow
Smallmouth Buffalo	Mosquitofish
Yellow Bullhead	Pirate Perch
Bluegill	Tadpole Madtom
Bluntnose Darter	Banded Pygmy Sunfish
Largemouth Bass	

(viii) **Channel-altered Mississippi Alluvial Plain Ecoregion.** Streams supporting diverse communities of indigenous or adapted species of fish and other forms of aquatic biota. Fish communities are characterized by an absence of sensitive species; sunfishes and minnows dominate the population followed by catfishes. The community may be generally characterized by the following fishes:

Key Species	Indicator Species
Blacktail Shiner	Mosquitofish
Drum	Gizzard Shad
Carp	Emerald Shiner
Channel Catfish	
Green Sunfish	
Spotted Gar	

(7) **Domestic Water Supply.** This beneficial use designates water that will be protected for use in public and private water supplies. Conditioning or treatment may be necessary prior to use.

(8) **Industrial Water Supply.** This beneficial use designates water that will be protected for use as process or cooling water. Quality criteria may vary with the specific type of process involved and the water supply may require prior treatment or conditioning.

(9) **Agricultural Water Supply.** This beneficial use designates waters that will be protected for irrigation of crops and/or consumption by livestock.

(10) **Other Uses.** This category of beneficial use is generally used to designate uses not dependent upon water quality, such as hydroelectric power generation and navigation.

8 CAR § 21-303. Use attainability analysis.

(a) A use attainability analysis must be conducted to justify the following conditions:

(1) Removing a fishable/swimmable designated use, which is not an existing use, from a waterbody; or

(2) To identify a subcategory of a fishable/swimmable use that requires less stringent criteria.

(b) In order to remove a designated fishable/swimmable use, which is not an existing use, or identify subcategories of a fishable/swimmable use that require less

stringent criteria, it must be demonstrated that the designated use is not attainable because:

(1) Naturally occurring pollutant concentrations prevent the attainment of the use; or

(2) Natural, ephemeral, intermittent or low flow conditions or water levels prevent the attainment of the use, unless these conditions may be compensated for by the discharge of sufficient volume of effluent discharges without violating state water conservation requirements to enable uses to be met; or

(3) Human caused conditions or sources of pollution prevent attainment of the use and cannot be remedied or would cause more environmental damage to correct than leave in place; or

(4) Dams, diversions or other types of hydrologic modifications preclude the attainment of the use, and it is not feasible to restore the waterbody to its original condition or to operate such modification in a way that would result in the attainment of the use; or

(5) Physical conditions related to the natural features of a waterbody, such as lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of aquatic life protection uses; or

(6) Controls more stringent than those required by Sections 301(b) and 306 of the Clean Water Act would result in substantial and widespread economic and social impact.

(c)(1) The scope of a use attainability analysis shall be in direct proportion to the project involved and the resource value of the receiving stream.

(2)(A) Methods for conducting a use attainability analysis may be found in the November 1983 United States Environmental Protection Agency publication entitled Technical Support Manual: Waterbody Surveys and Assessments for Conducting Use Attainability Analyses.

(B) Other scientific methods, including the use of existing technical data, may be used for justifying the removal of a designated use, provided the methods are agreed upon prior to the study.

(C) Such other methods may include the use of information previously gathered through technical studies, use attainability analysis, or both.

(d) Use attainability analysis procedures may be found in the State of Arkansas Continuing Planning Process document.

(e) Any waterbody on which a use attainability analysis is approved shall be listed in Appendix A with appropriate criteria.

8 CAR § 21-304. Physical alteration of habitat.

(a) Significant physical alterations of the habitat within Extraordinary Resource Waters, Ecologically Sensitive Waterbodies, or Natural and Scenic Waterways are not allowed.

(b) In other waters, where significant physical alterations of the habitat are proposed, the Division of Environmental Quality must be assured that no significant degradation of any existing use or water quality necessary to protect that use will occur.

(c) In order to make such determinations, the division may require an evaluation of all practicable alternatives to the project including:

(1) An environmental assessment of the impacts of each alternative;

(2) An engineering and economic analysis; and

(3) A socio-economic evaluation of the project in the local area.

8 CAR § 21-305. Short term activity authorization.

(a)(1) The Director of the Division of Environmental Quality may authorize, with whatever conditions deemed necessary and without public notice, short term activities which might cause a violation of the Arkansas Water Quality Standards.

(2) This authorization is subject to the provisions that such activity is essential to the protection or promotion of the public interest and that no permanent or long-term impairment of beneficial uses is likely to result from such activity.

(3) Nothing herein shall be intended to supersede existing state and federal permitting processes or requirements.

(b) Activities eligible for authorization include, but are not limited to:

(1) Wastewater treatment facility maintenance;

(2) Fish eradication projects;

(3) Mosquito abatement projects;

(4) Algae and weed control projects;

(5) Dredge and fill projects;

(6) Construction activities; or

(7) Activities which result in overall enhancement or maintenance of beneficial uses.

(c)(1) The director shall specify the degree of variance from the standards, the time limit of activity, and restoration procedures where applicable.

(2) Such authorization shall not be granted for activities which result in the adverse impact on any federally threatened or endangered species or on critical habitat of such species.

8 CAR § 21-306. Procedures for removal of any designated use except fishable/swimmable, Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway, and modification of water quality criteria not related to these uses.

(a) This procedure is applicable in those cases where the Arkansas Pollution Control and Ecology Commission chooses to establish less stringent water quality criteria without affecting a fishable/swimmable use or the designated use of Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway, or when the commission chooses to remove a use which is not an existing use other than fishable/swimmable, Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway.

(b)(1) The commission may allow a modification of the water quality criteria or the removal of a use which is not a fishable/swimmable use or designated use of Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway to accommodate important economic or social development in a local area, if

existing uses are maintained and protected fully and the requirements for public participation in the State of Arkansas Continuing Planning Process are met.

(2) As a minimum, the following information shall be submitted to the director before initiation of the public participation process:

(A) Technological or economic limits of treatability;

(B) Economic analysis of the impact on the local area; and

(C) Documentation that the use being removed is not an existing use and that all other designated uses will be protected.

(c)(1) Modifications made pursuant to this section may be required to be rejustified for continued support.

(2) As community water needs change, or technological advancement, including long-term environmental improvement projects, make treatment options more practicable, the commission may reevaluate the need for the reestablishment of the more stringent water quality criteria or the removed use.

(d) Any waterbody on which such alterations are approved will be so listed in Appendix A with the applicable changes noted.

8 CAR § 21-307. Use subcategories.

The Arkansas Pollution Control and Ecology Commission may adopt subcategories of a use and set the appropriate criteria to reflect varying needs of such subcategories of uses; for instance, to differentiate between cold and warm water fisheries or agricultural and domestic water supply.

8 CAR § 21-308. Site-specific criteria.

In establishing criteria:

(1) Establish numerical criteria values based on:

(A) 304(a) Guidance; or

(B) 304(a) Guidance modified to reflect site conditions (i.e., Water Effects Ratio); or

(C) Other scientifically defensible methods.

(2) Establish narrative criteria or criteria based upon biomonitoring methods where numerical criteria cannot be established or to supplement numerical criteria.

8 CAR § 21-309. Water quality standards temporary variance.

A water quality standards temporary variance shall be developed in accordance with and meet the requirements of 40 C.F.R. §131.14 and must be approved by the Arkansas Pollution Control and Ecology Commission and the United States Environmental Protection Agency.

8 CAR § 21-310. Procedure for the removal of the designated use of Extraordinary Resource Water, or Ecologically Sensitive Waterbody, or Natural and Scenic Waterway for the purpose of constructing a reservoir on a free- flowing waterbody to provide a domestic water supply.

(a)(1) An Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway designated use may be removed from a free-flowing waterbody for the purpose of constructing a reservoir to provide a domestic water supply, if it can be demonstrated that:

(A) The sole purpose for the funding and construction of the reservoir is to provide a domestic water supply; and

(B) There is no feasible alternative to constructing a reservoir in order to meet the domestic water needs of the citizens of the State of Arkansas.

(2) The limitation in subdivision (a)(1)(A) of this section does not prohibit incidental uses of the reservoir that are consistent with the use of domestic water supply.

(b)(1) A petition to initiate rulemaking to remove an Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway designated use from a free-flowing waterbody in order to construct a reservoir to provide a domestic water supply may be submitted to the Arkansas Pollution Control and Ecology Commission by a regional water distribution district, public facilities board, public water authority, or other public entity engaged in providing water to the public.

(2) Such petition, at a minimum, shall include:

(A) A map depicting the location of the proposed project and the area to be impounded;

(B) A description of the proposed project, including detailed design plans;

(C) A certification that the proposed structure to impound the free-flowing stream shall be funded and constructed solely for the purpose of providing a domestic water supply;

(D) An evaluation of all alternatives to the proposed project, including:

(i) An environmental assessment of the impacts of each alternative on the instream and downstream water quality, the instream habitat, and the habitat and plant and animal life in the area upstream, downstream, and to be inundated by the proposed project;

(ii) The costs associated with, and an economic analysis for, each alternative;

(iii) An engineering analysis for each alternative; and

(iv) A socio-economic evaluation of the project to the local area and to the state as a whole;

(E) Information and supporting documentation which address the criteria set forth in Appendix E;

(F)(i) A recommendation to the Arkansas Pollution Control and Ecology Commission from the Director of the Division of Environmental Quality on whether or not the designated use should be maintained based upon a review of the information and supporting documentation required to be considered in Appendix E.

(ii) The director shall provide the petitioner with the director's recommendation within one-hundred-eighty (180) days of the Division of Environmental Quality's receipt of the petitioner's Appendix E submittal.

(iii) If the director does not deliver a recommendation to the petitioner within the one-hundred-eighty-day time period, the petitioner may file its petition under this section without including a recommendation from the director.

(iv) The director may submit a recommendation to the commission at

any time not less than thirty (30) days prior to the commission's final decision on the petition.

(G) A description of any proposed mechanisms for protecting the domestic water supply, including but not limited to prohibitions to be placed on commercial and residential development along the proposed shoreline of the impoundment, the controls to be placed on public access to the water supply, and the legal authority for establishing and maintaining these domestic water supply protections; and

(H) Any other submittals required by Administrative Procedures, 8 CAR pt. 11 (previously, Rule 8) for a petition to initiate rulemaking.

(c)(1)(A) The commission, as part of its rulemaking decision, shall determine whether or not a feasible alternative to constructing a reservoir is available to meet the domestic water needs of the citizens of the State of Arkansas.

(B) The commission shall set forth the reasons for its determination in writing.

(2) The designated use of Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway shall not be removed by the commission if a feasible alternative to constructing a reservoir is available to meet the domestic water needs of the citizens of the State of Arkansas.

(d)(1)(A) The commission, as part of its rulemaking, shall determine whether or not the sole purpose for the funding and construction of the reservoir is to provide a domestic water supply.

(B) The commission shall set forth the reasons for its determination in writing.

(2) The designated use of Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway shall not be removed by the commission if the purpose for the funding and construction of the reservoir is other than to provide a domestic water supply.

(3) In no circumstance, shall the designated use of Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway be removed by the commission from a free-flowing waterbody in order to construct a reservoir for

recreational, flood control, or economic purposes other than providing a domestic water supply.

(e)(1) The commission, as part of its rulemaking decision, shall determine whether or not the designated use of Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway of a given waterbody should be maintained.

(2) The commission shall set forth the reasons for its determination in writing, after considering the director's recommendation referenced in subdivision (b)(2)(F) of this section and reviewing the information and supporting documentation which address the criteria set forth in Appendix E.

8 CAR § 21-311. Procedure for the addition of the designated use of Extraordinary Resource Water, or Ecologically Sensitive Waterbody, or Natural and Scenic Waterway to a Waterbody or Segment of a Waterbody.

(a)(1) Any waters of the state may be nominated for designation as an Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic Waterway by submitting a petition to initiate rulemaking to the Arkansas Pollution Control and Ecology Commission.

(2) Such petition shall include, at a minimum, the following:

(A) Name of petitioner;

(B) Petitioner's mailing address and telephone number;

(C) Name and location description of the waterbody or segment proposed for designation;

(D) A map depicting the waterbody or segment proposed for designation;

(E) Petitioner's interest in the proposed action;

(F) Statement of potential benefits and impacts of the proposed action, including economic benefits and impacts;

(G) Evidence of requests for resolution or resolutions by appropriate local government or governments regarding the nomination of the waterbody as an Extraordinary Resource Water, Ecologically Sensitive Waterbody, or Natural and Scenic

Waterway;

(H) Supporting documentation for the designation, including information which addresses the factors listed in Appendix F;

(I) Recommended language change necessary to affect this proposed change to any commission rule; and

(J) Any other submittals required by Administrative Procedures, 8 CAR pt. 11 (previously, Rule 8) for a petition to initiate rulemaking.

(b) The commission, as part of its rulemaking, shall set forth in writing the reasons for its final decision.

Subpart 4. General Standards

8 CAR § 21-401. Applicability.

(a)(1) Unless otherwise indicated in this subpart or in Appendix A, the general standards outlined below are applicable to all surface waters of the state at all times.

(2) They apply specifically with regard to substances attributed to discharges, nonpoint sources, or instream activities as opposed to natural phenomena.

(b) Waters may, on occasion, have natural background levels of certain substances outside the limits established by these criteria, in which case these criteria do not apply.

8 CAR § 21-402. Nuisance species.

All waters shall be free from substances attributed to man-caused point or nonpoint source discharges in concentrations that produce undesirable aquatic biota or result in the dominance of nuisance species.

8 CAR § 21-403. Methods.

The methods of sample collection, preservation, measurements, and analyses shall be in accordance with the United States Environmental Protection Agency Guidelines Establishing Test Procedures for the Analysis of Pollutants (40 C.F.R. § 136) or other proven methods acceptable to the Division of Environmental Quality.

8 CAR § 21-404. Mixing zones.

(a)(1) Where mixing zones are allowed, the effects of wastes on the receiving stream shall be determined after the wastes have been thoroughly mixed with the mixing zone volume.

(2) Outfall structures should be designed to minimize the extent of mixing zones to ensure rapid and complete mixing.

(b)(1) For aquatic life toxic substances in larger streams (those with Q7-10 flows equal to or greater than one hundred cubic feet per second (≥100 cfs), the zone of mixing shall not exceed one-fourth (1/4) of the cross-sectional area and/or critical flow volume of the stream.

(2) The remaining three- fourths (3/4) of the stream shall be maintained as a zone of passage for swimming and drifting organisms, and shall remain of such quality that stream ecosystems are not significantly affected.

(3)(A) In the smaller streams (Q7-10 flows less than one hundred cubic feet per second (<100 cfs) because of varying local physical and chemical conditions and biological phenomena, a site-specific determination shall be made on the percentage of river width necessary to allow passage of critical free-swimming and drifting organisms so that negligible or no effects are produced on their populations.

(B) As a guideline, no more than two-thirds (2/3) of the cross-sectional area and/or critical flow volume of smaller streams should be devoted to mixing zones thus leaving at least one-third (1/3) of the cross-sectional area free as a zone of passage.

(c) Mixing zones are not allowed for the parameters of bacteria or oil and grease, or where the background flow is less than the critical flow or where the background concentration of a waste parameter exceeds the specific criteria for that waste parameter.

(d) In lakes and reservoirs the size of mixing zones shall be defined by the Division of Environmental Quality on an individual basis, and the area shall be kept at a minimum.

(e) Mixing zones shall not prevent the free passage of fish or significantly affect aquatic ecosystems.

(f) A mixing zone shall not include any domestic water supply intake.

8 CAR § 21-405. Biological integrity.

(a)(1) For all waters with specific aquatic life use designated in Appendix A, aquatic biota should not be impacted.

(2) Aquatic biota should be representative of streams that have the ability to support the designated aquatic life use, taking into consideration the seasonal and natural variability of the aquatic biota community under naturally varying habitat and hydrological conditions; the technical and economic feasibility of the options available to address the relevant conditions; and other factors.

(b)(1)(A) An aquatic biota assessment should compare biota communities that are similar in habitat and hydrologic condition, based upon either an in-stream study including an upstream and downstream comparison, a comparison to a reference water body within the same ecoregion, or a comparison to community characteristics from a composite of reference waters.

(B) Such a comparison should consider the seasonal and natural variability of the aquatic biota community.

(2)(A) It is the responsibility of the Division of Environmental Quality to evaluate the data for an aquatic biota assessment to protect aquatic life uses designated in Appendix A.

(B) Such data may be used to develop permit effluent limitations or conditions.

8 CAR § 21-406. Color.

True color shall not be increased in any waters to the extent that it will interfere with present or projected future uses of these waters.

8 CAR § 21-407. Taste and odor.

Taste and odor producing substances shall be limited in receiving waters to concentrations that will not interfere with the production of potable water by reasonable water treatment processes, impart unpalatable flavor to food or fish, result in offensive odors arising from the waters, or otherwise interfere with the reasonable use of the water.

8 CAR § 21-408. Solids, floating material, and deposits.

Receiving waters shall have no distinctly visible solids, scum, or foam of a persistent nature, nor shall there be any formation of slime, bottom deposits, or sludge banks.

8 CAR § 21-409. Toxic substances.

Discharges shall not be allowed into any waterbody which, after consideration of the zone of initial dilution, the mixing zone, and critical flow conditions, will cause toxicity to human, animal, plant, or aquatic biota or interfere with normal propagation, growth, and survival of aquatic biota.

8 CAR § 21-410. Oil and grease.

Oil, grease, or petrochemical substances shall not be present in receiving waters to the extent that they:

(1) Produce globules, other residue, or any visible, colored film on the surface;

(2) Coat the banks and/or bottoms of the waterbody; or

(3) Adversely affect any of the aquatic biota.

Subpart 5. Specific Standards

8 CAR § 21-501. Applicability

(a)(1) Unless otherwise indicated in this subpart or in Appendix A, the following specific standards shall apply to all surface waters of the state at all times except during periods when flows are less than the applicable critical flow.

(2) Streams with regulated flow will be addressed on a case-by-case basis to maintain designated instream uses.

(b) These standards apply outside the applicable mixing zone.

(c) Waters may, on occasion, have natural background levels of certain substances outside the limits established by these criteria, in which case these criteria do not apply to the naturally occurring excursions.

8 CAR § 21-502. Temperature.

(a) Heat shall not be added to any waterbody in excess of the amount that will elevate the natural temperature, outside the mixing zone, by more than 5°F (2.8°C) based upon the monthly average of the maximum daily temperatures measured at mid-depth or three feet (whichever is less) in streams, lakes, or reservoirs.

(b) The following criteria are applicable:

Waterbodies	Criteria °C (°F)
Streams	
Ozark Highlands	29 (84.2)
Boston Mountains	31 (87.8)
Arkansas Valley	31 (87.8)
Ouachita Mountains	30 (86.0)
South Central Plains	30 (86.0)
Least-Altered Mississippi Alluvial Plain	30 (86.0)
Channel-Altered Mississippi Alluvial Plain	32 (89.6)
White River (Dam #1 to mouth)	32 (89.6)
St. Francis River	32 (89.6)
Mississippi River	32 (89.6)
Arkansas River	32 (89.6)
Ouachita River (L. Missouri R.to Louisiana state line)	32 (89.6)
Red River	32 (89.6)
Lakes and Reservoirs	32 (89.6)
Trout Waters	20 (68.0)

(c) Temperature requirements shall not apply to off-stream privately-owned reservoirs constructed primarily for industrial cooling purposes and financed in whole or in part by the entity or successor entity using the lake for cooling purposes.

(d) **Note.** Site specific temperature criteria are located in Appendix A.

8 CAR § 21-503. Turbidity.

(a) There shall be no distinctly visible increase in turbidity of receiving waters attributable to discharges or instream activities.

(b)(1) The values below should not be exceeded during base flow (June 1 through October 31) in more than twenty percent (20%) of samples.

(2) The values below should not be exceeded during storm flows in more than twenty-five percent (25%) of samples taken in no less than twenty-four (24) monthly

samples.

Waterbodies	Base Flows Values (NTU)	Storm Flows Values (NTU)
Streams		
Ozark Highlands	10	17
Boston Mountains	10	19
Arkansas Valley	21	40
Ouachita Mountains	10	18
South Central Plains	21	32
Least-Altered Mississippi Alluvial Plain	45	84
Channel-Altered Mississippi Alluvial Plain	75	250
Arkansas River	50	52
Mississippi River	50	75
Red River	50	150
St. Francis River	75	100
Trout Waters	10	15
Lakes and Reservoirs	25	45

8 CAR § 21-504. pH.

(a) pH between 6.0 and 9.0 standard units are the applicable criteria for rivers, streams, lakes, and reservoirs.

(b) As a result of waste discharges, the pH of water in streams or lakes must not fluctuate in excess of 1.0 standard unit over a period of twenty-four (24) hours.

(c) **Note.** Site specific pH criteria are located in Appendix A.

8 CAR § 21-505. Dissolved oxygen.

(a) **Rivers and streams.**

(1) The following dissolved oxygen criteria are applicable:

Waterbodies	**Criteria (mg/L)**	
Streams	Non-Critical	Critical
Ozark Highlands		
<10 mi^2 watershed	6	2
10 to 100 mi^2	6	5
>100 mi^2 watershed	6	6
Boston Mountains		
<10 mi^2 watershed	6	2
>10 mi^2 watershed	6	6
Arkansas Valley		
<10 mi^2 watershed	5	2
10 mi^2 to 150 mi^2	5	3
151 mi^2 to 400 mi^2	5	4
>400 mi^2 watershed	5	5
Ouachita Mountains		
<10 mi^2 watershed	6	2
>10 mi^2 watershed	6	6
Typical South Central Plains		
<10 mi^2 watershed	5	2
10 mi^2 to 500 mi^2	5	3
>500 mi^2 watershed	5	5
Springwater-influenced South Central Plains		
All size watersheds	6	5
Mississippi Alluvial Plain (least-altered and channel altered)		
<10 mi^2 watershed	5	2
10 mi^2 to 100 mi^2	5	3
>100 mi^2 watershed	5	5
Trout Waters		
All size watersheds	6	6

(2)(A) In streams with watersheds of less than then ten square miles (<10 mi^2), it is assumed that insufficient water exists to support aquatic life during the critical season.

(B) During this time, a dissolved oxygen criteria of two milligrams per liter (2 mg/L) will apply to prevent nuisance conditions.

(C)(i) However, field verification is required in areas suspected of having significant groundwater flows or enduring pools that may support unique aquatic biota.

(ii) In such waters the critical season criteria for the next size category of stream shall apply.

(3)(A) All streams with watersheds of less than ten square miles (<10 mi^2) are expected to support aquatic life during the noncritical season when stream flows, including discharges, equal or greater than one cubic foot per second (1 cfs).

(B) However, when site verification indicates that aquatic life exists at flows below one cubic foot per second (1 cfs), such aquatic biota will be protected by the noncritical season standard (refer to the State of Arkansas Continuing Planning Process for field verification requirements).

(4) Also in streams with watersheds of less than ten square miles (<10 mi^2), where waste discharges are one cubic foot per second (1 cfs) or more, streams are assumed to provide sufficient water to support aquatic life and, therefore, must meet the dissolved oxygen criteria of the next size category of streams.

(5) For purposes of determining effluent discharge limits, the following conditions shall apply:

(A)(i) The noncritical season dissolved oxygen standard is to be met at a water temperature of twenty-two degrees Celsius (22°C (seventy-one and six-tenths degrees Fahrenheit (71.6°F))) and at the minimum stream flow for that season.

(ii) At water temperatures of ten degrees Celsius (10°C (fifty degrees Fahrenheit (50°F))), the dissolved oxygen criteria is six and five-tenths milligrams per liter (6.5 mg/L).

(B) During March, April and May, when background stream flows are

fifteen cubic feet per second (15 cfs) or higher, the dissolved oxygen standard is six and five-tenths milligrams per liter (6.5 mg/L) in all areas except the Mississippi Alluvial Plain Ecoregion, where the non-critical season dissolved oxygen criteria will remain at five milligrams per liter (5 mg/L).

(C)(i) The critical season dissolved oxygen standard is to be met at maximum allowable water temperatures and at Q7-10 flows.

(ii) However, when water temperatures exceed twenty-two degrees Celsius (22°C (seventy-one and six-tenths degrees Fahrenheit (71.6°F))), a one milligram per liter (1 mg/L) diurnal depression will be allowed below the applicable critical criteria for no more than eight (8) hours during any twenty-four-hour period.

(b) **Lakes and reservoirs.**

(1) Specific dissolved oxygen criteria for lakes and reservoirs shall be 5 mg/L.

(2) Effluent limits for oxygen-demanding discharges into impounded waters are promulgated in Arkansas Pollution Control and Ecology Commission's Rules for State Administration of the National Pollutant Discharge Elimination System (NPDES), 8 CAR pt. 25.

(3) However, the commission may, after full satisfaction of the intergovernmental coordination and public participation provisions of the State of Arkansas Continuing Planning Process, establish alternative limits for dissolved oxygen in lakes and reservoirs where studies and other relevant information can demonstrate that predominant ecosystem conditions may be more accurately reflected by such alternate limits; provided that these limits shall be compatible with all designated beneficial uses of named lakes and reservoirs.

(c) **Note.** Site specific dissolved oxygen criteria are located in Appendix A.

8 CAR § 21-506. Radioactivity.

(a) The Rules for the Control of Sources of Ionizing Radiation, 20 CAR pt. 3, of the Division of Radiological Health of the Department of Health limits the maximum permissible levels of radiation that may be present in effluents to surface waters in uncontrollable areas.

(b) These limits shall apply for the purposes of this part, 8 CAR pt. 21, except that in no case shall the levels of dissolved radium-226 and strontium-90 exceed three (3) and ten (10) picocuries per liter, respectively, in the receiving water after mixing, nor shall the gross beta concentration exceed one thousand (1000) picocuries per liter.

8 CAR § 21-507. Bacteria.

(a)(1) For the purposes of this part, all streams with watersheds less than ten square miles (10 mi^2) shall not be designated for primary contact unless and until site verification indicates that such use is attainable.

(2) Secondary contact use is assumed in all watershed sizes.

(3) No mixing zones are allowed for discharges of bacteria.

(b) For assessment of ambient waters as impaired by bacteria, the below listed applicable criteria for *E. coli* shall not be exceeded in more than twenty-five percent (25%) of individual samples in no less than eight (8) samples taken during the primary contact season or during the secondary contact season.

(c) The following criteria are applicable:

Contact Recreation Seasons	**Criteria (col/100mL or MPN)**	
Primary Contact[1]	*E. coli*	
	IS[2]	*GM*[3]
ERW, ESW, NSW, Reservoirs, Lakes	298	126
All Other Waters	410	126
Secondary Contact[4]		
ERW, ESW, NSW, Reservoirs, Lakes	1490	630
All Other Waters	2050	630

(d) The Department of Health has the responsibility of approving or disapproving surface waters for public water supply and of approving or disapproving the suitability

of specifically delineated outdoor bathing places for body contact recreation, and it has issued rules pertaining to such uses.

8 CAR § 21-508. Toxic substances.

(a)(1) Toxic substances shall not be present in receiving waters, after mixing, in such quantities as to be toxic to human, animal, plant, or aquatic life or to interfere with the normal propagation, growth, and survival of the aquatic biota.

(2) Acute toxicity standards apply outside the zone of initial dilution. Within the zone of initial dilution acute toxicity standards may be exceeded but acute toxicity may not occur.

(3) Chronic toxicity and chronic numeric toxicity standards apply at, or beyond, the edge of the mixing zone.

(b) Permitting of all toxic substances shall be in accordance with the toxic implementation strategy found in the State of Arkansas Continuing Planning Process.

(c) For nonpermit issues and as a guideline for evaluating toxic substances not listed in the following tables, the Division of Environmental Quality may consider No Observed Effect Concentrations or other literature values as appropriate.

(d) For the substances listed below, the following standards shall apply:

ALL WATERBODIES - AQUATIC LIFE CRITERIA

Substance	Acute Values (µg/L)	Chronic Values (µg/L) (24-hr Average)
PCBs	---	0.0140
Aldrin	3.0	
Dieldrin	2.5	0.0019
DDT (& metabolites)	1.1	0.0010
Endrin[5]	0.18	0.0023
Toxaphene	0.73	0.0002
Chlordane	2.4	0.0043
Endosulfan[5]	0.22	0.056
Heptachlor	0.52	0.0038
Hexachlorocyclohexane[5]	2.0	0.080
Pentachlorophenol	$e^{[1.005(pH)-4.869]}$	$e^{[1.005(pH)-5.134]}$
Chlorpyrifos	0.083	0.041

DISSOLVED METALS [6]

Substance	Acute Criteria (CMC) - µg/L(ppb) Formula	X	Conversion	Chronic Criteria (CCC) - ug/L(ppb) Formula	X	Conversion
Cadmium	$e^{[0.9789(\ln hardness)]-3.866}$		(a)	$e^{[0.7977(\ln hardness)]-3.909}$		(c)
Chromium(III)	$e^{[0.819(\ln hardness)]+3.688}$		0.316	$e^{[0.8190(\ln hardness)]+1.561}$		0.860
Chromium (VI)	16		0.982	11		0.962
Copper	$e^{[0.9422(\ln hardness)]-1.464}$		0.960	$e^{[0.8545(\ln hardness)]-1.465}$		0.960
Lead	$e^{[1.273(\ln hardness)]-1.460}$		(b)	$e^{[1.273(\ln hardness)]-4.705}$		(b)
Mercury[7]	2.4		0.85	---		---
Nickel	$e^{[0.8460(\ln hardness)]+3.3612}$		0.998	$e^{[0.8460(\ln hardness)]+1.1645}$		0.997
Silver	$e^{[1.72(\ln hardness)]-6.52}$		0.85	---		---
Zinc	$e^{[0.8473(\ln hardness)]+0.8604}$		0.978	$e^{[0.8473(\ln hardness)]+0.7614}$		0.986

(a) Calculated as: 1.136672 - [(ln hardness)(0.041838)]

(b) Calculated as: 1.46203 - [(ln hardness)(0.145712)]

(c) Calculated as: 1.101672 - [(ln hardness)(0.041838)]

TOTAL METALS

Substance	Acute Criteria (CMC) - µg/L(ppb) Value	Chronic Criteria (CCC) - ug/L(ppb) Value
Cyanide[8]	22.36	5.2
Mercury[9]	---	0.012[8]
Selenium[8]	20	5

ALL WATERBODIES - HUMAN HEALTH CRITERIA

Substance	Water & Organism Criteria (ug/L)[10]
alpha Hexachlorocyclohexane	0.0373
Benzene	0.58[11]
Beryllium	4.0[12]
Chlordane	0.005
Dieldrin	0.0012
Dioxin (2,3,7,8 TCDD)	0.000001
Ethylbenzene	68
PCBs (polychlorinated biphenyls)	0.0004
Phenol	4000
Toluene	57
Toxaphene	0.0063
Xylene[13]	10000[14]

Note: Site specific toxics criteria are located in Appendix A.

(e)(1) The permittee shall have the option to develop site-specific numerical standards for toxic substances using United States Environmental Protection Agency approved bioassay methodology and guidance.

(2) Such guidance may include but may not be limited to Water Quality Standards (EPA-823-B-94-005, August, 1994); Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (EPA-821-R-02- 012. 5th ed. December 2002); Short Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms (EPA/600/4-91/002, 4th ed. October 2002) or most recent update thereof.

(f) Only ambient water quality data for dissolved metals generated or approved by the division after March 1, 1993 will be considered in the documentation of background concentrations for the purpose of developing permit limitations.

8 CAR § 21-509. Nutrients.

(a) Materials stimulating algal growth shall not be present in concentrations sufficient to cause objectionable algal densities or other nuisance aquatic vegetation or otherwise impair any designated use of the waterbody. Impairment of a waterbody

from excess nutrients is dependent on the natural waterbody characteristics such as stream flow, residence time, stream slope, substrate type, canopy, riparian vegetation, primary use of waterbody, season of the year, and ecoregion water chemistry. Because nutrient water column concentrations do not always correlate directly with stream impairments, impairments will be assessed by a combination of factors such as water clarity, periphyton or phytoplankton production, dissolved oxygen values, dissolved oxygen saturation, diurnal dissolved oxygen fluctuations, pH values, aquatic-life community structure, and possibly others. However, when excess nutrients result in an impairment, based upon division assessment methodology or by any Arkansas established numeric water quality criteria, the waterbody will be determined to be impaired by nutrients.

(b) **Site specific nutrient criteria.**

Lake	Chlorophyll a (ug/L)	Secchi Transparency (m)
Beaver Lake[15]	8[16]	1.1[17]

(c)(1) All point source discharges into the watershed of waters officially listed on Arkansas's impaired waterbody list (Section 303(d) of the Clean Water Act, 33 U.S.C. § 1313(d)) with phosphorus as the major cause shall have monthly average discharge permit limits no greater than those listed below.

(2) Additionally, waters in nutrient surplus watersheds as determined as set forth in Arkansas Code § 15-20-1104, and subsequently designated nutrient surplus watersheds may be included under this part if point source discharges are shown to provide a significant phosphorus contribution to waters within the listed nutrient surplus watersheds.

Facility Design Flow – mgd	Total Phosphorus discharge limit – mg/L
= or > 15	Case by case
3 to <15	1.0
1 to <3	2.0
0.5 to <1.0	5.0
<0.5	Case by Case

(3) For discharges from point sources which are greater than fifteen million gallons per day (>15 mgd), reduction of phosphorus below one milligram per liter (1 mg/L) may be required based on the magnitude of the phosphorus load (mass) and the type of downstream waterbodies (e.g., reservoirs, Extraordinary Resource Waters). Additionally, any discharge limits listed above may be further reduced if it is determined that these values are causing impairments to special waters such as domestic water supplies, lakes or reservoirs, or Extraordinary Resource Waters.

8 CAR § 21-510. Oil and grease.

(a) Oil, grease, or petrochemical substances shall not be present in receiving waters to the extent that they produce globules, other residue, or any visible, colored film on the surface; coat the banks and/or bottoms of the waterbodies; or adversely affect any of the aquatic biota.

(b) Oil and grease shall be an average of no more than ten milligrams per liter (10 mg/L) or a maximum of no more than fifteen milligrams per liter (15 mg/L).

(c) No mixing zones are allowed for discharges of oil and grease.

8 CAR § 21-511. Mineral quality.

(a) **Site specific mineral quality criteria.**

(1) Mineral quality shall not be altered by municipal, industrial, other waste discharges, or instream activities so as to interfere with designated uses.

(2) Site specific mineral quality criteria are found by ecoregion in Appendix A.

(b) **Ecoregion reference stream minerals values.** The following values were determined from Arkansas's least-disturbed ecoregion reference streams and are

considered to be the maximum naturally occurring levels. For waterbodies not listed above, any discharge that results in instream concentrations more than one-third (1/3) higher than these values for chlorides (Cl-) and sulfates (SO42-) or more than fifteen milligrams per liter (15 mg/L), whichever is greater, is considered to be a significant modification of the maximum naturally occurring values. These waterbodies should be considered as candidates for site-specific criteria development in accordance with 8 CAR §§ 21-306 and 21-308 (previously Rules 2.306 and 2.308). Similarly, site-specific criteria development should be considered if the following TDS values are exceeded after being increased by the sum of the increases to Cl- and SO42-. Such criteria may be developed only in accordance with 8 CAR §§ 21-306 and 21-308 (previously Rules 2.306 and 2.308). The values listed in the table below are not intended to be used by the Division of Environmental Quality to evaluate attainment of water quality standards for assessment purposes.

ECOREGION REFERENCE STREAM VALUES (mg/L)

Ecoregion	Chlorides (Cl^-)	Sulfates (SO_4^{2-})	TDS
Ozark Highlands	13	17	240
Boston Mountains	13	9	85
Arkansas Valley	10	13	103
Ouachita Mountains	6	15	128
South Central Plains	14	31	123
Mississippi Alluvial Plain	36	28	390

(c) **Domestic water supply criteria.** In no case shall discharges cause concentrations in any waterbody to exceed two hundred fifty milligrams per liter (250 mg/L), two hundred fifty milligrams per liter (250 mg/L), and five hundred milligrams per liter (500 mg/L) of chlorides, sulfates, and total dissolved solids, respectively, or cause concentrations to exceed the applicable criteria, except in accordance with 8 CAR §§ 21-306 and 21-308 (previously Rules 2.306 and 2.308).

8 CAR § 21-512. Ammonia.

(a) The total ammonia nitrogen (TAN) criteria and the frequency of occurrence are as follows:

(1) The one-hour average concentration of total ammonia nitrogen shall not exceed, more than once every three (3) years on the average, the acute criterion as shown in the following tables:

Temperature and pH-Dependent Values of the CMC (Acute Criterion Magnitude) – *Oncorhynchus* Species[18] Present

	Temperature (°C)																
pH	**0-14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	33	33	32	29	27	25	23	21	19	18	16	15	14	13	12	11	9.9
6.6	31	31	30	28	26	24	22	20	18	17	16	14	13	12	11	10	9.5
6.7	30	30	29	27	24	22	21	19	18	16	15	14	13	12	11	9.8	9.0
6.8	28	28	27	25	23	21	20	18	17	15	14	13	12	11	10	9.2	8.5
6.9	26	26	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9
7.0	24	24	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	8.0	7.3
7.1	22	22	21	20	18	17	15	14	13	12	11	10	9.3	8.5	7.9	7.2	6.7
7.2	20	20	19	18	16	15	14	13	12	11	9.8	9.1	8.3	7.7	7.1	6.5	6.0
7.3	18	18	17	16	14	13	12	11	10	9.5	8.7	8.0	7.4	6.8	6.3	5.8	5.3
7.4	15	15	15	14	13	12	11	9.8	9.0	8.3	7.7	7.0	6.5	6.0	5.5	5.1	4.7
7.5	13	13	13	12	11	10	9.2	8.5	7.8	7.2	6.6	6.1	5.6	5.2	4.8	4.4	4.0
7.6	11	11	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5
7.7	9.6	9.6	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.2	3.0
7.8	8.1	8.1	7.9	7.2	6.7	6.1	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.2	2.9	2.7	2.5
7.9	6.8	6.8	6.6	6.0	5.6	5.1	4.7	4.3	4.0	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1
8.0	5.6	5.6	5.4	5.0	4.6	4.2	3.9	3.6	3.3	3.0	2.8	2.6	2.4	2.2	2.0	1.9	1.7
8.1	4.6	4.6	4.5	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4
8.2	3.8	3.8	3.7	3.5	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2
8.3	3.1	3.1	3.1	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1.0	0.96
8.4	2.6	2.6	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79
8.5	2.1	2.1	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	0.98	0.9	0.83	0.77	0.71	0.65
8.6	1.8	1.8	1.7	1.6	1.5	1.3	1.2	1.1	1.0	0.96	0.88	0.81	0.75	0.69	0.63	0.59	0.54
8.7	1.5	1.5	1.4	1.3	1.2	1.1	1.0	0.94	0.87	0.8	0.74	0.68	0.62	0.57	0.53	0.49	0.45
8.8	1.2	1.2	1.2	1.1	1.0	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37
8.9	1.0	1.0	1.0	0.93	0.85	0.79	0.72	0.67	0.61	0.56	0.52	0.48	0.44	0.4	0.37	0.34	0.32
9.0	0.88	0.88	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37	0.34	0.32	0.29	0.27

Temperature and pH-Dependent Values of the CMC (Acute Criterion Magnitude) – *Oncorhynchus* Species Absent.

	Temperature (°C)																				
pH	**0-10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	51	48	44	41	37	34	32	29	27	25	23	21	19	18	16	15	14	13	12	11	9.9
6.6	49	46	42	39	36	33	30	28	26	24	22	20	18	17	16	14	13	12	11	10	9.5
6.7	46	44	40	37	34	31	29	27	24	22	21	19	18	16	15	14	13	12	11	9.8	9.0
6.8	440	41	38	35	32	30	27	25	23	21	20	18	17	15	14	13	12	11	10	9.2	8.5
6.9	41	38	35	32	30	28	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9
7.0	38	35	33	30	28	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9	7.3
7.1	34	32	30	27	25	23	21	20	18	17	15	14	13	12	11	10	9.3	8.5	7.9	7.2	6.7
7.2	31	29	27	25	23	21	19	18	16	15	14	13	12	11	9.8	9.1	8.3	7.7	7.1	6.5	6.0
7.3	27	26	24	22	20	18	17	16	14	13	12	11	10	9.5	8.7	8.0	7.4	6.8	6.3	5.8	5.3
7.4	24	22	21	19	18	16	15	14	13	12	11	9.8	9.0	8.3	7.7	7.0	6.5	6.0	5.5	5.1	4.7
7.5	21	19	18	17	15	14	13	12	11	10	9.2	8.5	7.8	7.2	6.6	6.1	5.6	5.2	4.8	4.4	4.0
7.6	18	17	15	14	13	12	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5
7.7	15	14	13	12	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.2	2.9
7.8	13	12	11	10	9.3	8.5	7.9	7.2	6.7	6.1	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.2	2.9	2.7	2.5
7.9	11	9.9	9.1	8.4	7.7	7.1	6.6	3.0	5.6	5.1	4.7	4.3	4.0	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1
8.0	8.8	8.2	7.6	7.0	6.4	5.9	5.4	5.0	4.6	4.2	3.9	3.6	3.3	3.0	2.8	2.6	2.4	2.2	2.0	1.9	1.7
8.1	7.2	6.8	6.3	5.8	5.3	4.9	4.5	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2	1.8	1.7	1.5	1.4
8.2	6.0	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2
8.3	4.9	4.6	4.3	3.9	3.6	3.3	3.1	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1.0	0.96
8.4	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79
8.5	3.3	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	0.98	0.9	0.83	0.77	0.71	0.65
8.6	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.5	1.3	1.2	1.1	1.0	0.96	0.88	0.81	0.75	0.69	0.63	0.58	0.54
8.7	2.3	2.2	2.0	1.8	1.7	1.6	1.4	1.3	1.2	1.1	1.0	0.94	0.87	0.8	0.74	0.68	0.62	0.57	0.53	0.49	0.45
8.8	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37
8.9	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.85	0.79	0.72	0.67	0.61	0.56	0.52	0.48	0.44	0.4	0.37	0.34	0.32
9.0	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37	0.34	0.32	0.29	0.27

(2) The monthly average concentration of total ammonia nitrogen shall not exceed those values shown as the chronic criterion in the following table:

Temperature and pH-Dependent Values of the CCC (Chronic Criterion Magnitude)

	Temperature (°C)																							
pH	**0-7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
6.5	4.9	4.6	4.3	4.1	3.8	3.6	3.3	3.1	2.9	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.6	1.5	1.5	1.4	1.3	1.2	1.1
6.6	4.8	4.5	4.3	4.0	3.8	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1
6.7	4.8	4.5	4.2	3.9	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1
6.8	4.6	4.4	4.1	3.8	3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1
6.9	4.5	4.2	4.0	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0
7.0	4.4	4.1	3.8	3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	0.99
7.1	4.2	3.9	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95
7.2	4.0	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.96	0.9
7.3	3.8	3.5	3.3	3.1	2.9	2.7	2.6	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.97	0.91	0.85
7.4	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.96	0.9	0.85	0.79
7.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.83	0.78	0.73
7.6	2.9	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.6	1.5	1.4	1.4	1.3	1.2	1.1	1.1	0.98	0.92	0.86	0.81	0.76	0.71	0.67
7.7	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.6
7.8	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53
7.9	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53	0.5	0.47
8.0	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.6	0.56	0.53	0.5	0.44	0.44	0.41
8.1	1.5	1.5	1.4	1.3	1.2	1.1	1.1	0.99	0.92	0.87	0.81	0.76	0.71	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.4	0.38	0.35
8.2	1.3	1.2	1.2	1.1	1.0	0.96	0.9	0.84	0.79	0.74	0.7	0.65	0.61	0.57	0.54	0.5	0.47	0.44	0.42	0.39	0.37	0.34	0.32	0.3
8.3	1.1	1.1	0.99	0.93	0.87	0.82	0.76	0.72	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.4	0.38	0.35	0.33	0.31	0.29	0.27	0.26
8.4	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53	0.5	0.47	0.44	0.41	0.39	0.36	0.34	0.32	0.3	0.28	0.26	0.25	0.23	0.22
8.5	0.8	0.75	0.71	0.67	0.62	0.58	0.55	0.51	0.48	0.45	0.42	0.4	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.24	0.22	0.21	0.2	0.18
8.6	0.68	0.64	0.6	0.56	0.53	0.49	0.46	0.43	0.41	0.38	0.36	0.33	0.31	0.29	0.28	0.26	0.24	0.23	0.21	0.2	0.19	0.18	0.16	0.15
8.7	0.57	0.54	0.51	0.47	0.44	0.42	0.39	0.37	0.34	0.32	0.3	0.28	0.27	0.25	0.23	0.22	0.21	0.19	0.18	0.17	0.16	0.15	0.14	0.13
8.8	0.49	0.46	0.43	0.4	0.38	0.35	0.33	0.31	0.29	0.27	0.26	0.24	0.23	0.21	0.2	0.19	0.17	0.16	0.15	0.14	0.13	0.13	0.12	0.11
8.9	0.42	0.39	0.37	0.34	0.32	0.3	0.28	0.27	0.25	0.23	0.22	0.21	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.12	0.11	0.1	0.09
9.0	0.36	0.34	0.32	0.3	0.28	0.26	0.24	0.23	0.21	0.2	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	0.11	0.1	0.09	0.09	0.08

(3) The highest four-day average within a 30-day period should not exceed 2.5 times the chronic values shown above.

(b)(1) For permitted discharges, the daily maximum or seven-day average permit limit shall be calculated using the four-day average value described above as an instream value, after mixing and based on a season when fish early life stages are present and a season when fish early life stages are absent.

(2) Temperature values used will be fourteen degrees Celsius (14° C) when fish early life stages are absent and the ecoregion temperature standard for the season when fish early life stages are present.

(3) The pH values will be the ecoregion mean value from least-disturbed stream data.

Subpart 6. Effective Date

8 CAR § 21-601. Effective date.

This part is effective ten (10) days after filing with the:

(1) Secretary of State;

(2) Arkansas State Library; and

(3) Bureau of Legislative Research.

Appendix A. Designated Uses, Specific Standards, and Maps of Waters of the State by Ecoregions

Link:

https://CodeOfARRules.arkansas.gov/docs/CARCodeAppendices/Appendices/411/8CARpt.21AppendixA.Designated Uses, Specific Standards, and Maps of Waters of the State by Ecoregions.pdf

Appendix B. Environmental Improvement Project

Link:

https://CodeOfARRules.arkansas.gov/docs/CARCodeAppendices/Appendices/412/8CARpt.21AppendixB.Environmental Improvement Project.pdf

Appendix C. Scientific Names of Aquatic Biota

Link:

https://CodeOfARRules.arkansas.gov/docs/CARCodeAppendices/Appendices/413/8CARpt.21AppendixC.ScientificNamesOfAquaticBiota.pdf

Appendix D. List of Current Extraordinary Resource Waters, Ecologically Sensitive Waterbodies, and Natural and Scenic Waterways

Link:

https://CodeOfARRules.arkansas.gov/docs/CARCodeAppendices/Appendices/414/8CARpt.21AppendixD.ListOfCurrentExtraordinaryResourceWaters,EcologicallySensitiveWaterbodies,AndNaturalAndScenicWaterways.pdf

Appendix E. Criteria to be Considered

Link:

https://CodeOfARRules.arkansas.gov/docs/CARCodeAppendices/Appendices/415/8CARpt.21AppendixE.CriteriaToBeConsidered.pdf

Appendix F. Factors Considered

Link:

https://CodeOfARRules.arkansas.gov/docs/CARCodeAppendices/Appendices/416/8CARpt.21AppendixF.FactorsConsidered.pdf