

STATE OF COLORADO

Bill Ritter, Jr., Governor
Martha E. Rudolph, Executive Director

WATER QUALITY CONTROL COMMISSION

<http://www.cdphe.state.co.us/op/wqcc/index.html>

4300 Cherry Creek Dr. South
Denver, Colorado 80246-1530
Phone (303) 692-3463
Fax (303) 691-7702



Colorado
Department
of Public Health
and Environment

NOTICE OF PUBLIC RULEMAKING HEARING BEFORE THE COLORADO WATER QUALITY CONTROL COMMISSION

SUBJECT:

For consideration of the adoption of revisions to the Basic Standards and Methodologies for Surface Water, Regulation #31 (5 CCR 1002-31).

Proposed revisions and proposed Statement of Basis and Purpose language have been submitted by the following:

- Exhibit 1 - the Water Quality Control Division (Division);
- Exhibit 2 – Colorado Wastewater Utility Council; and
- Exhibit 3 – Colorado Mining Association.

In these attachments, proposed new language is shown with double-underlining and proposed deletions are shown with ~~strikeouts~~. Any alternative proposals related to the revisions proposed in Exhibits 1 through 3 and developed in response to those proposals will also be considered.

TRIENNIAL REVIEW PROCESS OVERVIEW:

This Rulemaking Hearing is the third and final step in a three-step process for triennial review of water quality classifications and standards in Colorado. The first step is an Issues Scoping Hearing, which provides an opportunity for early identification of potential issues that may need to be addressed in the next major rulemaking hearing for particular regulations, and for identification of any issues that may need to be addressed in rulemaking prior to that time. The Issues Scoping Hearing for these basins was held in October 2008. The second step in the triennial review process – the Issues Formulation Hearing – results in the identification of specific issues to be addressed in the next major rulemaking. The Issues Formulation Hearing for the Basic Standards and Methodologies for Surface Water was held in November 2009. The third step is the Rulemaking Hearing, where any revisions to the water quality classifications and standards are formally adopted. Information regarding triennial reviews of water quality classifications and standards is provided on the Commission's website at <http://www.cdphe.state.co.us/op/wqcc/WQClassandStandards/ClassAndStand.html>.

HEARING SCHEDULE:

DATE: Monday, June 7, 2010
TIME: 10:00 a.m.
PLACE: Florence Sabin Conference Room
Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246

PUBLIC PARTICIPATION ENCOURAGED:

The Commission encourages all interested persons to provide their opinions or recommendations regarding the matters to be addressed in this rulemaking hearing, either orally at the hearing or in writing prior to or at the hearing. Although oral testimony from those with party status (see below) and other interested persons will be received at the hearing, the time available for such oral testimony may be limited. Written submissions prior to the hearing are encouraged, so that they can be distributed to the Commission for review prior to the hearing. Oral testimony at the hearing should primarily summarize written material previously submitted. The hearing will emphasize Commission questioning of parties and other interested persons about their written prehearing submittals. Introduction of written material at the hearing by those with party status or mailing list status (see below) generally will not be permitted. The Commission requests that all interested persons submit to the Commission any available information that may be relevant in considering the noticed proposals, including information relating to the factors listed in section 31.7(2) of the Basic Standards and Methodologies for Surface Water, 5 CCR 1002-31.

The Commission encourages informal discussions among the parties, the Water Quality Control Division and other interested persons prior to the hearing, in an effort to reach consensus or to develop proposed resolutions of issues and/or narrow the issues potentially in dispute. **The Commission strongly encourages that any multi-party/Division proposals for the resolution of issues (including proposed Statement of Basis and Purpose language whenever feasible) be submitted as part of the administrative record as early as possible, but at least by the prehearing conference.** To help facilitate discussions, the following contact information is provided:

- Water Quality Control Division: Sarah Johnson; sarah.johnson@state.co.us
303-692-3609
- Colorado Wastewater Utility Council: Amy Woodis; awoodis@mwrddst.co.us
- Colorado Mining Association: Ronda Sandquist; rsandquist@jacksonkelly.com
Kristi Livedalen; klivedalen@jacksonkelly.com

PARTY STATUS/MAILING LIST STATUS:

Participation as a "party" to this hearing or acquisition of "mailing list status," will require compliance with section 21.3(D) of the Procedural Rules, Regulation #21 (5 CCR 1002-21). Mailing list status will allow receipt of all party documents (except individual exhibits more than five pages in length). It is not necessary to acquire party status or mailing list status in order to testify or comment. **For each request for party status or mailing list status, please provide the organization's name, a contact person, mailing address, phone number, fax number and email address if available.** Written party status or mailing list status requests are due in the Commission Office on or before:

DATE: Wednesday, March 31, 2010
TIME: 5:00 p.m.

A single copy of the party status or mailing list status request may be transmitted as an email attachment to cdphe.wgcc@state.co.us, submitted by fax to 303-691-7702, mailed or otherwise conveyed so as to be received in the Commission Office no later than this deadline. PLEASE NOTE that, as indicated below, parties will have the option of distributing materials to other parties electronically, except in instances where a party has requested receiving hard copies of documents. Therefore, **anyone requesting party or mailing list status that wishes to receive hard copies of documents instead of emailed copies should so indicate in the party status/ mailing list status request so that this information can be included on the list distributed by the Commission Office.**

PREHEARING STATEMENTS:

PLEASE NOTE that for this hearing two separate deadlines for prehearing statements are established: (1) An original and 13 copies of **Proponents' Prehearing Statements** from **each proponent of revisions proposed in the exhibits attached to this notice**, including written testimony and exhibits

providing the basis for the proposals, must be received in the Commission Office no later than **March 17, 2010**; and (2) an original and 13 copies of a **Responsive Prehearing Statement**, including any exhibits, written testimony, and alternative proposals of the Water Quality Control Division or **anyone seeking party status and intending to respond to the proponents' proposals** must be received in the Commission Office no later than **April 14, 2010**.

For each deadline, the required number of hard copies of documents must be received in the Commission office by the specified dates. These requirements are not satisfied by electronic transmission of a facsimile copy or copies. However, **parties should also email a copy of their written documents to the Commission Office**, so that materials received can be posted on the Commission's web site. (Please email to cdphe.wqcc@state.co.us.)

Because the March 17, 2010 deadline for Proponents' Prehearing Statements precedes the March 31, 2010 due date for party status/mailling list status requests, proponents must transmit copies of the Proponents' Prehearing Statements to all proponents and to the Attorney General's Office representatives for the Commission and the Division, in accordance with a **proponents list** provided by the Commission Office. Parties who are not proponents should acquire copies of the Proponents' Prehearing Statements from the Commission's website: <http://www.cdphe.state.co.us/op/wqcc/WQClassandStandards/Reg31/Reg31.html>, or may contact the individual proponents to request hard copies.

Copies of Responsive Prehearing Statements and all subsequent filings for this rulemaking must be mailed or hand-delivered by the specific dates to all persons requesting party status or mailing list status and to the Attorney General's Office representatives for the Commission and the Division, in accordance with the **party status list** provided by the Commission Office following the party status/mailling list status deadline. **Alternatively, parties may email documents to those with party status or mailing list status by the specified dates**, except to those that the list distributed by the Commission Office identifies as requesting hard copies.

Also **note** that the Commission has prepared a document entitled **Information for Parties to Water Quality Control Commission Rulemaking Hearings**. A copy of this document will be mailed or emailed to all persons requesting party status or mailing list status. It is also posted on the Commission's web site at <http://www.cdphe.state.co.us/op/wqcc/PublicParticipation/HBappC.pdf>. Following the suggestions set forth in this document will enhance the effectiveness of parties' input for this proceeding. **Please note the request that all parties submit two-sided copies of all hearing documents on three-hole punch paper.**

MAILING LIST STATUS COMMENTS:

Those requesting mailing list status shall provide written testimony, if any testimony is to be offered for the hearing, by the above deadline for responsive prehearing statements – i.e., **April 14, 2010**. Copies shall be submitted and distributed in the same manner as noted above for prehearing statements.

REBUTTAL STATEMENTS:

Written rebuttal statements responding to the prehearing statements due on April 14, 2010 may be submitted by the Division or anyone seeking party status or mailing list status. Any such rebuttal statements must be received in the Commission Office by **May 12, 2010**. An original and 13 copies of written rebuttal statements must be received in the Commission Office by this deadline, and submission of an emailed copy as noted above is strongly encouraged. In addition, copies of these documents must be mailed or hand-delivered by that date to all those requesting party status or mailing list status, and to the Attorney General's Office representatives for the Commission and Division. **Alternatively, parties may email documents to those with party status or mailing list status by this deadline**, except to those that the list distributed by the Commission Office identifies as requesting hard copies. No other written materials will be accepted following this deadline except for good cause shown.

PREHEARING CONFERENCE:

DATE: Wednesday, May 19, 2010
TIME: 2:00 p.m.
PLACE: Room C-1A
Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246

Attendance at the prehearing conference is mandatory for all persons requesting party status. An opportunity may be available to participate in this prehearing conference by telephone. Persons wishing to participate by telephone should notify the Commission Office as early as possible.

SPECIFIC STATUTORY AUTHORITY:

The provisions of sections 25-8-202(1)(b); 25-8-204; and 25-8-402, C.R.S., provide the specific statutory authority for consideration of the regulatory amendments proposed by this notice.

Should the Commission adopt the regulatory language as proposed in this notice or alternative amendments, it will also adopt, in compliance with section 24-4-103(4) C.R.S., an appropriate Statement of Basis, Specific Statutory Authority, and Purpose.

NOTIFICATION OF POTENTIAL MATERIAL INJURY TO WATER RIGHTS:

In accordance with section 25-8-104(2)(d), C.R.S., any person who believes that the actions proposed in this notice have the potential to cause material injury to his or her water rights is requested to so indicate in the party status request submitted. In order for this potential to be considered fully by the Commission and the other agencies listed in the statute, persons must fully explain the basis for their claim in their prehearing statement which is due in the Commission Office on the date specified above. This explanation should identify and describe the water right(s), and explain how and to what degree the material injury will be incurred.

Dated this 10th day of February 2010 at Denver, Colorado.

WATER QUALITY CONTROL COMMISSION

Paul D. Frohardt, Administrator

EXHIBIT 1
WATER QUALITY CONTROL DIVISION

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)

...

31.5 DEFINITIONS

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(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 90 to 95 percent of the genera from chronic toxic effects from un-ionized ammonia and 95 percent of the genera from chronic toxic effects from metals. 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.

...

(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~~six 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 85th percentile of the data for ~~un-ionized~~total ammonia, nitrate, and the dissolved metals, the 50th percentile for total recoverable metals, the 15th percentile of such data for dissolved oxygen, the geometric mean of such data for *E. coli*, and the range between the 15th and 85th percentiles for pH. For temperature, for the purposes of implementing the chronic standard, "existing quality" means the maximum WAT in a three year period.

...

(25) "MAXIMUM WEEKLY AVERAGE TEMPERATURE (MWAT)" means an implementation statistic that is calculated from field monitoring data. The MWAT is calculated as the largest mathematical mean of multiple, equally spaced, daily temperatures over a seven-day consecutive period, with a minimum of three data points spaced equally through the day. 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).

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

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

...

(b) Numeric Standards

...

(ii) Ambient Quality-Based Standards

For state surface waters where evidence has been presented that the natural or irreversible man-induced ambient water quality levels are higher than specific numeric levels contained in tables I, II, and III, but are determined adequate to protect classified uses, the Commission may adopt site-specific chronic standards equal to the ~~85th percentile~~ existing quality of the 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. ~~For temperature, chronic (MWAT) and acute (DM) standards will be set at a level that would be exceeded once in a three-year frequency.~~

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

Where a numeric standard is not being met at the present time, or there is significant uncertainty regarding the appropriate long-term underlying standard, a temporary modification to the numeric standard may be granted by the Commission. The presence of a modification will be indicated by adding the words "~~temporarily modified~~" Temporary Modification ~~to~~ in the underlying numeric standard, 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-examined 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.

(a) Conditions for Granting a Temporary Modification

The Commission may grant a temporary modification if one of the following conditions is shown to exist:

- (i) ~~where the standard is not being met because of human-induced conditions deemed correctable within a twenty (20) year period, such as:~~
 - ~~— nonpoint source pollution which cannot be currently controlled using best management practices (BMP) or point source pollution which cannot be controlled using techniques required by the state and federal Acts but where adequate strategies may become feasible;~~
 - ~~— existing dams or other hydrological modifications that may be removed or operated in such a manner as to satisfy the standards;~~
 - ~~— deposition of instream toxicants due to past human point or nonpoint source activities which could be removed by natural processes or by human efforts;~~
 - ~~— other conditions which are correctable but for which time will be required to implement measures to achieve compliance with the standard.~~
- (ii) ~~where the standards cannot be met because the current imposition of the necessary controls or corrective measures would result in a substantial and widespread economic and social impact. The application of this condition requires a judgment by the Commission of what constitutes a substantial and widespread impact warranting modification.~~
- (i) where there is significant uncertainty regarding the level of water quality necessary to protect current and/or future uses.
- (iii) ~~where there is significant uncertainty regarding the appropriate long-term underlying standard -- e.g. due to the need for additional information regarding the extent to which existing quality is the result of natural or irreversible human-induced conditions or regarding the level of water quality necessary to protect current and/or future uses -- and the adoption of a temporary modification recognizes current conditions while providing an opportunity to resolve the uncertainty.~~
- (iii) where there is significant uncertainty regarding the timing of implementing attainable source controls or treatment.

(b) Eliminating the Need for A Temporary Modification

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 31.14.

(c) Duration of a Temporary Modification

When a temporary modification is granted, the duration of the temporary modification will be set by the Commission. The duration of a temporary modification shall be determined on a case-by-case basis, based upon all relevant factors, including how soon attainment of the underlying standard is deemed feasible. In making a decision as to whether a temporary modification should be removed or extended, the Commission will consider the existence of an implementation plan for eliminating the need for the temporary modification, the progress being made in trying to implement such a plan, the impact of 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.

- (d) Frequency of Commission review: the Commission will hold an annual public hearing to review temporary modifications which expire approximately two years from the review hearing. As a result of the hearing, the Commission may:
- (i) Delete the temporary modification and allow the existing underlying standards to go into effect;
 - (ii) Delete the temporary modification and adopt a revised underlying standard;
 - (iii) Extend the expiration date of the current temporary modification, with or without a revised underlying standard; or
 - (iv) Adopt a revised temporary modification with an appropriate expiration date.

(4) Procedures for Assigning or Changing a Standard or Granting, Removing, or Extending a Temporary Modification

- ~~(a) Overview: Assigning or changing a standard or granting, removing before its expiration, or extending a temporary modification 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).~~
- ~~(b) Frequency of commission review: the Commission will hold an annual public hearing to review temporary modifications expiring within two years of the hearing date. As a result of the hearing, the Commission may:~~
- ~~(i) Delete the temporary modification and allow the existing underlying standards to go into effect;~~
 - ~~(ii) Delete the temporary modification and adopt a revised underlying standard;~~
 - ~~(iii) Extend the expiration date of the current temporary modification, with or without a revised underlying standard; or~~
 - ~~(iv) Adopt a revised temporary modification with an appropriate expiration date.~~

(4) Granting, Extending and Removing Variances to Numeric Standards (effective January 1, 2013)

A variance to a water quality standard may be granted by the Water Quality Control Commission when the criteria of this subsection are met. The presence of the variance will be indicated in the appropriate water quality standards 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 re-examined not less than once every three years.

- (a) Criteria for Granting a Discharger-Specific Variance:

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: Demonstration that attaining the water quality standard has negative consequences that outweigh the benefits as a matter of policy. Considerations may include such factors as:

o The degree to which the pollutant arises from natural sources; or

o The adverse or beneficial environmental impact of increased treatment, including impacts on other media.

(ii) Demonstration that the conditions for granting a temporary modification are not met; or, if those conditions are met, determination by the Commission, after considering the site-specific circumstances, that granting a variance under this subsection is preferable as a matter of policy.

(b) Selection of Alternative Effluent Limits

An applicant for a variance shall submit a comprehensive alternatives analysis regarding pollutant removal techniques. Variances approved by the Commission shall be incorporated into the relevant standards tables as "alternative effluent limits." The Commission shall select such limits based upon an evaluation of the alternatives analysis and consideration of the impact of the variance on the uses of the water body in the area of the variance and downstream of that area. Alternative effluent limits represent the highest degree of protection of the classified use that is feasible within 20 years, taking into consideration the factors in subsection (4)(a)(i)(C), as appropriate.

(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 31.14(17)(b) and substantially comply with all other conditions of the variance.

31.8 ANTIDEGRADATION

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(2) Water Quality-Based Designations

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(b) Use-Protected Designation

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- (C) The water body ~~is~~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.

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31.11 BASIC STANDARDS APPLICABLE TO SURFACE WATERS OF THE STATE

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- (3) The interim organic pollutant standards contained in the following Basic Standards for Organic Chemicals Table 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 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 ~~efor~~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.

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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 water plus fish ingestion criteria to warrant the adoption of water plus fish ingestion standards for the segment in question.

4 Applicable to all aquatic life segments.

5 PQL's for the constituents listed above can be found at section 61.8((2)(l) of the Regulations for the State Discharge Permit System.

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

$$\text{Acute} = e^{[1.005(\text{pH})-4.869]}, \text{Chronic} = e^{[1.005(\text{pH})-5.134]}$$

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 congener 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.

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.

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31.14 INTEGRATION INTO DISCHARGE PERMITS

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(15) Except as provided below, where a temporary modification ~~has been adopted, permits will include a schedule of compliance designed to achieve the underlying standard as soon after its effective date as feasible.~~

- ~~(a) Where a temporary modification is adopted pursuant to section 31.7(3)(a)(i), the Commission may indicate its intent that the Division may establish a compliance schedule for implementation of the underlying standard that may not fully attain that standard during the life of the permit.~~
- ~~(b) Where a temporary modification is adopted pursuant to section 31.7(3)(a)(iii), permits for existing and new discharges to the segment in question:

 - ~~(ia) Will 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 compliance schedule to attain limits based on the underlying standard in accordance with section 31.14(4), above.~~
 - ~~(ib) May include a compliance schedule requiring actions intended to eliminate the uncertainty regarding the appropriate underlying standard.~~~~
- (16) Subsection (15)(b) notwithstanding, the Division, based on its best professional judgment, may:
 - (a) Where an existing permit is reissued while a temporary modification is in effect, determine limitations or other conditions 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 limit (numerical or otherwise) may be at or below the level of 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;
 - (b) set effluent limits in permits for new or expanding facilities at a level that does not pose an unreasonable risk to downstream uses;
- (17) 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, represents the level currently achieved. At the time a variance is approved, unless the alternative limit is currently achieved, a compliance schedule 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 (4)(a)(i)(C), as appropriate. A compliance schedule will be specified which requires progress toward the alternative effluent limitation as quickly as feasible.
 - (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.

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31.16 TABLES

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3) REFERENCES

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(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								
Parameter	Recreational			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) ⁽¹⁾⁽⁹⁾	3.0(A)	3.0(A)	3.0(A)	6.0 ⁽²⁾ (G) 7.0(spawning)	6.0-7.0 ⁽²⁾ (G) 7.0(spawning)	5.0(A)	3.0(A)	3.0(A)
pH (Std. Units) ⁽³⁾	6.5–9.0 (Bm)	6.5–9.0 (Bm)	6.5–9.0 (Bm)	6.5–9.0(A)	6.5–9.0(A)	6.5–9.0(A)		5.0–9.0(A)
Suspended Solids ⁽⁴⁾								

TABLE I PHYSICAL AND BIOLOGICAL PARAMETERS

Parameter	Recreational			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		
Temperature (°C) ⁽⁵⁾				<p>Rivers & Streams: Tier I^a: June-May-Sept = 17.0 (ch), 21.2 21.7(ac)</p> <p>Rivers & Streams: Oct-MayApril = 9.0 (ch), 13.0 (ac)</p> <p>Tier II^b: NS^e Rivers & Streams: Apr-Oct = 18.2 18.3 (ch), 23.8 23.9 (ac)</p> <p>NS^e Rivers & Streams: Nov-Mar = 9.0 (ch), 13.0 (ac)</p> <p>Lakes & Res: Apr-Dec = 17.0 (ch), 21.2 (ac)</p> <p>Lakes & Res: Jan-Mar = 9.0 (ch), 13.0 (ac)</p> <p>Large Lakes & Res^d: Apr-Dec = 18.2 18.3 (ch), 23.8 (ac)</p> <p>Large Lakes & Res^d: Jan-Mar = 9.0 (ch), 13.0 (ac)</p>	<p>Rivers & Streams: Tier I^a: Mar-Nov = 28.7 (ch), 31.3 (ac) es, Jd, od^a</p> <p>Mar-Nov = 24.2(ch), 29.0 (ac)</p> <p>Dec-Feb: 12.1(ch), 14.5(ac)</p> <p>Tier II^b: rs^b = 27.7 (ch), 31.3 (ac) other ss^e</p> <p>Mar-Nov = 27.5(ch), 28.6(ac)</p> <p>Dec-Feb = 13.8 (ch), 14.3 (ac)</p> <p>Tier III^f: Rivers & Streams: Dec-Feb = 14.3 (ch), 15.2 (ac) es, Jd, od^a = 12.1(ch), 14.5(ac) rs^b = 13.9 (ch), 15.2 (ac) other ss^e = 13.7 (ch), 14.3 (ac) Mar-Nov = 28.7 (ch), 31.8 (ac)</p> <p>Nov-Feb = 14.3 (ch), 15.9 (ac)</p> <p>Lakes & Res: Apr-Dec = 26.5 26.3 (ch), 29.3 29.5 (ac)</p> <p>Lakes & Res: Jan-Mar = 13.3 13.2 (ch), 14.6 14.8 (ac)</p>	Same as Class 1		

TABLE I PHYSICAL AND BIOLOGICAL PARAMETERS

Parameter	Recreational			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		

BIOLOGICAL:

<i>E. coli</i> per 100 ml	126 ⁽⁷⁾	205 ⁽⁷⁾	630 ⁽⁷⁾					630
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Note: Capital letters in parentheses refer to references listed in section 31.16(3); Numbers in parentheses refer to Table 1 footnotes.

Temperature Definitions

^a "cs, Jd, od" means common shiner, Johnny darter and orangethroat darter: these temperature criteria are to be applied only where any of these species are expected to occur at the site.

^b "rs" means razorback sucker: these temperature criteria are to be applied only where this specie is expected to occur at the site.

^c "other cs" means brook stickleback, central stoneroller, creek chub, longnose dace, Northern redbelly dace, finescale dace and white sucker: these temperature criteria are to be applied only where any of these species are expected to occur at the site.

^d These temperature criteria are to be applied only on lakes and reservoirs that are equal to or larger than 100 acres in surface area.

^e "NS" means "not sensitive": these criteria are to be applied where cutthroat trout and brook trout are not expected to occur at the site.

^a These temperature criteria apply where cutthroat trout and brook trout are expected to occur.

^b These temperature criteria apply where cold-water aquatic species, excluding cutthroat trout or brook trout, are expected to occur.

^c These temperature criteria apply to lakes and reservoirs with a surface area equal to or greater than 100 acres surface area.

^d These temperature criteria apply where common shiner, Johnny darter, or orangethroat darter are expected to occur.

^e These temperature criteria apply where brook stickleback, central stoneroller, creek chub, finescale dace, longnose dace, 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 These 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.

Table I – Footnotes

- (1) Standards for dissolved oxygen are ~~4-day~~ 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, see footnote 9.)
- • •
- (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 than once in three years, except as described in c, below.
- b. The DM of a waterbody shall not exceed the acute temperature criterion more than once in three years, except as described in c, below
- c. The following shall not be considered an exceedance of the criteria:
- 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 ~~annual~~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. Lakes and reservoirs: When a lake or reservoir is stratified, the mixed layer may exceed the criteria in Table 1 provided that an adequate refuge exists in water below the mixed layer. Adequate refuge depends on concurrent attainment of applicable dissolved oxygen standards. 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.
- iv. 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 the natural seasonal progression of temperature is maintained.
- (6) Deleted
- (7) *E.coli* criteria and resulting standards for individual water segments, are established as indicators of the potential presence of pathogenic organisms. ~~In the 2005 rulemaking hearing, the Commission transitioned from reliance on both fecal coliform and *E. coli* standards. The Commission intends standards for individual water segments will be revised to the *E. coli* standards. Compliance with *E. coli* standards shall be based on the geometric mean of representative stream samples. 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) For drinking water with or without disinfection. Deleted
- (9) The dissolved oxygen criteria is intended to apply to the epilimnion 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. The dissolved oxygen standard applies to lakes and reservoirs as follows.
- a. Recreation: Dissolved oxygen shall not be less than the criterion in Table 1, or the applicable site-specific standard in the upper portion of a lake or reservoir. A dissolved oxygen standard may be applied to the lower portion of a lake or reservoir on a site-specific basis if there is evidence that primary contact occurs in deeper water.
 - b. Agriculture: Dissolved oxygen shall not be less than the criterion in Table 1, or the applicable site-specific standard in the upper portion of a lake or reservoir. A dissolved oxygen standard may be applied to the lower portion of a lake on a site-specific basis if there is evidence that deeper water is used for livestock watering, or the irrigation of crops.
 - c. Aquatic Life: Dissolved oxygen shall not be less than the criteria in Table 1, or the applicable site-specific standard in the upper portion of a lake or reservoir. The dissolved oxygen may be less than the criteria in Table 1, or the applicable site-specific standard in the lower portion of a lake or reservoir if the dissolved oxygen is sufficient to protect the expected aquatic species from the chronic and acute effects of low dissolved oxygen.
 - i. Fall turnover exclusion: Dissolved oxygen may drop 1 mg/l below the criteria in Table 1 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 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. Domestic Water Supply: The portion of a lake or reservoir where the dissolved oxygen criterion applies shall be determined on a site-specific basis.

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 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)	0.019 (L) (1-day)	0.011 (L) (30-day)	0.019 (L) (1-day)	0.011 (L) (30-day)	0.011 (L) (30-day)		
Cyanide - Free (mg/l)	0.005(H) (1-day)		0.005(H) (1-day)		0.005(H) (1-day)	0.2(G) (1-day)	0.2(B,D ^m) (1-day)
Fluoride (mg/l)							2.0 ⁽³⁾ (E) (1-day)
Nitrate (mg/l as N)						100 ⁽²⁾ (B)	10 ⁽⁴⁾ (K) (1-day)
Nitrite (mg/l as N)	TO BE ESTABLISHED ON A CASE BY CASE BASIS ⁽³⁾				A CASE BY CASE BASIS ⁽³⁾	10 ⁽²⁾ (B) (1-day)	1.0(2) ⁽⁴⁾ (K) (1-day)
Sulfide as H ₂ S (mg/l)	0.002 undissociated(A) (30-day)		0.002 undissociated(A) (30-day)		0.002 undissociated(A) (30-day)		0.05(F) (30-day)
Boron (mg/l)						0.75(A,B) (30-day)	
Chloride (mg/l)							250(F) (30-day)
Sulfate (mg/l)							250(F) (30-day)
Asbestos							7,000,000 fibers/L ⁽⁵⁾
NOTE: Capital letters in parentheses refer to references listed 31.16(3); numbers in parentheses refer to table II footnotes.							

Table II – Footnotes

. . .

- (4) ~~A combined total of nitrite and nitrate at the point of intake to the domestic water supply shall not exceed 10 mg/l. The nitrate limit shall be calculated to meet the relevant standard at the end of the applicable regulatory mixing zone unless:~~
- a) 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 ground water, 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
- (5) Asbestos standard applies to fibers 10 micrometers or longer.

TABLE III METAL PARAMETERS (Concentration in ug/l)						
METAL ⁽¹⁾	AQUATIC LIFE ^{(1)(3)(4)(J)}		AGRICULTURE ⁽²⁾	DRINKING DOMESTIC WATER-SUPPLY ⁽²⁾	WATER + FISH ⁽⁷⁾	FISH INGESTION ⁽¹⁰⁾
	ACUTE	CHRONIC				
Aluminum	750 (tot.rec.)	87 (tot.rec.) ⁽¹¹⁾			---	---
Antimony				6.0 (30-day)	5.6	640
Arsenic	340	150	100 ^(A) (30-day)	0.02 – 10 ⁽¹³⁾ (30-day) ⁽¹⁴⁾	0.02	7.6
Barium				1,000 ^(E) (1-day) 490 (30-day)	---	---
Beryllium			100 ^(A,B) (30-day)	4.0 (30-day)	---	---
Cadmium	$(1.136672 - [\ln(\text{hardness}) \times e^{0.9151[\ln(\text{hardness})] - 3.1485}]) \times (0.041838)$ (Trout) = $(1.136672 - [\ln(\text{hardness}) \times e^{0.9151[\ln(\text{hardness})] - 3.6236}]) \times (0.041838)$	$(1.101672 - [\ln(\text{hardness}) \times e^{0.7998[\ln(\text{hardness})] - 4.4451}]) \times (0.041838)$	10 ^(B) (30-day)	5.0 ^(E) (1-day)	---	---
Chromium III ⁽⁵⁾	$e^{(0.819[\ln(\text{hardness})] + 2.5736)}$	$e^{(0.819[\ln(\text{hardness})] + 0.5340)}$	100 ^(B) (30-day)	50 ^(E) (1-day)	---	---
Chromium VI ⁽⁵⁾	16	11	100 ^(B) (30-day)	50 ^(E) (1-day)	100(30-day)	---
Copper	$e^{(0.9422[\ln(\text{hardness})] - 1.7408)}$	$e^{(0.8545[\ln(\text{hardness})] - 1.7428)}$	200 ^(B)	1,000 ^(F) (30-day)	1,300	---
Iron		1,000(tot.rec.) ^(A,C)		300(dis) ^(F) (30-day)	---	---
Lead	$(1.46203 - [(\ln(\text{hardness}) \times e^{1.273[\ln(\text{hardness})] - 1.46})]) \times (0.145712)$	$(1.46203 - [(\ln(\text{hardness}) \times e^{1.273[\ln(\text{hardness})] - 4.705})]) \times (0.145712)$	100 ^(B) (30-day)	50 ^(E) (1-day)	—	---
Manganese	$e^{(0.3331[\ln(\text{hardness})] + 6.4676)}$	$e^{(0.3331[\ln(\text{hardness})] + 5.8743)}$	200 ^(B) (30-day) ⁽¹²⁾	50(dis) ^(F) (30-day)	—	---
Mercury	4.4	0.77 FRV(fish) ⁽⁶⁾ = 0.01 (Total)		2.0 ^(E) (1-day)	—	---

TABLE III METAL PARAMETERS (Concentration in ug/l)						
METAL ⁽¹⁾	AQUATIC LIFE ^{(1)(3)(4)(J)}		AGRICULTURE ⁽²⁾	DRINKING DOMESTIC WATER-SUPPLY ⁽²⁾	WATER + FISH ⁽⁷⁾	FISH INGESTION ⁽¹⁰⁾
	ACUTE	CHRONIC				
<u>Molybdenum</u>			<u>300^(O) (30-day)</u>	<u>35(dis) (30-day)</u>		
Nickel	$e^{(0.846[\ln(\text{hardness}))+2.253]}$	$e^{(0.846[\ln(\text{hardness}))+0.0554]}$	200 ^(B) (30-day)	100 ^(E) (30-day)	610	4,600
Selenium ⁽⁹⁾	18.4	4.6	20 ^(B,D) (30-day)	50 ^(E) (30-day)	170	4,200
Silver	$\frac{1}{2}e^{(1.72[\ln(\text{hardness}))-6.52]}$	$e^{(1.72[\ln(\text{hardness}))-9.06]}$ (Trout) = $e^{(1.72[\ln(\text{hardness}))-10.51]}$		100 ^(F) (1-day)	—	---
Thallium		15 ^(C)		0.5 (30-day)	0.24	0.47
Uranium	$e^{(1.1021[\ln(\text{hardness}))+2.7088]}$	$e^{(1.1021[\ln(\text{hardness}))+2.2382]}$		<u>16.8 – 30⁽¹³⁾ (30-day)</u>	---	---
Zinc	$0.978 e^{(0.8525[\ln(\text{hardness}))+1.0617]}$	$0.986 e^{(0.8525[\ln(\text{hardness}))+0.9109]}$ (sculpin) ⁽¹⁵⁾ = $e^{(2.227[\ln(\text{hardness}))-5.604]}$	2000 ^(B) (30-day)	5,000 ^(F) (30-day)	7,400	26,000

NOTE: Capital letters in parentheses refer to references listed in section 31.16(3); Numbers in parentheses refer to Table III footnote

Table III – Footnotes

. . .

- (14) Applies at the point of water supply intake. The arsenic limit shall be calculated to meet the relevant standard at the end of the applicable regulatory mixing zone unless
- a) 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 ground water, or
 - b) The arsenic concentration at the point of intake to the domestic water supply will not exceed the standard as demonstrated through modeling or other scientifically supportable analysis
- (15) The chronic zinc equation for sculpin applies in areas where mottled sculpin are expected to occur and hardness is less than 113 mg/l CaCO₃. The regular chronic zinc equation applies in areas where mottled sculpin are expected to occur, but the hardness is greater than 113 mg/l CaCO₃.

Table IV
Table Value Standards for Selected Hardnesses
(concentration in ug/L, dissolved)

		Mean Hardness in mg/L calcium carbonate									
		25	50	75	100	150	200	250	300	350	400
Cadmium	Acute trout	0.5	0.9	1.3	1.7	2.4	3.1	3.8	4.4	5.1	5.7
	Acute	0.8	1.5	2.1	2.7	3.9	5.0	6.1	7.1	8.1	9.1-9.2
	Chronic	.15	.25	0.34	0.42	0.58	0.72	0.85	0.97	1.1	1.2
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	0.01	0.02	0.05	0.08	0.15	0.25	0.36	0.50	0.65	0.81
Uranium	Chronic	0.03	0.10	0.20	0.32	0.64	1.0	1.6	2.1	2.8	3.5
	Acute	521	1119	1750	2402	3756	5157	6595	8062	9555	11070
Zinc	Chronic	326	699	1093	1501	2346	3221	4119	5036	5968	6915
	Acute	4438	7969	11297	143124	201176	257259	311313	363366	414417	464467
	Chronic sculpin	4.8	22	55	104	N/A	N/A	N/A	N/A	N/A	N/A
	Chronic	38	69	97	124	176	224	274272	317	362	405

Shaded values exceed drinking water supply standards.

WQCD PROPOSED

31.47 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE; JUNE 9, 2010 RULEMAKING

The provisions of sections 25-8-202(1)(b), 25-8-204; and 25-8-402, C.R.S., provide the specific statutory authority for adoption. The Commission also adopted, in compliance with section 24-4-103(4) C.R.S., the following statement of basis and purpose.

BASIS AND PURPOSE:

I. WATER QUALITY CONTROL DIVISION PROPOSALS

A. Temporary Modifications

Background: In 2000, the Commission added “type iii” temporary modifications to section 31.7(3) to recognize that uncertainty regarding the underlying standard was an appropriate use of temporary modifications (see Statement of Basis, Regulation #31, at section 31.37, IV C.). In 2005, the Commission further revised section 31.7 to remove the distinction between the types of temporary modifications, clarify the durations of temporary modifications, and institute an annual review of temporary modifications. One of the primary purposes of these revisions was to focus attention on ending the need for the temporary modification as soon as possible (see Statement of Basis, Regulation #31, 31.44, I. D). These revisions resulted in a significant change in the Division’s approach to temporary modifications, primarily in limiting the use of temporary modifications to situations where there are point source discharges that face unreasonable outcomes.

During the time that Colorado’s temporary modifications regulatory provisions have been changing, EPA has also revised its policy regarding permit compliance schedules. Previously, it was thought that compliance schedules could be no longer than the term of the permit. This meant that attainment of underlying water quality standards had to occur by the end of the five-year permit term. EPA has recently revisited the issue and now says that compliance schedules can extend past the end of the permit term.

In the last few years, the Division has implemented the revised provisions both in the regularly scheduled basin hearings and in the new annual temporary modification review hearings. Various parties have expressed concern about the new practices. The current changes are the result of Standards Framework Work Group dialogue.

Organizational Revision of section 31.7: The current 31.7(5) was deleted and the contents moved to other sections in 31.7. Overview language that was previously at subsection 31.7(5)(a) was moved to the beginning of 31.7 as an introductory paragraph, because it speaks to the process for all of the following subsections. 31.7(5) (b) was moved to the end of sub-section (3) which addresses temporary modifications.

Commission Intent: The Commission continues to believe that temporary modifications are an important and useful water quality standards tool. The benefits of recognizing a short-term need for flexibility in the standards system is evident specifically where there are permitted dischargers on the segment.

The practical result of a temporary modification is to provide relief for permitted discharges until the time the uncertainty is resolved. The Commission continues to believe that it is more appropriate to focus resources on resolving the uncertainty rather than to focus on compliance with the underlying standard.

Since temporary modifications have no impact on other aspects of Colorado's water quality management program such as the 303(d) list, the Non-point Source Program or the TMDL Program, it is fitting that temporary modifications only be used where there are permitted discharges that might face unreasonable consequences in the absence of a temporary modification. To that end, it is the Commission's intent that temporary modifications should be adopted only where permit compliance schedules are and unsuitable means to provide additional time to come into compliance with the underlying standard.

Changes to the Regulation: The Commission revised the conditions for granting a temporary modification to specifically address the types of situations that warrant adoption of a temporary modification. Temporary modifications now explicitly provide time to resolve three types of uncertainty: 1) to determine what criteria is necessary to protect the use; 2) to determine whether the sources causing the impairment are correctable; and 3) determine how additional treatment will be provided.

In addition, a change was made to the frequency of review to clarify that only the temporary modifications that are about two years from their expiration date need to be included in the review. Experience has shown that if the temporary modification is set to be reviewed during the basin-wide review, there is little practical benefit in a review six months earlier.

B. Discharger Specific Variance Provisions

In this rulemaking the Commission adopted a new subsection in section 31.7 with a delayed effective date of January 1, 2013, establishing an option for the adoption of discharger specific variance in certain circumstances. Subsection (4) was added to section 31.7 to describe the process and criteria for granting, extending or removing variances. Subsection (17) was added to section 31.14 to explain how discharger-specific variances are to be integrated into discharge permits.

Overview: A discharger-specific variance establishes an alternative water-quality based effluent limit value that takes the place of a standards-based effluent limit for a specific point source discharge. Since technology-based effluent limits apply independently of water quality-based requirements, discharger-specific variances do not apply to technology-based effluent limits. Technology-based effluent limits must still be met, even where a discharger specific variance has been established.

During the term of the variance, all other water quality standards not specifically modified remain applicable. Variances ensure that the highest attainable level of water quality is achieved. At the time of the periodic basin review, the basis for the discharger-specific variance must be reviewed to determine if there has been any change in the factors upon which the variance was granted.

It is the Commission's intent that discharger-specific variances are to be used after other avenues (such as temporary modifications) have been shown to be inappropriate. As specified in subsection (4)(b)(ii), temporary modifications of standards must be considered before moving forward with a request for a discharger specific variance. Temporary modifications have been an effective tool in a variety of circumstances where standards are not met. The Commission is adding the discharger-specific variance option at this time because there is a limited set of circumstances where temporary modifications are not available or may not be the most effective water quality management tool.

Delayed Effective Date: The discharger-specific variance provisions will become effective on January 1, 2013. In the intervening time, it is anticipated that the Division, with input from interested stakeholders, will develop guidance to provide additional detail regarding the implementation of the discharger-specific variance provisions adopted by the Commission. The intent of the guidance is to make the discharger-specific variance adoption and implementation process more transparent and understandable to all interested parties, while providing appropriate flexibility.

Periodic Review Requirement: A discharger-specific variance acts as a revised water quality standard for a particular discharge and will be considered by the Commission in the context of water quality standards rulemaking proceedings. The variance will be reviewed in conjunction with the water quality standards

review cycle that fulfills the triennial review requirements. If, at the Issues Scoping Hearing or Issues Formulation Hearing, it is determined that action is appropriate before the next scheduled basin-wide standards rulemaking hearing, a special hearing will be held.

Expiration Dates: Discharger-specific variances are temporary and will include an expiration date. In determining the appropriate duration for a variance, the Commission's primary consideration will be the site-specific basis for the variance and the potential for achieving more protective effluent concentration or load. Additional considerations will be the timing of the discharge permit renewal and basin review cycle.

Criteria for Granting a Variance: The Commission established three independent tests for determining whether a variance is warranted. One addresses situations where achieving a specific water quality standard is not feasible because such treatment is beyond the limits of current technology. In these cases, the technology does not exist, or if it does exist, cannot treat to the levels that are required to meet water quality standards.

The second test relates to situations where achieving water quality standards is not feasible because the costs of required treatment would cause substantial and widespread adverse economic and social impact. Facility-specific cost, affordability, and treatment information is necessary to support a decision that a discharger-specific variance is appropriate under this test.

The third test relates to the non-economic consequences of increased treatment, including the effects on other media such as air or land. One element of this test is the extent to which the pollutant arises from natural sources. For consideration of this factor, the Commission expects to see a discussion of the fate and transport of the pollutant if the treatment works was not present, including the effect of the point source on the timing, concentrations and location of the pollutant's delivery to the receiving water.

The second element of the "other consequences" test relates to an assessment of the wider environmental impacts of increased treatment on other media as well as on water quality. For this element, there would need to be a demonstration that the increased treatment would cause more environmental damage than the benefits of meeting the standard warrant. The entity advocating this reason for a variance would need to articulate a clear and convincing basis for such a policy decision.

In addition to meeting one of these three tests to demonstrate need for the variance, the applicant for a variance must demonstrate that the conditions for granting a temporary modification are not met. Alternatively, if that demonstration cannot be made, in order to grant the variance, the Commission must make an affirmative determination that the variance the most appropriate water quality management tool to address the site-specific circumstances. As noted above, temporary modifications have been an effective tool for many years. The Commission's intent is that, by adding the discharger-specific variance option at this time, progress can be made on the limited set of circumstances where temporary modifications are not available or may not be the most effective tool.

Selection of the Alternative Effluent Limits: A discharger-specific variance will be selected after an evaluation of the alternative pollutant removal techniques and consideration of the impact of the variance on the uses of the stream in the area of the variance and downstream of that area. Alternative techniques should include such options as pollutant reduction or elimination (for instance in industrial manufacturing processes or the pretreatment context), seasonal retention, land application and treatment process alternatives. The chosen option must provide the highest degree of protection of the classified use that is feasible in 20 years, taking into considerations the factors in subsection (4)(a)(i)(C), where appropriate.

Permits are to include "alternative effluent limitations" which represent the limits that can be achieved at full implementation of the chosen option. The alternative effluent limits may be adjusted as new information becomes available. In some cases, for instance where current pollution removal techniques represent the limits of technology, alternative effluent limits may correspond to the level currently attained.

In most cases, acute and chronic alternative effluent limits will be specified. However, on a case-by-case basis, it may be more appropriate to establish other duration-based limits.

During the term of the variance, it is the Commission's intent that the permit require progress towards meeting the alternative limit as quickly as feasible. Steps necessary to document that progress will depend on facts of a specific situation and the basis for the variance. In some cases, investigation of treatment technologies should continue; in others, it may require long-range planning for wastewater reuse, where allowed, or process modification.

Relationship with other regulatory provisions

Antidegradation: In situations where a discharger-specific variance would authorize water quality degradation and trigger the requirement for an antidegradation review, the alternatives analysis upon which the selection of the interim limit was based can also be used for the antidegradation review. Since a demonstration that a current water quality *standard* is not attainable (required when a variance is considered) is a higher bar than demonstrating that protection of *assimilative capacity* beyond the standard is not required, it is likely that no additional analysis will be required.

Impaired Waters: As stated above, adoption of a discharger-specific variance constitutes a policy decision that, according to the terms of the variance, the underlying standard does not need to be met. Any impairments that are solely attributable to a duly authorized variance, are not to be included on the Section 303(d) List. The Section 303(d) List is the list of waters that still require a Total Maximum Daily Load ("TMDL"). In the case of impairments solely attributable to (and authorized by) a variance, a TMDL is not required since it is apparent why the water quality is impaired, and thus a TMDL is not necessary to identify the remedy for these waters. Cases where multiple sources contribute to an impairment would need to be examined on a case-by-case basis, and Section 303(d) Listing may be appropriate.

Regulation #61: The Discharge Permit Regulations (at section 61.12(a)) specify the conditions under which the Division can grant variances. In the context of permitting, the Division may grant variances to non-federal standards (i.e. ground water quality standards). The next time that Regulation #61 is revised, The Commission intends that the word "ground water" will be inserted before the word "standard" in the first line of 61.12(a).

C. Antidegradation

The Commission refined the antidegradation provisions with changes to two specific aspects of these provisions. First, the definition of "effluent dominated" was changed to 6 of 10 years, instead of 8 of 10 years (definition 31.5(18)). The purpose of this change is to better align the applicability of antidegradation review requirements with the concept of a simple majority which is used in the rest of the definition.

Second, the period 2000-2009 was inserted in the considerations for designating a water as Use Protected (see 31.8(2)(b)(i)(C)); i.e., a waterbody would need to have been effluent dependent or effluent dominated during the period 2000 – 2009. The purpose of this change is to avoid a situation where, over time, more and more waters become effluent dominated and therefore use-protected without the protection of antidegradation review regarding proposed new or increased water quality impacts.

D. Dissolved Oxygen in Lakes

The Commission clarified the application of dissolved oxygen criteria in lakes and reservoirs in footnote 9 of Table 1 in 31.16. The Commission determined that standards for dissolved oxygen standards apply as minima against which an individual profile will be assessed. Therefore, dissolved oxygen data collected from multiple locations in a single lake or reservoir on the same date will be assessed independently, and not averaged together.

Recreation: For the recreation use classification, the Commission determined that the dissolved oxygen standard should apply to the upper portion of a lake or reservoir, which is typically where primary contact occurs. The dissolved oxygen standard within a single profile will generally be assessed as the average of all measurements from 0.5 meter to 2.0 meters, or to the bottom, whichever is less. Dissolved oxygen standards may be applied to deeper portions of a lake or reservoir on a site-specific basis if there is evidence that primary contact occurs in deeper portions of a lake or reservoir.

Agriculture: For the agriculture use classification, the Commission determined that the dissolved oxygen standard should apply to the upper portion of a lake or reservoir, which is typically where livestock drink, and/or where water is diverted for irrigation. The dissolved oxygen standard within a single profile will generally be assessed as the average of all measurements from 0.5 meter to 2.0 meters, or to the bottom, whichever is less. Dissolved oxygen standards may be applied to deeper portions of a lake or reservoir on a site-specific basis if there is evidence that water for livestock or irrigation is drawn from deeper portions of a lake or reservoir.

Aquatic Life: For the aquatic life use classification, the Commission determined that the numeric dissolved oxygen standards should apply to the upper portion of a lake or reservoir. The dissolved oxygen in upper portion of a lake or reservoir will generally be characterized within a single profile as follows:

1. Where a lake or reservoir is equal to or greater than 5 meters deep, the dissolved oxygen within a single profile will generally be assessed as the average of all measurements from 0.5 meters to 2.0 meters.
2. Where a lake or reservoir is less than 5 meters deep, but more than 1.25 meters deep, the dissolved oxygen within a single profile will generally be assessed as the average of all measurements from 0.5 meters to a depth equal to 40% of the total depth.
3. Where a lake or reservoir is 1.25 meters deep or less, the dissolved oxygen within a single profile will generally be assessed as the median of all measurements.

The Commission decided to apply a narrative dissolved oxygen standard to the bottom portion of a lake or reservoir to protect the expected aquatic species from the chronic and acute effects of low dissolved oxygen.

Fall Turnover Exclusion

The Commission created some additional flexibility with respect to the dissolved oxygen standard during fall turnover when oxygen-depleted bottom water may be mixed throughout a lake or reservoir. The fall turnover exclusion allows the dissolved oxygen to drop one milligram per liter below the table value standard for up to 7-days during fall turnover. However, a dissolved oxygen profile must be measured 7-days before and again 7-days after the profile with low dissolved oxygen is measured at a consistent location to ensure that the depressed oxygen condition does not persist for more than the allowed 7-day period. The Commission recognizes that fish grow more slowly when oxygen levels are slightly depressed, but also recognizes that low dissolved oxygen during fall turnover is a natural phenomenon, and that fish and other aquatic species can withstand this event without long-term negative consequences. Lakes with fish species that spawn in the fall do not qualify for the fall turnover exclusion since eggs and larvae are more sensitive to the negative effects of low dissolved oxygen. An exception to this is allowed if data show that adequate dissolved oxygen is maintained in all spawning areas for the duration of fall turnover.

Water Supply: For the water supply use classification, the Commission decided that where the dissolved oxygen criteria should apply in a lake or reservoir would be determined on a site-specific basis. For lakes and reservoirs with an existing water supply use, the depth of the intake pipe should be considered when determining the appropriate depth to apply the dissolved oxygen criterion.

E. Temperature Criteria

The Commission reformatted the temperature criteria in 31.16 Table 1, and updated the values based on new data included in the Colorado Temperature Database. The Commission added the month of May to the summer season for cold stream tier I based on evidence that lower elevation streams within this tier typically exceeded the winter criteria in May due to natural conditions. The Commission also deleted the razorback sucker tier (warm stream tier III), and included the razorback sucker in warm stream tier II because the expected range of the razorback sucker is also habitat for the more thermally sensitive white sucker. Since the temperature tier applied to a segment is based on the most thermally sensitive species, the razorback sucker tier was never applied. However, this action does not preclude the adoption of a site-specific temperature standard based on the expected occurrence of the razorback sucker.

Several corrections were made to the temperature criteria. Both the Arctic grayling and golden shiner were moved from stream tiers to the cold and warm lake tiers respectively because both species are found only in lakes. Additionally, a typographical error in the chronic temperature criterion for cold stream tier II, and large lakes and reservoirs was corrected.

The Commission also adopted a provision in footnote 5 of Table 1 to exclude certain exceedances of the temperature criteria in the shoulder-seasons from being considered an impairment of the aquatic life use. The footnote excludes exceedances of the winter temperature criteria in cold streams for 30-days before the transition from winter to summer, and 30-days after the transition from summer to winter provided that the natural seasonal progression of temperature is maintained. The Commission adopted this exclusion to account for year-to-year variation in the timing of the natural seasonal fluctuation of temperature. The Commission did not apply this exclusion to lakes or warm-water streams because there was no evidence that an exclusion was warranted for those systems.

The Commission also changed the air temperature exclusion in footnote 5, so that sites must exceed the monthly maximum air temperature instead of the annual maximum air temperature. This change makes it possible to exclude data from any extraordinarily warm day for any time of year, and not just in summer when the maximum annual temperature will be recorded.

The Commission also clarified the definition of “maximum weekly average temperature” in 31.5 by deleting the word “daily” and adding the word “summertime”.

F. E. coli averaging period

The Commission adopted an averaging period of two months for the existing *E. coli* standards in Footnote 7 to Table 1. Without an averaging period, assessments have masked seasonal trends in *E. coli* at impairment concentrations. An averaging period of two months was selected to closely approximate the duration of the eight week epidemiological studies, which are the basis for the table value criteria. Site-specific or seasonal standards will be assessed with intervals as close as possible to two months.

G. Point of Water Supply Intake-Implementation

The Commission clarified how the domestic water supply standards for arsenic and nitrate would be implemented in permits by expanding on the Table II footnote 4 (nitrate) and Table III footnote 14 (arsenic). These two standards apply at the point of water supply intake. In order to provide a consistent level of protection and simplify implementation in the CDPS permitting process, the default assumption will be that the standard is applied at the end of the applicable regulatory mixing zone. This presumption can be overcome if the permittee provides information demonstrating 1) that there is no actual domestic water supply use; or 2) that the standard will not be exceeded at the point of intake

H. Metals Tables Values

Mercury: The Commission deleted the acute mercury table value of 1.4, and the chronic mercury table value of 0.77. These values were based on toxicological studies that included water as the sole pathway of exposure. The remaining table value for aquatic life is based on toxicological studies that included both water and food as pathways for mercury exposure. The food pathway is particularly important for mercury since it is bioaccumulative, and biomagnifies up the food chain.

Molybdenum: The Commission adopted totally recoverable molybdenum table-values for the drinking water supply and agriculture use classifications. The molybdenum criterion of 35 ug/l for drinking water supply is consistent with the standard that was adopted by the Commission to protect groundwater, and was calculated in accordance with Policy 96-2. The molybdenum criterion of 300 ug/l for agriculture is intended to protect livestock from the effects of molybdenosis. Site-specific molybdenum standards for agriculture should consider the ratio of copper to molybdenum, and the amount of sulfur in livestock diet (includes feed and water).

Uranium: The Commission revised the table value for uranium to be a hyphenated value. The Commission retained the 30 µg/L value, the maximum contaminant level (MCL) from EPA's 2000 radionuclides rule, and added a value of 16.8 µg/L. The 16.8 µg/L value is derived from use of the reference dose and relative source contribution from the 2000 radionuclides rule in Equation 1-1 of Policy 96-2. This equation and the resulting value are based purely upon the protection of human-health and do not take treatment or economic considerations into account as does the MCL. Footnote 13 to Table III will be applied to the revised uranium table value. The human-health value of 16.8 µg/L is based upon protection against the chemical toxicity effects of uranium.

Zinc (sculpin): The Commission added a chronic zinc equation for sculpin. The Commission had adopted this equation in the June 2005 rulemaking hearing as described in section 31.44. Although the equation was not captured in table III of Regulation 31 at that time, it has been adopted and applied in some of the basin regulations. The equation applies where mottled sculpin are expected to occur and hardness is less than 113 mg/l CaCO₃. It does not apply where mottled sculpin are expected to occur if the hardness is greater than 113 mg/l CaCO₃. Footnote 15 was added to Table III to clarify the Commission's intent for application

I. Other Changes

The Commission added clarification to a number of items and corrected minor typographical errors:

- The definition of "chronic standard" (at 31.5(7)) was revised to remove the reference to unionized ammonia.
- The definition of "existing quality" (at 31.5(20)) was revised to reference total ammonia instead of unionized ammonia and to clarify the time period used for determining existing quality for temperature.
- The subsection on ambient quality-based standards (at 31.7(1)(b)(ii)) was revised. The reference to the 85th percentile was changed to "existing quality" which is defined at 31.5(20) and includes the 85th percentile for dissolved metals, the 50th percentile for total recoverable metals and the appropriate statistics for pH, DO and temperature. The sentence regarding ambient temperature standards was deleted because it is covered in the definition of "existing quality." Acute standards for parameters in Tables I and II will be handled on a case-by-case basis.
- A solid line was added at the end of the footnotes to the Basic Standards for Organic Chemicals in sub-section 31.11(3) to distinguish the end of the footnotes from the beginning of sub-section 31.11(4)
- Punctuation was corrected in sub-section 31.14 (16).
- A reference was added at sub-section 31.16(3)(O).
- In Table I, the typographical error for the dissolved oxygen table value for warm water aquatic life was corrected to reflect the correct value of 5.0 mg/l. The coldwater values of 6.0 mg/l and 7.0 mg/l (spawning) had been incorrectly copied into the warm water column.
- For clarification, "1-day" was deleted from Footnote 1 to Table I.
- Language describing the transition from fecal coliforms to E coli was deleted from Footnote 7 to Table I because this transition is complete.
- A reference to Footnote 9 was added to Footnote 1 to Table I.

- Footnote 8 to Table I was deleted because it is not used.
- The Table III column heading “Drinking Water Supply” was changed to “Domestic Water Supply” to match the name of the classification at sub-section 31.1.3(1)(d).
- A missing parenthesis was replaced in the cadmium aquatic life chronic equation in Table III.
- Table IV was reformatted, the acute and chronic zinc values were updated to reflect changes adopted in 2005, a row was added for chronic zinc numbers for the protection of mottled sculpin and the acute cadmium value at hardness 400 was corrected.

EXHIBIT 2
COLORADO WASTEWATER UTILITY COUNCIL

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)

....

31.11 BASIC STANDARDS APPLICABLE TO SURFACE WATERS OF THE STATE

....

BASIC STANDARDS FOR ORGANIC CHEMICALS (in micrograms per liter)						
Parameter	CAS No.	Human Health Based ¹			Aquatic Life Based ⁴	
		Water Supply ²	Water+Fish ³	Fish Ingestion ⁸	Acute	Chronic
....						
Nonylphenol	84852-15-3 and 25154-52-3	---	---	---	28 (effective 4/1/2011 <u>1/1/2017</u>)	6.6 (effective 4/1/2011 <u>1/1/2017</u>)
....						

....

COLORADO WASTEWATER UTILITY COUNCIL PROPOSED

31.48 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: JUNE 8, 2010 RULEMAKING, FINAL ACTION AUGUST 9, 2010; EFFECTIVE DATE OF JANUARY 1, 2011

The provisions of sections 25-8-202(1)(b); 25-8-204; and 25-8-402, C.R.S., provide the specific statutory authority for the amendments to this regulation adopted by the Water Quality Control Commission (Commission). The Commission has also adopted, in compliance with section 24-4-103(4) C.R.S., the following statement of basis and purpose.

BASIS AND PURPOSE

Nonylphenol: Updated information on nonylphenol analytical method development and source control activities was provided to the Commission by the Metro Wastewater Reclamation District, the City of Boulder, the Littleton/Englewood Wastewater Treatment Plant, and Colorado Springs Utilities. Based on that evidence, the Commission determined that an extension of the current delayed effective date until January 1, 2017 (following the next scheduled Basic Standards rulemaking hearing) was appropriate. The Commission found that the additional time extension was necessary to resolve continuing uncertainties surrounding EPA analytical methods and overall nonylphenol source controllability through approved pretreatment programs. During the extension of the delayed effective date, these wastewater treatment facilities will continue to develop additional data and information as well as monitor developments on a possible national phase-out of nonylphenol ethoxylates at commercial laundries. For purposes of discharge permits, the Commission continues to expect that the Division will include effluent monitoring requirements in major permits issued prior to the delayed effective date of January 1, 2017.

EXHIBIT 3
COLORADO MINING ASSOCIATION

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)

....

31.16 TABLES

....

TABLE III METAL PARAMETERS (Concentration in ug/l)						
METAL ⁽¹⁾	AQUATIC LIFE ^{(1)(3)(4)(J)}		AGRICULTURE ⁽²⁾	DRINKING WATER-SUPPLY ⁽²⁾	WATER + FISH ⁽⁷⁾	FISH INGESTION ⁽¹⁰⁾
	ACUTE	CHRONIC				
Aluminum	$750 e^{\frac{(1.3695[\ln(\text{hardness}))+1.8308]}{}} \text{ (tot.rec.)}$	$87 e^{\frac{(1.3695[\ln(\text{hardness}))+0.9161]}{}} \text{ (tot.rec.)}^{(44)}$			---	---
....						
Arsenic	340	150	100 ^(A) (30-day)	0.02 – 10 ⁽⁴³¹²⁾ (30-day) ⁽⁴⁴¹³⁾	0.02	7.6
....						
Iron		1,000 (tot.rec.) ^(A,C)		300(dis) ^(F) (30-day)	---	---
....						
Manganese	$e^{(0.3331[\ln(\text{hardness}))+6.4676]}$	$e^{(0.3331[\ln(\text{hardness}))+5.8743]}$	200 ^(B) (30-day) ⁽⁴²¹¹⁾	50(dis) ^(F) (30-day)	—	---
....						
Zinc	$0.978 e^{\frac{(0.8525[\ln(\text{hardness}))+1.0617]}{(0.9094[\ln(\text{hardness}))+0.9095]}}$	$0.986 e^{\frac{(0.8525[\ln(\text{hardness}))+0.9109]}{(0.9094[\ln(\text{hardness}))+0.6235]}}$	2000 ^(B) (30-day)	5,000 ^(F) (30-day)	7,400	26,000

NOTE: Capital letters in parentheses refer to references listed in section 31.16(3); Numbers in parentheses refer to Table III footnote

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 as calcium carbonate and shall be no greater than 400 mg/l. The exception is for Al, where the upper cap on calculations would be hardness of 250 mg/L. For permit effluent limit calculations, the hardness values used in calculating the appropriate metal standard should be based on the lower 95 per cent 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.

....

- ~~(11) Where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as CaCO₃ in the receiving water after mixing, the 87 µg/L chronic total recoverable aluminum criterion will not apply, and aluminum will be regulated based on compliance with the 750 µg/L acute total recoverable aluminum criterion.~~

- ~~(1211)~~ This standard is only appropriate where irrigation water is applied to soils with pH values lower than 6.0.

- ~~(1312)~~ 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.

- ~~(1413)~~ Applies at the point of water supply intake.

Table IV
Table Value Standards for Selected Hardnesses
(concentration in ug/L, dissolved)

		Mean Hardness					In	mg/L	calcium	carbonate				
		25	50	75	100	150		200		250		300	350	400
Aluminum (tot. rec.)	<u>Acute</u>	<u>512</u>	<u>1,324</u>	<u>2,307</u>	<u>3,421</u>	<u>5,960</u>		<u>8,838</u>		<u>11,997</u>				
	<u>Chronic</u>	<u>205</u>	<u>530</u>	<u>924</u>	<u>1,370</u>	<u>2,388</u>		<u>3,541</u>		<u>4,807</u>				
Cadmium	Acute trout	0.5	0.9	1.3	1.7	2.4		3.1		3.8		4.4	5.1	5.7
													
Zinc	Acute	<u>44</u>	<u>79</u>	<u>112</u>	<u>143</u>	<u>204</u>		<u>257</u>		<u>314</u>		<u>363</u>	<u>414</u>	<u>464</u>
	Chronic	<u>45</u>	<u>85</u>	<u>123</u>	<u>160</u>	<u>231</u>		<u>301</u>		<u>368</u>		<u>435</u>	<u>500</u>	<u>564</u>
		<u>38</u>	<u>69</u>	<u>97</u>	<u>124</u>	<u>176</u>		<u>224</u>		<u>274</u>		<u>317</u>	<u>362</u>	<u>405</u>
		<u>34</u>	<u>65</u>	<u>93</u>	<u>121</u>	<u>175</u>		<u>228</u>		<u>279</u>		<u>329</u>	<u>379</u>	<u>428</u>

Shaded values exceed drinking water supply standards.

COLORADO MINING ASSOCIATION PROPOSED

31.48 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: JUNE 8, 2010 RULEMAKING, FINAL ACTION AUGUST 9, 2010; EFFECTIVE DATE OF JANUARY 1, 2011

The provisions of sections 25-8-202(1)(b); 25-8-204; and 25-8-402, C.R.S., provide the specific statutory authority for the amendments to this regulation adopted by the Water Quality Control Commission (Commission). The Commission has also adopted, in compliance with section 24-4-103(4) C.R.S., the following statement of basis and purpose.

BASIS AND PURPOSE

TABLE III AND IV REVISIONS

The Table III table values for aluminum, iron, and zinc have been revised to reflect more current information that was unavailable when the Commission revised this regulation in 2005. Based on zinc and aluminum analyses, the Table Value Standards for Selected Hardnesses were also modified.

Aluminum

With regard to aluminum, information was presented at the hearing indicating that the total recoverable aluminum water quality standard of 750 µg/L acute and 87 µg/L chronic, including the relevant footnote, should be revised. The technical basis for the existing aluminum standards was the 1988 United States Environmental Protection Agency ("USEPA") Aluminum Document, which was outdated. The revisions to the acute and chronic aluminum standards used the USEPA criteria derivation and recalculation procedures. The revisions also considered the results from more recent studies such as the Arid West Water Quality Research Project (2006), which analyzed potential updates to aluminum standards based on more complete literature reviews. The Arid West work was primarily based on an overall evaluation of the USEPA recalculation procedure for Arid West effluent-dependent water users and provided information that was unavailable when the 1988 Aluminum Document was prepared. Specifically, the Arid West recalculation procedure analysis discovered an inverse aluminum toxicity and hardness relationship. A hardness-based aluminum standard is more representative of the concentration levels that harm aquatic life and so provides a better measurement of potential toxicity. The total recoverable aluminum acute criteria range from 512 µg/L to 11,997 µg/L at hardness concentrations of 25 mg/L and 250 mg/L, respectively. The total recoverable aluminum chronic criteria range from 205 µg/L to 2,807 µg/L at hardness concentrations of 25 mg/L to 250 mg/L. Given the available data, it was recommended that the upper bound of hardness calculations be 250 mg/L, rather than the standard 400 mg/L for other metals equations. Finally, it was apparent from the scope of deviation from the existing standards that revisions were required.

Iron

The existing chronic aquatic life iron standard is 1,000 µg/L total recoverable iron. Because total recoverable iron is highly correlated with suspended sediment, the effects of high suspended sediment concentrations can be misinterpreted as being attributable to total recoverable iron. The use of the total recoverable form also does not accurately reflect the bioavailable concentration expected to be toxic to aquatic life, so dissolved iron should be used. Based on USEPA guidance and precedent in other states, dissolved iron values were found to be more representative of biologically available iron. Accordingly, a dissolved iron criteria of 1,000 µg/L was adopted.

Zinc

Since the 2005 Regulation No. 31 Basic Standards Hearing, the zinc criteria have undergone an additional technical review and update as part of the Arid West Water Quality Research Project. These revisions involved extensive literature searches and evaluation of a considerable amount of usable data for the acute and chronic zinc toxicity databases. Using these latest updates to the acute and chronic zinc toxicity databases, the zinc criteria equations were updated. By including recent zinc toxicity studies in the database, the recalculated acute standard became slightly more lenient and the recalculated chronic standard became slightly more stringent at hardnesses less than 150.