

**Title 785. Oklahoma Water Resources Board**  
**Chapter 45. Oklahoma's Water Quality Standards**

**Subchapter 1. General Provisions**

**785:45-1-2. Definitions [AMENDED]**

The following words and terms, when used in this Chapter, shall have the following meaning unless the context clearly indicates otherwise:

**"Abatement"** means reduction of the degree or intensity of pollution.

**"Acute test failure"** means greater than or equal to 50% mortality to appropriate test species at or below the critical effluent dilution after a 48 hour test as provided in OAC 252:690-3-29.

**"Acute toxicity"** means greater than or equal to 50% lethality to appropriate test organisms in a test sample.

**"Alpha particle"** means a positively charged particle emitted by certain radioactive materials. It is the least penetrating of the three common types of radiation (alpha, beta and gamma) and usually is not dangerous to plants, animals or humans.

**"Ambient"** means surrounding, especially of or pertaining to the environment about an entity, but undisturbed and unaffected by it.

**"Aquifer"** means a formation that contains sufficient saturated, permeable material to yield significant quantities of water to wells and springs. This implies an ability to store and transmit water; unconsolidated sands and gravels are typical examples.

**"Assimilative capacity"** means the amount of pollution a waterbody can receive and still maintain the water quality standards designated for that waterbody.

**"Attainable uses"** means the best uses achievable for a particular waterbody given water of adequate quality. The process of use attainability analysis can, and in certain cases must, be used to determine attainable uses for a waterbody.

**"Background"** means the ambient condition upstream or upgradient from a facility, practice or activity which has not been affected by that facility, practice or activity.

**"BCF"** means bioconcentration factor.

**"Beneficial uses"** means a classification of the waters of the State, according to their best uses in the interest of the public.

**"Benthic macroinvertebrates"** means invertebrate animals that are large enough to be seen by the unaided eye, can be retained by a U. S. Standard No. 30 sieve, and live at least part of their life cycles within or upon available substrate in a body of water or water transport system.

**"Best Available Technology"** means the best proven technology, treatment techniques or other economically viable means which are commercially available.

**"Best management practices"** means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the state or United States. BMPs also include treatment requirements, operating procedures, and practices to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

**"Beta particle"** means a negatively charged elementary particle emitted by radioactive decay that may cause skin burns. It is easily stopped by a thin sheet of metal.

**"Bioconcentration factor"** means the relative measure of the ability of a contaminant to be stored in tissues and thus to accumulate through the food chain and is shown as the following formula: BCF = Tissue Concentration divided by Water Concentration.

**"BMPs"** means best management practices.

**"Board"** means Oklahoma Water Resources Board.

**"BOD"** means biochemical oxygen demand.

**"Carcinogenic"** means cancer producing.

**"Chronic test failure"** means the statistically significant difference (at the 95% confidence level) between survival, reproduction or growth of the test organism at or below the chronic critical dilution after completion of a 7 day test as provided in OAC 252:690-3-29, or other test as approved by the permitting authority and the EPA Regional Administrator, and a control.

**"Chronic toxicity"** means a statistically significant difference (at the 95% confidence level) between longer-term survival and/or reproduction or growth of the appropriate test organisms in a test sample and a control. Teratogenicity and mutagenicity are considered to be effects of chronic toxicity.

**"Coliform group organisms"** means all of the aerobic and facultative anaerobic gram-negative, non-spore-forming rod shaped bacteria that ferment lactose broth with gas formation within 48 hours at 35°C.

**"Color"** means true color as well as apparent color. True color is the color of the water from which turbidity has been removed. Apparent color includes not only the color due to substances in solution (true color), but also that color due to suspended matter.

**"Conservative element"** means a substance which persists in the environment, having characteristics which are resistant to ordinary biological or chemical degradation or volatilization.

**"Conservation plan"** means, but is not limited to, a written plan which lists activities, management practices and maintenance or operating procedures designed to promote natural resource conservation and is intended for the prevention and reduction of pollution of waters of the state.

**"Critical dilution"** means, for chronic whole effluent toxicity testing, an effluent dilution expressed as a percentage representative of the dilution afforded a wastewater discharge according to the appropriate Q\*-dependent chronic mixing zone equation.

**"Critical temperature"** means the higher of the seven-day maximum temperature likely to occur with a 50% probability each year, or 29.4°C (85°F).

**"Criterion"** means a number or narrative statement assigned to protect a designated beneficial use.

**"CWAC"** means Cool Water Aquatic Community.

**"Degradation"** means any condition caused by the activities of humans which result in the prolonged impairment of any constituent of the aquatic environment.

**"Designated beneficial uses"** means those uses specified for each waterbody or segment whether or not they are being attained.

**"Dissolved oxygen"** means the amount of oxygen dissolved in water at any given time, depending upon the water temperature, the partial pressure of oxygen in the atmosphere in contact with the water, the concentration of dissolved organic substances in the water, and the physical aeration of the water.

**"DO"** means dissolved oxygen.

**"DRASTIC"** means that standardized system developed by the United States Environmental Protection Agency for evaluating groundwater vulnerability to pollution, based upon consideration of depth to water (D), net recharge (R), aquifer media (A), soil media (S), topography (T), impact of the vadose zone media (I), and hydraulic conductivity (C) of the aquifer.

**"Ecological Integrity"** refers to the ability of an ecosystem to support and maintain natural processes and a diverse community of organisms within the bounds of natural variation.

**"EPA"** means the United States Environmental Protection Agency.

**"Ephemeral stream"** means an entire stream which flows only during or immediately after a rainfall event, and contains no refuge pools capable of sustaining a viable community of aquatic organisms.

**"Epilimnion"** means the uppermost homothermal region of a stratified lake.

**"Eutrophication"** means the process whereby the condition of a waterbody changes from one of low biologic productivity and clear water to one of high productivity and water made turbid by the accelerated growth of algae.

**"Existing beneficial uses"** means those uses listed in Title 40 CFR §131.3 actually attained by a waterbody on or after November 28, 1975. These uses may include public water supplies, fish and wildlife propagation, recreational uses, agriculture, industrial water supplies, navigation, and aesthetics.

**"Existing point source discharge(s)"** means, for purposes of 785:45-5-25, point source discharges other than stormwater which were/are in existence when the ORW, HQW or SWS designation was/is assigned to the water(s) which receive(s) the discharge. The load from a point source discharge which is subject to the no increase limitation shall be based on the permitted mass loadings and concentrations, as appropriate, in the discharge permit effective when the limitation was assigned. Publicly owned treatment works may use design flow, mass loadings or concentration as appropriate if those flows, loadings or concentrations were approved as a portion of Oklahoma's Water Quality Management Plan prior to the application of the ORW, HQW, or SWS limitation.

**"Fecal coliform"** means a group of organisms common to the intestinal tracts of humans and of animals. The presence of fecal coliform bacteria in water is an indicator of pollution and of potentially dangerous bacterial contamination.

**"Fresh groundwater"** means groundwater with naturally-occurring concentrations of total dissolved solids less than 10,000 mg/L, or with levels of total dissolved solids of 10,000 or more mg/L caused by human activities.

**"Geometric mean"** means the nth root of the product of the samples.

**"Groundwater"** means waters of the state under the surface of the earth regardless of the geologic structure in which it is standing or moving outside the cut bank of any definite stream. [82: 1020.1(A)]

**"Groundwater basin"** means a distinct underground body of water overlain by contiguous land and having substantially the same geological and hydrological characteristics and yield capabilities". [82: 1020.1(C)]

**"HLAC"** means Habitat Limited Aquatic Community.

**"HQW"** means High Quality Water.

**"HUC"** means hydrologic unit code utilized by the United States Geologic Survey and other federal and state agencies as a way of identifying all drainage basins in the United States in

a nested arrangement from largest to smallest, consisting of a multi-digit code which identifies each of the levels of classification within two-digit fields.

**"Intolerant climax fish community"** means habitat and water quality adequate to support game fishes or other sensitive species introduced or native to the biotic province or ecological region, which require specific or narrow ranges of high quality environmental conditions.

**"Lake"** means:

(A) An impoundment of waters of the state over 50 acre-feet in volume which is either:

- (i) owned or operated by federal, state, county, or local government or
- (ii) appears in Oklahoma's Clean Lakes Inventory.

(B) Surface impoundments which are used as a treatment works for the purpose of treating stabilizing or holding wastes are excluded from this definition.

**"LC50"** means lethal concentration and is the concentration of a toxicant in an external medium that is lethal to fifty percent of the test animals for a specified period of exposure.

**"Long-term average flow"** means an arithmetic average stream flow over a representative period of record.

**"MDL"** means the Method Detection Limit and is defined as the minimum concentration of an analyte that can be measured and reported with 99% confidence that the analyte concentration is greater than zero (0). MDL is dependent upon the analyte of concern.

**"Mixing zone"** means when a liquid of a different quality than the receiving water is discharged into the receiving water, a mixing zone is formed. Concentration of the liquid within the mixing zone decreases until it is completely mixed with receiving water. A regulatory mixing zone is described in 785:45-5-26.

**"Narrative criteria"** means statements or other qualitative expressions of chemical, physical or biological parameters that are assigned to protect a beneficial use.

**"Natural source"** means source of contamination which is not human induced.

**"NLW Impairment Study"** means a scientific process of surveying the chemical, physical and biological characteristics of a nutrient threatened reservoir to determine whether the reservoir's beneficial uses are being impaired by human-induced eutrophication.

**"Non-conservative element"** means a substance which undergoes significant short-term degradation or change in the environment other than by dilution.

**"Nonpoint source"** means a source of pollution without a well defined point of origin.

**"Normal stream flow conditions"** means flow corresponding to low gradient areas in the hydrograph.

**"NTU"** means Nephelometric Turbidity Unit, which is the unit of measure using the method based upon a comparison of the intensity of light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension (formazin). The higher the intensity of scattered light, the higher the turbidity.

**"Numerical criteria"** means concentrations or other quantitative measures of chemical, physical or biological parameters that are assigned to protect a beneficial use.

**"Numerical standard"** means the most stringent of the numerical criteria assigned to the beneficial uses for a given stream.

**"Nutrient impaired reservoir"** means a reservoir with a beneficial use or uses determined by an NLW Impairment Study to be impaired by human-induced eutrophication.

**"Nutrient-limited watershed"** means a watershed of a waterbody with a designated beneficial use which is adversely affected by excess nutrients as determined by Carlson's Trophic State Index (using chlorophyll-a) of 62 or greater, or is otherwise listed as "NLW" in Appendix A of this Chapter.

**"Nutrients"** means elements or compounds essential as raw materials for an organism's growth and development; these include carbon, oxygen, nitrogen and phosphorus.

**"ORW"** means Outstanding Resource Water.

**"OWRB"** means Oklahoma Water Resources Board.

**"PCBs"** means polychlorinated biphenyls.

**"Picocurie"** means that quantity of radioactive material producing 2.22 nuclear transformations per minute.

**"Point source"** means any discernable, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, well, discrete fissure, container, rolling stock or concentrated animal feeding operation from which pollutants are or may be discharged. This term does not include return flows from irrigation agriculture.

**"Pollutant"** means any material, substance or property which may cause pollution.

**"Pollution"** means *contamination or other alteration of the physical, chemical or biological properties of any natural waters of the State, or such discharge of any liquid, gaseous or solid substance into any waters of the State as will or is likely to create a nuisance or render such waters harmful, or detrimental or injurious to public health, safety or welfare, or to domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial uses, or to livestock, wild animals, birds, fish or other aquatic life".* [82: §1084.2(1)]

**"Polychlorinated biphenyls"** means a group of organic compounds (206 possible) which are constructed of two phenyl rings and more than one chlorine atom.

**"PQL"** means Practical Quantitation Limit and is defined as 5 times the MDL. The PQL represents a practical and routinely achievable detection limit with high confidence.

**"Put and take fishery"** means the introduction of a fish species into a body of water for the express purpose of sport fish harvest where existing conditions preclude a naturally reproducing population.

**"Q\***" means dilution capacity.

**"Salinity"** means the concentration of salt in water.

**"Sample standard"** means the arithmetic mean of historical data from October 1976 to September 1983 except as otherwise provided in Appendix F of this Chapter, plus two standard deviations of the mean.

**"Seasonal base flow"** means the sustained or fair-weather runoff, which includes but is not limited to groundwater runoff and delayed subsurface runoff.

**"Seasonal seven-day, two-year low flow"** means the 7-day low flow of a stream likely to occur with a 50% probability for a season with the applicable dates in Table 1 of Appendix G of OAC 785:45.

**"Seasonal 7Q2"** means the seasonal seven-day, two-year low flow.

**"Sensitive representative species"** means *Ceriodaphnia dubia, Daphnia magna, Daphnia pulex, Pimphales promelas* (Fathead minnow), *Lepomis macrochirus* (Bluegill sunfish), or other sensitive organisms indigenous to a particular waterbody.

**"SWS"** means Sensitive Public and Private Water Supply.

**"Seven-day, two-year low flow"** means the 7-day low flow of a stream likely to occur with a 50% probability each year.

**"7Q2"** means the seven-day, two-year low flow.

**"Standard deviation"** means a statistical measure of the dispersion around the arithmetic mean of the data.

**"Standard Methods"** means the publication "Standard Methods for the Examination of Water and Wastewater", published jointly by the American Public Health Association, American Water Works Association, and Water Environment Federation.

**"Standards"**, when capitalized, means this Chapter, which constitutes the Oklahoma Water Quality Standards described in 82 O.S. §1085.30. Whenever this term is not capitalized or is singular, it means the most stringent of the criteria assigned to protect the beneficial uses designated for a specified water of the State.

**"Storm water"** means storm water runoff, snow melt runoff, and surface runoff and drainage.

**"Subwatershed"** means a smaller component of the larger watershed.

**"Synergistic effect"** means the presence of cooperative pollutant action such that the total effect is greater than the sum of the effects of each pollutant taken individually.

**"Thermal pollution"** means degradation of water quality by the introduction of heated effluent and is primarily a result of the discharge of the cooling waters from industrial processes, particularly from electrical power generation.

**"Thermal stratification"** means horizontal layers of different densities produced in a lake caused by temperature.

**"Variance"** means a temporary (not to exceed three years) exclusion of a specific numerical criterion for a specific discharge to a specific waterbody.

**"Warm Water Aquatic Community"** means a subcategory of the beneficial use category "Fish and Wildlife Propagation" where the water quality and habitat are adequate to support intolerant climax fish communities and includes an environment suitable for the full range of warm water benthos.

**"Wastes"** means *industrial waste and all other liquid, gaseous or solid substances which may pollute or tend to pollute any waters of the state".* [82 O. S. §1084.2(2)]

**"Waterbody"** means any specified segment or body of waters of the state, including but not limited to an entire stream or lake or a portion thereof.

**"Water quality"** means physical, chemical, and biological characteristics of water which determine diversity, stability, and productivity of the climax biotic community or affect human health.

**"Waters of the state"** means *all streams, lakes, ponds, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, public or private, which are contained within, flow through, or border upon this State or any portion thereof* [82:1084.2(3)].

**"Watershed"** means the drainage area of a waterbody including all direct or indirect tributaries.

**"Wetland"** means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

**"WWAC"** means Warm Water Aquatic Community.

**"Yearly mean standard"** means the arithmetic mean of historical data from October 1976 to September 1983 except as otherwise provided in Appendix F of this Chapter, plus one standard deviation of the mean. The moving yearly mean standard is an average of the last five years of available data.

**"Zone of passage"** means a three dimensional zone expressed as a volume in the receiving stream through which mobile aquatic organisms may traverse the stream past a discharge without being affected by it. A regulatory zone of passage is described in 785:45-5-26.

## **Subchapter 5. Surface Water Quality Standards**

### **Part 3. BENEFICIAL USES AND CRITERIA TO PROTECT USES**

#### **785:45-5-12. Fish and wildlife propagation [AMENDED]**

(a) **List of subcategories.** The narrative and numerical criteria in this section are designed to maintain and protect the beneficial use classification of "Fish and Wildlife Propagation". This classification encompasses several subcategories which are capable of sustaining different climax communities of fish and shellfish. These subcategories are Habitat Limited Aquatic Community, Warm Water Aquatic Community, Cool Water Aquatic Community (Excluding Lake Waters), and Trout Fishery (Put and Take).

(b) **Habitat Limited Aquatic Community subcategory.**

(1) Habitat limited aquatic community means a subcategory of the beneficial use "Fish and Wildlife Propagation" where the water chemistry and habitat are not adequate to support a "Warm Water Aquatic Community" because:

(A) Naturally occurring water chemistry prevents the attainment of the use; or  
(B) Naturally occurring 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 a sufficient volume of effluent to enable uses to be met; or

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

(D) 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

(E) Physical conditions related to the natural features of the waterbody, such as the lack of a proper substrate, cover, flow, depth, pools, riffles, and the like, unrelated to water quality, preclude attainment of the "Warm Water Aquatic Community" beneficial use.

(2) Habitat Limited Aquatic Community may also be designated where controls more stringent than those required by sections 301(b) and 306 of the federal Clean Water Act as amended, which would be necessary to meet standards or criteria associated with the beneficial use subcategories of Cool Water Aquatic Community or Warm Water Aquatic Community, would result in substantial and widespread economic and social impact.

(c) **Warm Water Aquatic Community subcategory.** Warm Water Aquatic Community means a subcategory of the beneficial use category "Fish and Wildlife Propagation" where the water quality and habitat are adequate to support climax fish communities.

(d) **Cool Water Aquatic Community subcategory.** Cool Water Aquatic Community means a subcategory of the beneficial use category "Fish and Wildlife Propagation" where the water quality, water temperature and habitat are adequate to support cool water climax fish communities and includes an environment suitable for the full range of cool water benthos. Typical species may include smallmouth bass, certain darters and stoneflies.

(e) **Trout Fishery subcategory.** Trout Fishery (Put and Take) means a subcategory of the beneficial use category "Fish and Wildlife Propagation" where the water quality, water temperature and habitat are adequate to support a seasonal put and take trout fishery. Typical species may include trout.

(f) **Criteria used in protection of fish and wildlife propagation.** The narrative and numerical criteria to maintain and protect the use of "Fish and Wildlife Propagation" and its subcategories shall include:

(1) **Dissolved oxygen.**

(A) Dissolved oxygen (DO) criteria are designed to protect the diverse aquatic communities of Oklahoma.

(B) Allowable loadings designed to attain these dissolved oxygen criteria are provided as follows:

(i) For streams with sufficient historical data, the allowable load shall be based on meeting the dissolved oxygen concentration standard at the seven-day, two-year low flow and the appropriate seasonal temperatures prescribed in Table 1 of Appendix G of this Chapter.

(ii) For streams lacking sufficient historical data, or when the appropriate flow is less than one (1) cubic foot per second (cfs), the allowable load shall be based on meeting the dissolved oxygen concentration standard at one (1) cfs and the appropriate seasonal temperature.

(iii) Provided, for streams designated in OAC 785:45 Appendix A as HLAC or WWAC which have sufficient historical data as determined by the permitting authority, the allowable BOD load may be based upon meeting the dissolved oxygen concentration standard at the applicable seasonal temperature and corresponding seasonal seven-day, two-year low flow.

(iv) Provided further, in stream segments where dams or other structures have substantially affected the historic flow regime of the stream segment, including but not limited to the portions of the Verdigris and Arkansas Rivers constituting the McClellan-Kerr Arkansas River Navigation System, a properly designed and implemented site-specific hydrologic study approved by the permitting authority and the Board may be used to determine the appropriate regulatory low flow. In such circumstances, the allowable BOD load may be based upon meeting the dissolved oxygen concentration standard at the applicable seasonal temperature and the site-specific regulatory low flow.

(C) Except for naturally occurring conditions ~~and as modified in (D) of this paragraph~~, the dissolved oxygen criteria are as set forth in Table 1 of Appendix G of this Chapter. Additionally:

(i) For streams, no more than two DO samples shall exhibit a DO concentration of less than 2.0 mg/L in any given year.

(ii) For lakes, no more than 50% of the water volume shall exhibit a DO concentration less than 2.0 mg/L. If no volumetric data is available, then no more than 70% of the water column at any given sample site shall exhibit a DO concentration less than 2.0 mg/L. If a lake specific study including historical analysis demonstrates that a different percent volume or percent water column than described above is protective of the WWAC use, then that lake specific result takes precedence.

(D) ~~For purposes of assessment, listing and reporting under sections 303(d) and 305(b) of the federal Clean Water Act as amended, the procedure for determining use support of the Fish and Wildlife Propagation beneficial use or any subcategory thereof with respect to dissolved oxygen shall be as follows:~~

(i) ~~**General support test for all streams.** If more than two concentrations of DO in a stream are observed to be below 2.0 mg/L in any given year, the Fish and Wildlife Propagation beneficial use shall be deemed to be not supported.~~

(ii) ~~**Support tests for HLAC streams.**~~

(I) ~~The HLAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a stream shall be deemed to be fully supported with respect to the DO criterion if 10% or less of the samples from the stream are less than 4.0 mg/L from April 1 through June 15 and less than 3.0 mg/L during the remainder of the year.~~

(II) ~~The HLAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a stream shall be deemed to be not supported with respect to the DO criterion if more than 10% of the samples from the stream are less than 4.0 mg/L from April 1 through June 15 or less than 3.0 mg/L during the remainder of the year due to other than naturally occurring conditions.~~

(iii) ~~**Support tests for WWAC streams.**~~

(I) ~~The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a stream shall be deemed to be fully supported with respect to the DO criterion if 10% or less of the samples from the stream are less than 6.0 mg/L from April 1 through June 15 and less than 5.0 mg/L during the remainder of the year.~~

(II) ~~The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a stream shall be deemed to be undetermined with respect to the DO criterion if more than 10% of the samples from the stream are less than 6.0 mg/L and 10% or less of the samples are less than 5.0 mg/L from April 1 through June 15, or more than 10% of the samples are less than 5.0 mg/L and~~

~~10% or less of the samples are less than 4.0 mg/L from June 16 through October 15.~~

~~(III) The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a stream shall be deemed to be not supported with respect to the DO criterion if more than 10% of the samples from the stream are less than 5.0 mg/L from April 1 through June 15, or less than 4.0 mg/L from June 16 through October 15, or less than 5.0 mg/L from October 16 through March 31, due to other than naturally occurring conditions.~~

**~~(iv) Support tests for CWAC and Trout streams.~~**

~~(I) The CWAC or Trout subcategory of the Fish and Wildlife Propagation beneficial use designated for a stream shall be deemed to be fully supported with respect to the DO criterion if 10% or less of the samples from the stream are less than 7.0 mg/L from March 1 through May 31 and less than 6.0 mg/L during the remainder of the year.~~

~~(II) The CWAC or Trout subcategory of the Fish and Wildlife Propagation beneficial use designated for a stream shall be deemed to be undetermined with respect to the DO criterion if more than 10% of the samples from the stream are less than 7.0 mg/L and 10% or less of the samples are less than 6.0 mg/L from March 1 through May 31, or more than 10% of the samples are less than 6.0 mg/L and 10% or less of the samples are less than 5.0 mg/L from June 1 through October 15.~~

~~(III) The CWAC or Trout subcategory of the Fish and Wildlife Propagation beneficial use designated for a stream shall be deemed to be not supported with respect to the DO criterion if more than 10% of the samples from the stream are less than 6.0 mg/L from March 1 through May 31, or less than 5.0 mg/L from June 1 through October 15, or less than 6.0 mg/L from October 16 through the last day of February, due to other than naturally occurring conditions.~~

**~~(v) Support tests for WWAC lakes.~~** The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be fully supported with respect to the DO criterion if both the Surface and Water Column criteria prescribed in (vi)(I) and (vii)(I) of this subparagraph (D) are satisfied. If either of the Surface or Water Column criteria prescribed in (vi)(II) or (vii)(II) produce a result of undetermined, then the WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be undetermined with respect to the DO criterion; provided, if either of the Surface or Water Column criteria prescribed in (vi)(III) or (vii)(III) produce a result of not supported, then the WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be not supported with respect to the DO criterion.

**(vi) Surface criteria for WWAC lakes.**

- (I) The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be fully supported with respect to the DO criterion if 10% or less of the samples from the epilimnion during periods of thermal stratification, or the entire water column when no stratification is present, are less than 6.0 mg/L from April 1 through June 15 and less than 5.0 mg/L during the remainder of the year.
- (II) The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be undetermined with respect to the DO criterion if more than 10% of the samples from the epilimnion during periods of thermal stratification, or the entire water column when no stratification is present, are less than 5.0 mg/L and 10% or less of the samples are less than 4 mg/L from June 16 through October 15, or more than 10% of the samples from the surface are less than 6.0 mg/L and 10% or less of the samples are less than 5.0 mg/L from April 1 through June 15.
- (III) The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be not supported with respect to the DO criterion if more than 10% of the samples from the epilimnion during periods of thermal stratification, or the entire water column when no stratification is present, are less than 5.0 mg/L from April 1 through June 15 or less than 4.0 mg/L from June 16 through October 15, or less than 5.0 mg/L from October 16 through March 31, due to other than naturally occurring conditions.

**(vii) Water Column criteria for WWAC lakes.**

- (I) The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be fully supported during periods of thermal stratification with respect to the DO criterion if less than 50% of the volume (if volumetric data is available) or 50% or less of the water column (if no volumetric data is available) of all sample sites in the lake are less than 2.0 mg/L.
- (II) The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be undetermined during periods of thermal stratification with respect to the DO criterion if 50% or more, but not greater than 70%, of the water column at any given sample site in the lake is less than 2.0 mg/L due to other than naturally occurring conditions.
- (III) The WWAC subcategory of the Fish and Wildlife Propagation beneficial use designated for a lake shall be deemed to be not supported during periods of thermal stratification with respect to the DO criterion if 50% or more of the water volume (if volumetric data is available) or more than 70% of the water

~~column (if no volumetric data is available) at any given sample site is less than 2.0 mg/L.~~

~~(IV) If a lake specific study including historical analysis produces a support status which is contrary to an assessment obtained from the application of (I), (II) or (III) of (D)(vii) of this section, then that lake specific result will control.~~

~~(viii) Additional application/exercise when support undetermined. In instances where application of the tests in this subparagraph (D) initially produce a result that the pertinent subcategory is undetermined with respect to the DO criterion, such shall be subject to additional investigation that considers diurnal data for further application of such tests in order to resolve the determination of use support.~~

(2) **Temperature.**

(A) At no time shall heat be added to any surface water in excess of the amount that will raise the temperature of the receiving water more than 2.8°C outside the mixing zone.

(B) The normal daily and seasonal variations that were present before the addition of heat from other than natural sources shall be maintained.

(C) In streams, temperature determinations shall be made by averaging representative temperature measurements of the cross sectional area of the stream at the end of the mixing zone.

(D) In lakes, the temperature of the water column and/or epilimnion, if thermal stratification exists, shall not be raised more than 1.7°C above that which existed before the addition of heat of artificial origin, based upon the average of temperatures taken from the surface to the bottom of the lake, or surface to the bottom of the epilimnion if the lake is stratified.

(E) No heat of artificial origin shall be added that causes the receiving stream water temperature to exceed the maximums specified below:

- (i) The critical temperature plus 2.8°C in warm water and habitat limited aquatic community streams and lakes except in the segment of the Arkansas River from Red Rock Creek to the headwaters of Keystone Reservoir where the maximum temperature shall not exceed 34.4°C.
- (ii) 28.9°C in streams designated cool water aquatic community.
- (iii) 20°C in streams designated trout fishery (put and take).

(F) Water in privately-owned reservoirs used in the process of cooling water for industrial purposes is exempt from these temperature restrictions, provided the water released from any such lake or reservoir into a stream system shall meet the water quality standards of the receiving stream.

(3) **pH (hydrogen ion activity).** The pH values shall be between 6.5 and 9.0 in waters designated for fish and wildlife propagation; unless pH values outside that range are due to natural conditions.

(4) **Oil and grease (petroleum and non-petroleum related).**

(A) All waters having the designated beneficial use of any subcategory of fish and wildlife propagation shall be maintained free of oil and grease to prevent a visible sheen of oil or globules of oil or grease on or in the water.

(B) Oil and grease shall not be present in quantities that adhere to stream banks and coat bottoms of water courses or which cause deleterious effects to the biota.

(5) **Biological Criteria.**

(A) Aquatic life in all waterbodies with the beneficial use designation of Fish and Wildlife Propagation (excluding waters designated "Trout, put-and-take") shall not exhibit degraded conditions as indicated by one or both of the following:

- (i) comparative regional reference data from a station of reasonably similar watershed size or flow, habitat type and Fish and Wildlife beneficial use subcategory designation or
- (ii) by comparison with historical data from the waterbody being evaluated.

(B) Compliance with the biological criteria to protect Fish and Wildlife Propagation set forth in this paragraph shall be based upon measures including, but not limited to, diversity, similarity, community structure, species tolerance, trophic structure, dominant species, indices of biotic integrity (IBI's), indices of well being (IWB's), or other measures.

(6) **Toxic substances (for protection of fish and wildlife).**

(A) Surface waters of the state shall not exhibit acute toxicity and shall not exhibit chronic toxicity outside the chronic regulatory mixing zone. Acute test failure and chronic test failure shall be used to determine discharger compliance with these narrative aquatic life toxics criteria. The narrative criterion specified in this subparagraph (A) which prohibits acute toxicity shall be maintained at all times and shall apply to all surface waters of the state. The narrative criterion specified in this subparagraph (A) which prohibits chronic toxicity shall apply at all times outside the chronic regulatory mixing zone and within the zone of passage to all waters of the state except:

- (i) When a discharge into surface waters designated with the Fish and Wildlife Propagation beneficial use complies with and meets the discharge permit limitations but the flow immediately upstream from the discharge is less than one (1) cubic foot per second or when the flow falls below the seven-day, two-year low-flow, whichever is larger. For purposes of the permitting process, the regulatory low flow shall be the larger of one (1) cubic foot per second or the seven-day, two-year low flow; and
- (ii) To streams listed as ephemeral in Appendix A.

(B) Procedures to implement these narrative criteria are found in OAC 785:46 Subchapter 3.

(C) Toxicants for which there are specific numerical criteria are listed in Table 2 of Appendix G of this Chapter.

(D) For toxicants not specified in Table 2 of Appendix G of this Chapter, concentrations of toxic substances with bio-concentration factors of 5 or less shall not exceed 0.1 of published LC50 value(s) for sensitive representative species using standard testing methods, giving consideration to site specific water quality characteristics.

(E) Concentrations of toxic substances with bio-concentration factors greater than 5 shall not exceed 0.01 of published LC50 value(s) for sensitive

representative species using standard testing methods, giving consideration to site specific water quality characteristics.

(F) Permit limits to prevent toxicity caused by discharge of chlorine and ammonia are determined pursuant to the narrative criteria contained within (A) and (B) of this paragraph.

(G) The acute and chronic numerical criteria listed in the "Fish and Wildlife Propagation" column in Table 2 of Appendix G of this Chapter apply to all waters of the state designed with any of the beneficial use sub-categories of Fish and Wildlife Propagation. The numerical criteria which prohibit acute toxicity apply outside the acute regulatory mixing zone.

(i) The numerical criteria specified in Table 2 of Appendix G which prohibit chronic toxicity shall apply at all times outside the chronic regulatory mixing zone and within the zone of passage to all waters of the state except:

(I) When a discharge into surface waters designated with the Fish and Wildlife Propagation beneficial use complies with and meets the discharge permit limitations but the flow immediately upstream from the discharge is less than one (1) cubic foot per second or when the flow falls below the seven-day, two-year low-flow, whichever is larger. For purposes of the permitting process, the regulatory low flow shall be the larger of one (1) cubic foot per second or the seven-day, two-year low flow; and

(II) To streams listed as ephemeral in Appendix A.

(ii) Equations are presented in Table 2 of Appendix G for those substances whose toxicity varies with water chemistry. Metals listed in Table 2 of Appendix G are measured as total metals in the water column.

(H) For purposes of assessment per OAC 785:46-15-5, criteria for dissolved metals identified in Table 3 of Appendix G of this Chapter may be ascertained and implemented as an alternative to the total recoverable metals criteria set forth in Table 2 of Appendix G. Such dissolved metals criteria may be determined by multiplying the total recoverable numerical criteria in OAC 785:45 Appendix G, Table 2 by the conversion factors identified in Table 3 of Appendix G.

(7) **Turbidity.**

(A) Turbidity from other than natural sources shall be restricted to not exceed the following numerical limits:

- (i) Cool Water Aquatic Community/Trout Fisheries: 10 NTUs;
- (ii) Lakes: 25 NTUs; and
- (iii) Other surface waters: 50 NTUs.

(B) In waters where background turbidity exceeds these values, turbidity from point sources shall be restricted to not exceed ambient levels.

(C) Numerical criteria listed in (A) of this paragraph apply only to seasonal base flow conditions.

(D) Elevated turbidity levels may be expected during, and for several days after, a runoff event.

(8) **Sediments.** Concentrations or loads of suspended or bedded sediments that are caused by human activity shall not impair the Fish and Wildlife Propagation use or any subcategory thereof.

**785:45-5-21. Wetland Beneficial Uses and Criteria [NEW]**

- (a) **Beneficial Uses.** This subsection lists the beneficial uses assigned to wetlands
- (1) **Wetland Habitat and Biota.** Wetland Habitat and Biota includes uses where the water quality, hydrology, and habitat are capable of supporting a wetland-dependent flora and fauna community. Wetland-dependent species may permanently or periodically live in a wetland or utilize a wetland during their life cycle. Species present may shift in accordance with season, hydroperiod, or other abiotic conditions. Typical wetland-dependent species may include, but are not limited to, hydrophytic plants, fish, crustaceans, benthic invertebrates, amphibians, waterfowl, migratory birds, and reptiles.
- (2) **Flood Protection and Erosion Control.** Flood Protection and Erosion Control is the use which addresses the ability of wetlands to collect and temporarily store floodwaters and attenuate peak flow. This results in reduced flooding and minimizes flood damage protecting adjacent and downstream areas. For wetlands along the banks of lakes and rivers, plants and roots serve to stabilize the bank, absorb wave energy, and slow currents thereby reducing erosion and protecting property. Given wetland types may also increase infiltration and groundwater recharge.
- (3) **Water Quality Enhancement.** Water Quality Enhancement is the use which addresses the ability of wetlands to assimilate and or transform pollutants thereby improving water quality in or downstream of the wetland waterbody. The intent of this beneficial use is to recognize the natural capacity of wetlands to remove pollutants. This use does not support natural wetlands being used for the purpose of removing pollutants from a wastewater discharge or knowingly exceeding the assimilative capacity of a natural wetland.
- (4) **Recreation.**
- (A) Wetlands contiguous with lakes or streams with the beneficial use designation Primary Body Contact Recreation are also designated Primary Body Contact Recreation.
- (B) Wetlands contiguous with lakes or streams with the beneficial use designation Secondary Contact Recreation are also designated Secondary Body Contact Recreation.
- (C) Wetlands not contiguous with lakes or streams with the beneficial use designation Primary Body Contact Recreation are designated Secondary Body Contact Recreation.
- (D) Primary Body Contact Recreation means direct body contact with the water where a possibility of ingestion exists as described in 785:45-5-16.
- (E) Secondary Body Contact Recreation means ingestion of water is not anticipated as described in 785:45-5-17. Associated activities may include boating, fishing, or wading.
- (5) **Aesthetics.** To be aesthetically enjoyable, the surface waters of the state must be free from floating materials and suspended substances that produce objectionable color and turbidity. The water must also be free from noxious odors and tastes, from materials

that settle to form objectionable deposits, and discharges that produce undesirable effects or are a nuisance to aquatic life.

(b) **Criteria.** The following criteria shall be applied to ensure the protection, maintenance or enhancement of wetland waterbodies. Criteria which rely on water in order to be measured are not applicable during periods when surface water is not present.

(1) The ecological integrity of wetland habitat and biota shall be protected and shall not be altered by human activities beyond what is comparable to that typically present in wetlands of similar type and that also characterize best attainable ecological condition.

(2) The hydrology of wetlands, including the extent, duration, and frequency of saturated or ponded conditions shall not be altered by human activities beyond what is comparable to that typically present in wetlands of similar type and that also characterize best attainable hydrologic condition.

(3) Floating or submerged debris, oil, deleterious substances, or any other material not naturally found in a wetland shall not be present in amounts which may cause adverse impacts on wetland beneficial uses.

(4) There are many factors that cause natural variation in wetland dissolved oxygen concentrations and pH; however, the dissolved oxygen concentration and pH shall be sufficient to support the Wetland Habitat and Biota beneficial use.

(5) The daily and seasonal temperature variations that were present before the addition of heat from other than natural sources shall be maintained.

(6) Wetlands shall not exhibit acute or chronic toxicity.

(7) Concentrations of substances which are toxic or harmful to human, animal, or plant life shall not be present in amounts which individually or synergistically cause adverse impacts on any wetland beneficial use. Toxic substances shall not be present at levels that will bioaccumulate in wetland-dependent species to levels which are harmful to wetland-dependent species or human health.

(A) Numerical criteria for toxic substances are in Appendix G, Table 2, Columns Acute, Chronic, and Fish Consumption (plus Other Organisms) and Table 3.

(B) For toxicants not presented in Appendix G, Table 2, Columns, Acute, Chronic, and Fish Consumption (plus Other Organisms) and Table 3 other scientifically-defensible methods, the latest scientific information, and or applicable state and or federal policies may be relied upon to determine toxic thresholds.

(8) Concentrations or loads of suspended or bedded sediments that are caused by human activity shall not impair any wetland beneficial use.

(9) Recreation

(A) Primary Body Contact Recreation Criteria. Criteria are prescribed in 785:45-5-16.

(B) Secondary Body Contact Recreation Criteria. Criteria are prescribed in 785:45-5-17.

(10) Aesthetics

(A) To be aesthetically enjoyable, the surface waters of the state must be free from floating materials and suspended substances that produce objectionable color and turbidity. Naturally occurring turbidity in wetlands is not considered objectionable.

(B) The water must also be free from noxious odors and tastes, from materials that settle to form objectionable deposits, and discharges that produce undesirable effects or are a nuisance to aquatic life. Odors associated with naturally occurring conditions in wetlands are not considered noxious odors.

(c) **Other Provisions.**

(1) Constructed treatment wetlands. Constructed treatment wetlands are artificial systems designed and constructed to utilize natural microbial, biological, chemical, and physical processes to treat wastewater and or stormwater in a partially controlled environment. A constructed treatment wetland is part of a treatment train or treatment system for wastewater and or stormwater and water quality criteria do not apply to wastewater and or stormwater contained within the treatment wetland. However, any discharges from a constructed treatment wetland shall meet applicable standards for the downstream receiving waterbody. A treatment wetland shall not be constructed within a water of the state.

(2) Commercial and Noncommercial Pits. Constructed commercial and noncommercial pits or any other pit used for the handling, storage, or disposal of sediment, soils, drilling fluids, water other fluids, debris, brine, and or other substances produced, obtained, or used in connection with drilling and or operation of a well(s) are defined and regulated by the Oklahoma Corporation Commission. A commercial, noncommercial, or any other pit shall not be constructed within a water of the state.

## PART 5. SPECIAL PROVISIONS

### **785:45-5-26. Mixing zones and zones of passage [NEW]**

(a) Mixing zones in wetlands may be allowed on a case-by-case basis as provided in the sections below.

(1) Where dilution is available at critical conditions a mixing zone may be designated. Mixing zones are discretionary and shall be determined on a discharge-by-discharge basis. Additionally, mixing zones may be allowed or denied on a pollutant-by-pollutant basis, which may result in a mixing zone allowance for all, some, or no pollutants in a discharge. The physical, chemical, and biological characteristics of the discharge and receiving wetland shall be considered in determining whether a mixing zone is allowed. In all cases, mixing zones and or dilution allowances shall be limited, as necessary, to protect the integrity of the receiving water ecosystem and waterbody beneficial uses.

(2) Before establishing a mixing zone it must first be determined if and how much (if any), receiving water is available to dilute the discharge. Where receiving water for dilution mixing is not available at critical conditions (i.e. surface water is not present in the waterbody) effluent limits shall be based on attaining all applicable water quality criteria at the end-of-pipe and no mixing zone shall be provided. The availability of receiving water for dilution shall be evaluated consistent with waterbody critical season and interannual seasonal variations shall be considered. Additionally, seasonal variations of the effluent shall be accounted for, as appropriate.

(3) A mixing zone shall be as small as practicable and overlapping mixing zones in wetlands are prohibited. The following conditions must be met in allowing a mixing zone. A mixing zone shall not:

- (A) compromise the integrity of the entire waterbody or dominate the receiving waterbody;
  - (B) impair any wetland beneficial use;
  - (C) cause acutely toxic conditions to aquatic life passing through or residing in the mixing zone;
  - (D) interfere with the free movement of fish and or other aquatic life;
  - (E) produce floating or submerged debris, oil, or deleterious substances;
  - (F) produce objectionable color, odor, taste, or turbidity;
  - (G) cause objectionable bottom deposits;
  - (H) cause nuisance conditions;
  - (I) accumulate pollutants in sediment or biota;
  - (J) be allowed for bioaccumulative pollutants;
  - (K) be allowed at or near biologically sensitive or biologically important areas (e.g. fish spawning areas or presence of a threatened or endangered species near the outfall or downstream);
  - (L) be allowed in situations where an effluent will attract biota
  - (M) be allowed at or near any drinking water intake or recreational areas.
- (4) Supporting information and assumptions used to establish mixing zones shall be subject to review and revision as information on the nature and impacts of the discharge becomes available. At a minimum, mixing zones are subject to review and revisions along with all aspects of a discharge permit upon permit renewal.
- (5) Receiving water monitoring at/near the mixing zone boundary shall be conducted, by responsible parties, to document attainment or nonattainment of all applicable water quality criteria and document the impacts (if any) of the mixing zone on the wetland.
- (6) Mixing zones may be revised or eliminated and outfalls may require relocation, if it is determined that the water quality within the mixing zone adversely affects any existing beneficial uses in the receiving waterbody.

#### **785:45-5-30. Additional Provisions**

- (a) Consistent with Clean Water Act section 404(f) and 40 CFR section 232.3, discharges associated with normal farming activities are not subject to water quality standards.
- (b) Consistent with Oklahoma Statute Title 27A §1-1-201, prior converted croplands are not subject to water quality standards.

## **APPENDIX G. NUMERICAL CRITERIA TO PROTECT BENEFICIAL USES**

(a) **Introduction.** This Appendix prescribes numerical limits for certain criteria which are necessary to protect beneficial uses as and wherever designated. Table 1 is a chart that states the numerical limits to protect the beneficial use and subcategories of Fish and Wildlife Propagation for the single parameter of dissolved oxygen as set forth in OAC 785:45-5-12(f)(1). The latter limits vary depending upon several factors including the pertinent subcategory or fishery class, the time of the year, and the seasonal temperature. Table 2 prescribes the numerical limits for certain substances or parameters in order to protect beneficial uses and subcategories as set forth in OAC 785:45-5-10(1), 785:45-5-10(6), 785:45-5-12(f)(6), and 785:45-5-20. The numerical limits may vary from one beneficial use or subcategory to another according to how the criteria are required by OAC 785:45 or OAC 785:46 to be implemented. Table 3 is a chart that sets forth conversion factors that can be used to determine criteria for dissolved metals in order to protect the beneficial use of Fish and Wildlife Propagation and all its subcategories as set forth in OAC 785:45-5-12(f)(6)(H).

(b) **Explanations for abbreviations and certain terms in Tables.**

- (1) "CAS #" refers to a parameter's Chemical Abstract Service registry number. Each of these numbers is a unique identifier of a particular compound with a particular structure; the number provides additional and further specificity for the parameter in question than simply identifying it by a systematic, generic, proprietary, or [trivial] name. The CAS number has no particular chemical significance.
- (2) Equations are prescribed for those substances the toxicity of which varies with water chemistry.
- (3) Metals that are listed in Tables 2 and 3 shall be measured as total metals in the water column.

**TABLE 1. [NEW]**

**Dissolved Oxygen Criteria to Protect Fish and Wildlife Propagation  
and All Subcategories Thereof<sup>1</sup>**

<b>SUBCATEGORY OF FISH AND WILDLIFE PROPAGATION (FISHERY CLASS)</b>	<b>DATES APPLICABLE</b>	<b>D.O. CRITERIA<sup>4</sup> (MINIMUM) (mg/L)</b>	<b>SEASONAL TEMPERATURE (°C)</b>
Habitat Limited Aquatic Community			
Early Life Stages	4/1 - 6/15	4.0	25 <sup>3</sup>
Other Life Stages			
Summer Conditions	6/16 - 10/15	3.0	32
Winter Conditions	10/16 - 3/31	3.0	18
Warm Water Aquatic Community <sup>5</sup>			
Early Life Stages	4/1 - 6/15	6.0 <sup>2</sup>	25 <sup>3</sup>
Other Life Stages			
Summer Conditions	6/16 - 10/15	5.0 <sup>2</sup>	32
Winter Conditions	10/16 - 3/31	5.0	18
Cool Water Aquatic Community & Trout			
Early Life Stages	3/1 - 5/31	7.0 <sup>2</sup>	22
Other Life Stages			
Summer Conditions	6/1 - 10/15	6.0 <sup>2</sup>	29

<sup>1</sup> For use in calculation of the allowable load.

<sup>2</sup> Because of natural diurnal dissolved oxygen fluctuation, a 1.0 mg/l dissolved oxygen concentration deficit shall be allowed for not more than eight (8) hours during any twenty-four (24) hour period.

<sup>3</sup> Discharge limits necessary to meet summer conditions will apply from June 1 of each year. However, where discharge limits based on Early Life Stage (spring) conditions are more restrictive, those limits may be extended to July 1.

<sup>4</sup> DO shall not exhibit concentrations less than the criteria magnitudes expressed above in greater than 10% of the samples as assessed across all life stages and seasons.

<sup>5</sup> For Lakes, the warm water aquatic community dissolved oxygen criteria expressed above are applicable to the surface waters.