COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Water Quality Control Commission

REGULATION NO. 31 - THE BASIC STANDARDS AND METHODOLOGIES FOR SURFACE WATER

5 CCR 1002-31

[Editor's Notes follow the text of the rules at the end of this CCR Document.]

31.1 AUTHORITY AND SCOPE

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31.2 PURPOSE

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31.3 INTRODUCTION

This regulation presents a classification system which establishes beneficial use categories together with basic standards (section 31.11), an antidegradation rule (section 31.8), and numeric tables which define the conditions generally necessary to maintain and attain such beneficial uses. In addition, it establishes procedures for classifying the waters of the state, for assigning water quality standards, and for continued review of the classifications and standards.

The classifications set forth in section 31.13 will be assigned by applying the system to specific state surface waters, in accordance with proper procedures, including public hearings. The basic standards and the antidegradation rule will apply to all state surface waters at the effective date of this regulation. Whenever a specific stream segment or body of water receives a classification for one or more of the uses, additional numeric standards may be assigned. When appropriate, achieving water quality standards through innovative solutions or management approaches may be implemented through control regulations, TMDLs, Waste Load Allocations, antidegradation reviews, and permits. All classified uses will be protected. This does not mean that any entity has the right to rely on the presence of specific pollutants in the stream even though those pollutants may be utilized by the entity.

In assigning classifications and standards, the Commission shall take into consideration the water quality classifications and standards of downstream waters and shall ensure that as implemented through its policies, the water quality classifications and standards of downstream waters will be attained and maintained.

Water quality standards, temporary modifications of numeric standards, and classifications shall be reviewed at least once every three (3) years and revised where appropriate. No provisions of this regulation shall be interpreted so as to ~~supercede~~supersede, abrogate, or impair rights to divert water and apply water to beneficial uses.

31.4 DELETED

31.5 DEFINITIONS

See the Colorado Water Quality Control Act, section 25-8-101 et seq., C.R.S., and the codified water quality regulations additional definitions.

(1) "ACT" means the Colorado Water Quality Control Act, section 25-8-101 et seq., C.R.S..

(2) "ACUTE STANDARD" means the level not to be exceeded by the concentration for either a single sample or calculated as an average of all samples collected during a one-day period, except for temperature, which shall be based on the DM (see DM definition). As used in tables II and III, acute represents one-half of the LC-50 that protects 95 percent of the genera in a waterbody from lethal effects. The acute standard is implemented in combination with a selected duration and frequency of recurrence (section 31.9(1)). In determining attainment of the applicable acute standard, the representative nature of the data must be considered.

(3) "ANTIDEGRADATION RULE" means the rule established in section 31.8.

(4) "BASIC STANDARDS" means those standards as established in section 31.11.

(5) "BENEFICIAL USES" means those uses of state surface waters to be protected such as those identified in the classification system.

(6) "BMP" (Best Management Practices) means a practice or a combination of practices that is determined by a governmental agency after problem assessment, examination of alternative practices, and appropriate public participation, to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing or reducing the amount of pollution generated by nonpoint sources to a level compatible with quality goals.

(7) "CHRONIC STANDARD" means the level not to be exceeded by the concentration for either a single representative sample or calculated as an average of all samples collected during a thirty-day period, except for temperature, which shall be based on the WAT (see WAT definition). As used in tables II and III, chronic represents the level that protects 95 percent of the genera from chronic toxic effects. Chronic toxic effects include, but are not limited to, demonstrable abnormalities and adverse effects on survival, growth, or reproduction. The chronic standard is implemented in combination with a selected duration and frequency of recurrence (section 31.9(1)). In determining attainment of the applicable chronic standard, the representative nature of the data must be considered.

(8) "COLD WATER BIOTA" means aquatic life, including trout, normally found in waters where the summer weekly average temperature does not frequently exceed 20 ºC.

(9) "COMMISSION" means the Colorado Water Quality Control Commission.

(10) "COMPENSATORY WETLANDS" means wetlands developed for mitigation of adverse impacts to other wetlands (e.g. wetlands developed pursuant to section 404 of the federal Act).

(11) "CONSTRUCTED WETLANDS" means those wetlands intentionally designed, constructed and operated for the primary purpose of wastewater or stormwater treatment or environmental remediation provided under CERCLA, RCRA, or section 319 of the federal Act, if (a) such wetlands are constructed on non-wetland sites that do not contain surface waters of the state, or (b) such wetlands are constructed on previously existing wetland sites, to the extent that approval or authorization under section 404 of the federal Act has been granted for such construction or it is demonstrated that such approval or authorization is not, or was not, required. This term includes, but is not limited to, constructed swales, ditches, culverts, infiltration devices, catch basins, and sedimentation basins that are part of a wastewater or stormwater treatment system or a system for environmental remediation mandated under CERCLA or RCRA. Compensatory wetlands shall not be considered constructed wetlands. Constructed wetlands are not state waters.

(12) "CREATED WETLANDS" means those wetlands other than compensatory wetlands created in areas which would not be wetlands in the absence of human modifications to the environment. Created wetlands include, but are not limited to wetlands created inadvertently by human activities such as mining, channelization of highway runoff, irrigation, and leakage from man-made water conveyance or storage facilities. Wetlands resulting from hydrologic modifications such as on-channel reservoirs or on-channel diversion structures that expand or extend the reach of adjacent classified state waters are not considered created wetlands.

(13) "DAILY MAXIMUM TEMPERATURE (DM)" means the highest two-hour average water temperature recorded during a given 24-hour period.

(14) "DISSOLVED METALS" means that portion of a water and suspended sediment sample which passed through a 0.40 or 0.45 ~~u~~µm (~~M~~micron) membrane filter. Determinations of "d~~D~~issolved" constituents are made using the filtrate. This may include some very small (~~C~~colloidal) suspended particles which passed through the membrane filter as well as the amount of substance present in true chemical solution.

(15) "DIVISION" means the Division of Administration of the Colorado Department of Public Health and Environment of which the Water Quality Control Division is a part.

(16) "*E. coli*" means *Escherichia coli*.

(17) "EFFLUENT-DEPENDENT STREAM" means a stream that would be ephemeral without the presence of wastewater effluent, but has continuous or periodic flows for all or a portion of its reach as the result of the discharge of treated wastewater.

(18) "EFFLUENT-DOMINATED STREAM" means a stream that would be intermittent or perennial without the presence of wastewater effluent whose flow for the majority of the time is primarily attributable to the discharge of treated water (i.e. greater than 50 percent of the flow consists of treated wastewater for at least 183 days annually, for eight out of the last ten years).

(19) "EPHEMERAL STREAM" means a stream channel or reach of a stream channel that carries flow during, and for a short duration as the result of, precipitation events or snowmelt. The channel bottom is always above the groundwater table.

(20) "EXISTING QUALITY" means the numeric value that represents the quality of a water ~~-~~body and is generally used for comparison with the water quality standard. Existing quality shall be calculated as:

- Total ammonia, nitrate, and the dissolved metals: 85th percentile
- Total recoverable metals: 50th percentile
- Dissolved oxygen in streams: 15th percentile
- *E. coli:* geometric mean
- pH: the range between the 15th and 85th percentiles
- Temperature: F~~f~~or the purposes of determining standards attainment, "~~-~~existing quality~~"~~ is the seasonal maximum DM (acute) and WAT (chronic) ~~and~~ which allows one warming event with a 3-year average exceedance frequency. For data records with less than or equal to 3 years, existing quality is equal to the maximum WAT and DM. For data records with 4-6 years, one warming event above the standard is permitted. The warming event allowance is described in Footnote 5(c)(ii) to Table I.

For the purposes of permits implementation, for data records with less than or equal to 3 years of representative upstream data, existing quality is equal to the seasonal or monthly maximum DM (acute) and WAT (chronic). For data records with 4-6 years, for monthly limits, the second highest monthly DM or WAT may be selected for one month in either winter or summer and the remaining months shall be the max DM or WAT.

(21) "FEDERAL ACT" means the Clean Water Act, U.S.C. Section 1251 et seq., as amended.

(22) "FIRST (1st) ORDER STREAM" means a stream that has no tributaries, based on USGS mapping at 1:100,000 scale.

(23) "FLOODPLAIN" means any flat or nearly flat lowland that borders a stream, a lake, or an on-channel reservoir and that may be covered by its waters at flood or high stage as described by the parameter of the probable maximum flood or probable maximum high stage.

(24) "HIGHEST ATTAINABLE USE" means the modified use that is both closest to the uses specified in section 31.13 and attainable based on the evaluation of the factors in 31.6(2)(b) that preclude attainment of the use and any other information or analyses that were used to evaluate attainability.

(25) "LC-50" means the concentration of a parameter that is lethal to 50% of the test organisms within a defined time period.

(26) "MAXIMUM WEEKLY AVERAGE TEMPERATURE (MWAT)" means the largest WAT in the period of interest. For lakes and reservoirs, the summertime MWAT is assumed to be equivalent to the maximum WAT from at least three profiles distributed throughout the growing season (generally July-September).

(27) "MIXED LAYER" means that part of a lake that is well-mixed by wind action and can be expected to have relatively homogeneous physical and chemical conditions. In a thermally stratified lake, the mixed layer corresponds to the *epilimnion*; in an unstratified lake, the mixed layer extends to the bottom. The vertical extent of the mixed layer usually is determined by inspection of a vertical profile of temperature.

(28) "MIXING ZONE" means that area of a water-body designated on a case-by-case basis by the Division which is contiguous to a point source and in which certain standards may not apply.

(29) "NUMERIC VALUE" means the measured concentration of a parameter.

(30) "PARAMETER" means the chemical constituents or other characteristics of the water such as algae, *E. coli*, total dissolved solids, dissolved oxygen, or the magnitude of radioactivity levels, temperature, pH, and turbidity, or other relevant characteristics.

(31) "PERMIT" means a National Pollutant Discharge Elimination System (NPDES) permit, a Colorado Discharge Permit System (CDPS) permit, or other state water quality permit.

(32) "POTENTIALLY DISSOLVED METALS" means that portion of a constituent measured from the filtrate of a water and suspended sediment sample that was first treated with nitric acid to a pH of less than 2.0 and let stand for 8 to 96 hours prior to sample filtration using a 0.4 or 0.45 ~~□~~µm (micron) membrane filter. Note the "Potentially Dissolved" method cannot be used where nitric acid will interfere with the analytical procedure used for the constituent measured.

(33) "PRIMARY CONTACT RECREATION" means recreational activities where the ingestion of small quantities of water is likely to occur. Such activities include but are not limited to swimming, rafting, kayaking, tubing, windsurfing, water- skiing, and ~~frequent~~ water play by children.

(34) "REGIONAL WASTEWATER MANAGEMENT PLAN" means a water quality planning document prepared pursuant to section 208 of the federal Act, sometimes referred to as "208 Plans" or "Water Quality Management Plans."

(35) "REPRODUCTIVE SEASON" means the portion of the year when fish migration, spawning, egg incubation, fry rearing or other reproductive functions occur.

(36) "SALINITY" means total dissolved solids (TDS).

(37) "SECOND (2nd) ORDER STREAM" means a stream which begins downstream of the confluence of two first (1st) order streams and ends downstream of the confluence of two second (2nd) order streams, based on USGS mapping at 1:100,000 scale.

(38) "STANDARD" means a narrative and/or numeric restriction established by the Commission applied to state surface waters to protect one or more beneficial uses of such waters. Whenever only numeric or only narrative standards are intended, the wording shall specifically designate which is intended.

(39) "STATE WATERS" means any and all surface and subsurface waters which are contained in or flow in or through this state, but does not include waters in sewage systems, waters in treatment works of disposal systems, waters in potable water distribution systems, and all water withdrawn for use until use and treatment have been completed.

(40) "STATUS QUO", in the context of temporary modifications, means the numeric values representative of the conditions at the time of the original temporary modification adoption for:

1. the quality of a waterbody, for which a temporary modification is applied, and

2. the quality, and as appropriate the flow and loading, of effluent discharged into a waterbody, for which a temporary modification is applied.

Status quo shall be calculated as follows using data representative of quality at the time of the original temporary modification adoption, typically using data for the 5 years leading up to the temporary modification. Where such adequate, representative data do not exist, data representative of quality as close in time as practicable to the original temporary modification adoption shall be used.

For consideration of waterbody status quo:

- Total ammonia, nitrate, and dissolved metals (chronic): 85th percentile
- Total recoverable metals (chronic): 50th percentile
- Total ammonia, nitrate, total metals, and dissolved metals (acute): 95th percentile
- Temperature: seasonal maximum DM (acute) and WAT (chronic)
- Other parameters: As appropriate based on the duration and frequency for the water quality standard from Tables I, II, or III
- Or, in limited circumstances, as otherwise determined by the Commission on a case-by-case basis

For consideration of effluent status quo:

- Total ammonia, nitrate, and dissolved and total recoverable metals (chronic): maximum 30-day average
- Total ammonia, nitrate, and dissolved and total recoverable metals (acute): maximum daily maximum
- Temperature: seasonal maximum DM (acute) and WAT (chronic)
- Other parameters: As appropriate based on permit implementation approaches of the water quality standard from Tables I, II, or III
- Representative effluent flow and loading, as appropriate
- Or, in limited circumstances, as otherwise determined by the Commission on a case-by-case basis

(41~~0~~) "TABLES" means tables I, II, and III, appended to this regulation, which set forth accepted levels for various parameters which will generally protect the beneficial uses of state surface waters.

(42~~1~~) "THIRD (3rd) ORDER STREAM" means a stream which begins at the confluence of two second (2nd) order streams and ends downstream of the confluence of two third (3rd) order streams, based on USGS mapping at 1:100,000 scale.

(43~~2~~) "TOTAL RECOVERABLE METALS" means that portion of a water and suspended sediment sample measured by the total recoverable analytical procedure described in "Methods for Chemical Analysis of Water and Wastes," U.S. Environmental Protection Agency, March, 1979, or its equivalent.

(44~~3~~) "TRIBUTARY WETLANDS" means wetlands that are the head-waters of surface waters or wetlands within the floodplain that are hydrologically connected to surface waters via either surface or groundwater flows. The hydrologic connection may be intermittent or seasonal, but must be of sufficient extent and duration to normally reoccur annually. Tributary wetlands do not include constructed or created wetlands.

(45) "USE ATTAINABILITY ANALYSIS" means an assessment of the factors affecting the attainment of aquatic life uses or other beneficial uses, which may include physical, chemical, biological, and economic factors.

(46~~5~~) "USES" see Beneficial Uses.

(47~~6~~) "WARM WATER BIOTA" means aquatic life normally found in waters where the summer weekly average temperature frequently exceeds 20 °-C.

(48~~7~~) "WATER QUALITY-BASED DESIGNATION" means a designation adopted by the Commission for specific state surface waters pursuant to section 31.8(2), to identify which level of water quality protection such waters will receive under the Antidegradation Rule in section 31.8(1). Such designations are adopted pursuant to the Commission's authority to classify state waters, as set forth in section 25-8-203, C.R.S., and the procedural requirements for classifying state waters shall be applied in adopting such designations.

(49~~8~~) "WATER EFFECT RATIO" means a ratio that is computed as a specific pollutant's acute or chronic toxicity value measured in water from the site covered by a standard, divided by the respective acute or chronic toxicity value in laboratory dilution water, as more specifically defined in 40 C.F.R. subsection 131.36(c) (1993).

(5049) "WATER QUALITY STANDARD" see Standard.

(510) "WEEKLY AVERAGE TEMPERATURE (WAT)" means the average of daily average temperatures over a seven-day consecutive period, with a minimum of three data points spaced equally through each day. For lakes and reservoirs, the WAT is assumed to be equivalent to the average temperature of the mixed layer. The average temperature of the mixed layer is determined from a vertical profile of equally-spaced temperature measurements, separated by not more than one meter.

(521) "WETLANDS" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

31.6 PROCESS FOR ASSIGNING CLASSIFICATIONS

The Commission is responsible for classifying state waters as set forth in sections 25-8-202(1)(a), and 25-8-203, C.R.S. All state surface waters may be classified in one or more of the use classifications as set forth in section 31.13.

Waters shall be classified for the present beneficial uses of the water, or the beneficial uses that may be reasonably expected in the future for which the water is suitable in its present condition or the beneficial uses for which it is to become suitable as a goal. The assignment of one or more classifications to a portion of the state surface waters is based upon its current suitability for the designated uses or goals for future uses. Where the use classification is based upon a future use for which the waters are to become suitable, the numeric standards assigned to such waters to protect the use classification may require a temporary modification to the underlying numeric standard and an implementation plan for eliminating the temporary modification.

When assigning classifications to waters of a given area, the Commission will consider the goals, objectives, and requirements of federal and state statutes and regulations, recommendations of the regional wastewater management plans (208 plans); 208 plans of adjoining regions; testimony, comments, and documents presented at public hearings on the issue; and other relevant information.

(1) Considerations in Assigning Classifications

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(2) Upgrading and Downgrading

(a) Upgrading

The state shall maintain those water use classifications which are currently being attained. Where existing classifications specify fewer designated water uses than those which are presently being attained, the Commission shall upgrade the designated classification to reflect the uses actually being attained.

(b) Downgrading

At a minimum, the state shall maintain those water use classifications currently designated, unless it can be demonstrated that the existing classification is not presently being attained and cannot be attained within a twenty (20) year time period. Nonattainability must be due to at least one or more of the following conditions:

(i) Naturally occurring pollutant concentrations prevent the attainment of the use within a twenty (20) year period; or

(ii) 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

(iii) Human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied within a twenty (20) year period or would cause more environmental damage to correct than to leave in place; or

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

(v) Physical conditions related to the natural features of the water-body, such as the 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

(vi) Controls more stringent than those required by section 301(b) and 306 of the federal Act would result in substantial and widespread economic and social impact; or

(vii) Agricultural practices which are considered satisfactory for the locality. It must be demonstrated that these agricultural practices preclude the present classifications. Satisfactory practices will be approved by the Commission based on evidence from areawide 208 agencies, soil conservation districts, agricultural extension services and other public input.

An additional reason for revising classifications will be where previous classifications had no basis in fact and did not reflect actual beneficial uses. Such corrections to classifications shall not be considered downgrading. See e.g., section 31.6(3)(b) regarding hearings pursuant to section 25-8-207, C.R.S.

(3) Procedures for Assigning or Changing Classifications

(a) General

(i) Assigning or changing a classification shall be accomplished by rule after a rulemaking hearing. Rulemaking hearings to consider a classification will be conducted according to the Procedural Regulations of the Commission. At a minimum, the Commission shall review classifications once every three years. Any interested person have shall have the right to petition the Commission to assign or change a stream classification. Such petition shall be open to the public inspection. Except as provided below, pursuant to section 24-4-103(7), C.R.S., action on such petition shall be within the discretion of the Commission. The Commission may also decide to consider a classification on its own motion.

(ii) In making a decision regarding a proposed classification, the Commission will consider the principles set forth in this regulation. The decision will be made by the Commission applying its expertise after analyzing the evidence presented at public hearing and considering the requirements of law, its own policies, and all other matters deemed pertinent in the discretion of the Commission.

(iii) Where the classifications of a water-body segment do not include an aquatic life classification or recreation class E, P, or U, as a part of the triennial review of the segment the Division shall review any prior use attainability analyses or other basis for omission of one or more of the above classified uses. If the justification for the omission is determined not to be consistent with accepted use attainability procedures, the Division or other party, if any, advocating the omission shall perform a supplemental analysis to

provide a basis for a Commission determination whether such uses are attainable. When the Commission wishes to remove an aquatic life class 1 or 2 or recreation class E, P, or U classification, the Division shall conduct or the Commission shall require the petitioner to conduct, in consultation with the Division, a use attainability analysis to justify the proposed change.

(b) Section 25-8-207

(i) Procedural requirements relating to reviews pursuant to section 25-8-207, C.R.S., are set forth in the Procedural Regulations, Regulation No. 21, 5 CCR 1002-21.

(ii) The Commission shall, upon petition, or upon its own motion, review existing stream standards, classifications or water quality designations in subsection (iii) below. The Commission may revise stream standards, classifications and designations pursuant to the criteria listed in subsection (iv) below.

(iii) The Commission shall make a finding of inconsistency, taking into account sections 25-8-102 and 25-8-104, C.R.S., if a water quality designation does not conform with the provisions of section 25-8-209 or if the existing use classification(s) or water quality standards:

(A) are more stringent than is necessary to protect fish life, shellfish life, and wildlife in water-body segments which are reasonably capable of sustaining such fish life, shellfish life, and wildlife from the standpoint of physical, streambed, flow, habitat, climatic and other pertinent characteristics. Where such characteristics are adequate to support the use, use classifications shall be adopted or retained to protect aquatic life which constitutes a significant source of food supply for the fish, shellfish, or wildlife that is the basis for the classified use; or

(B) were adopted based upon material assumptions that were in error or no longer apply.

(iv) As a result of any hearing held pursuant to this section, the Commission may revise or change use classifications, water quality standard(s) or water quality designations in accordance with the criteria contained in the Act or whenever necessary to insure compliance with the other provisions of this regulation.

(v) Where the Commission determines that an inconsistency exists, it shall declare the inconsistent classification, standards or designations void ab initio and shall simultaneously establish appropriate classifications, standards or designations.

(4) Segmentation

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31.7 PROCESS FOR ASSIGNING STANDARDS AND GRANTING, EXTENDING, OR REMOVING TEMPORARY MODIFICATIONS AND VARIANCES

Overview: Assigning or changing a standard or granting, removing before its expiration, or extending a temporary modification or variance shall be accomplished by a rule after a rulemaking hearing. The procedures for taking such action shall be the same as the procedures for assigning or changing classifications. See section 31.6(3)(a)(i).

(1) Assigning Standards

The Commission is responsible for promulgating water quality standards as set forth in section 25-8-204, C.R.S. Standards may be narrative and/or numeric and include the following:

(a) Basic Standards

The basic standards in section 31.11 shall apply to all state surface waters at the effective date of the regulation.

(b) Numeric Standards

A numeric standard may be assigned by the Commission either to apply on a statewide basis or to specific state surface waters. A numeric standard will be assigned by the Commission when it is presented with evidence that a particular numeric level for a parameter is the suitable limit for protecting the classified use. A numeric standard consists of a numeric level and may include a description as to how that numeric level is to be measured. Numeric standards will include appropriate averaging periods and appropriate frequencies of allowed excursions. A numeric standard may be exceeded due to temporary natural conditions such as unusual precipitation patterns, spring runoff or drought. Such uncontrollable conditions are not cause for changing the numeric standard.

A temporary modification of a numeric standard may be granted by the Commission if the numeric standard is not being met at the present time, but such numeric standard is necessary to allow the full attainment of the classified use.

Numeric standards will be assigned based on the evidence presented at the classification and numeric-standard-setting hearings. Numeric standards may not necessarily be assigned for all constituents listed in the tables. In making this determination, the Commission will consider the likelihood of such constituents being present in the waters in question naturally or due to point or nonpoint sources, and shall consider the significance of the constituents with respect to protection of the classified uses. Entities having specific water quality data for the waters being classified, such as 208 agencies, local municipalities and industries, and citizens' groups, the Water Quality Control Division, state and federal agencies, environmental organizations, and other interested persons are encouraged to present such information.

The Commission may use any of the following approaches to establish site-specific numeric standards, as it determines appropriate with respect to specific state surface waters. Existing site-specific standards shall remain in effect until superseded by revised standards promulgated pursuant to this section:

(i) Table Value Standards

The Commission may apply the numeric levels set forth in tables I, II, and III as site-specific standards when those levels are determined to be appropriate to protect the applicable classified uses, and the available site-specific information does not indicate that one of the following alternative approaches to numeric standards would be more appropriate. Acute and chronic standards may be adopted. Numeric standards may not necessarily be assigned for all constituents listed in the tables. Standards for metals may be established by site-specific adoption of the hardness-dependent equations in table III, instead of single-value numeric standards. The numeric levels for various parameters in tables I, II, and III, are levels determined by the Commission after careful analysis of all available information and are generally considered to protect the beneficial use classifications. They are intended to guide the Commission and others at the use classification and numeric-standard-setting hearings.

(ii) Ambient Quality-Based Standards

(A) Where ambient water quality levels are worse than specific numeric levels contained in tables I, II, and III, but are determined adequate to protect the highest attainable uses, the Commission may adopt one of the two following types of site-specific ambient quality-based standards:

(I) Feasibility-based Ambient Standard: Where water quality can be improved, but not to the level required by the current numeric standard, a feasibility-based numeric ambient standard may be adopted based on available representative data.

(II) Natural or Irreversible Ambient Standard: Where no improvement is feasible, or sources and causes are natural, a site-specific numeric standard may be adopted at existing quality based on available representative data. Site-specific acute standards for parameters in Table III shall be based on the 95th percentile value of the available representative data.

(B) Ambient quality-based standards are authorized only where a comprehensive analysis and review is conducted:

(I) Which identifies the sources and causes of the elevated levels and characterizes existing conditions, including spatial and temporal variation;

(II) Where sources and causes are not natural, a comprehensive alternatives analysis identifies the improved water quality conditions (if any) that could result from feasible pollution control alternatives;

(III) Which includes a rationale for either retaining or revising the current use classification(s); and

(IV) Which characterizes the highest attainable use.

(iii) Site-Specific- Criteria-Based Standards

For state surface waters where an indicator species procedure (water effects ratio), recalculation procedure, use attainability analysis or other site-specific analysis has been completed in accordance with section 31.16(2)(b), or in accordance with comparable procedures deemed acceptable by the Commission, the Commission may adopt site-specific standards as determined to be appropriate by the site-specific study results. For segments assigned aquatic life classifications, where factors other than water quality substantially limit the diversity and abundance of species present, the Commission may adopt site-specific acute or chronic standards as determined to be appropriate based upon available information regarding the waters and the habitat. Recurrence intervals for site-specific-criteria-based standards may be determined on a site-specific basis.

Site-specific- criteria-based standards and ambient quality-based standards for metals shall be based on dissolved metals whenever the Commission determines that the evidence presented is adequate to justify such standards. Site-specific standards for metals in effect prior to July 31, 1988 were generally based on total recoverable metals. Those standards shall remain in effect until superseded by revised standards promulgated pursuant to this section.

(iv) Standards For Surface Waters In Wetlands

(A) Tributary wetlands to which the interim classifications referenced in section 31.13(1)(e)(iv) apply, shall be subject to the following interim standard:

(1) Until such time as the Commission adopts site-specific standards for the tributary wetland, water quality in the wetland shall be maintained for each parameter at whichever of the following levels is less restrictive:

(a) ambient quality, or

(b) that quality which meets the numeric standards (except for numeric standards for pH, dissolved oxygen, and any standard established for the protection of a domestic water supply use) of the tributaries of the surface water segment to which the wetland is most directly hydrologically connected. Where the applicable numeric standard is based on section 31.16, table III, of this regulation, the numeric standard applicable to the wetland may be implemented taking into account the water effect ratio of the pollutant.

(2) Ambient quality shall be determined in accordance with section 31.7(1)(b)(ii) and shall take into account the location, sampling date, and quality of all available data. Ambient quality shall be determined as of the time the first regulatory action is undertaken which requires the identification of water quality standards for wetlands. If available information is not adequate to otherwise determine or estimate ambient quality, the interim standard set forth in section 31.7(1) (b) (iv) (A) (1) (b) shall apply.

(B) Wetlands for which the Commission has adopted a site-specific "wetlands" classification described in section 31.13(1)(e)(v), shall be subject to numeric standards and designations adopted by the Commission. The Commission shall adopt any numeric standards and designations determined to be appropriate in view of the functions and values to be protected for the wetlands in question.

(C) Created wetlands~~,~~ shall be subject only to the narrative standards set forth in section 31.11, unless the Commission has adopted the wetlands classification and appropriate numeric standards. All created wetlands will have a use - protected designation unless determined otherwise as a result of a site-specific hearing.

(D) Compensatory wetlands shall be subject to the standards of the segment in which they are located, unless the Commission adopts a wetlands classification and appropriate numeric standards.

(E) All other wetlands which are state waters shall be subject only to the narrative standards set forth in section 31.11, unless the Commission has adopted the wetlands classification and appropriate numeric standards.

(F) The issuance and use of site-specific or individual permits under section 404 of the Clean Water Act, is not precluded by the provisions of sections 31.7, 31.11 or 31.13, except as provided in the 401 certification process under section 25-8-302, C.R.S.

(G) Wetlands water quality standards and classifications shall not be interpreted or applied in a manner that is inconsistent with sections 25-8-102(5) and 25-8-104, C.R.S.

(c) Site-Specific Narrative Standards

(i) Narrative standards may be assigned by the Commission to apply on a specific state surface water where numeric criteria are not required under federal law. Narrative standards will be assigned based on the evidence presented at the classification and numeric-standards-setting hearings, and must protect the classified uses.

(ii) The Commission may adopt a site-specific narrative standard where water quality currently is degraded as a result of historical mining activities and improvement is likely within 20 years, if it determines that such a standard is the most appropriate option to protect existing uses and to promote water quality improvement efforts for the segment(s) in question due to uncertainty regarding what water quality is attainable. Unless the Commission determines that a different approach is appropriate on a site-specific basis, it shall use a statement that the standard(s) for the pollutant(s) in question shall be the chemical concentrations, biological conditions, and/or physical conditions identified by a structured scientific use attainability analysis, or table value standards, if the use attainability analysis is not completed and submitted by a specified date and approved by the Commission. Generally, a numerical temporary modification based on existing ambient quality will also be adopted for the segment(s) and pollutant(s) in question.

(2) Considerations in Assigning Standards

*****

(3) Granting, Extending, and Removing Temporary Modifications to Numeric Standards

Where non-attainment of underlying standards has been demonstrated or predicted, the Commission may grant a temporary modification to a numeric standard upon a showing that the conditions in subsection (a), below, exist, provided that adequate supporting information described in subsection (b), below, are submitted. The presence of a temporary modification will be indicated in the appropriate water quality standards basin regulation by ~~adding the words "Temporary Modification" in the Temporary Modifications and Qualifiers column, and~~ listing the parameter, the operative value, ~~,~~ and the expiration date. A temporary modification may be granted to an entire stream or water~~-~~body or to any portion thereof. It may be granted at the time a numeric standard is assigned or at any later time. When the temporary modification expires or is removed by the Commission, the underlying numeric standard will be in full effect. In every case, the modification to the numeric standard shall be temporary. All temporary modifications must be re~~-~~evaluat~~examin~~ed not less than once every three (3) years.

In general, requests for a temporary modification are preferred over a more permanent downgrading of a present classification where it appears that the conditions causing the lower water quality might be temporary within a twenty (20) year time frame. The adoption of a temporary modification recognizes current conditions while providing an opportunity to resolve the uncertainty. ~~Retaining a classification higher than the present usage will serve as a reminder that the conditions are correctable and may increase the priority for funding to attain the classified use.~~

For the term of a temporary modification, ~~R~~regional wastewater management plans (208 plans) and plan updates, ~~discharge permits,~~ wasteload allocations, and planning, design, and construction of new, enlarged, or improved facilities and ~~,~~management practices~~, and other water quality controls and actions~~ shall be geared toward fully attaining the classified use and underlying numeric standard and assist in eliminating the need for the temporary modification. Discharge permits shall be implemented such that, at

a minimum, status quo is maintained, and effluent quality is maintained at the best level reasonably achievable~~,~~ in a manner consistent with the provisions of subsection 31.9(4).

The subsections below provide requirements for the adoption, extension, review, and implementation of temporary modifications.

(a) Conditions Justifying a Temporary Modification

The Commission may grant a temporary modification of a numeric water quality standard for a waterbody where all of the following apply ~~if~~:

(i) Non-attainment of underlying standards has been demonstrated or predicted

(ii) Such non-attainment co-occurs spatially and temporally with an existing permitted discharge that has a demonstrated or predicted problem complying with a water quality-based effluent limit with which:

(A) the discharge must currently comply, or~~a demonstrated or predicted water quality-based effluent limit compliance problem, and~~

(B) the discharge must comply within the next five years, or

(C) the discharge must comply in more than five years, and evidence shows significant investment in facility infrastructure would be required before the uncertainty is resolved.

(iii) At least one of the following is shown to exist:

(A) there is significant uncertainty regarding the water quality standard necessary to protect current and/or future uses.

(B) there is significant uncertainty regarding the extent to which existing quality is the result of natural or irreversible human-induced conditions.

(b) Adequate Supporting Information for Original Adoption of a Temporary Modification~~:~~

Adequate supporting information must be submitted including all of the following:

(i) Characterization of the waterbody and effluent including:

(A) ~~a justification for the interim narrative or numeric value, wherever possible~~ raw data describing the waterbody and effluent and characterization of the status quo, or, absent adequate data, a plan to collect data representative of quality as close in time as practicable to the temporary modification adoption, and~~and ambient quality, a plan for eliminating the need for the temporary modification, and a justification for the proposed expiration date.~~

(B) documentation of waterbody non-attainment and an effluent compliance problem, as required in section 31.7(3)(a).

(ii) Documentation of uncertainty pertaining to the underlying water quality standard for the waterbody and/or the extent to which existing quality is the result of natural or irreversible human-induced conditions.

(iii) A plan for resolving the uncertainty and eliminating the need for the temporary modification that includes, for each type of uncertainty, a detailed, site-specific approach expected to result in sufficient information to resolve the uncertainty within the term of the temporary modification. The plan shall also include a schedule of timelines for key deliverables, including, but not limited to, annual reporting on progress to the Division. Additionally, the plan shall include activities to ensure that, at a minimum, status quo is maintained, and effluent quality is maintained at the best level reasonably achievable, in a manner consistent with the provisions of subsection 31.9(4). Implementation of nonpoint source strategies for improving waterbody quality can also be considered, as appropriate.

(iv) A justification for the narrative or numeric operative value, as defined in section 31.7(3)(d).

(v) A justification for the proposed expiration date, consistent with section 31.7(3)(e).

(c) Adequate Supporting Information for Extension of a Temporary Modification~~:Eliminating the Need for A Temporary Modification~~

In addition to the information required for adoption of an original temporary modification, a proposed extension of a temporary modification shall be supported by:

(i) Justification for why the time allotted under the previous temporary modification term was not sufficient to resolve the uncertainty and eliminate the need for the temporary modification, and

(ii) Demonstration that status quo has been maintained. If waterbody quality status quo is shown to have been degraded, justification that the degradation was not due to the effluent in question shall also be provided.

~~Regional wastewater management plans (208 plans) and plan updates, discharge permits, wasteload allocations, planning, design, and construction of new enlarged, or improved facilities, management practices, and other water quality controls and actions shall be geared toward fully attaining the classified use and underlying numeric standard and assist in eliminating the need for the temporary modification, in a manner consistent with the provisions of subsection 31.9.~~

(d) Operative Value ~~During~~during the ~~Time~~ Term of ~~the~~ a Temporary Modification

In order to ensure that, at a minimum, status quo is maintained~~, protect existing uses~~, the operative value during the term~~time~~ of the temporary modification will be set to represent the current condition of the waterbody and effluent by either:

(i) N~~a n~~umeric value~~s~~ representing the ~~existing quality at the time of adoption~~status quo, or

(ii) A~~a~~ narrative "current condition" that ~~assures existing uses are protected and that~~represents the status quo ~~is preserved during the term of the temporary modification~~; the numeric values representing status quo shall be documented in the Statement of Basis and Purpose.

(e) ~~Duration~~ Term and Review of a Temporary Modification

(i) When a temporary modification is granted, the ~~duration~~ length of term of the temporary modification will be set by the Commission. The term granted shall be the shortest possible to resolve the uncertainty. The ~~duration~~ term of a temporary modification shall

be determined on a case-by-~~ ~~case basis, based upon all relevant factors, including, but not limited to:

(A) the degree of uncertainty pertaining to the justification regarding the need for and length of the original temporary modification or extension, and

(B) how soon resolving the issues that necessitated adoption of the temporary modification is deemed feasible.

(ii) In making a decision as to whether a temporary modification should be removed or extended, the Commission will consider all relevant factors, including, but not limited to, whether:

(A) the temporary modification still qualifies under 31.7(3)(a),

(B) there is an ~~existence of an implementation~~adequate plan to resolve uncertainty for eliminating the need for the temporary modification and substantial progress has been made under the plan,~~, the progress being made in trying to implement such a plan,~~

(C) status quo has been maintained, or if status quo in the waterbody, alone, has not been maintained, whether degradation of the waterbody quality status quo is due to factors other than the effluent in question, and

(D) there has been no, or minimal,~~the~~ impact ~~of~~ from the temporary modification on the uses of the stream in the area of the temporary modification and upstream and downstream of that area.~~, and all other relevant factors.~~

A temporary modification shall not be extended if the proponent did not substantially comply with all conditions of the temporary modification, including, but not limited to, submission of annual progress updates and supporting documentation.

(f) Frequency of Commission Review

(i) The Commission will hold, at a minimum, a~~n annual~~ biennial (i.e., every other year) public rulemaking hearing to review all temporary modifications ~~which expire within approximately two years of the hearing date~~. As a result of the hearing, the Commission may:

~~(i)~~(A) Delete the temporary modification and allow the existing underlying standards to go into effect;

~~(ii)~~(B) Delete the temporary modification and adopt a revised underlying standard;

~~(iii)~~(C) Extend the expiration date of the current temporary modification, with or without a revised underlying standard; or

~~(iv)~~(D) Adopt a revised temporary modification with an appropriate expiration date.

(ii) Annual progress updates must be submitted to the Division. As a result of the review of the annual progress updates submitted during years with no scheduled formal public rulemaking hearing, the Division may propose that the Commission schedule a rulemaking hearing prior to the regularly scheduled biennial hearing to review and consider revisions, deletions, or extensions of temporary modifications.

(4) Granting, Extending and Removing Variances to ~~Numeric~~ Standards

A variance to a water quality standard may be granted by the ~~Water Quality Control~~ Commission to establish a temporary water quality standard that represents the highest feasible degree of protection of a classified use when the criteria ~~of~~ in this subsection are met. Variances approved by the Commission shall be incorporated into the relevant standard tables, and ~~T~~the presence of the variance will be indicated in the appropriate water quality standards basin regulation. When the variance expires or is removed by the Commission, the underlying standard will be in full effect. In every case, the variance to the standard shall be temporary and must be reevaluated ~~examined~~ during each basin triennial review for the segment, unless the Commission requires a more frequent review when adopting the variance. ~~not less than once every three years.~~

(a) Criteria for Granting a Discharger-Specific Variance

Variances to ~~numeric~~ standards are authorized only where a comprehensive alternatives analysis demonstrates that there are no feasible alternatives that would allow for the regulated activity to proceed without a discharge that exceeds water quality-based effluent limits. In addition, an applicant for a variance must satisfy both of the following criteria.

(i) Tests to Determine the Need for a Variance

(A) Limits of Technology: Demonstration that attaining the water quality standard is not feasible because, as applied to the point source discharge, pollutant removal techniques are not available or it is technologically infeasible to meet the standard;

(B) Economics: Demonstration that attaining the water quality standard is not feasible because meeting the standard, as applied to the point source discharge, will cause substantial and widespread adverse social and economic impacts in the area where the discharge is located. Considerations include such factors as the cost and affordability of pollutant removal techniques; or

(C) Other Consequences: 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.

(ii) Evaluation of~~Demonstration that the conditions forgranting a~~ the use of other regulatory tools, including compliance schedules, use attainability analyses to determine whether a change in uses or standards could fully protect actual and potential classified uses on the segment, and temporary modifications, and an explanation for how these other tools are not appropriate or ~~are notmet; or, if those conditions are met, determination by the Commission, after considering the site-specific circ~~ ~~umstances,~~ would not result in water quality-based effluent limits that ~~granting a variance under this subsection is preferable as a matter of policy~~ are feasible for the discharger to achieve within the required timeframe.

(b) Selection of Alternative Effluent Limits for Discharger-Specific Variances

~~An applicant for~~ The Commission's decision on whether to adopt a variance shall ~~submit~~ be based upon an evaluation of a comprehensive alternatives analysis ~~regarding pollutant removal techniques. Variances approved by the Commission shall be incorporated into the relevant standards tables based upon an evaluation of the alternatives analysis~~ and consideration of the impact of the variance on the uses of the water body ~~in~~ at the ~~area of the variance~~ discharge location and downstream of ~~that area.~~ the discharge.

(i) ~~A v~~Variances adopted by the Commission for a specific discharger shall include~~ will be expressed as a temporary hybrid standard, which represents~~ alternative effluent limits (AELs) that:

(A) represent the highest ~~degree of protection of the classified use that is feasible within 20 years,~~ attainable condition by requiring the highest degree of protection of the classified use that is feasible for the specific discharger named in the variance, and

(B) reflects the greatest pollutant reduction achievable throughout the term of the variance while taking into consideration the factors in subsection 31.7(4)(a), as appropriate, and~~, and must maintain and protect existing uses in a manner consistent with federal requirements~~

(C) do not result in any lowering of the currently attained ambient water quality, unless temporarily necessary for restoration activities.

(ii) To ensure all feasible water quality improvements are implemented throughout the term of the variance, the Commission shall adopt one of the following:

(A) An effluent-based AEL, expressed as an effluent concentration, load, pollutant percent removal, or other quantifiable expression of effluent quality and quantity. At its discretion, the Commission may additionally require the adoption and implementation of a Pollutant Minimization Program. ~~(i) The first number is the underlying standard previously adopted by the Commission for the segment and represents the long-term goal for the waterbody. The first number will be used~~

(B) An action-based AEL with a quantifiable expression of the specific pollution control requirements to be completed by the discharger and the adoption and implementation of a Pollutant Minimization Program. An action-based AEL may only be justified when no additional feasible pollution control technology can be identified which could achieve a predictable, quantitative improvement in effluent quality.

(iii) The Commission will adopt a minimum of two AELs:

(A) an initial AEL that applies from the onset of the variance to ensure the discharge does not contribute to any lowering of currently attained ambient water quality, and

(B) a final AEL which represents the highest attainable condition that is feasible to achieve during the term of the variance.

~~(i)~~ The underlying standard is the applicable standard for assessing attainment for ~~the~~ a waterbody and the development of effluent limitations for all other dischargers to the waterbody segment not named in the variance.

~~(ii)~~(iv) ~~(ii) The second number (or narrative condition)~~ The ~~is the Commission's determination of the effluentconcentration with the highest degree of protection of the classified use that is feasible for~~ the ~~specific discharger named in the variance.~~

~~(iii) Control requirements, such as discharge permit effluent limitations, shall be established either by calculating~~ using the first number as the ambient water quality~~target, provided that no effluentlimitation shall require an "end-of-pipe" discharge level more restrictive than thesecond number during the term of the variance, for the named discharger.~~

~~(c) Duration of a Variance~~

~~When a variance is granted, the duration of the variance will be set by the Commission. The duration of a variance shall be determined on a case-by-case basis, based upon all relevant factors, including the potential for achieving more protective effluent levels.~~

~~(d) Considerations for Extending a Variance~~

~~A variance shall not be extended if the permittee did not submit the reports required under section 31.9(5) and substantially comply with all other conditions of the variance.~~

(c~~5~~) Conditions on Discharger-Specific Variances

A discharger-~~-~~specific variance applies only to the point source discharge ~~specified in the variance~~ and ~~to the~~ pollutant(s) specified in the variance. ~~A~~ In all permit actions issued to implement a discharger-specific variance ~~shall require~~:

~~(a) For existing discharges, compliance with an initial effluent limitation which, at the time the variance is approved, at a minimum~~ (i) At the time the variance is implemented in the permit, compliance with the initial AEL will be required. Where necessary and appropriate, the permit may include a compliance schedule for the achievement of any interim and final AELs adopted by the Commission, which may include interim milestones towards achieving the applicable AEL.

(~~c~~ii) Ongoing investigation of treatment technologies, process changes, wastewater reuse, or other controls that may result in improvement in effluent quality, and~~submission of~~ reports ~~on the~~ regarding such investigations should be submitted with adequate time to allow for consideration of the information during the scheduled review of the variance by the Commission.

(iii~~d~~) Any limitations and requirements necessary to implement ~~Conditions in the permit as necessary to administer~~ the variance shall be included as enforceable permit conditions, including~~,~~ but not limited to~~,~~ additional monitoring requirements.

(iv) The discharge permit effluent limitations shall be established using the least stringent of the water quality-based effluent limits based upon the underlying standard or the AEL(s).

(d) Term and Review of a Discharger-Specific Variance

The Commission will set the term of a variance, on a case-by-case basis, to be only as long as necessary to achieve the highest attainable condition, including the time needed to plan, implement, or evaluate the outcome of the activities. In every case, the variance to the standard shall be temporary and must be reevaluated at a minimum during each basin triennial review for the segment. The specific timing of reviews shall be specified in the variance and comply with all requirements in this section. If the term of the variance is greater than five years, the variance must be reviewed at least every five years after EPA's approval.

The Commission will conduct a reevaluation and submit the results of its reevaluation to EPA within 30 days of the completion of the reevaluation process. If the Commission does not fulfill this requirement, the DSV will no longer be the applicable water quality standard for purposes of the Clean Water Act.

If, as a result of the reevaluation process, the Commission determines that it is possible to achieve a more stringent AEL or highest attainable condition than was originally required by the variance, then the Commission will revise the variance to incorporate the more stringent AEL in

that hearing and submit the reevaluation results to EPA. Similarly, if the Commission determines a less stringent AEL is necessary, a revised variance must be submitted to EPA.

When the variance expires, a subsequent variance shall only be adopted if the permittee completed the ongoing investigation of pollution control alternatives and substantially complied with all other conditions of the variance.

31.8 ANTIDEGRADATION

(1) Antidegradation Rule

(a) The highest level of water quality protection applies to certain waters that constitute an outstanding state or national resource. These waters, which are those designated outstanding waters pursuant to section 31.8(2)(a), shall be maintained and protected at their existing quality. Short-term degradation of existing quality is allowed for activities that result in long-term ecological or water quality benefit or clear public interest.

(b) An intermediate level of water quality protection applies to waters that have not been designated outstanding waters or use -protected waters. These waters shall be maintained and protected at their existing quality unless it is determined that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the waters are located. For these waters, no degradation is allowed unless deemed appropriate following an antidegradation review in accordance with section 31.8(3), except as specified in (i) and (ii) below. Further, all applicable statutory and regulatory requirements for point sources and, if applicable control regulations have been adopted, all cost-effective and reasonable best management practices for nonpoint sources shall be met.

(i) For dissolved iron, dissolved manganese, and sulfate, concentrations may reach the applicable water supply standard without an antidegradation review provided degradation for Aquatic Life based standards is not significant.

(ii) For all other pollutants, no degradation is allowed, unless deemed appropriate following an antidegradation review in accordance with section 31.8(3).

(c) At a minimum, for all state surface waters existing classified uses and the level of water quality necessary to protect such uses shall be maintained and protected. No further water quality degradation is allowable which would interfere with or become injurious to these uses. The classified uses shall be deemed protected if the narrative and numerical standards are not exceeded.

The antidegradation review requirements in section 31.8(3) are not applicable to waters designated use -protected pursuant to section 31.8(2)(b). For these waters, only the protection specified in this subparagraph applies.

(d) Water quality designations and reviewable water provisions shall not be utilized in a manner that is contrary to the provisions of sections 25-8-102 and 25-8-104, C.R.S.

(2) Water Quality-Based Designations

Waters which satisfy the criteria in subparagraph (a) below may be designated by the Commission as "outstanding waters". Waters which satisfy the criteria in subparagraph (b) below may be designated "use -protected." Waters not satisfying either set of criteria will remain undesignated, and will be subject to the antidegradation review provisions set forth in section 31.8(3), below.

(a) Outstanding Waters Designation

Waters may be designated outstanding waters where the Commission makes all of the following three determinations:

(i) The existing quality for each of the following parameters is equal to or better than that specified in tables I, II, and III for the protection of aquatic life class 1, recreation class P and (for nitrate) domestic water supply uses:

Table I: dissolved oxygen, pH, *E. coli*

Table II: chronic ammonia, nitrate

Table III: chronic cadmium, chronic copper, chronic lead, chronic manganese, chronic selenium, chronic silver, and chronic zinc

The determination of existing quality shall be based on adequate representative data, from samples taken within the segment in question. Data must be available for each of the 12 parameters listed; provided, that if *E. coli* samples from within the segment are infeasible due to its location, and a sanitary survey demonstrates that there are no human sources present that are likely to impact quality in the segment in question, *E. coli* data will not be required. "Existing quality" shall be the 85th percentile of the data for ammonia, nitrate, and dissolved metals, the 50th percentile for total recoverable metals, the 15th percentile for dissolved oxygen, the geometric mean for *E. coli*, and the range between the 15th and 85th percentiles for pH.

In addition, the foregoing notwithstanding, this test shall not be considered to be met if the Commission determines that, due to the presence of substantial natural or irreversible human-induced pollution for parameters other than those listed above, the quality of the waters in question should not be considered better than necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water.

(ii) The waters constitute an outstanding natural resource, based on the following:

(A) The waters are a significant attribute of a State Gold Medal Trout Fishery, a National Park, National Monument, National Wildlife Refuge, or a designated Wilderness Area, or are part of a designated wild river under the Federal Wild and Scenic Rivers Act; or

(B) The Commission determines that the waters have exceptional recreational or ecological significance, and have not been modified by human activities in a manner that substantially detracts from their value as a natural resource.

(iii) The water requires protection in addition to that provided by the combination of water quality classifications and standards and the protection afforded reviewable water under section 31.8(3).

(b) Use- Protected Designation

These are waters that the Commission has determined do not warrant the special protection provided by the outstanding waters designation or the antidegradation review process.

(i) Waters shall be designated by the Commission use- protected if any of the criteria below are met, except that the Commission may determine that those waters with exceptional recreational or ecological significance should be undesignated, and deserving of the protection afforded by the antidegradation review provisions of section 31.8(3):

(A) The use classifications of the waters include aquatic life warm water class 2, except as provided in subsection (iii) below;

(B) The existing quality for at least three of the following parameters is worse than that specified in tables I, II and III for the protection of aquatic life class 1, recreation class P and (for nitrate) domestic water supply uses:

Table I: dissolved oxygen, pH, *E. coli*

Table II: chronic ammonia, nitrate

Table III: chronic cadmium, chronic copper, chronic lead, chronic manganese, chronic selenium, chronic silver, and chronic zinc

The determination of existing quality shall be based on adequate representative data, from samples taken within the segment in question. Data must be available for each of the 12 parameters listed; provided, that if *E. coli* samples from within the segment are infeasible due to its location, and a sanitary survey demonstrates that there are no human sources present that are likely to impact quality in the segment in question, *E. coli* data will not be required. "Existing quality" shall be as defined in 31.5.~~; or~~

~~(C) The water body was an effluent-dominated or effluent-dependent stream during the period 2000-2009, except that the Commission may determine that the water body should be undesignated, and subject to the protection provided by the antidegradation review process, based on the water body's public resource value and ecological significance. (This provision shall be repealed effective 12/31/2019)~~

(ii) In addition, waters may be designated use protected even though none of the preceding criteria apply if the Commission determines that due to the presence of substantial natural or irreversible human induced pollution for parameters other than those listed in section 31.8(2)(b)(i)(B) the quality of the waters in question should not be considered better than necessary to support aquatic life class 1 and~~/or~~ recreation class P uses. In making such a determination about a use~~-~~ protected designation, the Commission may take into account evidence of exceedances of one or more of the parameters listed in section 31.8(2)(b)(i)(B). (This provision shall be repealed effective 12/31/2031)

(iii) Waters classified as aquatic life warm water class 2 shall not be designated use ~~-~~ protected solely on the basis of such classification if:

(A) There is adequate representative data available from samples taken within the segment in question for each of the 12 parameters listed in subsection 31.8(2)(b)(i)(B), above, and that data shows that the existing quality for at least 10 of the 12 parameters is equal to or better than that specified in tables I, II and III for the protection of aquatic life class 1, recreation class P and (for nitrate) domestic water supply uses; and

(B) The segment in question is not listed, and does not qualify for listing, for two or more pollutants on Colorado's Section 303(d) List of Water-Quality-Limited Segments Requiring Total Maximum Daily Loads, for an exceedance of chronic or "30-day" numeric standards.

(3) Antidegradation Review Process

(a) Applicability

These antidegradation review procedures shall apply to the review of regulated activities with new or increased water quality impacts that may degrade the quality of state surface waters that have not been designated as outstanding waters or use -protected waters, including waters previously designated as high quality class 2. These waters are referred to below as "reviewable waters." "Regulated activities" means any activities which require a discharge permit or water quality certification under federal or state law, or which are subject to state control regulations unless the Commission has specified in the control regulation that the antidegradation review process is not applicable. Where possible, the antidegradation review should be coordinated or consolidated with the review processes of other agencies concerning a proposed activity in an effort to minimize costs and delays for such activities.

(b) Division and Commission Roles

For regulated activities, the significance determination set forth in section 31.8(3)(c) and the determination whether degradation is necessary to accommodate important economic or social development in the area in which the waters are located, pursuant to section 31.8(3)(d), shall be made by the Division, subject to a de novo review by the Commission in an adjudicatory hearing, on the Commission's own motion, pursuant to a petition by any interested person who has submitted written comments during the Division review process, or on the Commission's determination pursuant to section 24-4-105(2), C.R.S.

(c) Significance Determination

The initial step in an antidegradation review shall be a determination whether the regulated activity in question is likely to result in significant degradation of reviewable waters, with respect to adopted narrative or numeric standards. The significance determination will be based on the chronic numeric standard and flow for the pollutant of concern except for those pollutants which have only acute numeric standards in which case the acute standard and flow will be used. This significance determination shall be made with respect to the net effect of the new or increased water quality impacts of the proposed regulated activity, taking into account any environmental benefits resulting from the regulated activity and any water quality enhancement or mitigation measures impacting the segment or segments under review, if such measures are incorporated with the proposed regulated activity. The regulated activity shall be considered not to result in significant degradation, as measured in the reviewable waters segment, if:

(i) For bioaccumulative toxic pollutants, (i.e., those chemicals for which the bioaccumulation factor (BAF) is equal to or greater than 1000) the new or increased loading from the source under review is less than 10 percent of the existing total load to that portion of the segment impacted by the discharge for critical constituents; provided, that the cumulative impact of increased loadings from all sources shall not exceed 10 percent of the baseline total load established for the portion of the segment impacted by the discharge (the baseline total load shall be determined at the time of the first proposed new or increased water quality impacts to the reviewable waters.); and

(ii) For all pollutants:

(A) The flow rate or volume of a new or increased discharge under review is small enough that it will be diluted by 100 to 1 or more at low flow, as defined in section 31.9, by water in the stream; or

(B) The new activity or increased discharge from the source under review will consume, after mixing, less than 15 percent of the baseline available increment, provided that the cumulative increase in concentration from all sources shall not exceed 15 percent of the baseline available increment. The baseline available increment is the increment between low-flow pollutant concentrations and the relevant standards for critical constituents for that portion of the segment impacted by the discharge. Except as identified in (C) below, the baseline low-flow pollutant concentration shall represent the water quality as of September 30, 2000 (or the effective date when the use-protected designation is removed), and shall be determined at the time of the first proposed new or increased water quality impacts to the reviewable waters after that date.

(C) If water quality subsequently improves as the result of the remediation of impacts from past unpermitted releases of contaminants that affected the water quality as of September 30, 2000 (or the effective date when the use-protected designation is removed), the resulting improved water quality at the time of the proposed new water quality impacts shall be used as the baseline. However, if such improvement results from non-legally-mandated remediation, upon petition the Commission may determine an alternative baseline to be used for antidegradation review purposes, taking into account the site-specific circumstances, including the benefits of protecting improved water quality and the goal of not discouraging voluntary clean-up efforts, including water pollutant trading. Any individual or entity, including those involved in the remediation efforts, may petition the Commission, at any time, to establish an alternative baseline, including prior to proceeding with a remediation project.

(D) The regulated activity will result in only temporary or short term changes in water quality. This exception shall not apply where long-term operation of the regulated activity will result in an adverse change in water quality.

For the purposes of this subsection, the phrase “portion of the segment impacted by the discharge” means the portion of the stream from the discharge point to the first major tributary inflow, or as determined by the Division based on site-specific information at the time of the analysis.

(d) Necessity of Degradation Determination

If a determination has been made in accordance with section 31.8(3)(c) that a proposed regulated activity is likely to result in significant degradation of reviewable waters, a determination shall be made pursuant to this section whether the degradation is necessary to accommodate important economic or social development in the area in which the waters are located. The following provisions shall apply to this determination:

(i) The “area in which the waters are located” shall be determined from the facts on a case-by-case basis. The area shall include all areas directly impacted by the proposed regulated activity.

(ii) A determination shall be made from the facts on a case-by-case basis whether the proposed regulated activity is important economic or social development. If the activity proponent submits evidence that the regulated activity is important development, it shall be presumed important unless information to the contrary is submitted in the public review process. The determination shall take into account information received during the public comment period and shall give substantial weight to any applicable determinations by local governments or land use planning authorities.

(iii) If the proposed regulated activity is determined to be important economic or social development, a determination shall be made whether the degradation that would result from such regulated activity is necessary to accommodate that development. The degradation shall be considered necessary if there are no water quality control alternatives available that (A) would result in no degradation or less degradation of the state waters and (B) are determined to be economically, environmentally, and technologically reasonable. In situations where water quality control alternatives are identified that satisfy the tests in (A) and (B), the Division shall consider the proposed degradation to be unnecessary, and require implementation of a non-degrading or less degrading alternative as a condition of authorizing the proposed activity.

This determination shall be based on an assessment of whether such alternatives are available, based upon a reasonable level of analysis by the project proponent, consistent with accepted engineering practice, and any information submitted by the public or which is otherwise available. The assessment shall address practical water quality control technologies, the feasibility and availability of which has been demonstrated under field conditions similar to those of the activity under review. The scope of alternatives considered shall be limited to those that would accomplish the proposed regulated activity's purpose. Any alternatives that would be inconsistent with section 25-8-104 of the Water Quality Control Act shall not be considered available alternatives.

In determining the economic reasonableness of any less-degrading water quality control alternatives, the Division may take into consideration any relevant factors, including but not limited to the following, if applicable:

(A) Whether the costs of the alternative significantly exceed the costs of the proposal;

(B) For publicly owned treatment works (POTWs) or public water supply projects, whether user charges resulting from the alternative would significantly exceed user charges for similarly situated POTWs or public water supply projects;

(C) For private industry, whether the alternative would have a significant adverse effect upon the project's profitability or competitive position (if the project proponent chooses to provide such information);

(D) For any dischargers, whether treatment costs resulting from the alternative would significantly exceed treatment costs for any similar existing dischargers on the segment in question.

(E) The relative, long-term, energy costs and commitments and availability of energy conservation alternatives.

(e) Public Participation and Intergovernmental Coordination

Procedural provisions relating to public participation and intergovernmental coordination and antidegradation reviews are set forth in the Procedural Rules, Regulation No. 21, section 21.16 (5 CCR 1002-21).

(f) Public Nomination-Water Quality Based Designations

Any person may nominate any state water for designation as outstanding waters or use-protected during triennial review or at any time. Such nomination shall include written documentation of the qualifications for such designation based upon the criteria in section 31.8(2)(a) or (b).

(g) Protection of Existing Uses

If, during an antidegradation review, it is determined that an existing use of the affected waterbody has not been classified, prior to completing the antidegradation review for an applicable regulated activity, an expeditious rulemaking hearing shall be held (on an emergency basis if necessary) to consider adoption of the additional classification.

31.9 IMPLEMENTATION OF STANDARDS

(1) Low Flow Exceptions

(a) Water quality standards shall apply at all times; provided, that in developing effluent limitations or other requirements for discharge permits, the Division shall normally define critical flow conditions using the following low-flow values:

(i) Generally: the empirically based 30-day average low flow with an average 1-in-3 year recurrence interval (30E3) for chronic standards and the empirically based 1-day low flow with an average 1-in-3 year recurrence interval (1E3) for acute standards, or the equivalent statistically-based flow.

(ii) Temperature limitations: the empirically based 7-day average low flow with an average 1-in-3 year recurrence interval (7E3), and the empirically based 1-day low flow with an average 1-in-3 year recurrence interval (1E3) for acute standards, or the equivalent statistically-based flow.

(iii) Total phosphorus and total nitrogen limitations: the annual median of the daily average flows with a 1-in-5 year recurrence interval.

(b) Data Requirements

The period of record for determining low flows shall be based on a minimum of ten years of flow data, except that, when ten years of data is not available, low flows may be determined, on a case-by-case basis, using a period of record of less than ten years. If more than ten years of flow data is available, it may be more appropriate to establish low flow conditions based on a longer period of record to more accurately reflect site-specific conditions.

(c) Streams With Rapid Flow Changes

For streams with seasonal rapidly rising or falling hydrographs, the Division shall use, if so requested by a discharger, the procedure set forth in subparagraphs (i) through (v) below for calculating 30E3 values for those transitional flow periods of the year. For certain substances such as ammonia, the low flow exceptions may be based on periodic or seasonal flows as determined on a case-by-case basis by the Division.

(i) Averaging Procedure – Calculation of 30-day Forward Moving Harmonic Means - Moving harmonic means shall first be calculated for each consecutive thirty-day period in the period of record being considered.

(ii) Calculate Annual 30E3 Value - Determine the annual 30E3 value using the procedure set forth in Appendix A using

(A) 30-day forward moving harmonic means, and

(B) the excursion procedure for a 1-in-3 year recurrence interval.

(iii) Assigning Harmonic Means - Each 30-day harmonic mean shall then be assigned to a month. A harmonic mean shall be assigned to a specific month only if the harmonic mean is calculated using data for 15 or more days from that month.

(iv) Ranking of Harmonic Means - Harmonic means shall be ranked from the lowest to highest for each month of the year. The lowest harmonic mean for a month shall be used to establish the low flow value for that month using the procedure set forth in subparagraph (v) below.

(v) Establishing Monthly 30E3 Low Flows – The low flow for a month shall be either the lowest harmonic mean assigned to that month (as determined in subparagraphs (iii) and (iv), above), or the annual low flow value (as determined in subparagraph (ii), above), whichever is greater.

(d) Waters Not Yet Classified

Discharges to waters not presently classified must meet established effluent limitation regulations, the basic standards, antidegradation rule and control regulations. Effluent flows which reach a classified body of water, even though the discharge point is to a water not yet classified, must be of a quality which will not cause the standards of the classified body of water to be violated.

(2) Compliance Schedules

Where the Commission has adopted new standards, temporary modifications or revised standards that have become more stringent, or where the Division has developed new interpretations of existing standards, including, but not limited to, implementation requirements through approved TMDLs and Wasteload Allocations, interim and final AELs for variances and antidegradation reviews; the Division may include schedules of compliance in Colorado Discharge Permit System (CDPS) permits when it determines such schedules to be necessary and appropriate.

(3) Temperature Limits

The Division will determine whether temperature limits are to be included in permits utilizing the following approach.

(a) No temperature effluent limit will be applied if a discharge is to an effluent-dependent stream and there is no evidence that the aquatic life use may be negatively affected by the thermal component of the discharge. In implementing this provision, the Division will consider all readily-available and pertinent evidence regarding the potential for the thermal properties of a discharge to affect aquatic life.

(b) No temperature effluent limit will be applied to a discharge of water from a natural hot springs, so long as that water enters the receiving water in the vicinity of its natural outflow.

(c) Where neither (a) nor (b) above apply to a discharge, the Division will determine whether a limitation for temperature is to be included in a permit consistent with procedures developed in accordance with Section 61.8(2)(b)(i) of the CDPS Regulations. Where there are not adequate data to determine reasonable potential, the Division may require the permittee to collect and submit temperature data.

(d) At the time of permit renewal, where a site-specific recalculation procedure demonstrates that alternative numerical criteria are more appropriate for protection of aquatic life, these alternative criteria will be used for development of permit limits.

(e) Consistent with section 316(a) of the federal Clean Water Act, and federal implementing regulations, the Division may impose alternate effluent limitations with respect to the thermal component of such discharge.

(4) Temporary Modifications

Where a temporary modification is adopted, permits for discharges to the segment in question:

(a) For existing discharges: ~~,~~

(i) W~~w~~ill not include a compliance schedule to meet limits based on the underlying standard during the period that the temporary modification is in effect. ~~The Division, where necessary and within a reasonable period of the expiration of a temporary modification, shall reopen any permit for a discharge to that segment and include a permit condition to attain limits based on the underlying standard.~~

(ii) Will, regardless of whether the operative value of the temporary modification is numeric or narrative, include permit effluent limits, where appropriate, that ensure that, at a minimum, status quo is maintained during the temporary modification.

~~(b) May include a permit condition requiring actions intended to eliminate the uncertainty regarding the appropriate underlying standard.~~

(iii~~c~~) ~~Where a permit for an existing discharge is reissued while a temporary modification is in effect, the Division, based on best professional judgment, m~~May ~~determine~~ include limitations or other conditions (e.g., source identification, pretreatment, and evaluation of other source control and treatment options) for the parameter(s) in question based on an assessment of the level of effluent quality reasonably achievable without requiring significant investment in facility infrastructure (e.g., based on past facility performance). Such limits (numeric~~al~~ or otherwise) may be at or below the level derived from the temporary modification, where such a requirement would not cause an undue economic burden, but not more restrictive than necessary to achieve the underlying standard.

(~~d~~b) For expanding discharges: ~~The Division~~Will~~,~~ ~~based on best professional judgment, may set~~ include effluent limits ~~in permits for new or expanding discharges at a level~~ that, at a minimum, do~~es~~ not pose an unreasonable risk to downstream uses and ensure status quo is maintained.

(c) For new discharges: Will include effluent limits based on the underlying standard, rather than the temporary modification, unless the Commission has established a specific limit or value for new dischargers.

(~~b~~d) May include a permit condition requiring actions intended to eliminate the uncertainty regarding the appropriate underlying standard.

~~**(5) Conditions on Discharger-Specific Variances**~~

~~A discharger-specific variance applies only to the point source specified in the variance and to the pollutant specified in the variance. A permit action issued to implement a discharger-specific variance shall require:~~

~~(a) For existing discharges, compliance with an initial effluent limitation which, at the time the variance is approved, at a minimum represents the level currently achieved. At the time a variance is approved, unless the alternative limit is currently achieved, a permit condition will be specified which requires progress toward the alternative effluent limitation as quickly as feasible.~~

~~(b) For new discharges, compliance with an initial effluent limitation which, at the time the variance is approved, represents the highest degree of protection of the classified use that is currently feasible, taking into consideration the factors in subsection 31.7(4)(a)(ii), as appropriate.~~

~~(c) Ongoing investigation of treatment technologies, process changes, wastewater reuse, or other controls that may result in improvement in effluent quality, and submission of reports on the investigations to allow for timely consideration of the information during the scheduled review of the variance by the Commission.~~

~~(d) Conditions in the permit as necessary to administer the variance including, but not limited to, additional monitoring requirements.~~

31.10 MIXING ZONES

(1) Definitions

(a) Physical Mixing Zone

That portion of a water-body, surrounding or downstream from a point source of discharge, wherein constituents of the discharge are not uniformly dispersed into the receiving waters. The physical mixing zone also can be referred to simply as the "mixing zone," except where there is possible confusion with the regulatory mixing zone, as it is defined below, which differs from the physical mixing zone

(b) Exceedae~~e~~nce Zone

That portion of a physical mixing zone within which a numeric water quality standard for a given water quality parameter is not met during critical conditions. The size of an exceedae~~e~~nce zone may differ from one numeric standard to another at a given location.

(c) Regulatory Mixing Zone

The maximum size allowable for an exceedae~~e~~nce zone at a given location. An acute regulatory mixing zone limits the size of exceedae~~e~~nce zones for acute standards, and a chronic regulatory mixing zone limits the size of exceedae~~e~~nce zones for chronic standards. The sizes of the acute and chronic regulatory mixing zones are related to the size of the receiving water, as explained in 31.10 (3).

(d) Stream Channel Width at Bankfull Stage

The width of a stream under flow conditions when the stream just begins to enter the lowest level of the floodplain.

(e) Average Waterb-~~B~~ody Surface Area

The average surface area for a lake shall be determined from historic data (five years or more if possible), and must be computed monthly or seasonally, as appropriate, to reflect significant monthly or seasonal changes in area.

(f) Stream, Lake, Wetland

For purposes of this regulation, streams will include Waters of the State that flow, regardless of size, and lakes will include Waters of the State that are not flowing, including reservoirs. Wetlands will be treated in the same manner as lakes.

(2) Exemptions from Restriction of Permit Limits by Mixing Zone Regulations

In the following instances, water quality ~~standards~~-based effluent limits (permit limits) for discharges to streams will be calculated using the full chronic (30E3) and acute (1E3) low flow of the stream for dilution except where a more stringent approach is determined by the Division to be necessary to protect designated uses in the water-body as a whole based on the factors identified in subsection 31.10(5). These exemptions do not apply to lakes.

(a) Exemption tables, other procedures developed or approved by the Division, or site-specific data indicate that the chronic regulatory mixing zone is larger than the physical mixing zone;

(b) The effluent flow at maximum permitted discharge is greater than twice the chronic low flow (30E3); or

(c) The ratio of the chronic low flow (30E3) to the maximum permitted or other appropriate effluent flow is greater than or equal to 20:1 and the operation is designated by the Division as a "minor."

(3) Regulatory Mixing Zone Sizes

(a) Streams

The Division shall consider the following factors in determining the sizes of the regulatory mixing zones for streams:

(i) The size of the chronic regulatory mixing zone for any point source of discharge to a stream shall not be greater than a plan view area equal to six times the square of the stream channel width at bankfull stage.

(ii) Where the size of the physical mixing zone exceeds the size of the chronic regulatory mixing zone, the area of the acute regulatory mixing zone for a water quality parameter shall be established between 10 % and 25 % of the area of the chronic regulatory mixing zone for the same water quality parameter. The size of the acute regulatory mixing zone will be determined within this range based on a presumption that:

(A) For waters determined under subsection 31.8 to be "reviewable," the default acute regulatory mixing zone will be 10% as large as the chronic regulatory mixing zone.

(B) For waters determined under subsection 31.8 to be "use protected," the default acute regulatory mixing zone will be 25% as large as the chronic regulatory mixing zone.

An acute mixing zone may also be further reduced below default limits for reasons given in subsection 31.10(5). The permittee may request that the size of the acute regulatory mixing zone be higher than recommended by the Division, but no higher than 25% of the chronic regulatory mixing zone, on the basis of arguments related to cost/benefit analysis, economic reasonableness, ecological risks, use classification, or designation. The burden is on the permittee to bring appropriate information to the Division.

(iii) The sum total of the plan view areas of all chronic regulatory mixing zones for point sources of discharge into any reach of stream for a specified water quality parameter shall not occupy more than ten percent 10% of the total plan view area of such reach of river or stream, as measured at bankfull stage. The length (approximately 10 miles) and boundaries of the stream or river reach for these purposes shall be determined by the Division. Constraints on chronic regulatory mixing zones used to determine permit limits

in discharge permits resulting from the cumulative impacts of multiple point sources of discharge into a stream reach shall be shared equitably among permittees and any other sources of discharge. The distribution of the allowable loads for the pollutant of concern shall be consistent with regulations applicable to total maximum daily loads and/or upon mutual agreement amongst the permittees.

(b) Lakes

The Division shall consider the following factors in determining the size of the regulatory mixing zones for lakes:

(i) For each point source of discharge, the size of the chronic regulatory mixing zone shall not be greater than 3% of the average inter-annual seasonal or monthly surface area. The Division may apply this limit to an entire lake or to a smaller, geographically distinguishable (bay, arm, etc.), portion of a lake.

(ii) Where the physical mixing zone exceeds the chronic regulatory mixing zone, the area of the acute regulatory mixing zone for lakes, for any water quality parameter, shall be established between 10% and 25% of the area of the chronic regulatory mixing zone for the same water quality parameter. The size of the acute mixing zone will be determined within this range based on a presumption that:

(A) For waters determined under subsection 31.8 to be “reviewable” the default acute regulatory mixing zone will be 10% as large as the chronic regulatory mixing zone.

(B) For waters determined under subsection 31.8 to be “use protected” the default acute regulatory mixing zone will be 25% as large as the chronic regulatory mixing zone.

An acute mixing zone may also be further reduced below default limits for reasons given in subsection 31.10 (5). The permittee may request that the size of the acute regulatory mixing zone be higher than recommended by the Division, but no higher than 25% of the chronic regulatory mixing zone, on the basis of arguments related to cost/benefit analysis, economic reasonableness, ecological risks, use classification, or designation. The burden is on the permittee to bring appropriate information to the Division.

(iii) The sum total of the plan view areas of all chronic regulatory mixing zones for point sources of discharge into lakes for a specified water quality parameter shall not occupy more than ten percent 10% of the total plan view area of such lake, or a geographically distinguishable portion thereof, at any seasonally average area. Constraints on chronic regulatory mixing zones used to determine limits in discharge permits resulting from the cumulative impacts of multiple point sources of discharge into lakes shall be shared equitably among permittees and any other sources of discharge. The distribution of the allowable loads for the pollutant of concern shall be consistent with regulations applicable to total maximum daily loads and/or upon mutual agreement amongst the permittees.

(iv) For artificial lakes supplied principally with potable water, mixing zones larger than those allowed above may be designated for purposes of CDPS permits. Appropriate mixing zone size limits shall be determined by the Division on a case-by-case basis, consistent with the constraints described in subsection 31.10(5). Such mixing zones shall be kept as small as practicable, on a parameter-by-parameter basis, and shall provide for protection of existing and designated uses in the water-body as a whole.

(4) Use of Mixing Zone Regulations in Setting Permit Limits

(a) Streams

Computation of chronic or acute permit limits for point source discharges to streams shall be as follows:

(i) For discharges not exempted as explained in subsection 31.10(2), the permit limit for any parameter for which there is a water quality standard shall be that resulting in acute and chronic exceedance zones equal to or smaller than the respective acute and chronic regulatory mixing zones.

(ii) Where the annual acute low flow (1E3) of the receiving stream is zero, no dilution will be provided in calculating acute permit limits. Where the chronic low flow (30E3) of the receiving stream is equal to zero, no dilution will be provided in calculating chronic permit limits.

(b) Lakes

Computation of chronic or acute permit limits for point source discharges to lakes shall be as follows:

(i) The permit limit for any parameter for which there is a water quality standard shall be that resulting in acute and chronic exceedaence zones equal to or smaller than the respective acute and chronic regulatory mixing zones as shown by site-specific analysis for each regulated substance.

(5) Additional Constraints on Mixing Zones

(a) Exceedaence zones from multiple point sources of discharge shall not overlap to such an extent as to harm beneficial uses.

(b) Regulatory mixing zones shall comply with the narrative basic standards included in subsection 31.11(1), except that these requirements do not apply to the protection of any sessile organisms residing within acute and chronic regulatory mixing zones.

(c) Where sampling shows that the conditions described in subsection 31.10(3) are not attained, the mixing zone analysis will be revised as necessary to achieve compliance with subsection 31.10(3).

(d) The Division may limit or deny regulatory mixing zones on a site-specific basis for specific regulated substances. In doing so, the Division shall consider the following:

(i) The need to provide a zone of passage for aquatic life;

(ii) The likelihood of bioaccumulation of toxins in fish or wildlife;

(iii) The special importance of certain habitat such as fish spawning or nursery areas or habitat that supports threatened or endangered species;

(iv) Potential for human exposure to pollutants through drinking water or recreation;

(v) The possibility that aquatic life will be attracted to the effluent plume;

(vi) The potential for adverse effects on groundwater; or

(vii) The toxicity or persistence of the substance discharged.

(6) Mixing Zones for Whole Effluent Toxicity-based Permit Requirements

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31.11 BASIC STANDARDS APPLICABLE TO SURFACE WATERS OF THE STATE

All surface waters of the state are subject to the following basic standards; however, discharge of substances regulated by permits which are within those permit limitations shall not be a basis for enforcement proceedings under these basic standards:

(1) Except where authorized by permits, BMPs, 401 certifications, or plans of operation approved by the Division or other applicable agencies, state surface waters shall be free from substances attributable to human-caused point source or nonpoint source discharge in amounts, concentrations or combinations which:

(a) for all surface waters except wetlands;

(i) can settle to form bottom deposits detrimental to the beneficial uses. Depositions are stream bottom buildup of materials which include but are not limited to anaerobic sludges, mine slurry or tailings, silt, or mud; or

(ii) form floating debris, scum, or other surface materials sufficient to harm existing beneficial uses; or

(iii) produce color, odor, or other conditions in such a degree as to create a nuisance or harm existing beneficial uses or impart any undesirable taste to significant edible aquatic species or to the water; or

(iv) are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life; or

(v) produce a predominance of undesirable aquatic life; or

(vi) cause a film on the surface or produce a deposit on shorelines; and

(b) for surface waters in wetlands;

(i) produce color, odor, changes in pH, or other conditions in such a degree as to create a nuisance or harm water quality dependent functions or impart any undesirable taste to significant edible aquatic species of the wetland; or

(ii) are toxic to humans, animals, plants, or aquatic life of the wetland.

(2) The radioactive materials in surface waters shall be maintained at the lowest practical level. In no case shall radioactive materials in surface waters be increased by any cause attributable to municipal, industrial, or agricultural practices or discharges to as to exceed the ~~following~~ levels in 31.11 Table A below, unless alternative site-specific standards have been adopted pursuant to subsection (4) below:

31.11 TABLE A - RADIONUCLIDE STANDARDS

TABLE A RADIONUCLIDE STANDARDS**	
Parameter	Picocuries per Liter
Americium 241*	0.15
Cesium 134	80
Plutonium 239~~,~~ and 240*	0.15
Radium 226 and 228*	5
Strontium 90*	8
Thorium 230 and 232*	60
Tritium	20,000

*Radionuclide samples for these materials should be analyzed using unfiltered (total) samples.

**These Human Health based standards are 30-day average values ~~for both plutonium and americium~~.

(3) The interim organic pollutant standards contained in ~~the following~~ 31.11 Table B Basic Standards for Organic Chemicals Table below are applicable to all surface waters of the state for which the corresponding use classifications have been adopted, unless alternative site-specific standards have been adopted pursuant to sub-section (4) below.

Note that all standards in the 31.11 Table B Basic Standards for Organic Chemicals Table are being adopted as "interim standards." These interim standards will remain in effect until alternative permanent standards are adopted by the Commission in revisions to this regulation or site-specific standards determinations. Although fully effective with respect to current regulatory applications, these interim standards shall not be considered final or permanent standards subject to antibacksliding or downgrading restrictions.

31.11 TABLE B - BASIC STANDARDS FOR ORGANIC CHEMICALS

TABLE B BASIC STANDARDS FOR ORGANIC CHEMICALS (concentration in ~~micrograms per liter~~µg/L)

Parameter		Human Health Based[1]			Aquatic Life Based[4]	
	CAS No.	Water Supply[2]	Water + Fish[3]	Fish Ingestion[8]	Acute	Chronic
Acenaphthene	83-32-9	420	420	---[10]	1,700	520
Acetochlor	34256-82-1	140	---	---	---	---
Acetone	67-64-1	6300	---	---	---	---
Acrolein	107-02-8	3.5	3.5	9.3	~~68~~3	~~21~~3
Acrylamide[C, 13]	79-06-1	0.022	---	---	---	---
Acrylonitrile[C]	107-13-1	0.065	0.051	0.25	7,500	2,600
Alachlor	15972-60-8	2[M]	2	140	---	---
Aldicarb	116-06-3	7[M]	---	---	---	---
Aldicarb Sulfone	1646-88-4	7[M]	---	---	---	---
Aldicarb Sulfoxide	1646-87-3	7[M]	---	---	---	---
Aldrin[C]	309-00-2	0.0021	$4.9X10^{-5}$	$5.0X10^{-5}$	1.5	---
Aniline[C]	62-53-3	6.1	---	---	---	---
Anthracene (PAH)	120-12-7	2,100	2,100	40,000	---	---
Aramite[C]	140-57-8	1.4	---	---	---	---
Atrazine	1912-24-9	3[M]	---	---	---	---
Azobenzene[C]	103-33-3	0.32	---	---	---	---
Benzene[C, 12]	71-43-2	2.3 to 5[M]	2.2	51	5,300	---
Benzidine[C]	92-87-5	0.00015	$8.6X10^{-5}$	0.00020	2,500	---
Benzo(a)anthracene (PAH)[C, 13]	56-55-3	0.16	0.0051	0.0053	---	---
Benzo(a)pyrene (PAH)[C, 12, 13]	50-32-8	0.016	0.00051	0.00053	---	---
Benzo(b)fluoranthene (PAH)[C, 13]	205-99-2	0.16	0.0051	0.0053	---	---
Benzo(k)fluoranthene (PAH)[C, 13]	207-08-9	1.6	0.051	0.053	---	---
Benzo(g,h,i)perylene (PAH)	191-24-2	---	0.0038	0.018	---	---
Benzotrichloride[C]	98-07-7	0.0027	---	---	---	---
Benzyl chloride[C]	100-44-7	0.21	---	---	---	---
Biphenyl[C]	92-52-4	4.4	---	---	---	---
Bis(chloromethyl)ether (BCME)[C]	542-88-1	0.00016	0.0001	0.0003	---	---
Bromate[C]	15541-45-4	0.050	---	---	---	---
Bromobenzene	108-86-1	56	---	---	---	---

Bromodichloromethane (HM)[C]	75-27-4	---	0.55	17	11,000	---
Bromoform (HM)[C]	75-25-2	---	4.3	140	---	---
Butyl benzyl phthalate	85-68-7	1,400	1,400	1,900	---	---
Carbaryl	63-25-2	---	---	---	2.1	2.1
Carbofuran[12]	1563-66-2	35 to 40 [M]	---	---	---	---
Carbon tetrachloride[C, 12]	56-23-5	0.5 to 5[M]	0.43	3.0	35,200	---
Chlordane[C, 12]	57-74-9	0.10 to 2[M]	0.00080	0.00081	1.2	0.0043
Chlordecone[C]	143-50-0	0.0035	---	---	---	---
Chlorethyl ether (BIS-2)[C]	111-44-4	0.032	0.030	0.53	---	---
Chlorobenzene[11]	108-90-7	100 [M]	100	1,600	---	---
Chlorodibromomethane (dibromochloromethane) (HM)[11]	124-48-1	---	54.0	1,700	---	---
Chloroform (HM)[C]	67-66-3	---	3.4	110	28,900	1,240
Chloroisopropyl ether(BIS-2)	108-60-1	280	280	65,000	---	---
4-Chloro-3-methylphenol	59-50-7	210	---	---	30	---
Chloronaphthalene	91-58-7	560	560	---[10]	2,300	620
Chlorophenol,2-	95-57-8	35	35	150	4,380	2,000
Chlorpyrifos	2921-88-2	21	---	---	0.083	0.041
Chrysene (PAH)[C, 13]	218-01-9	16	0.51	0.53	---	---
Dalapon	75-99-0	200[M]	---	---	---	---
DDD[C]	72-54-8	0.15	0.00031	0.00031	0.6	---
DDE[C]	72-55-9	0.1	0.00022	0.00022	1,050	---
DDT[C]	50-29-3	0.1	0.00022	0.00022	0.55	0.001
Demeton	8065-48-3	---	---	---	---	0.1
Di(2-ethylhexyl)adipate	103-23-1	400[M]	---	---	---	---
Diazinon	333-41-5	---	---	---	0.17	0.17
Dibenzo(a,h)anthracene (PAH)[C, 13]	53-70-3	0.016	0.00051	0.00053	---	---
1,2 Dibromo-3-Chloropropane (DBCP)	96-12-8	0.2[M]	---	---	---	---
Dibromoethane 1,2[C]	106-93-4	0.018	---	---	---	---
Dicamba	1918-00-9	210	170	860	---	---
Dichloroacetic acid[C]	79-43-6	0.7	---	---	---	---
Dichlorobenzene 1,2[11]	95-50-1	600[M]	420	1,300	---	---
Dichlorobenzene 1,3	541-73-1	94	94	960	---	---

Dichlorobenzene 1,4[11]	106-46-7	75[M]	63	190	---	---
Dichlorobenzidine[C]	91-94-1	0.078	0.021	0.028	---	---
Dichloroethane 1,2[C, 12]	107-06-2	0.38 to 5[M]	0.38	37	118,000	20,000
Dichloroethylene 1,1	75-35-4	7[M]	7	3,600	---	---
Dichloroethylene 1,2-cis[12]	156-59-2	14 to 70[M]	---	---	---	---
Dichloroethylene 1,2-trans[11]	156-60-5	100[M]	100	10,000	---	---
Dichloromethane (methylene chloride) [C, 13]	75-09-2	5[M]	4.6	590	---	---
Dichlorophenol 2,4	120-83-2	21	21	290	2,020	365
Dichlorophenoxyacetic acid (2,4-D)	94-75-7	70[M]	---	---	---	---
Dichloropropane 1,2[C, 12]	78-87-5	0.52 to 5[M]	0.50	14	23,000	5,700
Dichloropropylene 1,3[C]	542-75-6	0.35	0.34	21	6,060	244
Dichlorvos[C]	62-73-7	0.12	---	---	---	---
Dieldrin[C]	60-57-1	0.002	$5.2X10^{-5}$	$5.4X10^{-5}$	0.24	0.056
Diethyl phthalate	84-66-2	5,600	5,600	44,000	---	---
Diisopropylmethylphosphonate (DIMP)	1445-75-6	8	---	---	---	---
Dimethylphenol 2,4	105-67-9	140	140	850	2,120	---
Dimethyl phthalate	131-11-3	70,000	70,000	1,100,000	---	---
Di-n-butyl phthalate	84-74-2	700	700	4,500	---	---
Dinitro-o-cresol 4,6	534-52-1	0.27	1.3	28	---	---
Dinitrophenol 2,4	51-28-5	14	14	5,300	---	---
Dinitrotoluene 2,4[C]	121-14-2	0.11	0.11	3.4	---	---
Dinitrotoluene 2,6[C]	606-20-2	---	---	---	330	230
Dinoseb	88-85-7	7[M]	---	---	---	---
Dioxane 1,4- [C]	123-91-1	0.35	---	---	---	---
Dioxin (2,3,7,8 TCDD)[C, 12]	1746-01-6	$2.2x10^{-7}$ to $3.0x10^{-5}$, [M]	$5.0X10^{-9}$	$5.1X10^{-9}$	0.01	0.00001
Diphenylhydrazine 1,2[C]	122-66-7	0.044	0.036	0.20	270	---
Diquat[12]	85-00-7	15 to 20[M]	---	---	---	---
Endosulfan	115-29-7	42	---[10]	---	0.11	0.056
Endosulfan, alpha	959-98-8	42	---[10]	---	0.11	0.056
Endosulfan, beta	33213-65-9	42	---[10]	---	0.11	0.056
Endosulfan sulfate	1031-07-8	42	---[10]	---	0.11	0.056
Endothall	145-73-3	100[M]	---	---	---	---

Endrin	72-20-8	2[M]	----[10]	---	0.086	0.036
Endrin aldehyde	7421-93-4	2.1	0.29	0.30	---	---
Epichlorohydrin[C]	106-89-8	3.5	---	---	---	---
Ethylbenzene[11]	100-41-4	700[M]	530	2,100	32,000	---
Ethylene dibromide[C, 12] (1,2 – dibromoethane)	106-93-4	0.02 to 0.05[M]	---	---	---	---
Ethylene glycol monobutyl ether (EGBE) (2-Butoxyethanol)	111-76-2	700	---	---	---	---
Ethylhexyl phthalate (BIS-2)[C, 12] (DEHP)	117-81-7	2.5 to 6[M]	1.2	2.2	---	---
Fluoranthene (PAH)	206-44-0	280	130	140	3,980	---
Fluorene (PAH)	86-73-7	280	280	5,300	---	---
Folpet[C]	133-07-3	10	---	---	---	---
Furmecyclox[C]	60568-05-0	1.2	---	---	---	---
Glyphosate	1071-83-6	700[M]	---	---	---	---
Guthion	86-50-0	---	---	---	---	0.01
Heptachlor[C, 12]	76-44-8	0.008 to 0.4[M]	$7.8X10^{-5}$	$7.9X10^{-5}$	0.52	0.0038
Heptachlor epoxide[C, 12]	1024-57-3	0.004 to 0.2[M]	$3.9X10^{-5}$	$3.9X10^{-5}$	0.52	0.0038
Hexachlorobenzene[C, 12]	118-74-1	0.022 to 1.0[M]	0.00028	0.00029	---	---
Hexachlorobutadiene	87-68-3	0.45	0.44	---[10]	90	9.3
Hexachlorocyclohexane, Alpha[C]	319-84-6	0.0056	0.0026	0.0049	---	---
Hexachlorocyclohexane, Beta	319-85-7	0.019	0.0091	0.017	---	---
Hexachlorocyclohexane, Gamma (Lindane)	58-89-9	0.2[M]	0.2	---[10]	0.95	0.08
Hexachlorocyclohexane, Technical[C]	608-73-1	---	0.012	0.041	100	---
Hexachlorocyclopentadiene[11, 12] (HCCPD)	77-47-4	42 to 50[M]	40	---[10]	7	5
Hexachlorodibenzo-p-dioxin (1,2,3,7,8,9-hcdd)[C]	19408-74-3	5.60E-06	---	---	---	---
Hexachloroethane[C]	67-72-1	0.88	0.5	1.2	980	540
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	121-82-4	0.42	---	---	---	---
Hexanone 2-	591-78-6	35	---	---	---	---
Hydrazine/Hydrazine sulfate[C]	302-01-2	0.012	---	---	---	---
Indeno(1,2,3-cd)pyrene (PAH)[C, 13]	193-39-5	0.16	0.0051	0.0053	---	---
Isophorone[11]	78-59-1	140	130	3,600	---	---

Malathion	121-75-5	140	---	---	---	0.1
Methanol	67-56-1	14,000	---	---	---	---
Methoxychlor12	72-43-5	35 to 40M	---10	---	---	0.03
Methyl bromide (HM)	74-83-9	---	9.8	1,500	---	---
Methyl chloride (HM)[C]	74-87-3	---	5.6	180	---	---
Methylene bis(N,N'-dimethyl)aniline 4,4[C]	101-61-1	0.76	---	---	---	---
Metribuzin	21087-64-9	180	160	1,700	---	---
Mirex	2385-85-5	1.4	---	---	---	0.001
Naphthalene (PAH)	91-20-3	140	140	---[10]	2,300	620
Nitrobenzene	98-95-3	14	14	2,800	27,000	---
Nitrophenol 4	100-02-7	56	56	9,700	---	---
Nitrosodibutylamine N[C]	924-16-3	0.0065	0.0043	0.012	---	---
Nitrosodiethylamine N[C]	55-18-5	0.00023	0.00023	0.0083	---	---
Nitrosodimethylamine N[C] (NDMA)	62-75-9	0.00069	0.00069	3.0	---	---
N-Nitrosodiethanolamine[C]	1116-54-7	0.013	---	---	---	---
Nitrosodiphenylamine N[C]	86-30-6	7.1	3.3	6.0	---	---
N-Nitroso-N-methylethylamine[C]	10595-95-6	0.0016	---	---	---	---
N-Nitrosodi-n-propylamine[C]	621-64-7	0.005	0.005	0.50	---	---
Nitrosopyrrolidine N[C]	930-55-2	0.017	0.016	36	---	---
Nonylphenol	84852-15-3 and 25154-52-3	---	---	---	28	6.6
Oxamyl (vydate)[12]	23135-22-0	175 to 200[M]	---	---	---	---
PCBs[C, 9, 12]	1336-36-3	0.0175 to 0.5[M]	$6.4X10^{-5}$	$6.4X10^{-5}$	2.0	0.014
Parathion	56-38-2	---	---	---	0.065	0.013
Pentachlorobenzene	608-93-5	5.6	1.4	1.5	---	---
Pentachlorophenol[C, 12]	87-86-5	0.088 to 1.0[M]	0.080	0.91	19[6]	15[6]
Perchlorate	7790-98-9	4.9	---	---	---	---
Phenol	108-95-2	2,100	2,100	---[10]	10,200	2,560
Picloram	1918-02-1	490	---	---	---	---
Prometon	1610-18-0	100	---	---	---	---
Propylene oxide[C]	75-56-9	0.15	---	---	---	---
Pyrene (PAH)	129-00-0	210	210	4,000	---	---
Quinoline[C]	91-22-5	0.012	---	---	---	---

Simazine	122-34-9	4[M]	---	---	---	---
Styrene	100-42-5	100[M]	---	---	---	---
Tetrachlorobenzene 1,2,4,5	95-94-3	2.1	0.97	1.07	---	---
Tetrachloroethane 1,1,2,2[C]	79-34-5	0.18	0.17	4	---	2,400
Tetrachloroethylene (PCE)[C]	127-18-4	5[M]	5	62	5,280	840
Tetrahydrofuran	109-99-9	6,300	---	---	---	---
Toluene[11, 12]	108-88-3	560 to1,000[M]	510	5,900	17,500	---
Toxaphene[C, 12]	8001-35-2	0.032 to 3[M]	0.00028	---[10]	0.73	0.0002
Tributyltin (TBT)	56573-85-4	---	---	---	0.46	0.072
Trichloroacetic acid	76-03-9	0.52	---	---	---	---
Trichlorobenzene 1,2,4[11]	120-82-1	70[M]	35	---[10]	250	50
Trichloroethane 1,1,1 (1,1,1-TCA)	71-55-6	200[M]	---	---	---	---
Trichloroethane 1,1,2 (1,1,2-TCA)[11, 12]	79-00-5	2.8 to 5[M]	2.7	71	9,400	---
Trichloroethylene (TCE)[C]	79-01-6	5[M]	2.5	30	45,000	21,900
Trichloropropane 1,2,3[C, 13]	96-18-4	3.7E-4	---	---	---	---
Trichlorophenol 2,4,5	95-95-4	700	700	3,600	---	---
Trichlorophenol 2,4,6[C]	88-06-2	3.2	1.4	2.4	---	970
Trichlorophenoxypropionic acid (2,4,5-tp) (Silvex)	93-72-1	50[M]	---	---	---	---
Total Trihalomethanes (HMs)	(total)[7]	80	80	---	---	---
Trimethylbenzene 1,2,3	526-73-8	67	---	---	---	---
Trimethylbenzene 1,2,4	95-63-6	67	---	---	---	---
Trimethylbenzene 1,3,5	108-67-8	67	---	---	---	---
Vinyl Chloride[C, 12]	75-01-4	0.023 to 2[M]	0.023	2.3	---	---
Xylenes (total)[12]	1330-20-7	1,400 to 10,000[M]	---	---	---	---

Table B – Footnotes

(1) All standards are chronic or 30-day standards. They are based on information contained in EPA's Integrated Risk Information System (IRIS) and/or EPA lifetime health advisories for drinking water using a 10^{-6} incremental risk factor unless otherwise noted.

(2) Only applicable to segments classified for water supply.

(3) Applicable to all Class 1 aquatic life segments which also have a water supply classification or Class 2 aquatic life segments which also have a water supply classification designated by the Commission after rulemaking hearing. These class 2 segments will generally be those where fish of a catchable size and which are normally consumed are present, and where there is evidence that fishing takes place on a recurring basis. The Commission may also consider additional evidence that may be relevant to a determination whether the conditions applicable to a particular segment are similar enough to the assumptions underlying the Wwater plus+ fFish ingestion criteria to warrant the adoption of wWater plus+ fFish ingestion standards for the segment in question.

(4) Applicable to all aquatic life segments.

(5) Deleted.

(6) Standards are pH–dependent. Those listed are calculated for pH = 7.8.

Acute = $e^{[1.005(pH)-4.869]}$; Chronic = $e^{[1.005(pH)-5.134]}$.

(7) Total trihalomethanes are considered the sum of the concentrations of bromodichloromethane (CAS No. 75-27-4), dibromochloromethane (Chlorodibromomethane(HM), CAS No. 124-48-1), tribromomethane (bromoform, CAS No. 75-25-2) and trichloromethane (chloroform, CAS No. 67-66-3).

(8) Applicable to the following segments which do not have a water supply classification: all Class 1 aquatic life segments or Class 2 aquatic life segments designated by the Commission after rulemaking hearing. These class 2 segments will generally be those where fish of a catchable size and which are normally consumed are present, and where there is evidence that fishing takes place on a recurring basis. The Commission may also consider additional evidence that may be relevant to a determination whether the conditions applicable to a particular segment are similar enough to the assumptions underlying the fish ingestion criteria to warrant the adoption of fish ingestion standards for the segment in question.

(9) PCBs are a class of chemicals which include aroclors, 1242, 1254, 1221, 1232, 1248,1260 and 1016, CAS numbers 53469-21-9, 11097-69-1, 11104-28-2, 11141-16-5, 12672-29-6, 11096-82-5, and 12674-11-2 respectively. The aquatic life criteria apply to this set of PCBs. The human health criteria apply to total PCBs, i.e. the sum of all congenor or all isomer analyses.

(10) The chronic aquatic life standard is more stringent than the associated Water + Fish or Fish Ingestion standard, and therefore no Water + Fish or Fish Ingestion standard has been adopted.

(11) The Water + Fish and Fish Ingestions standards for these compounds have been calculated using a relative source contribution (RSC).

(12) Whenever a range of standards is listed and referenced to this footnote, the first number in the range is a strictly health-based value, based on the Commission's established methodology for human health-based standards. The second number in the range is a maximum contaminant level, established under the federal Safe Drinking Water Act that has been determined to be an acceptable level of this chemical in public water supplies, taking treatability and laboratory detection limits into account. Control requirements, such as discharge permit effluent limitations, shall be established using the first number in the range as the ambient water quality target, provided that no effluent limitation shall require an "end-of-pipe" discharge level more restrictive than the second number in the range. Water bodies will be considered in attainment of this standard, and not included on the Section 303(d) List, so long as the existing ambient quality does not exceed the second number in the range.

(13) Mutagenic compound, age dependent factors were used in calculating standard.

(C) Carcinogens classified by the EPA as A, B1, or B2.

(M) Drinking water MCL.

CAS No. – Chemical Abstracts Service Registry Number.

(HM) – Halomethanes

(PAH) – Polynuclear Aromatic Hydrocarbons.

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(4) Site-Specific Radioactive Materials and Organic Pollutants Standards.

(a) In determining whether to adopt site-specific standards to apply in lieu of the statewide standards established in sections (2) and (3) above, the Commission shall first determine the appropriate use classifications, in accordance with section 31.13. If such a determination would result in removing an existing classification, the downgrading factors in section 31.6 (2)(B) shall apply.

(b) The Commission shall then determine whether numerical standards other than some or all of the statewide standards established in sections (2) and (3) above would be more appropriate for protection of the classified uses, taking into account the factors prescribed in section 25-8-204(4), C.R.S. and in section 31.7. The downgrading factors described in section 31.6(2)(B) shall not apply to the establishment of site-specific standards under this section.

(c) Site-specific standards to apply in lieu of statewide standards may be based upon consideration of the appropriateness of the assumptions used in the risk assessment based potency factors and reference dose values, including, but not limited to, consideration of the uncertainty factor, exposure assessment, bioaccumulation factor, exposed population factor, assumed consumption factor, risk comparisons, uncertainty analysis, and the availability of the toxics in the water column, considering persistence, hardness, pH, temperature or valence form in the water column.

(5) Nothing in this regulation shall be interpreted to preclude:

(a) An agency responsible for implementation of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. 9601 et seq., as amended, from selecting a remedial action that is more or less stringent than would be

achieved by compliance with the statewide numerical standards established in this section, or alternative site-specific standards adopted by the Cecommission, where a determination is made that such a variation is authorized pursuant to the applicable provisions of CERCLA.

(6) Except where the Commission adopts or has adopted a different standard on a site-specific basis, the less restrictive of the following two options shall apply as numerical standards for all surface waters with a "water supply" classification, if water supply is an actual use of the waters in question or of hydrologically connected groundwater:

i. existing quality as of January 1, 2000; or

ii. the following table value criteria set forth in Tables II and III:

Iron	300 µug/Ll (dissolved)
Manganese	50 µug/Ll (dissolved)
Sulfate	250 mg/Ll (dissolved)

Provided, that if the existing quality of these constituents in such surface waters as of January 1, 2000, is affected by an unauthorized discharge with respect to which the Division has undertaken an enforcement action, the numerical standards shall be the ambient conditions existing prior to the unauthorized discharge or the above table value criteria, whichever is less restrictive.

Data generated subsequent to January 1, 2000 shall be presumed to be representative of existing quality as of January 1, 2000, if the available information indicates that there have been no new or increased sources of these pollutants impacting the segment(s) in question subsequent to that date.

For all surface waters with a "water supply" classification that are not in actual use as a water supply, the water supply table value criteria for sulfate, iron and manganese set forth in Tables II and III may be applied as numerical standards only if the Commission determines as the result of a site-specific rulemaking hearing that such standards are necessary and appropriate in accordance with section 31.7.

(7) Methylmercury Fish Tissue: Fish tissue concentrations shall not exceed 0.3 milligrams methylmercury per kilogram (0.3 mg/kg) of wet-weight fish tissue. Attainment of the standard will be assessed by comparing the average fish tissue methylmercury concentration for each species and size class to the 0.3 mg/kg standard.

31.12 SALINITY AND SUSPENDED SOLIDS

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31.13 STATE USE CLASSIFICATIONS

Waters are classified according to the uses for which they are presently suitable or intended to become suitable. In addition to the classifications, one or more of the qualifying designations described in section 31.13(2), may be appended. Classifications may be established for any state surface waters, except that water in ditches and other manmade conveyance structures shall not be classified.

(1) Classifications

(a) Recreation

(i) Class E Existing Primary Contact Use

These surface waters are used for primary contact recreation or have been used for such activities since November 28, 1975.

(ii) Class P - Potential Primary Contact Use

These surface waters have the potential to be used for primary contact recreation. This classification shall be assigned to water segments for which no use attainability analysis has been performed demonstrating that a recreation class N classification is appropriate, if a reasonable level of inquiry has failed to identify any existing primary contact uses of the water segment, or where the conclusion of a UAA is that primary contact uses may potentially occur in the segment, but there are no existing primary contact uses.

(iii) Class N - Not Primary Contact Use

These surface waters are not suitable or intended to become suitable for primary contact recreation uses. This classification shall be applied only where a use attainability analysis demonstrates that there is not a reasonable likelihood that primary contact uses will occur in the water segment(s) in question within the next 20-year period.

(v) Class U - Undetermined Use

These are surface waters whose quality is to be protected at the same level as existing primary contact use waters, but for which there has not been a reasonable level of inquiry about existing recreational uses and no recreation use attainability analysis has been completed. This shall be the default classification until inquiry or analysis demonstrates that another classification is appropriate.

(b) Agriculture

These surface waters are suitable or intended to become suitable for irrigation of crops usually grown in Colorado and which are not hazardous as drinking water for livestock.

(c) Aquatic Life

These surface waters presently support aquatic life uses as described below, or such uses may reasonably be expected in the future due to the suitability of present conditions, or the waters are intended to become suitable for such uses as a goal:

(i) Class 1~~I~~ - Cold Water Aquatic Life

These are waters that (1) currently are capable of sustaining a wide variety of cold water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species.

(ii) Class 1 - Warm Water Aquatic Life

These are waters that (1) currently are capable of sustaining a wide variety of warm water biota, including sensitive species, or (2) could sustain such biota but for correctable water quality conditions. Waters shall be considered capable of sustaining such biota where physical habitat, water flows or levels, and water quality conditions result in no substantial impairment of the abundance and diversity of species~~specifies~~.

(iii) Class 2 - Cold and Warm Water Aquatic Life

These are waters that are not capable of sustaining a wide variety of cold or warm water biota, including sensitive species, due to physical habitat, water flows or levels, or uncorrectable water quality conditions that result in substantial impairment of the abundance and diversity of species.

(d) Domestic Water Supply

These surface waters are suitable or intended to become suitable for potable water supplies. After receiving standard treatment (defined as coagulation, flocculation, sedimentation, filtration, and disinfection with chlorine or its equivalent) these waters will meet Colorado drinking water regulations and any revisions, amendments, or supplements thereto.

(i) Direct Use Water Supply Lakes and Reservoirs Sub-classification

(A) For the purpose of this section, “plant intake” means the works or structures at the head of a conduit through which surface water is diverted from a source (e.g., lake) into the treatment plant.

(B) Direct Use Water Supply Lakes and Reservoirs (DUWS) are those water supply lakes and reservoirs where:

(I) There is a plant intake located in the lake or reservoir or a man-made conveyance from the lake or reservoir that is used regularly to provide raw water directly to a water treatment plant that treats and disinfects raw water, or

(II) The Commission, based on evidence in the record, determines that the reservoir will meet the criteria in 31.13(1)(d)(i)(B)(I) in the future.

(e) Wetlands

(i) The provisions of this section do not apply to constructed wetlands.

(ii) Compensatory wetlands shall have, as a minimum, the classifications of the segment in which they are located.

(iii) Created wetlands shall be considered to be initially unclassified, and shall be subject only to the narrative standards set forth in section 31.11, unless and until the Commission adopts the “wetlands” classification described below and appropriate numeric standards for such wetlands.

(iv) Tributary wetlands shall be considered tributaries of the surface water segment to which they are most directly connected and shall be subject to interim classifications as follows: such wetlands shall be considered to have the same classifications, except for drinking water supply classifications, as the segment of which they are a part, unless the

"wetlands" classification and appropriate site-specific standards have been adopted to protect the water quality dependent functions of the wetlands. Interim numeric standards for these wetlands are described in section 31.7(1)(b)(iv).

(v) The Commission may adopt a "wetlands" classification based on the functions of the wetlands in question. Wetland functions that may warrant site-specific protection include groundwater recharge or discharge, flood flow alteration, sediment stabilization, sediment or other pollutant retention, nutrient removal or transformation, biological diversity or uniqueness, wildlife diversity or abundance, aquatic life diversity or abundance, and recreation. Because some wetland functions may be mutually exclusive (e.g., wildlife abundance, recreation), the functions to be protected or restored will be determined on a wetland-by-wetland basis, considering natural wetland characteristics and overall benefits to the watershed. The initial adoption of a site-specific wetlands classification and related standards to replace the interim classifications and standards described above shall not be considered a downgrading.

(2) Qualifiers

The following qualifiers may be appended to any classification to indicate special considerations. Where a qualifier applies, it will be appended to the use classification; for example, "Class 1, Warm Water Aquatic Life (Goal)".

(a) Goal

A qualifier which indicates that the waters are presently not fully suitable but are intended to become fully suitable for the classified use. "Goal" will be used to indicate that a temporary modification for one or more of the underlying numeric standards has been granted.

(b) Seasonal

A qualifier which indicates that the water may only be suitable for a classified use during certain periods of the year. During those periods when water is in the stream, the standards as defined in sections 31.7(1)(b) and 31.9(1) shall apply.

(c) Interrupted Flow

A qualifier which indicates that due to natural or human induced conditions the continuity of flow is broken not necessarily according to a seasonal schedule. This qualifier appended to a classification indicates that the flow conditions still permit the classified use during period of flow. The presence of water diversions in a stream does not change the classifications and standards, and the standards do not require that flow be maintained in the stream.

(3) Areas Requiring Special Protection

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31.14 RESERVED

31.15 SEVERABILITY

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31.16 TABLES

(1) INTRODUCTION

*****

(2) TESTING PROCEDURES

*****

(3) REFERENCES

Capital letters following levels in the tables indicate the sources of the level; they are referenced below. ~~In some cases, the source is described in a footnote.~~

(A) EPA Quality Criteria for Water, July 1976, U.S. Environmental Protection Agency, U.S. Government Printing Office: 1977 0-222-904, Washington, D.C. 256 p.

(B) EPA ~~–~~Water Quality Criteria 1972, Ecological Research Series, National Academy of Sciences, National Academy of Engineering, EPA-R3-73-033, March 1973, Washington, D.C. 594 p.

(C) Davies, P.H. and Goettl, J.P., Jr., July 1976, Aquatic Life - Water Quality Recommendations for Heavy Metal and Other Inorganics.

(D) Parametrix Inc., Attachment II, Parametrix Reports - Toxicology Assessments of As, Cu, Fe, Mn, Se, and Zn, May 1976, Bellevue, Washington, 98005. submitted to Water Quality Control Commission by Gulf Oil Corp., Inc., 161 p.

(E) EPA National Interim Primary Drinking Water Regulations, 40 Code of Federal Regulations, Part 141.

(F) EPA, March 1977, Proposed National Secondary Drinking Water Regulation, Federal Register, Vol. 42 No. 62, pp 17143-17147.

(G) Recommendations based on review of all available information by the Committee on Water Quality Standards and Stream Classification.

(H) American Fishery Society, June 1978, A Review of the EPA Red Book Quality Criteria for Water, (Preliminary Edition).

(I) Section 307 of the Clean Water Act, regulations promulgated pursuant to Section 307.

(J) Final Report of the Water Quality Standards and Methodologies Committee to the Colorado Water Quality Control Commission, June 1986.

(K) Proposed Nitrogenous Water Quality Standards for the State of Colorado, by the Nitrogen Cycle Committee of the Basic Standards Review Task Force, March 12, 1986 (Final Draft).

(L) Quality Criteria for Water, 1986, and Updates Through 1989, U.S. Environmental Protection Agency, U.S. Government Printing Office, EPA 440/5-86-001, Washington, D.C. 20460.

(M) ~~m superscript: L~~level modified by Commission

(N) 1999 Update of Ambient Water Quality Criteria for Ammonia (1999 Ammonia Update), U.S. Environmental Protection Agency, Office of Water, EPA-823-F-99-024, Washington, D.C. 20460.

(O) Raisbeck, M.F., S. L. Riker, C. M. Tate, R. Jackson, M. A. Smith, K. J. Reddy and J. R. Zygmunt. 2008. Water quality for Wyoming livestock and wildlife. University of Wyoming AES Bulletin B-1183.

TABLE I - PHYSICAL AND BIOLOGICAL PARAMETERS

TABLE I PHYSICAL AND BIOLOGICAL PARAMETERS								
Parameter	Recreation~~al~~			Aquatic Life			Agriculture	Domestic Water Supply
	CLASS E (Existing Primary Contact) and CLASS U (Undetermined Use)	CLASS P (Potential Primary Contact Use)	CLASS N (Not Primary Contact Use)	CLASS 1 COLD WATER BIOTA	CLASS 1 WARM WATER BIOTA	CLASS 2		
PHYSICAL								
D.O. (mg/L~~l~~)[(1)(9)]	3.0[(A)]	3.0[(A)]	3.0[(A)]	6.0[(2)(G)] 7.0 (spawning)	5.0[(2)(G)]	5.0[(A)]	3.0[(A)]	3.0[(A)]
pH (Std. Units)[(3)]	6.5–9.0[(B,M~~m~~)]	6.5–9.0[(B,M~~m~~)]	6.5–9.0[(B,M~~m~~)]	6.5–9.0[(A)]	6.5–9.0[(A)]	6.5–9.0[(A)]		5.0–9.0[(A)]
Suspended Solids[(4)]								
Temperature (°C)[(5)]				**Rivers & Streams: Tier I[a,g]:** June-Sept = 17.0 (ch), 21.7 (ac) Oct –May = 9.0 (ch), 13.0 (ac) **Tier II[b,g]:** Apr-Oct = 18.3 (ch), 24.3 (ac) Nov-Mar = 9.0 (ch), 13.0 (ac) **Lakes & Res[h]:** Apr-Dec = 17.0 (ch), 21.2 (ac) Jan-Mar = 9.0 (ch), 13.0 (ac) **Large Lakes & Res[c,h]:** Apr-Dec = 18.3 (ch), 24.2 (ac) Jan-Mar = 9.0 (ch), 13.0 (ac)	**Rivers & Streams: Tier I[d]:** Mar-Nov = 24.2 (ch), 29.0 (ac) Dec-Feb = 12.1 (ch), 24.6 (ac) **Tier II[e]:** Mar-Nov = 27.5 (ch), 28.6 (ac) Dec-Feb = 13.8 (ch), 25.2 (ac) **Tier III[f]:** Mar-Nov = 28.7 (ch), 31.8 (ac) Dec-Feb = 14.3 (ch), 24.9 (ac) **Lakes & Res:** Apr-Dec = 26.2 (ch), 29.3 (ac) Jan-Mar = 13.1 (ch), 24.1 (ac)	Same as Class 1		
BIOLOGICAL:								
E. coli per 100 ml	126[(7)]	205[(7)]	630[(7)]					630
Note: Capital letters In parentheses refer to references listed in section 31.16(3); n~~N~~umbers in parentheses refer to Table ~~l~~I footnotes.								

Temperature Definitions

[a] Cold Stream Tier I temperature criteria apply where cutthroat trout and brook trout are expected to occur.

[b] Cold Stream Tier II temperature criteria apply where cold-water aquatic species, excluding cutthroat trout or brook trout, are expected to occur.

[c] Large Cold Lakes temperature criteria apply to lakes and reservoirs with a surface area equal to or greater than 100 acres surface area.

[d] Warm Stream Tier I temperature criteria apply where common shiner, johnny darter, or orangethroat darter, or stonecat are expected to occur.

[e] Warm Stream Tier II temperature criteria apply where brook stickleback, central stoneroller, creek chub, finescale dace, longnose dace, mountain sucker, northern redbelly dace, razorback sucker, or white sucker are expected occur, and none of the more thermally sensitive species in Tier I are expected to occur.

[f] Warm Stream Tier III temperature criteria apply where warm-water aquatic species are expected to occur, and none of the more thermally sensitive species in Tiers I and II are expected to occur.

[g] Mountain whitefish-based summer temperature criteria [16.9 (ch), 21.2 (ac)] apply when and where spawning and sensitive early life stages of this species are known to occur.

[h] Lake trout-based summer temperature criteria [16.6 (ch), 22.4 (ac)] apply where appropriate and necessary to protect lake trout from thermal impacts.

Table I – Footnotes

(1) Standards for dissolved oxygen are minima, unless specified otherwise. For the purposes of permitting, dissolved oxygen may be modeled for average conditions of temperature and flow for the worst case time period. Where dissolved oxygen levels less than these levels occur naturally, a discharge shall not cause a further reduction in dissolved oxygen in receiving water. (For lakes, also see footnote 9.)

(2) A 7.0 mg/liter standard (minimum), during periods of spawning of cold water fish, shall be set on a case by case basis as defined in the NPDES or CDPS permit for those dischargers whose effluent would affect fish spawning.

(3) The pH standards of 6.5 (or 5.0) and 9.0 are an instantaneous minimum and maximum, respectively to be applied as effluent limits. In determining instream attainment of water quality standards for pH, appropriate averaging periods may be applied, provided that beneficial uses will be fully protected.

(4) Suspended solid levels will be controlled by Effluent Limitation Regulations, Basic Standards, and Best Management Practices (BMPs).

(5) Temperature shall maintain a normal pattern of diel and seasonal fluctuations and spatial diversity with no abrupt changes and shall have no increase in temperature of a magnitude, rate, and duration deleterious to the resident aquatic life. These criteria shall not be interpreted or applied in a manner inconsistent with section 25-8-104, C.R.S.

a. The MWAT of a waterbody shall not exceed the chronic temperature criterion more frequently than one event in three years on average.

b. The DM of a waterbody shall not exceed the acute temperature criterion more frequently than one event in three years on average.

c. The following shall not be considered an exceedance of the criteria:

i. Lakes and reservoirs: When a lake or reservoir is stratified, the mixed layer may exceed the applicable temperature criteria in Table ~~1~~I provided that an adequate refuge exists in water below the mixed layer. Adequate refuge means that there is concurrent attainment of the applicable Table I temperature and dissolved oxygen criteria. If the refuge is not adequate because of dissolved oxygen levels, the lake or reservoir may be included on the 303(d) List as “impaired” for dissolved oxygen, rather than for temperature.

ii. A “warming event” is the maximum allowable extent of exceedances above the standard, in units of degree-days (°C-days). This concept integrates both the magnitude of temperature (°C) above the standard as well as the duration (in days) and represents the cumulative temperatures above which growth or lethal impacts to fisheries are expected. For all Cold Stream tiers the allowable degree-days are 2.4 (acute) and 13.5 (chronic). For all Warm Stream tiers the allowable degree-days are 3.8 (acute) and 35.5 (chronic).

~~i. Air temperature excursion: ambient water temperature may exceed the criteria in Table 1 or the applicable site-specific standard when the daily maximum air temperature exceeds the 90th percentile value of the~~

~~monthly maximum air temperatures calculated using at least 10 years of air temperature data.~~

~~ii. Low-flow excursion: ambient water temperature may exceed the criteria in Table 1 or the applicable site-specific standard when the daily stream flow falls below the acute critical low flow or monthly average stream flow falls below the chronic critical low flow, calculated pursuant to Regulation 31.9(1)~~

~~iii. Winter shoulder-season excursion: For the purposes of assessment, ambient water temperatures in cold streams may exceed the winter criteria in Table 1 or applicable site-specific winter standard for 30 days before the winter/summer transition, and 30 days after the summer/winter transition, provided that the natural seasonal progression of temperature is maintained and that temperature exceedances during these periods are not the result of anthropogenic activities in the watershed.~~

(6) Deleted

(7) *E. coli* criteria and resulting standards for individual water segments~~,~~ are established as indicators of the potential presence of pathogenic organisms. Standards for *E. coli* are expressed as a two-month geometric mean. Site-specific or seasonal standards are also two-month geometric means unless otherwise specified.

(8) Deleted

(9) The dissolved oxygen standard applies to lakes and reservoirs as follows.

a. Recreation: In the upper portion of a lake or reservoir, dissolved oxygen shall not be less than the criteria in Table ~~1~~ I or the applicable site-specific standard. In the lower portion of a lake or reservoir, dissolved oxygen may be less than the applicable standard except where a site-specific standard has been adopted. A site-specific dissolved oxygen standard will be established for the lower portion of a lake or reservoir where there is evidence that primary contact occurs within the lower portion.

b. Agriculture: In the upper portion of a lake or reservoir, dissolved oxygen shall not be less than the criteria in Table ~~1~~I or the applicable site-specific standard. In the lower portion of a lake or reservoir, dissolved oxygen may be less than the applicable standard except where a site-specific standard has been adopted. A site-specific dissolved oxygen standard will be established for the lower portion of a lake or reservoir where there is evidence that livestock watering or irrigation water is pumped from the lower portion.

c. Aquatic Life: In the upper portion of a lake or reservoir, dissolved oxygen shall not be less than the criteria in Table I or the applicable site-specific standard. In the lower portion of a lake or reservoir, dissolved oxygen may be less than the applicable standard as long as there is adequate refuge. Adequate refuge means that there is concurrent attainment of the applicable Table I temperature and dissolved oxygen criteria. A site-specific dissolved oxygen standard will be established for the lower portion of a lake or reservoir where the expected aquatic community has habitat requirements within the lower portion.

i. Fall turnover exclusion: Dissolved oxygen may drop 1 mg/L~~l~~ below the criteria in Table ~~1~~I in the upper portion of a lake or reservoir for up to seven consecutive days during fall turnover provided that profile measurements are taken at a consistent location within the lake or reservoir 7-days before, and 7-days after the profile with low dissolved oxygen. The profile measurements taken before and after the profile with low dissolved oxygen must attain the criteria in Table ~~1~~I in the upper portion of the lake or reservoir. The fall turnover exclusion does not apply to lakes or reservoirs with fish species that spawn in the fall unless there are data to show that adequate dissolved oxygen is maintained in all spawning areas, for the entire duration of fall turnover.

d. Water Supply: The dissolved oxygen criteria is intended to apply to the epilmnion and metalimnion strata of lakes and reservoirs. Dissolved oxygen in the hypolimnion may, due to the natural conditions, be less than the table criteria. No reductions in dissolved oxygen levels due to controllable sources is allowed.

TABLE II - INORGANIC PARAMETERS

TABLE II INORGANIC PARAMETERS								
Parameter	Aquatic Life						Agriculture	Domestic Water Supply
	CLASS 1 COLD WATER BIOTA		CLASS 1 WARM WATER BIOTA		CLASS 2			
~~INORGANICS:~~								
Ammonia (mg/L~~l~~ as N) Total	chronic = elsp or elsa[(1)] acute = sp[(1)][(N)]		chronic = Apr 1-Aug 31 = elsp[(1)] Sept 1-Mar 29 = elsa[(1)] acute = sa[(1)][(N)]		Class 2 Cold/Warm have the same standards as Class 1 Cold/Warm[(N)]			
Total residual Chlorine (mg/L~~l~~)	0.019[(L)] (~~1-day~~acute)	0.011[(L)] (chronic~~30-day~~)	0.019[(L)] (acute~~1-day~~)	0.011[(L)] (chronic~~30-day~~)	0.019[(L)] (acute~~1-day~~)	0.011[(L)] (chronic~~30-day~~)		
Cyanide - Free (mg/L~~l~~)	0.005[(H)] (acute~~1-day~~)		0.005[(H)] (acute~~1-day~~)		0.005[(H)] (acute~~1-day~~)		0.2[(G)] (~~1-day~~acute)	0.2[(B,D,M~~m~~)] (acute~~1-day~~)
Fluoride[(6)] (mg/L~~l~~)								2.0[~~(3)~~(E)] (acute~~1-day~~)
Nitrate (mg/L~~l~~ as N)							100[(2)(B)] (acute)	10[(4)(K)] (acute~~1-day~~)
Nitrite (mg/L~~l~~ as N)	TO BE ESTABLISHED ON A CASE BY CASE BASIS[(3)]				A CASE BY CASE BASIS[(3)]		10[(2)(B)] (~~1-day~~acute)	1.0[(2)(4)(K)] (acute~~1-day~~)
Sulfide as H_2S (mg/L~~l~~)	0.002 undissociated[(A)] (chronic~~30-day~~)		0.002 undissociated[(A)] (chronic~~30-day~~)		0.002 undissociated[(A)] (chronic~~30-day~~)			0.05[(F)] (chronic~~30-day~~)
Boron (mg/L~~l~~)							0.75[(A,B)] (chronic~~30-day~~)	
Chloride (mg/L~~l~~)								250[(F)] (chronic~~30-day~~)
Sulfate, dissolved[(7)] (mg/L~~l~~)								250[(F)] (chronic~~30-day~~)
Asbestos[(6)] fibers/L								7,000,000 ~~fibers/L~~[(5)] (chronic)
Note: Capital letters in parentheses refer to references listed in 31.16(3); numbers in parentheses refer to T~~t~~able II footnotes.								

Table II – Footnotes

(1) Chronic:

For fFish eEarly lLife sStage pPresent (elsp)*:

$$chronic\ elsp = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * MIN\left(2.85, 1.45*10^{0.028(25-T)}\right)$$

For fFish eEarly lLife sStage aAbsent (elsa)*:

$$chronic\ elsa = \left(\frac{0.0577}{1+10^{7.688-pH}} + \frac{2.487}{1+10^{pH-7.688}}\right) * 1.45*10^{0.028*(25-MAX(T,7))}$$

*T = Temperature

Acute:

For salmonids present (sp):

$$acute\ sp = \frac{0.275}{1+10^{7.204-pH}} + \frac{39.0}{1+10^{pH-7.204}}$$

For salmonids absent (sa):

$$acute\ sa = \frac{0.411}{1+10^{7.204-pH}} + \frac{58.4}{1+10^{pH-7.204}}$$

(2) In order to provide a reasonable margin of safety to allow for unusual situations such as extremely high water ingestion or nitrite formation in slurries, the NO3-N plus NO2-N content in drinking waters for livestock and poultry should be limited to 100ppm or less, and the NO2-N content alone be limited to 10ppm or less.

(3) Salmonids and other sensitive fish species* present:

Acute= 0.10 (0.59 * [Cl-]+3.90) mg/L NO2-N

Chronic= 0.10 (0.29 * [Cl-]+0.53) mg/L NO2-N

[Cl-] = Chloride ion concentration; (upper limit for Cl- = 40 mg/L)

Salmonids and other sensitive fish species* absent:

Acute= 0.20 (2.00 * [Cl-]+0.73) mg/L NO2-N

Chronic=0.10 (2.00 *[Cl-]+0.73) mg/L NO2-N

[Cl-] = Chloride ion concentration; upper limit for Cl- = 22 mg/L)

*Sensitive fish species include salmonids, channel catfish, logperch and brook stickleback. Either total or dissolved chloride data may be used in these equations.

(4) The combined total of nitrate plus nitrite will not exceed 10 mg/L.

a. The nitrate limit shall be calculated to meet the relevant standard in accordance with the provisions of Section 31.10 of this regulation, unless ~~(this subsection 4 is repealed effective 12/31/2022):~~

~~a.~~ ~~T~~the permittee provides documentation that a reasonable level of inquiry demonstrates that there is no actual domestic water supply use of the waters in question or of hydrologically connected groundwater~~, or~~

~~b~~. The combined total of nitrate plus nitrite at the point of intake to the domestic water supply will not exceed 10 mg/L as demonstrated through modeling or other scientifically supportable analysis. (This Footnote 4a is repealed effective 12/31/2022).

(5) Asbestos standard applies to fibers 10 micrometers or longer.

(6) Consistent with 31.7(1)(b) and 31.7(2), these table values will be applied on a site-specific basis.

(7) The dissolved sulfate standard may be assessed and implemented from either unfiltered or filtered samples.

TABLE III - METAL PARAMETERS

TABLE III METAL PARAMETERS (cConcentration in µg/Ll)						
Metal(1)	Aquatic Life(1)(3)(4)(J)		Agriculture(2)	Domestic Water Supply(2)	Water + Fish(7)	Fish Ingestion(10)
	ACUTE	CHRONIC	CHRONIC		CHRONIC	CHRONIC
Aluminum	e(1.3695*[ln(hardness)]+1.8308) (total recoverable)	87 or e(1.3695*[ln(hardness)]-0.1158) (total recoverable)(11)			---	---
Antimony(18)				6.0 (30-daychronic)	5.6	640
Arsenic	340	150	100(A) (30-day)	0.02 – 10(13) (chronic30-day)	0.02	7.6
Barium(18)				1,000(E) (acute1-day) 490 (chronic30-day)	---	---
Beryllium(18)			100(A,B) (30-day)	4.0 (chronic30-day)	---	---
Cadmium	Warm(17) = (1.136672-(ln(hardness)* 0.041838))*e(0.9789*ln(hardness)-3.443) Cold(17) = (1.136672-(ln(hardness)* 0.041838))*e(0.9789*ln(hardness)-3.866)	(1.101672-(ln(hardness)*0.041838))* e(0.7977*ln(hardness)-3.909)	10(B) (30-day)	5.0(E) (1-dayacute)	---	---
Chromium III(5)	e(0.819*[ln(hardness)]+2.5736)	e(0.819*[ln(hardness)]+0.5340)	100(B) (30-day)	50(E) (acute1-day)	---	---
Chromium VI(5)	16	11	100(B) (30-day)	50(E) (acute1-day)	100(30-day)	---
Copper	e(0.9422*[ln(hardness)]-1.7408)	e(0.8545*[ln(hardness)]-1.7428)	200(B)	1,000(F) (chronic30-day)	1,300	---
Iron		1,000 (total recoverable)(A,C)		300 (dissolved)(F) (chronic30-day)	---	---
Lead	(1.46203-[(ln(hardness)* (0.145712)])*e(1.273*[ln(hardness)]-1.46)	(1.46203-[(ln(hardness)* (0.145712)])*e(1.273*[ln(hardness)]-4.705)	100(B) (30-day)	50(E) (acute1-day)	—	---
Manganese	e(0.3331*[ln(hardness)]+6.4676)	e(0.3331*[ln(hardness)]+5.8743)	200(B) (30-day)(12)	50 (dissolved)(F) (chronic30-day)	—	---

Mercury		FRV(fish)[6] = 0.01 (tTotal recoverable)		2.0[E] (acute1-day)	—	---
Molybdenum			300[O] (30-day)[15]	210 (30-daychronic)		
Nickel	$e^{(0.846*[ln(hardness)]+2.253)}$	$e^{(0.846*[ln(hardness)]+0.0554)}$	200[B] (30-day)	100[E] (chronic30-day)	610	4,600
Selenium[9]	18.4	4.6	20[B,D] (30-day)	50[E] (chronic30-day)	170	4,200
Silver	½0.5*$e^{(1.72*[ln(hardness)]-6.52)}$	$e^{(1.72*[ln(hardness)]-9.06)}$ (Trout)[19] = $e^{(1.72*[ln(hardness)]-10.51)}$		100[F] (acute1-day)	—	---
Thallium[18]		15[C]		0.5 (chronic30-day)	0.24	0.47
Uranium[16]	$e^{(1.1021*[ln(hardness)]+2.7088)}$	$e^{(1.1021*[ln(hardness)]+2.2382)}$		16.8 – 30[13] (chronic30-day)	---	---
Zinc	$0.978*e^{(0.9094*[ln(hardness)]+0.9095)}$	$0.986*e^{(0.9094*[ln(hardness)]+0.6235)}$ (sSculpin)[14] = $e^{(2.140*[ln(hardness)]-5.084)}$	2000[B] (30-day)	5,000[F] (chronic30-day)	7,400	26,000
Note: Capital letters in parentheses refer to references listed in section 31.16(3); nNumbers in parentheses refer to Table III footnotes.						

Table III – Footnotes

(1) Metals for aquatic life use are stated as dissolved unless otherwise specified.

Where the hardness-based equations in Table III are applied as table value water quality standards for individual water segments, those equations define the applicable numerical standards. As an aid to persons using this regulation, Table IV provides illustrative examples of approximate metals values associated with a range of hardness levels. This table is provided for informational purposes only.

(2) Metals for agricultural and domestic uses are stated as total recoverable unless otherwise specified.

(3) Hardness values to be used in equations are in mg/L~~l~~ as calcium carbonate and shall be no greater than 400 mg/L~~l~~. The exception is for aluminum, where the upper cap on calculations is a hardness of 220 mg/L~~l~~. For permit effluent limit calculations, the hardness values used in calculating the appropriate metal standard should be based on the lower 95 percent confidence limit of the mean hardness value at the periodic low flow criteria as determined from a regression analysis of site specific data. Where insufficient site~~-~~-specific data exists to define the mean hardness value at the periodic low flow criteria, representative regional data shall be used to perform the regression analysis. Where a regression analysis is not possible, a site~~-~~-specific method should be used, e.g., where hardness data exists without paired flow data, the mean of the hardness during the low flow season established in the permit shall be used. In calculating a hardness value, regression analyses should not be extrapolated past the point that data exist. For determination of standards attainment, where paired metal/hardness data is available, attainment will be determined for individual sampling events. Where paired data is not available, the mean hardness will be used.

(4) Both acute and chronic numbers adopted as stream standards are levels not to be exceeded more than once every three years on the average.

(5) Unless the ~~stability of the~~stable forms of chromium ~~valence state~~ in ~~receiving~~ a water~~s~~ body ~~can be clearly demonstrated~~have been characterized and shown not to be predominantly chromium VI, ~~the standard~~ data reported~~for~~ as the measurement of all valence states of chromium combined should be treated as ~~in terms of~~ chromium VI. In addition, in no case can the sum of the ~~instream levels~~concentrations of chromium III ~~hexavalent~~ and ~~trivalent~~ chromium VI or data reported as the measurement of all valence states of chromium combined exceed the water supply standards of 50 µg/L~~l~~ chromium in those waters classified for domestic water use.

(6) FRV means Final Residue Value and should be expressed as~~"Total"~~ "total recoverable" mercury. The term "total recoverable" refers to the mineral acid digestion of an unfiltered sample to account for all forms of mercury present in water.~~because many forms of mercury are readily converted to toxic forms under natural conditions.~~ Mercury data analyzed and reported as "total" or "total recoverable" mercury by using EPA approved total mercury analysis methods listed in 40 CFR 136.3 are considered equivalent.

Many forms of mercury are readily converted to toxic forms under natural conditions. The FRV of 0.01 µg/liter is the maximum allowed concentration of total mercury in the water. This value is estimated to prevent bioaccumulation of methylmercury in edible fish or shellfish tissue above the fish tissue standard for methylmercury of 0.3 mg/kg.

In waters supporting populations of fish or shellfish with a potential for human consumption, the Commission can adopt the FRV as the stream standard to be applied

as a 30-~~-~~day average. Alternatively, the Commission can adopt site-~~-~~specific ambient-based standards for mercury in accordance with section 31.7(1)(b)(ii) and (iii). Site-specific water-column standards shall be calculated from the site-specific bioaccumulation factor, using measured water column concentrations of total mercury and measured fish tissue concentrations of methylmercury. Fish tissue data shall be collected from species of the highest trophic level present in the water-body. Fish tissue samples should include older, larger individuals present in the water-body. A bioaccumulation factor should be calculated separately for each species sampled, and the highest bioaccumulation factor should be used to calculate the site-specific water column standard in order to prevent the average fish tissue concentrations from exceeding 0.3 mg/kg for all species.

(7) Applicable to all Class 1 aquatic life segments which also have a water supply classification or Class 2 aquatic life segments which also have a water supply classification designated by the Commission after rulemaking hearing. These Class 2 segments will generally be those where fish of a catchable size and which are normally consumed are present, and where there is evidence that fishing takes place on a recurring basis. The Commission may also consider additional evidence that may be relevant to a determination whether the conditions applicable to a particular segment are similar enough to the assumptions underlying the ~~w~~Water ~~plus~~ + F~~f~~ish ingestion criteria to warrant the adoption of W~~w~~ater ~~plus~~+ F~~f~~ish ingestion standards for the segment in question.

(8) The use of 0.1 micron pore size filtration for determining dissolved iron is allowed as an option in assessing compliance with the drinking water standard.

(9) Selenium is a bioaccumulative metal and subject to a range of toxicity values depending upon numerous site-specific variables.

(10) Applicable to the following segments which do not have a water supply classification: all Class 1 aquatic life segments or Class 2 aquatic life segments designated by the Commission after rulemaking hearing. These class 2 segments will generally be those where fish of a catchable size and which are normally consumed are present, and where there is evidence that fishing takes place on a recurring basis. The Commission may also consider additional evidence that may be relevant to a determination whether the conditions applicable to a particular segment are similar enough to the assumptions underlying the fish ingestion criteria to warrant the adoption of fish ingestion standards for the segment in question.

(11) Where the pH is equal to or greater than 7.0 in the receiving water after mixing, the chronic hardness-dependent equation will apply. Where pH is less than 7.0 in the receiving water after mixing, either the 87 µg/L~~l~~ chronic total recoverable aluminum criterion or the criterion resulting from the chronic hardness-dependent equation will apply, whichever is more stringent.

(12) This standard is only appropriate where irrigation water is applied to soils with pH values lower than 6.0.

(13) Whenever a range of standards is listed and referenced to this footnote, the first number in the range is a strictly health-based value, based on the Commission's established methodology for human health-based standards. The second number in the range is a maximum contaminant level, established under the federal Safe Drinking Water Act that has been determined to be an acceptable level of this chemical in public water supplies, taking treatability and laboratory detection limits into account. Control requirements, such as discharge permit effluent limitations, shall be established using the first number in the range as the ambient water quality target, provided that no effluent limitation shall require

an “end-of-pipe” discharge level more restrictive than the second number in the range. Water bodies will be considered in attainment of this standard, and not included on the Section 303(d) List, so long as the existing ambient quality does not exceed the second number in the range.

(14) The chronic zinc equation for sculpin applies in areas where mottled sculpin are expected to occur and hardness is less than 102 ppm CaCO3. The regular chronic zinc equation applies in areas where mottled sculpin are expected to occur, but the hardness is greater than 102 ppm CaCO3.

(15) In determining whether adoption of a molybdenum standard is appropriate for a segment, the Commission will consider whether livestock or irrigated forage is present or expected to be present. The table value assumes that copper and molybdenum concentrations in forage are 7 mg/kg and 0.5 mg/kg respectively, forage intake is 6.8 kg/day, copper concentration in water is 0.008 mg/L~~l~~, water intake is 54.6 L~~l~~/day, copper supplementation is 48 mg/day, and that a Cu:Mo ratio of 4:1 is appropriate with a 0.075 mg/L~~l~~ molybdenum margin of safety. Numeric standards different than the table-value may be adopted on a site-specific basis where appropriate justification is presented to the Commission. In evaluating site-specific standards, the relevant factors that should be considered include the presence of livestock or irrigated forage, and the total intake of copper, molybdenum, and sulfur from all sources (i.e., food, water, and dietary supplements). In general, site-specific standards should be based on achieving a safe copper:molybdenum total exposure ratio, with due consideration given to the sulfur exposure. A higher Cu:Mo ratio may be necessary where livestock exposure to sulfur is also high. Species specific information shall be considered where cattle are not the most sensitive species.

(16) When applying the table value standards for uranium to individual segments, the Commission shall consider the need to maintain radioactive materials at the lowest practical level as required by Section 31.11(2) of the Basic Standards regulation.

(17) The acute(warm) cadmium equation applies to segments classified as Aquatic Life Warm Class 1 or 2. The acute(cold) cadmium equation applies to segments classified as Aquatic Life Cold Class 1 or 2.

(18) Consistent with 31.7(1)(b) and 31.7(2), these table values will be applied on a site-specific basis.

(19) The chronic silver equation for trout applies in areas where trout are expected to occur. The regular chronic silver equation applies in areas where trout are not expected to occur.

TABLE IV ~~–~~ AQUATIC LIFE TABLE VALUE STANDARDS FOR SELECTED HARDNESS~~ES~~ CONCENTRATIONS

TABLE IV AQUATIC LIFE TABLE VALUE STANDARDS FOR SELECTED HARDNESS CONCENTRATIONS (µg/L) ~~Table Value Standards for Selected Hardnesses (concentration in µg/L, dissolved)~~											
Mean Hardness in mg/L~~l~~ Ccalcium ~~c~~Carbonate											
		25	50	75	100	150	200	250	300	350	400
Aluminum	Acute	512	1324	2307	3421	5960	8838	10071	10071	10071	10071
	Chronic	73	189	329	488	851	1262	1438	1438	1438	1438
Cadmium	Acute(cold)	0.49	0.94	1.4	1.8	2.6	3.4	4.2	5.0	5.8	6.5
	Acute(warm)	0.75	1.4	2.1	2.7	4.0	5.2	6.4	7.6	8.8	10
	Chronic	0.25	0.43	0.58	0.72	0.97	1.2	1.4	1.6	1.8	2.0
Chromium III	Acute	183	323	450	570	794	1005	1207	1401	1590	1773
	Chronic	24	42	59	74	103	131	157	182	207	231
Copper	Acute	3.6	7.0	10	13	20	26	32	38	44	50
	Chronic	2.7	5.0	7.0	9.0	13	16	20	23	26	29
Lead	Acute	14	30	47	65	100	136	172	209	245	281
	Chronic	0.5	1.2	1.8	2.5	3.9	5.3	6.7	8.1	9.5	11
Manganese	Acute	1881	2370	2713	2986	3417	3761	4051	4305	4532	4738
	Chronic	1040	1310	1499	1650	1888	2078	2238	2379	2504	2618
Nickel	Acute	145	260	367	468	660	842	1017	1186	1351	1513
	Chronic	16	29	41	52	72	94	113	132	150	168
Silver	Acute	0.19	0.62	1.2	2.0	4.1	6.7	9.8	13	18	22
	Chronic(~~Trout~~trout)	0.01	0.02	0.05	0.08	0.15	0.25	0.36	0.50	0.65	0.81
	Chronic	0.03	0.10	0.20	0.32	0.64	1.0	1.6	2.1	2.8	3.5
Uranium	Acute	521	1119	1750	2402	3756	5157	6595	8062	9555	11070
	Chronic	326	699	1093	1501	2346	3221	4119	5036	5968	6915
Zinc	Acute	45	85	123	160	231	301	368	435	500	565
	Chronic(~~S~~sculpin)	6.1	27	64	118	N/A	N/A	N/A	N/A	N/A	N/A
	Chronic	34	65	93	121	175	228	279	329	379	428
Shading~~ed~~ indicates the aquatic life standards~~values~~ exceed drinking water supply standards.											

APPENDIX A. Calculation of a Biologically-Based Low Flow

The biologically-based flow calculation method is an iterative convergence procedure consisting of five parts. In Part I, Z (the allowed number of excursions) is calculated. In Part II, the set of X-day running averages is calculated from the daily flows for the period of record being considered. Because the ambient (instream) concentration of a pollutant can be considered to be inversely proportional to stream flow, the appropriate "running averages" of stream flow are actually "running harmonic means." (The harmonic mean of a set of numbers is the reciprocal of the arithmetic mean of the reciprocals of the numbers.) Thus, "X-day running averages" should be calculated as, not as, where F is the flow for an individual day. Throughout this Appendix A, the term "running average" will mean "running harmonic mean."

Part III describes the calculation of N (the total number of excursions of a specified flow for the period of record being considered). The calculations described in Part III will be performed for a number of different flows that are specified in Parts IV and V. In Part IV, initial lower and upper limits on the flow are calculated, the number of excursions at each limit are calculated using Part III, and an initial trial flow is calculated by interpolation between the lower and upper limits. In Part V, successive iterations are performed to calculate the flow as the highest flow that results in no more than the number of allowed excursions calculated in Part I.

Part I. Calculation of allowed number of excursions.

I-1. Calculate Z = D/[(Y)(365.25 days/year])

where D = the number of days in the flow record;

Y = the average number of years specified in

the frequency; and

Z = the allowed number of excursions based on a 1-in-3-year recurrence interval.

Part II. Calculation of X-day running averages, i.e., X-day running harmonic means.

II-1. Where X = the specified duration (in days) of the averaging period, calculate the set of X-day running averages for the entire period of record being considered, i.e., calculate an X-day average starting with day 1, day 2, day 3, etc. Each average will have X-1 days in common with the next average, and the number of X-day averages calculated from the period of record being considered will be (D+1-X).

Part III. Determination of the number of excursions of a specified flow in a set of running averages, i.e., running harmonic means.

III-1. Select a specified trial low flow by method outlined in Part IV or an equivalent method.

III-2. In the set of X-day running averages for the period of record being considered, record the date for which the first average is below the specified trial low flow and record the number of consecutive days that are part of at least one or more of the X-day averages that are below the specified flow. (Note that whether a day is counted as an excursion day does not depend exclusively on whether the X-day average for that day is below the specified trial low flow. Instead, it depends entirely on whether that day is part of any X-day average that is below the specified trial low flow. Table A-1 provides examples of the counting of excursion days. For ease in discussion, it is based on a 4-day flow period, rather than a 30-day flow period. When calculating a low flow pursuant to Section 31.9(1), a 30-day period should be used.)

Thus the starting date and the duration (in days) of the first excursion period will be recorded. By definition, the minimum duration is X days.

III-3. Determine the starting dates of, and number of days in, each succeeding excursion period in the period of record being considered.

III-4. Identify all of the excursion periods that begin within 120 days after the beginning of the first excursion period. (Although the first excursion period is often the only one in the 120-day period, two or three sometimes occur within the 120 days. Rarely do any excursion periods occur during days 121 to 240.) All of these excursion periods are considered to be in the first low flow period. Add up the total number of excursion days in the first low flow period and divide the sum by X to obtain the number of excursions in the first low flow period. If the number of excursions is calculated to be greater than 5.0, set it equal to 5.0.

III-5. Identify the first excursion period that begins after the end of the first low flow period, and start the beginning of the second 120-day low flow period on the first day of this excursion period. Determine the number of excursion days and excursions in the second low flow period.

III-6. Determine the starting dates of, and the number of excursions in, each succeeding 120-day low flow period.

III-7. Sum the number of excursions in all the low-flow periods to determine S = the total number of excursions of the specified trial low flow.

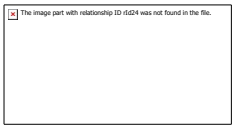
Part IV. Calculation of initial limits of the low flow and initial trial flow.

IV-1. Use L = 0 as the initial lower limit.

IV-2. Use U = the XQY low flow as the initial upper limit.

IV-3. Use N L = 0 as the number of excursions (see Part III) of the initial lower limit.

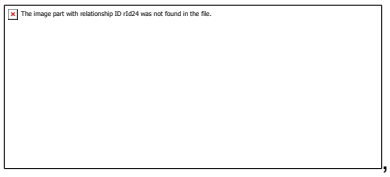
IV-4. Calculate N U = the number of excursions (see Part III) of the initial upper limit.

IV-5. Calculate T = the initial trial flow as 

IV-6. Calculation of initial limits of the low flow and initial trial flow may be accomplished using equivalent methods.

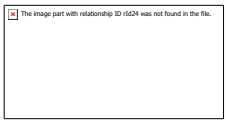
Part V. Iterative convergence to the low flow.

V-1. Calculate N T = the number of excursions for the trial low flow.

V-2 

, use T as the low flow and stop.

V-3. If ((U-L)/U) < 0.005, use L as the low flow and stop.

Otherwise, calculate a new trial flow as  and repeat steps V-1, V-2, and V-3 as necessary.

APPENDIX A TABLE A-1 - COUNTING EXCURSION DAYS FOR A SPECIFIED FLOW OF 100 FT^3/SEC USING 4-DAY AVERAGES.

TABLE A-1. COUNTING EXCURSION DAYS FOR A SPECIFIED FLOW OF 100 FT3/SEC USING 4-DAY AVERAGES.

Date	Daily flow	4-day avg. flow	Is the 4-day average below 100?	Is this date part of any 4-day average that is below 100?	Date of start of excursion period	Number of days in excursion period	Date of start of low flow period	Number of excursion days in low flow period	Number or excursions in low flow period
1	130	112.5	No	No					
2	120	102.5	No	No					
3	110	97.5	Yes	Yes	3	4	3	12	3
4	90	102.5	No	Yes					
5	90	117.5	No	Yes					
6	100	112.5	No	Yes					
7	130	102.5	No	No					
8	150	102.5	No	No					
9	70	87.5	Yes	Yes	9	8			
10	60	90.0	Yes	Yes					
11	130	102.5	No	Yes					
12	90	95.0	Yes	Yes					
13	80	97.5	Yes	Yes					
14	110	127.5	No	Yes					
15	100	225.0	No	Yes					
16	100	>100	No	Yes					
17	200	>100	No	No					
18	500	>100	No	No					
The daily flows and four-day average flows for days 19 to 200 are all above 100 ft^3/sec.									

~~The daily flows and four-day average flows for days 19 to 200 are all above 100 ft^3/sec.~~

31.17 NUTRIENTS

(a) Overview

This section establishes interim numeric values for phosphorus, nitrogen and chlorophyll *a* and also sets forth provisions regarding the use of these numeric values for the adoption of water quality standards.

(b) Interim Phosphorus Values

Table 1 Interim Total Phosphorus Values	
Lakes and Reservoirs, cold~~,~~ > 25 acres	25 µ~~u~~g/L[1]
Lakes and Reservoirs, warm > 25 acres	83 µ~~u~~g/L[1]
Lakes and Reservoirs < = 25 acres	RESERVED
Rivers and Streams - cold	110 µ~~u~~g/L[2]
Rivers and Streams - warm	170 µ~~u~~g/L[2]
[1] summer (July 1 - September 30) average ~~T~~total ~~P~~phosphorus (µ~~u~~g/L) in the mixed layer of lakes (median of multiple depths), allowable exceedance frequency 1-in-5 years. [2] annual median ~~T~~total ~~P~~phosphorus (µ~~u~~g/L), allowable exceedance frequency 1-in-5 years.	

(c) Interim Nitrogen Values (Effective December 31, 2027)

Table 2 Interim Total Nitrogen Values	
Lakes and Reservoirs, cold~~,~~ > 25 acres	426 µ~~u~~g/L[1]
Lakes and Reservoirs, warm~~,~~ > 25 acres	910 µ~~u~~g/L[1]
Lakes and Reservoirs~~,~~ < = 25 acres	RESERVED
Rivers and Streams - cold	1,250 µ~~u~~g/L[2]
Rivers and Streams - warm	2,010 µ~~u~~g/L[2]
[1] summer (July 1 – September 30) average ~~T~~total ~~N~~nitrogen (µ~~u~~g/L) in the mixed layer of lakes (median of multiple depths), allowable exceedance frequency 1-in-5 years. [2] annual median ~~T~~total ~~N~~nitrogen (µ~~u~~g/L), allowable exceedance frequency 1-in-5 years.	

(d) Interim Chlorophyll *a* Values

Table 3 Interim Chlorophyll *a* Values		
Waterbody type	~~.~~	DUWS
Lakes and Reservoirs, cold~~,~~ > 25 acres	8 µ~~u~~g/L[a1]	5 µ~~u~~g/L[c3]
Lakes and Reservoirs, warm~~,~~ > 25 acres	20 µ~~u~~g/L[a1]	5 µ~~u~~g/L[c3]
Lakes and Reservoirs~~,~~ < = 25 acres	RESERVED	5 µ~~u~~g/L[c3]
Rivers and Streams - cold	150 mg/m2-[b2]	
Rivers and Streams - warm	150 mg/m2-[b2]	
[a1] summer (July 1 - September 30) average chlorophyll a (µ~~u~~g/L) in the mixed layer of lakes (median of multiple depths), allowable exceedance frequency 1-in-5 years. [b2] summer (July 1 - September 30) maximum attached algae, not to exceed. [c3] March 1 - November 30 average chlorophyll a (µ~~u~~g/L) in the mixed layer of lakes (median of multiple depths), allowable exceedance frequency 1-in-5 years.		

(e) Use of Interim Phosphorus Values for Standards Adoption

Prior to December 31, 2027 the values set forth in subsection (b) above will be considered for the adoption of water quality standards for specific water bodies in Colorado in the following circumstances.

(i) Waters located upstream of

(A) all permitted domestic wastewater treatment facilities discharging prior to May 31, 2012 or with preliminary effluent limits requested prior to May 31, 2012,

(B) cooling tower discharges, and

(C) any non-domestic facility subject to Regulation #85 effluent limits and discharging prior to May 31, 2012.

(ii) Circumstances where the Cc~~c~~ommission has determined that adoption of numerical standards is necessary to address existing or potential nutrient pollution because the provisions of Regulation #85 will not result in adequate control of such pollution.

(f) Chlorophyll *a* Values for Standards Adoption

Prior to December 31, 2022, the values set forth in subsection (d) above will be considered for the adoption of water quality standards for specific water bodies in Colorado in the following circumstances.

(i) Waters located upstream of

(A) all permitted domestic wastewater treatment facilities discharging prior to May 31, 2012, or with preliminary effluent limits requested prior to May 31, 2012,

(B) cooling tower discharges, and

(C) any non-domestic facility subject to Regulation #85 effluent limits and discharging prior to May 31, 2012.

(ii) Discretionary Application of the Values for Direct Use Water Supply (DUWS) Lakes and Reservoirs. The Cc~~c~~ommission may determine that a numerical chlorophyll standard is appropriate for specific water bodies with this sub-classification after consideration of the following factors:

(A) Whether the public water system using the lake or reservoir as a raw water supply experiences impacts attributed to algae on an intermittent or continual basis;

(B) Whether there are lake or reservoir use restrictions in place that recognize the importance of the reservoir as a water supply;

(C) Whether application of this value appropriately balances protection of all classified uses of the lake or reservoir;

(D) Other site specific considerations which affect the need for a more protective value.

(iii) Circumstances where the Cc~~c~~ommission has determined that adoption of numerical standards is necessary to address existing or potential nutrient pollution because the provisions of Regulation #85 will not result in adequate control of such pollution.

(g) Use of Interim Nitrogen Values for Standards Adoption

After December 31, 2027, the values set forth in subsection (c) above will be considered for the adoption of water quality standards for specific water bodies in Colorado in the circumstances identified in subsection (e)(i) and (ii) above.

(h) Phase 2 Application of Numeric Standards

After December 31, 2022, the values set forth in subsection (d) will be considered by the Cc~~c~~ommission when applying numeric standards to individual segments. After December 31, 2022, the values set forth in subsections (b) and (c) for lakes and reservoirs will be considered by the Cc~~c~~ommission when applying numeric standards to Direct Use Water Supply (DUWS) reservoirs and lakes or lakes and reservoirs with public swim beaches that meet the definition of natural swimming areas in C.R.S. § 25-5-801. After December 31, 2027, the values set forth in subsection (b) and (c) will be considered by the ~~c~~Commission when applying numeric standards to individual segments where total phosphorus and total nitrogen standards have not yet been adopted.

For each individual segment where numeric standards for total phosphorus, total nitrogen, and chlorophyll *a* have not yet been adopted, numeric standards will be adopted by the Cc~~c~~ommission where necessary to:

(i) protect the assigned use classifications, and

(ii) comply with the Colorado Water Quality Control Act and the Federal Act.

(i) Site-Specific Flexibility to Consider Alternatives to the Interim Values

In accordance with the preceding subsection, both before and after December 31, 2027, in considering adoption of numeric standards for specific water bodies in Colorado, the Cc~~c~~ommission may review relevant site-specific factors and conditions in determining what numeric standards are most appropriate, and may adopt standards, either more or less stringent than the 31.17(b)(c) and (d) interim values.

(i) Where evidence demonstrates that an alternative numeric standard would be more appropriate for the protection of use classifications, the Cc~~c~~ommission may consider assigning ambient quality-based standards or site-specific criteria based standards as outlined in 31.7(1)(b)(ii-iii).

(ii) Where it has been demonstrated that interim values are not feasible to achieve, the Cc~~c~~ommission may consider modifying the use classification as outlined in Section 31.6(2).

(iii) Where the conditions established in Section 31.7(3)(a) are met, the Cc~~c~~ommission may consider granting a temporary modification.

31.18 RESERVED.

31.19 RESERVED.

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31.~~57~~58 STATEMENT OF BASIS SPECIFIC STATUTORY AUTHORITY AND PURPOSE; APRIL 13, 2020 RULEMAKING; FINAL ACTION MAY 11, 2020; EFFECTIVE DATE JUNE 30, 2020

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31.59 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE; JUNE 14-15, 2021 RULEMAKING; FINAL ACTION AUGUST 9, 2021; EFFECTIVE DATE DECEMBER 31, 2021

The provisions of C.R.S. 25-8-202(1)(a), (b) and (2); 25-8-203; 25-8-204; and 25-8-402; provide the specific statutory authority for adoption of these regulatory amendments. The commission also adopted in compliance with 24-4-103(4) C.R.S. the following statement of basis and purpose.

BASIS AND PURPOSE

I. EPA DISAPPROVALS AND ACTION LETTERS

A. Use Protected Designation for Effluent Dependent/Dominated Waters

On December 8, 2011, EPA disapproved the Use Protected default for effluent-dependent or effluent-dominated waters provision at 31.8(2)(b)(i)(C) because Use Protected designations are to be based on water quality, not a default assumption regarding the impact of effluent on water quality. In the 2016 Regulation No. 31 rulemaking hearing, the commission adopted a sunset date of 12/31/2019 for this provision to resolve the disapproval. In this hearing, the commission deleted the repealed antidegradation provision at 31.8(2)(b)(i)(C).

B. Temperature Excursions

To adequately protect aquatic life in Colorado, the commission, following guidance from the Temperature Technical Advisory Committee (TAC) deleted the air temperature, low-flow, and shoulder season excursions in Regulation No. 31 at Table I Footnote 5(c). In the 2016 Regulation No. 31 rulemaking hearing, the commission adopted a warming event provision. However, there was no technical basis for the joint adoption and application of both the warming event and excursions concepts.

On August 17, 2016, EPA wrote a letter to the commission citing concerns that the materials developed by the division to support its proposal did not align with the decision made by the commission. In addition, EPA requested additional information supporting joint application of the excursions and warming event allowance, as EPA did "not currently have a basis for approval." In its October 2, 2017 action letter regarding its review of the commission's 2016 changes to Regulation No. 31, EPA took no action on these standards changes. While EPA did not issue a formal disapproval, EPA's rationale for no action was that "a technical analysis has not been submitted which supports the revisions." Subsequent analysis by the division and TAC found that application of both the warming event and excursions is not biologically protective and recommended deleting the air temperature, low-flow, and shoulder season excursions and retaining only the warming event allowance.

During the 2016 Regulation No. 31 rulemaking hearing, some stakeholders voiced concern that deletion of the excursions would result in an unacceptable increase in 303(d) temperature impairment listings. Analysis of over 500 temperature sites across the state indicate that the warming event and excursions are approximately equal in resulting in an assessment decision of impairment or attainment for a waterbody; therefore, deletion of the excursions is not likely to result in an increase in temperature 303(d) listings, given the similar practical outcomes of these provisions. Regarding impacts to permitting, the air temperature, low-flow, and shoulder season

excursions in Table I Footnote 5(c) have never been incorporated into permit effluent limits, and deletion of these excursions will not affect permit effluent limit calculations.

C. Point of Application Footnote for Nitrate Water Supply Standards

On December 8, 2011, EPA disapproved the point of application footnote for nitrate in Table II Footnote 4 that allowed the nitrate standard to not be implemented in discharge permits if no actual Water Supply use was identified and only applied the nitrate standard to the point of intake. The provision was disapproved because the standards are intended to protect classified uses, regardless of whether they are set to protect actual or future uses. During the 2016 Regulation No. 31 rulemaking hearing, a sunset date of 12/31/2022 was adopted for this provision to resolve the disapproval. The commission did not take any action regarding this provision in the current rulemaking hearing. However, Table II Footnote 4 at 31.16 was revised to clarify that the commission intended to retain the condition that the sum of nitrate and nitrite will not exceed the standard of 10 mg/L. The commission restructured the footnote to separate this condition from the portion of the footnote that expires on 12/31/2022.

II. REVISIONS OF CRITERIA IN LIGHT OF NEW INFORMATION

A. Aquatic Life standards for Acrolein and Carbaryl

The commission adopted revised acute and chronic Aquatic Life water quality standards of 3 µg/L for acrolein, based on the EPA 304(a) criteria updated in 2009. The commission also adopted new acute and chronic Aquatic Life water quality standards of 2.1 µg/L for carbaryl, based on the EPA 304(a) criteria published in 2012.

B. Other Standards to Protect Aquatic Life and Recreation Uses

The commission declined to adopt EPA's revised 304(a) Aquatic Life criteria for selenium, ammonia, and aluminum at this time; however, the division is committed to evaluating these new criteria. Studies are currently underway for each parameter to improve understanding of these criteria in the context of water quality conditions in Colorado and how these criteria may be adopted and implemented in Colorado in the future.

EPA has also released updated criteria or guidance for several other parameters, including copper (Aquatic Life), *E. coli* (Recreation), cyanotoxins (Recreation), and the human health risk exposure assumptions. However, the division does not recommend adopting EPA's recommendations for these parameters at this time, as these items are not included on the division's 10-Year Water Quality Roadmap.

III. ANTIDEGRADATION STATUTE ALIGNMENT

As part of the June 2020 Regulation No. 38 rulemaking hearing (final action August 10, 2020), the commission raised questions about a potential misalignment of the Use Protected regulatory provisions in Regulation 31.8(2)(b)(ii) that considered the reversibility of existing pollution, with the statutory language in the Water Quality Control Act that limits the water quality test for the Use Protected designation to existing quality.

SUNSET 31.8(2)(b)(ii) Effective December 31, 2031

Having considered the evidence and statements submitted in this rulemaking, the commission believes that it is appropriate to move forward toward revision or deletion of the discretionary water quality-based antidegradation test at 31.8(2)(b)(ii). While the late stages of this rulemaking helped to advance the discussion regarding options for Use Protected designations based on the presence of substantial pollution for parameters other than those listed in section 31.8(2)(b)(i)(B), it was not possible within the

constraints of this rulemaking to subject these issues and options to the robust public process that they deserve. This included the division's compromise option presented as part of its consolidated proposal - Option B, which proposed to add clear and relevant factors for the commission to holistically consider the overall characteristics of a waterbody when determining antidegradation designations in the limited circumstances where the 12 parameters test may not be sufficient. Since the issues are complex and there remains much controversy at the time of the rulemaking hearing, the commission adopted the division's alternative compromise proposal – Option A and repealed the antidegradation provision at 31.8(2)(b)(ii) with a delayed effective date of December 31, 2031. It is the intention of the commission to retain the current provision until that date but maintain its focus on Use Protected designations based on the 12 parameters test.

This action preserves division resources already fully allocated to criteria development and implementation efforts as identified in the 10-Year Water Quality Roadmap (Roadmap) through 2027 and allows adequate time for the division to conduct a separate, comprehensive stakeholder process on antidegradation following completion of the Roadmap and prior to the expiration of 31.8(2)(b)(ii). The commission intends that the division will engage in this comprehensive stakeholder process to consider options to delete the test at 31.8(2)(b)(ii) or revise that test with criteria that holistically evaluate the overall characteristics of a waterbody in a manner consistent with state and federal requirements. The commission also intends to revisit the provisions at 31.8(2)(b)(ii) through a rulemaking action no later than 2031. Revisiting this provision in the future would have the added benefit of providing an opportunity to also consider other aspects of Colorado's antidegradation rule, such as a lack of explicit "Tier 1" antidegradation review for existing uses as noted by EPA. If this stakeholder process is delayed due to unforeseen circumstances, it is the commission's intent that a limited extension of the sunset date will be adopted to allow time for the stakeholder process and rulemaking hearing prior to deletion of 31.8(2)(b)(ii). The commission also deleted the word "/or" to align with the federal antidegradation rule at 40 CFR 131.12(a)(2) and the Colorado Water Quality Control Act at 25-8-209(4).

Prior to 2021 the commission has only considered the presence of substantial pollution for parameters other than those listed in Section 31.8(2)(b)(i)(B) in the context of antidegradation designations in rare circumstances throughout the history of the antidegradation program in Colorado. The commission selected the 12 parameters listed in 31.8(2)(b)(i)(B) because they are effective indicators of water quality for antidegradation designation purposes. Accordingly, as the commission's past practice has reflected, the water quality-based tests set out in 31.8(2)(b)(i) will ordinarily suffice to determine whether waters' existing quality warrants a Reviewable or a Use Protected designation.

If proposals based on 31.8(2)(b)(ii) are advanced prior to 2031, the commission will thoroughly and holistically consider the physical, chemical, and biological characteristics of a waterbody, social and economic impacts throughout the segment and on downstream waters and users, environmental justice and health equity principles, and ensure that the public has adequate notice and time to engage and comment on proposals.

It is also important to note that under the tests at 31.8(2)(b)(i), the commission may determine that those waters with exceptional recreational or ecological significance should be undesignated, and deserving of the protection afforded by the antidegradation review provisions of section 31.8(3).

Future Considerations

At this time, the commission believes that it would be appropriate for it to revisit the option of a discretionary test for use in the limited circumstances where the 12 parameters test may not be sufficient, so long as that test (1) includes clear factors established in the regulation for making Use Protected antidegradation determinations that are consistent with state and federal law and (2) is based on a finding of substantial pollution for parameters outside those included in the 12 parameters test. Without presuming to limit the options available to future decision makers and based on its experience in this rulemaking, the commission recommends that the following issues should be addressed in a future

stakeholder and rulemaking process to revisit section 31.8(2)(b)(ii) . The issues include, but are not limited to, thorough and holistic consideration of all of the following:

A. the physical, chemical, and biological characteristics of a waterbody, including consideration of how many pollutants and/or what magnitude of pollution should be considered substantial pollution, impacting both aquatic life and recreation uses;
B. the social and economic impacts throughout the segment and on downstream waters and users;
C. environmental justice and health equity principles;
D. ensuring that mechanisms are in place to ensure that the public has adequate notice and time to engage and comment on proposals;
E. that waters with exceptional recreational or ecological significance should not be designated as Use Protected; and
F. whether and how to provide exclusions from the Use Protected designation based on short-term degradation, such as existing quality resulting from temporary events influencing the waterbody that are not representative of normal conditions (e.g., pollution from temporary land disturbance, illegal discharges, spills of toxic chemicals, and impacts from fires, floods, or other catastrophic events).

The commission further recommends that the future stakeholder and rulemaking process should address the broader aspects of the antidegradation program noted above (e.g., explicit Tier 1 antidegradation review).

IV. DISCHARGER-SPECIFIC VARIANCES

The commission revised the discharger-specific variance (DSV) provisions at 31.7(4) to improve the clarity and organization of requirements, reflect the commission's current practices, and align with the 2015 federal rule (40 CFR 131.14). The commission's criteria for DSVs have been utilized successfully to develop DSVs that have been approved by EPA and are resulting in water quality improvements. Overall, the commission determined that the requirements at 31.7(4) continue to be appropriate. The changes made during this hearing are not expected to substantively change the requirements for variances, but rather are intended to improve transparency and facilitate commission action and EPA approval.

Previously, the requirements for DSVs were included in three locations in the regulations, at 31.7(4) *Granting, Extending and Removing Variances to Numeric Standards,* at 31.9(5) *Conditions on Discharger-Specific Variances*, and in some of the basin regulations, which include reevaluation requirements for existing DSVs (e.g., 32.6(6)(a) and (b)). The commission centralized the DSV requirements in a single location at 31.7(4) to ensure that requirements are not overlooked.

A. Variances to Narrative Standards

The commission deleted the term "numeric" from 31.7(4) *Granting, Extending and Removing Variances to Numeric Standards* and 31.7(4)(a) to better align with the federal rule, which does not preclude the possibility of variances to narrative criteria. As with all variances, a DSV for a narrative standard would need to meet all Colorado and federal requirements and be supported by a comprehensive alternatives analysis demonstrating that there are no feasible pollution control alternatives that would allow for the regulated activity to proceed without a discharge that exceeds water quality-based effluent limits (WQBELs) for a given parameter(s) and an evaluation that there are no other regulatory options to achieve compliance. Therefore, a DSV must include identification of the pollutant(s) or water quality parameter(s) to be able to perform an alternatives analysis and a detailed demonstration of why it is not feasible to meet the narrative standard. The identification of the pollutant is a critical and crucial step of the DSV process whether the standard is narrative or numeric, because the treatment and control technologies can vary significantly based on the pollutant requiring removal. For example, feasible treatment technologies for removing organic carbon and ammonia may not be effective at removing zinc, cadmium, or sulfate.

There are several narrative standards in Regulation No. 31 with implementation tools that help determine numeric effluent limitations or quantifiable conditions in NPDES permits. For example, one of the narrative water quality standards listed in 31.11(1) specifies that waters should be free from substances that cause toxicity to humans, animals, plants, and aquatic life. The implementation tool used for aquatic life toxicity determinations is Whole Effluent Toxicity (WET) testing. WET tests directly measure the toxic effects on aquatic life due to the presence of one or more pollutants in the wastewater. Because WET testing is a control mechanism that measures, and limits, the combined toxic effect that the pollutants in the effluent have on aquatic life, it does not require the identification of each one of the pollutants in the effluent. The commission recognizes that each situation is unique, but in cases such as the one for toxicity described here, to qualify for a DSV, the discharger will need to identify the pollutant(s) or water quality parameter(s) that is/are causing non-compliance with the standard and/or failures with the implementation tool. The identification of the pollutant will serve two purposes during a DSV process: first, to determine if there are any pollution control alternatives that can feasibly achieve compliance with the narrative standard (in other words, whether or not the discharger qualifies for a variance); and second, to develop the alternatives analysis of feasible pollution control technologies that will provide incremental water quality improvements.

To align with the federal rule and ensure that a variance results in measurable progress towards attaining the underlying designated use, the commission will also adopt a quantifiable expression of the highest attainable condition for narrative standards. A quantifiable expression of the highest attainable condition can be expressed as numeric pollutant concentrations in ambient water, numeric effluent conditions, or other quantitative expressions of pollutant reduction. The preamble to the federal rule at 40 CFR 131.14 describes the quantifiable expression by providing the example of the maximum number of combined sewer overflows that is achievable after implementation of a long-term control plan. The commission believes such a quantifiable expression helps ensure measurable water quality improvements during the term of the variance, which is a key purpose of a variance.

Although this change acknowledges the possibility of DSVs adopted for narrative standards, the commission encourages potential proponents of DSVs for narrative standards to closely coordinate with the division before proposing such variances. At this time, the commission does not have a full understanding of all the circumstances under which DSVs for narrative standards may be warranted. Similarly, no guidance yet exists for developing and implementing alternative effluent limits (AEL) for narrative standards that protect the highest attainable condition.

B. Review Requirements

In 31.7(4), the commission changed the requirement to reevaluate DSVs “every three years” to “during each basin triennial review for the segment, unless the Commission requires a more frequent review when adopting the variance” to be consistent with current commission practice. Because the DSV reevaluation occurs across multiple hearings (Issues Scoping Hearing, Issues Formulation Hearing, and Rulemaking Hearing), the term “triennial review” better captures the process and timing of DSV reviews. This revision also provides flexibility to conduct more frequent reviews if it is required by the variance.

C. When a DSV is the Right Regulatory Tool

In 31.7(4)(a)(ii), the commission changed the requirement to obtain a DSV from being a preferable matter of policy when the conditions for granting a temporary modification are not met, to requiring evaluation of whether other regulatory tools are appropriate to obtain feasible WQBELs within the required timeframe. This change reflects the commission’s practice of granting a DSV only in instances where there has been an evaluation of other regulatory tools, such as compliance schedules or a Use Attainability Analysis (UAA), to determine whether these tools may result in WQBELs that are feasible for the discharger to achieve within the required timeframe.

The required timeframe to evaluate the potential use of other regulatory tools is based on site-specific conditions; however, a reasonable timeframe for such determinations usually does not exceed a few years. For example, if a discharger is expecting more stringent WQBELs in a future permit, or has a compliance schedule and is considering a variance because it will not be able to achieve its WQBELs at the end of the compliance schedule, the discharger should use this time to evaluate other regulatory tools. A UAA can be evaluated if there is a potential to change the classified uses or standards on the segment; while uses and standards are required to be reviewed at least once every three years, and future changes are possible, DSVs are definitely temporary. In the past, UAAs to support removal of the Water Supply use where there are no current or future water supplies have been effective for several dischargers. This type of analysis can generally be completed within months. It is important to evaluate the potential use of other regulatory tools first, as it is the commission's intent that DSVs are to be used only in cases where the compliance problem cannot be solved using other regulatory tools.

D. Alternative Effluent Limits

In 31.7(4)(b), the commission adopted revisions to both the definition and selection of AELs to improve clarity and align with the federal rule. The commission clarified that the AEL selection process should be based on (1) implementation of the best feasible alternative(s) to achieve WQBELs over the longer term, (2) achieving the highest attainable condition throughout the term of the variance, and (3) protecting the existing water quality conditions at the time of the adoption of the variance unless necessary for restoration activities.

The commission renamed the two options for AELs to reflect what each option represents. The AEL must be either (i) an effluent-based (numeric) limit expressed as an effluent concentration, load, pollutant percent removal, or other quantifiable expression of effluent quality and quantity, or (ii) an action-based (narrative) limit with a quantifiable expression of the specific pollution control requirements to be completed by the discharger and the adoption and implementation of a Pollutant Minimization Program (PMP).

In addition, the commission revised its practice of only adopting AELs to be met by the end of the variance. Previously, the commission adopted only a final AEL, which established the required water quality improvement to be achieved once the selected alternatives had been fully implemented. To ensure that the DSV did not result in any lowering of the currently attained ambient water quality, the commission previously relied upon implementation requirements that directed the permit writer to develop "initial effluent limits" based upon the level of effluent quality currently achieved that applied from the beginning of the variance until the AEL was achieved. The permit writer would also develop "interim effluent limits" if the water quality improvements were planned in phases.

In order to align with federal requirements, the commission will instead adopt AELs that apply throughout the term of the variance. This will include an initial AEL that applies from the beginning of the variance and a final AEL based upon the expected water quality improvement to be achieved once the selected alternatives have been fully implemented. The purpose of the initial AEL is to ensure that the DSV does not result in any lowering of the currently attained ambient water quality. The purpose of the final AEL is to set requirements that represent the highest attainable condition that is feasible to achieve within the term of the variance. The commission may also adopt interim AELs to set requirements for variances with multiple planned phases of water quality improvement.

The commission strongly prefers adoption of effluent-based initial and final AELs, expressed as effluent concentrations, loads, or pollutant removal percentages. However, in cases where the commission determines that an action-based final AEL is appropriate, the commission may still adopt an effluent-based initial effluent limit. Action-based initial AELs with a quantifiable expression and a PMP will be considered only in extraordinary circumstances when it is not

feasible for the discharger to comply with an effluent-based initial AEL. For instance, City of Pueblo's selenium DSV is a good example of a case where the permittee did not have sufficient control over pollutant concentrations at the onset of the variance and there was a high degree of variability and unpredictability that limited numerical characterization of the pollutant reductions achievable in effluent concentrations. This DSV, adopted by the commission in the 2018 Regulation No. 32 rulemaking hearing, included an action-based AEL (formerly known as a narrative AEL) that quantified the requirements of the DSV as a specific set of source control and optimization measures with a specific timeline (implemented as a PMP).

E. Pollutant Minimization Program

To be consistent with the federal rule, the commission revised the language to allow the adoption of an effluent-based (numeric) AEL or an action-based (narrative) AEL with a quantifiable expression and a PMP to ensure all feasible water quality improvements are implemented throughout the term of the variance. The commission described the effluent-based AELs as limits that can be expressed as an effluent concentration, load, pollutant percent removal, or other quantifiable expression of effluent quality and quantity. The commission described the action-based AELs as a quantifiable expression of the specific pollution control requirements to be completed by the discharger and the adoption and implementation of a PMP. The commission specified that the action-based AEL is only justified when there is no additional feasible control technology that can achieve a predictable, quantitative improvement in effluent quality, and therefore, will also require adoption and implementation of a PMP to specify the actions that need to be taken to achieve maximum pollutant reduction with existing control technologies. For the effluent-based AEL (numeric), the commission stated that it may also adopt a PMP at its discretion. These requirements are consistent with the nine DSVs adopted by the commission to date.

A PMP is a comprehensive source control measure described in 40 CFR 131.14 that will prevent and reduce the pollutant loadings to the receiving waterbody. A PMP is particularly essential for variances where the requirements are adopted as actions to be completed by the discharger, rather than effluent quality. Based upon experience with the DSVs previously adopted by the commission, a PMP provides a clear set of expectations and timeline for implementation, which makes it straightforward for both the discharger and the commission to determine compliance with the requirements. Without a PMP, there is a risk of the discharger and the commission having different expectations about the DSV requirements and whether compliance has been achieved. A PMP may be a short document, and the development of a PMP should not be an onerous requirement. Previously, it has been an extremely useful document to the discharger (particularly to the plant operator) after the variance has been adopted.

F. Organization

The *Conditions on Discharger-Specific Variances* section was moved from 31.9(5) to 31.7(4)(c) to facilitate consolidation of DSV requirements in a single location. Section 31.9(5) was deleted. Section 31.7(4)(c)(i) was revised to avoid redundancy with Section 31.7(4)(b)(i). The commission also included language to state that the discharger should be in compliance with the initial AEL when the variance is implemented in the permit and that the permit writer determines the compliance schedule(s) of the interim (if any) and final AELs. The commission also clarified the language to allow the permit writer to set interim milestones to achieve the final AEL, if appropriate.

The commission moved Section 31.7(4)(b)(iii) to 31.7(4)(c)(iv) because it governs the division's permitting implementation rather than a requirement for the selection of AELs. The previous regulatory language in this provision also gave direction to the permit writer regarding DSV implementation; however, the language was confusing. Therefore, the commission clarified the language in 31.7(4)(c)(iv) to state that the effluent limits for the point source discharge in the variance should be based on either WQBELs based on the underlying standard for the receiving

waterbody or the AEL, whichever is less stringent. This is applicable in situations where a discharger's WQBELs increase, for example, due to an increase in dilution in their discharging segment.

G. Other Changes

In 31.7(4)(b), the commission revised the language that described the variance as a standard "which represents the highest degree of protection of the classified use that is feasible within 20 years" to instead state that variances shall include AELs "that reflect the greatest pollutant reduction achievable throughout the term of the variance". While it is important to consider the potential for attaining standards on a long time horizon (i.e., approximately 20 years), in practice, there is often a great deal of uncertainty regarding the timeframe over which it may be feasible for the permittee to achieve WQBELs based upon the underlying standard. Adopting a variance with a shorter timeframe and a more certain AEL would allow for water quality improvement in the short-term, while retaining the ability to reconsider long-term feasibility during the reevaluation of the variance or at the end of the term of the variance.

Section 31.9(2) was clarified to note that compliance schedules are authorized when appropriate and necessary to meet interim and final AELs for variances.

The commission made several revisions to 31.7(4)(d). First, the commission changed the requirements for the duration of a DSV and included language to account for the planning, implementation, and monitoring of the activities planned to achieve better water quality. Previously, 31.7(4)(c) stated that the duration of the DSV will be determined on a case-by-case basis, based upon all relevant factors, including the potential for achieving more protective effluent levels. This was not entirely consistent with the federal rule, which states "The term of the WQS variance must only be as long as necessary to achieve the highest attainable condition." For each of the DSVs that the commission has adopted to date, the duration was based upon the time needed to achieve the highest attainable condition. The commission revised this section to align with the federal rule and reflect current commission practice.

Second, the same requirements included in the basin regulations (such as 32.6(6)(a) and (b)) regarding the reevaluation of DSVs were added to 31.7(4)(d). These requirements were not included in Regulation No. 31 previously. The requirements include conducting a reevaluation of the variance during the triennial basin review when the term of the variance is longer than five years, and more frequently if needed, and submitting the results of its reevaluation to EPA within 30 days of the date the commission completes its reevaluation, as is required by federal rule.

Third, to better align with the federal rule, the commission added that it would incorporate a more stringent AEL if, as part of the reevaluation process, it determines that a more stringent AEL or higher attainable condition than originally required by the variance is achievable. The commission added that if the commission determines a less stringent AEL is necessary, a revised variance must be submitted to EPA.

Lastly, the commission changed the language from "extending" to adopting "a subsequent variance" in order to better align with the federal rule, and clarified the requirements for adopting a subsequent variance.

V. LAKE TEMPERATURE AND DISSOLVED OXYGEN FOOTNOTE

The commission adopted Footnote 5(c)(i) to Table I, which states:

> Lakes and reservoirs: When a lake or reservoir is stratified, the mixed layer may exceed the applicable temperature criteria in Table I provided that an adequate refuge exists in water below the mixed layer. Adequate refuge means that there is concurrent attainment of the applicable Table I temperature and dissolved oxygen criteria. If the refuge is not adequate because of

dissolved oxygen levels, the lake or reservoir may be included on the 303(d) List as "impaired" for dissolved oxygen, rather than for temperature.

This footnote previously existed in Regulation No. 31, but was deleted in the 2016 Regulation No. 31 rulemaking hearing. In 2016, the commission declined to adopt the division's statewide temperature proposal for lakes to adjust the Table Value Standards (TVS) for temperature based on elevation. The proposal would have resulted in an increase in the allowable temperature for many lakes. A component of the proposal was also to delete Footnote 5(c)(iii) to Table I, which allowed for surface temperatures to exceed standards as long as concurrent attainment of dissolved oxygen (DO) and temperature existed in a profile of the reservoir. The commission did not adopt this proposal; however, Footnote 5(c)(iii) was still deleted, in error. The footnote deletion should not have been adopted because deletion of the footnote was directly coupled to the elevation-based temperature standards proposal.

The division provided evidence in this hearing showing that lake surface temperatures are widely subject to exceedances and correlated with elevation, and that Table I Footnote 5(c)(iii) should be reinstated. The reinstatement of Footnote 5(c)(iii), modified for clarity, will allow for lakes to have surface or mixed layer temperature exceedances (a naturally occurring condition) and assessments to consider 303(d) and M&E listings for DO where DO and temperature are not concurrently attained.

VI. LONGEVITY PLANS FOR SITE-SPECIFIC STANDARDS

The commission considered but did not adopt a proposal to revise section 31.7(1)(b)(ii) and (iii) and 31.7(1)(c) to incorporate a longevity plan requirement for all ambient quality-based, criteria-based, and narrative site-specific standards. The commission determined that, at this time, a regulatory change is not needed for longevity plans to continue to be adopted with site-specific standards.

The purpose of longevity plans is to ensure that site-specific standards can be reviewed during subsequent triennial reviews, as required by federal and state rule (Federal Clean Water Act Section 303(c)(1) and Colorado Water Quality Control Act Section 25-8-202(f)). Consistent with past practice, the commission will continue to thoughtfully consider the expected longevity of each site-specific standard and identify the types, extent, and timing of information needed to facilitate future reviews of the standards. The commission will continue to adopt longevity plans as needed to guarantee the collection and analysis of information that will be necessary to ensure that a site-specific standard is maintained over time, continues to be scientifically sound, protects the beneficial uses, and can be updated or revised as needed.

The commission intends that longevity plans will continue to be developed in collaboration with the division and other interested parties. In addition, the commission intends that longevity plans will be implemented by the parties proposing site-specific standards; in some situations, longevity plans may be implemented by multiple parties. Longevity plans should include plans for collection of evidence necessary to support review of the site-specific standards in subsequent rulemaking hearings, taking into account the expected longevity of the site-specific standards, the conditions on which the site-specific standards were based, the time horizon in which those conditions are expected to change, and the resources required to collect, analyze, and report on data and other information. The purpose of collecting such information is to ensure the commission can determine whether the basis and assumptions used to support the initial adoption of the site-specific standards are still valid or if there has been a significant change in conditions. Depending on the type of site-specific standard (ambient-based, criteria-based, or narrative), this may include collection of instream and effluent water quality data (and, as appropriate, the flow and loading of effluent) to characterize existing quality; aquatic life community information; updates to toxicity databases; analysis of data; investigation of treatment technologies, treatment alternatives, and/or other controls to determine if further improvements to water quality are feasible; land use or habitat evaluations; or collection of other relevant site-specific information.

For example, longevity plans for site-specific standards based on the copper Biotic Ligand Model have included continued collection of the water quality data required to run the model; longevity plans for site-specific standards based on the recalculation procedure have included investigations of new toxicity data,

reporting on changes to instream chemical, physical, or biological conditions, and additional biological and water quality data collection; longevity plans for site-specific standards based on natural or irreversible ambient conditions have included ongoing biological and water quality data collection.

When the division has identified an existing site-specific standard as a priority for review in an upcoming rulemaking hearing, the division will conduct outreach with potentially impacted entities as early as possible to identify data and other information needs and collaborate on data and information collection as needed. The division shall notify potentially impacted entities in consideration of a timeline that allows them adequate notice of the division's intent for review and allow participation in the routine approach to stakeholder participation in basin reviews.

The commission expects that longevity plans will result in the collection of evidence that is of the right type, quality, and quantity to be useful for future evaluations of the site-specific standard, recognizing that the type(s) of data collection is dependent on conditions unique to the site, and that a longer time horizon (beyond a single triennial review period) for the frequency of data collection may be warranted for certain sites. For some situations, it may be appropriate to require certain activities only if certain types of changes occur; for example, water quality data collection may only be necessary if changes to land use or flow are observed. Because every site-specific standards situation is unique, so too will be the components, review elements, and review timing of every longevity plan. In addition, the commission anticipates that individual longevity plans may be revised in future reviews to account for site-specific circumstances.

In addition, the commission encourages the division to begin evaluating the basis of all existing site-specific standards. Where the basis or validity of an existing site-specific standard cannot be confirmed with available data or other information, the commission encourages the original proponents of existing site-specific standards (including the division), and/or other dischargers whose permit compliance relies on the site-specific standards, to begin working with the division, EPA, CPW, and other interested parties to develop a plan to collect the necessary information and provide an update to the commission at the soonest possible triennial review for the waterbody at issue. Because most existing site-specific standards do not have a longevity plan, and in many cases, sampling is not occurring, the commission anticipates it will take time for representative data and/or information required for a comprehensive review of each site-specific standard to become available, and that progress will be incremental during routine basin review cycles. The division will compile and store information about all site-specific standards in a publicly available site-specific standards library; this library will house information about the basis and review history for each site-specific standard and will be used to prioritize site-specific standards for future review.

VII. TEMPORARY MODIFICATIONS

The commission adopted changes to the temporary modification provisions at 31.7(3) and 31.9 to reflect current commission practice and better ensure that temporary modifications are adopted only when necessary and eliminated in a timely manner. Changes were also adopted to ensure that facilities receiving regulatory relief through a temporary modification take measures to, at a minimum, maintain status quo and manage effluent quality at the best level reasonably achievable under the term of the temporary modification. These changes are described in more detail in the following sections.

Section 31.7(3) was also reorganized slightly for clarification and a definition for the term "status quo" was added to 31.5(40). The commission considers division Policy 13 *Permit Implementation Method for Narrative (Current Condition) Temporary Modifications* to be consistent with this regulatory definition.

A. Changes to 31.7(3)(a): Non-attainment Requirements and Appropriate Use of Predicted Non-compliance

The commission made several substantive and editorial revisions to 31.7(3)(a). The commission clarified that temporary modifications may be granted for numeric water quality standards. Additionally, the commission clarified at 31.7(3)(a) that non-attainment of the underlying water

quality standard in the waterbody is an explicit requirement for justifying a temporary modification. This requirement for a temporary modification is set forth at 31.7(3), namely that "Where non-attainment of underlying standards has been demonstrated or predicted the Commission may grant a temporary modification…". However, this requirement was not previously raised again explicitly at 31.7(3)(a). Furthermore, the commission added clarification that the appropriate scope of temporary modification application to a waterbody is only where demonstrated or predicted waterbody non-attainment and compliance problems co-occur (i.e., the temporal and spatial application should be appropriately narrow). For example, if a compliance problem or non-attainment is only observed in the summer, it may not be appropriate to grant a year-round temporary modification. These changes recognize current practice and are not meant to change that policy, only to clarify and expressly approve its use. The commission recognizes that evaluations of co-occurrence of non-attainment and non-compliance can vary depending on the situation and intends to consider site-specific information in determining the appropriate spatial and temporal extent of a temporary modification.

Additionally, the commission added language at 31.7(3)(a)(ii) to clarify how predicted compliance problems are justified. It was specified that temporary modifications are only justified in situations where, in addition to significant uncertainty and non-attainment, there is either a demonstrated or predicted problem complying with a water quality-based effluent limit (WQBEL) on a timescale such that, absent a temporary modification, the discharger would face unreasonable consequences. For purposes of temporary modifications, unreasonable consequences are defined as situations where it can be demonstrated that the timing of the anticipated permit limit (considering any potential compliance schedules or other permitting flexibility) would not provide sufficient time to resolve the uncertainty prior to requiring significant investment in design or construction of facility infrastructure. As such, the commission further defined predicted non-compliance as a problem complying with a WQBEL with which the discharge must comply within the next five years (i.e., within five years of the effective date of the temporary modification). Another example situation that would qualify for a temporary modification is where a discharge has a predicted problem complying with a WQBEL in more than five years, and evidence shows significant investment in facility infrastructure would be required before the uncertainty is resolved. For the purposes of temporary modifications, significant investment can be equated to any measures beyond low cost options for maintaining the best effluent quality reasonably achievable, such as example activities provided at 31.9(4).

These changes provide clarity regarding the appropriate use of prediction in determining whether compliance problems exist in the context of temporary modifications. The commission expects that, when time allows, progress to resolve the uncertainty (e.g., derivation of an appropriate site-specific standard or DSV) will occur in coordination with the division and other stakeholders outside of a temporary modification. This will allow for optimal use of resources and help to ensure that the scope of a temporary modification is appropriately narrow and the term is appropriately short.

B. Changes to 31.7(3)(b), 31.7(3)(c), and 31.7(3)(e): Status Quo Characterization and Plan to Resolve Uncertainty Requirements

The commission revised 31.7(3)(b) and 31.7(3)(c) to clarify what supporting information is required for temporary modification adoption and extension, respectively. To support an extension of a temporary modification, the commission added a requirement to provide justification as to why the time allotted under the previous temporary modification term was not sufficient to resolve the uncertainty. This information will help the commission judge whether the reasoning behind the need for extension is justified and avoid granting temporary modification extensions where the need for extension results from lack of sufficient effort to eliminate the need for the temporary modification.

The commission also added an explicit provision to 31.7(3)(b) and (c) requiring a characterization of the status quo of the waterbody and effluent, or, absent sufficient data, a plan to collect data to characterize the status quo as soon as possible. This characterization will ensure that the

commission can use these data points to compare to future characterizations of ambient and effluent conditions when a temporary modification is reviewed or when it is proposed to be modified or extended, to verify that status quo has been maintained. As such, the commission also adopted revisions to 31.7(3)(e) that explicitly list consideration of the maintenance of the status quo when making a decision as to whether a temporary modification should be removed or extended. Additionally, a statement was added to the review criteria to clarify that an extension of the temporary modification shall not be granted in cases where the basic reporting requirements (i.e., providing annual updates and supporting documentation to the division) have not been met over the prior term of the temporary modification. All of these actions are aligned with the current intent of the regulatory language and reflect current commission practice. The commission recognizes that, during the temporary modification, permitted dischargers' effluent quality may be marginally changed and variability in effluent quality may occur; however, the commission also expects that dischargers take measures to ensure that effluent quality is maintained at the best level reasonably achievable, in a manner consistent with the provisions of 31.9(4), under the term of the temporary modification, as discussed below. There may also be situations where the waterbody quality status quo has not been maintained due to causes outside of the discharger's control (e.g., hydrological modifications of the waterbody upstream of the discharge point). Under these circumstances, justification that the waterbody degradation was not due to the effluent in question should also be provided and considered, as specified in 31.7(3)(c) and 31.7(3)(e).

The commission also made changes to 31.7(3)(b) to clarify the expectations for the required plan to resolve uncertainty that accompanies each temporary modification. The commission clarified that, for each type of uncertainty identified, the plan should include an adequately detailed, site-specific approach, including sampling plans where appropriate, to resolve the uncertainty. Plans should also include timelines for key deliverables and annual reporting of progress to the division. Furthermore, the commission added a requirement for plans to include activities to ensure that, at a minimum, status quo is maintained and effluent quality is maintained at the best level reasonably achievable. This is not only aligned with existing provisions at 31.9(4), but also with previous commission intent documented in the Statement of Basis and Purpose at 31.44 and existing commission practice to adopt plans that include low-cost activities that would result in water quality improvements under the term of the temporary modification. Such activities may include optimization-like activities such as pretreatment, source identification, and evaluations of source control and treatment options. Nonpoint source implementation of strategies for improving waterbody quality can also be considered, as appropriate. These activities also serve to help eliminate the uncertainty regarding the extent to which conditions are natural or irreversible. Except where justified otherwise, it is the commission's intent that efforts to resolve each type of uncertainty occur in parallel, rather than in sequence, such that the need for the temporary modification is eliminated as expeditiously as possible.

C. Changes to 31.7(3)(d): Removal of Term "Existing Uses" and Alignment of Numeric and Narrative Operative Values

The commission removed the requirement for temporary modification operative values to "protect existing uses" at 31.7(3)(d). This requirement is not consistent with the intent of temporary modifications, which focuses on maintaining status quo. Thus, the requirement to "protect existing uses" was replaced with a requirement that the temporary modification operative values, at a minimum, ensure that status quo is maintained. The commission also aligned the language at 31.7(3)(d)(i) and (ii) to clarify that characterization of status quo is the requirement for both numeric and narrative operative values.

D. Changes to 31.7(3)(e): Clarification of Considerations for Setting the Term of and Extending the Temporary Modifications

The commission added clarifying language at 31.7(3)(e) to better specify appropriate considerations when setting the term of temporary modifications. In circumstances where there is uncertainty pertaining to the justification for the temporary modification and further data are being

gathered to support the justification (e.g., where there is some uncertainty whether waterbody non-attainment exists), a shorter term for the temporary modification may be warranted. The commission also clarified that the term granted shall be the shortest possible to sufficiently resolve the uncertainty. The reasoning for the length of term selected should be clearly justified in the plan to resolve uncertainty for the temporary modification. Additionally, the commission clarified that, when evaluating extension of a temporary modification, the situation must still qualify for a temporary modification under 31.7(3)(a) and substantial progress towards resolving the uncertainty must have been made under the previous term of the temporary modification. The commission will evaluate the adherence to planned activities scheduled in the plan to resolve uncertainty, as well as the justification (newly required at 31.7(3)(c)) as to why the time allotted under the previous temporary modification duration term was not sufficient to resolve the uncertainty.

E. Changes to 31.7(3)(f): Modification of Scope and Schedule for Rulemaking

The commission revised 31.7(3)(f) to expand the scope of temporary modifications included in the temporary modifications public rulemaking hearings from those expiring within the subsequent two years to all temporary modifications, so that the commission is able to better ensure that timely progress is being made on all temporary modifications, regardless of the expiration date. The commission also modified the minimum routine schedule for temporary modifications public rulemaking hearings from annually to biennially. The commission expects that proponents of temporary modifications will supply annual updates for all temporary modifications to the division, which the division will review to ensure that temporary modifications are still justified and timely progress is being made to resolve uncertainty. However, formal temporary modifications public rulemaking hearings will only occur routinely on a biennial basis. The need for a public rulemaking hearing in off years will be assessed after updates are received and hearings can be scheduled as needed.

F. Changes to 31.9(4): Clarification, Alignment with Division Practice, and Inclusion of Examples of Division Authority to include Low Cost Optimization in Permits for Temporary Modifications

Section 31.9(4) was reorganized slightly for clarification. The commission also added a new section (31.9(4)(ii)) that clarifies how numeric and narrative operative values for temporary modifications should be implemented in permits. Where a permit is issued for an existing discharge to a waterbody where a temporary modification applies, whether numeric or narrative, permit effluent limits applicable under the term of the temporary modification should be developed to ensure that, at a minimum, status quo is maintained.

Additionally, the commission removed the statement at 31.9(4) that specified that “The Division, where necessary and within a reasonable period of the expiration of a temporary modification, shall reopen any permit for a discharge to that segment and include a permit condition to attain limits based on the underlying standard”. This was removed because it does not reflect current permitting practices.

The commission also added language at 31.9(4)(iii) to reemphasize that inclusion of low cost optimization in permits, which includes activities such as pretreatment, source identification, and evaluation of source control and treatment options, is authorized and may be an effective permitting tool for ensuring that effluent quality is maintained at the best level reasonably achievable without requiring significant investment in facility infrastructure under the term of the temporary modification, as well as resolving uncertainty regarding the extent to which ambient conditions resulting from the effluent in question are reversible.

Finally, the commission revised the language in 31.9(4) that pertains to implementation of temporary modifications for expanding and new discharges. The commission added clarification that, when considering expanding discharges to a waterbody where a temporary modification

applies, permits should not only protect downstream uses, but unless specifically decided otherwise by the commission, should, at a minimum, ensure that status quo is maintained. The commission revised the expectations for permits for new discharges to waterbodies where temporary modifications apply from establishing limits that protect downstream uses to establishing limits based on the underlying standard, unless the commission has established a specific limit or value for new dischargers for a particular temporary modification or set of modifications. An example of such a case is the operative value assigned to new discharges by the commission for arsenic temporary modifications, which also considers arsenic control and treatment limits. This revision for new discharges aligns with the commission's intent at 31.53(IV), which states that "Specifically, the Commission added references to "existing discharges" to clarify that effluent limits based upon temporary modifications only apply to existing discharges, and that effluent limits for new and expanded discharges must generally be set to the underlying standard." The commission considers division Policy 13 *Permit Implementation Method for Narrative (Current Condition) Temporary Modifications* to be consistent with this regulatory revision.

VIII. CLEANUP, CORRECTIONS, AND CLARIFICATIONS

A. Nitrite Aquatic Life Standards

The commission added additional instructions for using the chloride-based nitrite standards for aquatic life in Table II Footnote 3 at 31.16 to clarify that sensitive fish species include salmonids, channel catfish, logperch and brook stickleback. The "sensitive species" are defined in the 1986 Nitrogen Cycle Committee of the Basic Standards Review Task Force document. This footnote was also edited to clarify that either total or dissolved chloride data may be used in these equations. About half of the available chloride data in Colorado is reported as "total" and the remainder is reported as dissolved. Whether or not a sample was filtered should not impact the concentration of chloride, because chloride is completely soluble at concentrations well above 40 mg/L. As more nitrite data become available and nitrite standards are assessed and implemented more frequently, it is expected that there may be more interest in adopting the equation-based standards from Regulation No. 31 in the basin tables on a site-specific basis. The proposed clarifying edits are intended to make this option as straightforward as possible.

B. Reformat Hardness-based Equations

The following changes were made to the hardness-based table value standard equations in Table III at 31.16 to improve compatibility with Excel:

- Acute and chronic aluminum, chromium III, copper, lead, manganese, nickel, silver, uranium, and zinc: the first bracket was replaced with the symbol * and the second bracket was deleted from the equation.
- Chronic aluminum: a missing parenthesis was added to the end of the equation.
- Acute and chronic lead: brackets and an extra parenthesis were deleted from the conversion factor in the equation.
- Acute silver: ½ was replaced with 0.5* in the equation.

These changes were also made in Regulation Nos. 32-38.

C. Duration of Radionuclide Standards in Table A

The commission revised the footnote to the Radionuclide Standards table (Table A) in 31.11(2) to state that all of the radionuclide standards listed should be applied as chronic 30-day average health-based standards. Colorado's radionuclide standards (with the exception of americium 241) were adopted in 1979 using the 1976 National Interim Primary Drinking Water Regulations, which included maximum contaminant levels for radionuclides that are based on annual dose exposures

and maintaining a body burden below harmful levels. In 1996, revised plutonium and new americium standards were adopted with the footnote specifying that they are 30-day averages. However, because all of the radionuclide standards in Table A are based on long-term risk exposure assumptions, the footnote was modified to specify that all should be implemented as chronic 30-day average standards.

D. Duration of Nitrate and Asbestos in Table II

31.16 Table II: (acute) was added to the agriculture nitrate standard and (chronic) was added to the asbestos standard to clarify the durations of the standards.

E. Duration of Standards in Tables II and III

31.16 Table III: The word "chronic" was added to the column headers for the Agriculture, Water + Fish, and Fish Ingestion standards, and the phrase '30-day' was removed from cells in those columns to clarify the durations of the standards.

31.16 Tables II and III: In columns that include both acute and chronic standards, the duration is noted in the cell with each standard. To clarify the duration of the standards, the phrase "1-day" was replaced with "acute" and the phrase "30-day" was replaced with "chronic".

F. Standards Not Routinely Applied

Footnote 6 was added to Table II and Footnote 18 was added to Table III at 31.16 to clarify that fluoride, asbestos, antimony, barium, beryllium, and thallium standards should be applied on a site-specific basis in accordance with 31.7(1)(b) and 31.7(2). Since their initial adoption, these standards have not been adopted broadly into the basin regulations (Regulation Nos. 32-38), and the footnote was included to encourage adoption of protective criteria, where appropriate.

G. Sulfate

The sulfate standard at 31.11(6)(ii) and in Table II at 31.16 was edited to clarify that the standard applies to dissolved sulfate concentrations. This change was also made in Regulation Nos. 32-38. As an ion, sulfate is found in water only in the dissolved state; therefore, either unfiltered or filtered samples may be used to determine sulfate concentrations. In addition to clarifying that sulfate is a dissolved parameter, Footnote 7 was added to Table II to clarify that sulfate can be assessed and implemented using data from unfiltered or filtered samples.

H. Mercury Clarification

The commission revised the term "total" in Table III and the associated Footnote 6 to the term "total recoverable" mercury to align with the basin regulations and clarify the confusion caused by the use of two different terms that refer to the same fraction of mercury. The term currently used to describe the mercury standard in Table III is "total" to denote that the standard is based on all forms of mercury, not just methylmercury. It is also meant to denote that the standard is based on the "total" (unfiltered) fraction, rather than dissolved (filtered) fraction of mercury. However, in the basin regulations (Nos. 32-38), the term "total recoverable" is used to refer to the same fraction and all forms of mercury.

The term "total recoverable" comes from the analytical protocols used to analyze heavy metals, including mercury, and requires a pre-digestion step. This pre-digestion step does not provide quantification of any additional fraction of mercury in the sample. It simply serves as a sample preparation step for high turbidity samples to facilitate determination of mercury (all forms) present in the sample. Although both "total" and "total recoverable" terms are used in the

literature to define results from analytical methods that include a pre-digestion step of unfiltered samples, “total recoverable” is technically the more correct term.

The commission also revised Table III Footnote 6 to clarify that mercury data analyzed and reported as “total” or “total recoverable” using EPA approved total mercury analysis methods listed in 40 CFR 136.3 are considered equivalent.

I. Chromium Footnote

The commission revised Table III Footnote 5 to improve the clarity of the footnote, which directs the implementation of the trivalent (III) and hexavalent (VI) chromium standards when data for the individual valence states are unavailable. Chromium data are infrequently reported for chromium III and chromium VI individually. Instead, data are typically reported as the total of all valence states of chromium present in the sample. This is primarily due to the difficulty of accurately measuring chromium III concentrations and the instability of chromium when the sample is acidified for analysis of the total recoverable fraction. While chromium III and chromium VI are the valence states most often found in natural waters, chromium is unstable and can convert between forms in water and in the bodies of humans and aquatic life. However, chromium VI is more water soluble and a known carcinogen. Depending on the classified use, the chromium VI standards are the same as or more stringent than the chromium III standards (Table III). Therefore, when data for individual chromium species are unavailable, the use of the chromium VI standards to assess data reported as total chromium (i.e., the total of all valence states of chromium) will ensure protection of human health and aquatic life. In addition, Footnote 5 was modified to clarify that neither the sum of the concentrations of chromium III and chromium VI (when reported individually) nor the total chromium concentration (i.e., the total of all valence states of chromium) should exceed the Water Supply standards of 50 µg/L for chromium III and chromium VI in water bodies with a Water Supply use classification. This change was also made in Regulation Nos. 32-38.

J. Definition of Existing Quality for Temperature

The commission revised the definition of existing quality for temperature at 31.5(20) to distinguish between the calculations used to determine standards attainment and the calculations used in permits implementation. Standards attainment in the context of 303(d) assessment allows for a short duration of temperature exceedance as defined by the biological warming event in units of degree-days and was developed in the 2017 303(d) listing methodology. The warming event and degree-days concept was added to Table I Footnote 5(c)(ii). Permits implementation requires ambient upstream temperatures in seasonal or monthly maxima to calculate effluent limits and for reasonable potential analysis.

The method for calculating permits implementation was developed in the 2016 Regulation No. 31 rulemaking hearing at 31.53(A) to incorporate an allowable exceedance frequency for monthly determination of effluent limits. This method is being added to the definitions section of Regulation No. 31 and clarified by adding “seasonal or monthly maxima” to make clear that permits has the flexibility to implement seasonal or monthly based effluent limits. The commission expects the division to continue to engage with stakeholders regarding permits implementation of temperature and explore whether the warming event assessment method may be considered in the permitting context through workgroups and other appropriate means.

K. Table Numbering

'Table A' was added to the title of Radionuclide Standards at 31.11. 'Table B' was added to the title of Basic Standards for Organic Chemicals at 31.11.

L. Housekeeping

The following edits were made to improve clarity and correct typographical errors:

- The word “frequent” was removed from the definition of primary contact recreation at 31.5(33) to better reflect the commission’s past practice. This change also aligns with *E. coli*’s exposure risk assumptions and EPA’s definition of primary contact recreation in the federal Recreational Water Quality Criteria.
- Letter references to 31.16(3) in Table I and Table II were changed to superscript to improve clarity and consistency.
- In order to reflect a previous change to the Stream Classifications and Water Quality Standards Tables, the reference to the 'Temporary Modifications and Qualifiers' column at 31.7(3) was replaced with language that specifies the presence of a temporary modification will be indicated in the appropriate water quality standards basin regulation.
- All variations of *E. coli* were edited to display a consistent format throughout the regulation. This change was also made in Regulation Nos. 32-38.
- References to “tot.rec.” in Table III were replaced with “total recoverable”. References to “dis” were replaced with “dissolved”.
- Footnote 1 to Table II was modified to clarify that the “T” in the chronic ammonia equations stands for temperature. This change was also made in Regulation Nos. 32-38.
- The fluoride Water Supply standard in Table II included a reference to Footnote 3, which is the nitrite footnote. This reference was deleted to correct a previous error.
- Footnote 19 was added to Table III to provide clarity regarding the application of the chronic(trout) equation for silver.
- Tables and footnotes were formatted for consistency and clarity.
- Other minor edits were made to improve clarity and consistency.