



COLORADO

Water Quality
Control Commission

Department of Public Health & Environment

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

SUBJECT:

For consideration of the adoption of revisions to section 41.5(B)(6) in the Basic Standards for Ground Water, Regulation #41 (5 CCR 1002-41) and revisions to the Site Specific Water Quality Classifications and Standards for Ground Water, Regulation #42 (5 CCR 1002-42). Revisions to Regulation #41 proposed by the Water Quality Control Division, along with a proposed Statement of Basis, Specific Statutory Authority and Purpose, are attached to this notice as Exhibit 1. Revisions to Regulation #42 proposed by Cherokee Metropolitan District, along with a proposed Statement of Basis, Specific Statutory Authority and Purpose, are attached to this notice as Exhibit 2.

In these attachments, proposed new language is shown with double-underlining and proposed deletions are shown with ~~strikeouts~~. Any alternative proposals related to the subject of this hearing will also be considered.

SCHEDULE OF IMPORTANT DATES

Party status requests due	05/26/2016 5 pm	Additional information below.
Proponent's prehearing statement due	06/07/2016 5 pm	Additional information below.
Responsive prehearing statement due	07/01/2016 5 pm	Additional information below.
Rebuttal Statement due	07/26/2016 5 pm	Additional information below.
Last date for submittal of motions	07/28/2016 5 pm	Additional information below.
Notify commission office if participating in prehearing conference by phone	07/29/2016 by noon	Send email to cdphe.wqcc@state.co.us with participant(s) name(s)
Prehearing Conference (mandatory for parties)	08/01/2016 10:00 am	Florence Sabin Conference Room Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246
Rulemaking Hearing	08/08/2016 1:00 pm	Florence Sabin Conference Room Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246

HEARING SUBMITTALS:

For this hearing, the commission will receive all submittals electronically. Submittals must be provided as PDF documents, except for raw data exhibits which may be provided as Excel workbooks. Submittals may be emailed to cdphe.wqcc@state.co.us, provided via an FTP site, CD or flash drive, or otherwise conveyed to the commission office so as to be received no later than the specified date.

PARTY STATUS:

Party status requests must be in writing and must provide:

- the organization's name,
- one contact person,
- a mailing address,
- a phone number, and
- email addresses of all individuals associated with the party who wish to be notified when new submittals are available on the commission's website for review.

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, along with an explanation of the alleged harm, in their party status request.

PREHEARING AND REBUTTAL STATEMENTS:

Each party that has proposed revisions must submit a proponent's prehearing statement.

Each prehearing and rebuttal statement must be provided as a separate PDF document from any accompanying written testimony or exhibits.

Following the rebuttal statement due date, no other written materials will be accepted from parties except for good cause shown.

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 will not be permitted unless authorized by the commission.

PREHEARING CONFERENCE:

Attendance at the prehearing conference is mandatory for all persons requesting party status. Parties needing to participate by telephone can call 1-857-216-6700 and enter the conference code 425132.

Following the cut-off date for motions, no motions will be accepted, except for good cause shown.

PUBLIC PARTICIPATION ENCOURAGED:

The commission encourages input from non-parties, either orally at the hearing or in writing prior to the hearing. Written submissions should be emailed to cdphe.wgcc@state.co.us by July 27, 2016.

SPECIFIC STATUTORY AUTHORITY:

The provisions of sections 25-8-202; 25-8-203; 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.

Dated this 12th day of April, 2016 at Denver, Colorado.

WATER QUALITY CONTROL COMMISSION

Trisha Oeth, Administrator

EXHIBIT 1
WATER QUALITY CONTROL DIVISION

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL COMMISSION

5 CCR 1002-41

REGULATION NO. 41
THE BASIC STANDARDS FOR GROUND WATER

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41.5 GROUND WATER QUALITY STANDARDS

The water quality standards specified in subsection B below are deemed necessary and appropriate to protect ground water uses as specified in section 41.4, and shall be adopted to protect such classified uses. The standards specified in subsections A and C apply to all State ground waters, unless alternative site-specific standards have been adopted for a specified area pursuant to subsection D below.

B. Numeric Standards

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6. The Commission may adopt site-specific standards in lieu of those listed in Tables 1, 2, 3 and 4 taking into account the factors prescribed in Section 25-8-204(4), C.R.S. and section 41.4. The downgrading factors described in Regulation No. 31, section 6(2)(B) of the Basic Standards and Methodology for Surface Water shall not apply to the establishment of site-specific standards under this subsection.

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WATER QUALITY CONTROL DIVISION PROPOSED

42.35 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: AUGUST 8, 2016 RULEMAKING; FINAL ACTION OCTOBER 11, 2016; EFFECTIVE DATE NOVEMBER 30, 2016

The provisions of C.R.S. sections 25-8-202; 25-8-203; 25-8-204; 25-8-402, provide the specific statutory authority for adoption of this regulation. The Commission also adopted, in compliance with section 24-4-103(4) the following statement of basis and purpose.

BASIS AND PURPOSE

The Water Quality Control Commission amended Regulation 41.5(B)(6) to authorize the Commission to adopt site-specific standards in Regulation #42 for agricultural standards (listed in Tables 3 and 4) as well as domestic water supply standards (listed in Tables 1 and 2). The Commission determined that correcting the existing inconsistency between domestic and agricultural standards and expanding the Commission's authorization to adopt site-specific groundwater standards was consistent with the Commission's authority under the Water Quality Control Act, the overall policies of Regulations #41 and #42, and the Commission's 2001 discussion to allow consideration of site-specific standards for the agricultural standards in Tables 3 and 4.

EXHIBIT 2
CHEROKEE METROPOLITAN DISTRICT PROPOSAL

COLORADO DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT
WATER QUALITY CONTROL COMMISSION

REGULATION NO. 42

**SITE-SPECIFIC WATER QUALITY CLASSIFICATIONS AND STANDARDS FOR
GROUND WATER**

5 CCR 1002-42

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42.2.5 INCORPORATION BY REFERENCE

Wherever material in this regulation has been adopted and incorporated by reference, the reference cited herein includes only the version that was in effect as of October 11, 2016, and not later amendments to the incorporated material.

All material incorporated by reference may be examined at any state publications depository library. Requests for public inspection of materials incorporated by reference in this regulation should be made to the Standards Unit, Water Quality Control Division, at the Department of Public Health and Environment, 4300 Cherry Creek Drive South, Denver, Colorado 80246-1530.

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42.7 SITE-SPECIFIC GROUND WATER CLASSIFICATIONS AND WATER QUALITY STANDARDS

The statewide standards for organic chemicals and radioactive materials set forth in section 41.5 C of The Basic Standards for Ground Water apply to all ground water for which site specific classifications and standards have been adopted, unless the Commission specifies otherwise in the site-specific standards for a particular specified area.

The following classifications and standards shall not be interpreted so as to cause material injury to water rights in accordance with 25-8-104 C.R.S. (1989):

....

(3) UPPER BLACK SQUIRREL CREEK ALLUVIAL AQUIFER, EL PASO COUNTY

- (a) Specified Area: All unconfined ground waters within the saturated zone underlying that area of El Paso County shown on Figure 3.
- (b) Classification: The classifications of the unconfined ground water in the specified area are:
 - Domestic Use-Quality
 - Agricultural Use-Quality

(c) Ground Water Quality Standards: The ground water quality standards included in Tables 1 - 4 of the "Basic Standards for Ground Water" 41.0 (5 CCR 1002-41) are assigned to all unconfined ground water in the specified area with the exception that the standard for total dissolved solids (TDS) shall be the minimum of the following:

(i) 600 mg/l or

(ii) the ECw value and sodium absorption ratio necessary to protect irrigated crops that are grown, or may be expected to be grown, in the specified area as determined using the Water Quality Control Division's Policy – Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops (WQP-24). The TDS concentration for protection of irrigated crops shall be determined by converting the allowable electrical conductivity of the ground water (ECw) as determined using WQP-24 to a TDS value based on the ratio of actual TDS to ECw data of the discharge or by using the factor in WQP-24 or another scientifically-supported and published factor. The sodium absorption ratio shall be determined using the ECw value for the most sensitive crop as prescribed in section 3.3.4 of WQP-24.

CHEROKEE METROPOLITAN DISTRICT PROPOSED

42.35 STATEMENT OF BASIS, SPECIFIC STATUTORY AUTHORITY AND PURPOSE: AUGUST 8, 2016 RULEMAKING; FINAL ACTION OCTOBER 11, 2016; EFFECTIVE DATE NOVEMBER 30, 2016

The provisions of C.R.S. sections 25-8-202; 25-8-203; 25-8-204; 25-8-402, provide the specific statutory authority for adoption of this regulation. The Commission also adopted, in compliance with section 24-4-103(4) the following statement of basis and purpose.

BASIS AND PURPOSE

Site-Specific Numeric Standards

In this hearing, the Commission established a two-part site-specific total dissolved solids (TDS) groundwater standard for the Upper Black Squirrel Creek Alluvial Aquifer (UBSCAA) specified area. The Commission had previously assigned the agriculture use-quality and the domestic use-quality classifications for the UBSCAA specified area. The Commission determined that a TDS standard of 600 mg/l is appropriate to protect the domestic use-quality classification and also established the Water Quality Control Division's Policy - Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops (WQP-24) as the standard to define allowable levels of TDS and sodium absorption ratio necessary to protect the agricultural use-quality classification for crops irrigated with groundwater downgradient of any activity within the UBSCAA.

Concurrent with this action the Commission also modified section 41.5 D. of the Basic Standards for Ground Water (Regulation No. 41) to authorize the adoption of site-specific standards in lieu of any numeric standard listed in section 41.5 B.

The Commission followed revised section 41.5 D. of Regulation No. 41 to determine whether a site specific standard for TDS should be adopted. The Commission noted that it had previously determined the appropriate ground water classifications for the UBSCAA specified area, as noted above, thus meeting the requirement under subsection 41.5 D.1.

Under subsection 41.5 D.2 the Commission, in determining whether a site-specific numeric standard for TDS should be adopted is required to take into account the factors prescribed in section 25-8-204(4), C.R.S. and section 41.4 of Regulation No. 41.

The Commission analyzed the following information from each of the factors in section 25-8-204(4), C.R.S. to determine whether a site-specific standard for TDS should be adopted:

- (a) The need for standards which regulate specified pollutants;

Based on current and potential future impacts to ground water quality in the UBSCAA specified area it is necessary to establish TDS standards to protect the agricultural and domestic uses.

- (b) Such information as may be available to the Commission as to the degree to which any particular type of pollutant is subject to treatment; the availability, practicality, and technical and economic feasibility of treatment techniques; the impact of treatment requirements upon water quantity; and the extent to which the discharge to be controlled is significant;

Treatment to remove TDS requires the implementation of membrane treatment technology such as reverse osmosis (RO). Usually, a portion of the discharge is treated and blended back with the remaining wastewater to achieve the necessary final TDS concentration.

RO technology is readily available. A typical RO treatment facility will produce 80 percent of the wastewater fed to the system resulting in 20 percent of the wastewater (brine) having to be disposed either through deep well injection, evaporation ponds, or a mechanical zero liquid discharge process. This reduces the amount of water that is available to the owner or downstream/downgradient water rights holders.

For municipalities and other domestic wastewater generators, the cost to remove TDS with RO treatment from the biologically treated wastewater can approach or even exceed the cost of the conventional wastewater treatment plant, preceding the RO treatment facility, used to meet effluent permit limits for common constituents such as biological oxygen demand, total suspended solids, ammonia, and nitrate. Recent drinking water RO treatment projects in Colorado have cost between \$1.25 million and \$3.50 million per MGD capacity and operation and maintenance costs are between \$0.60 and \$0.70 per 1,000 gallons treated. These drinking water projects do not include pretreatment processes, such as microfiltration (MF), that will be necessary for a wastewater treatment application. The Commission noted that the estimated costs, in 2014 dollars for the Cherokee Metropolitan District (CMD) to construct a 1.65 MGD MF/RO facility with deep well injection of the produced brine which would be necessary for CMD to achieve a TDS concentration in the discharge from the RO facility of 400 mg/l, would exceed \$17.6 million with operating costs exceeding \$0.63/1,000 gallons treated. These costs do not include the \$6.3 million one-time cost to replace the 420 acre-feet of water per year that would be lost through deep well injection of the brine. For CMD, implementation of this project would result in an increase in the monthly wastewater charge of \$27.99 an 80 percent increase over the average 2014 rate of \$34.92/month. The median household income (MHI) for the CMD service area, 2010-2014, is \$51,421 which is 86.5 percent of Colorado's MHI. The resulting annual wastewater charge to add the debt service and operation and maintenance costs for the MF/RO facilities would exceed \$755, more than 1.5 percent of the MHI in the CMD service area.

- (c) The continuous, intermittent, or seasonal nature of the pollutant to be controlled;

TDS concentrations in the UBSCAA specified area ranged from 165 to 842 mg/l based on information from 72 wells collected by the Colorado Geological Survey (El Paso County Groundwater Quality Study, March 2011). Fifty-one of the 72 wells sampled in this study had TDS values less than 300 mg/l while three exceeded 600 mg/l. Currently, commercial, agricultural and residential activities affect groundwater quality the most within the UBSCAA specified area. Currently, high-density urban housing and industrial land uses have less significant effect on ground water quality. The prevalent land uses are agricultural and rural residential, and land use is the primary factor that affects shallow groundwater. The expected future land uses within the UBSCAA specified area are expansion of the current developed land uses, including further residential development in urban areas. Land use in the northwest portion of the basin is expected to change to urban development. Agricultural land is projected to transform into urban land. Commercial development is expected to accompany residential development along the Highway 94 corridor. Substantial industrial development is not anticipated in the future land uses plans (El Paso County Groundwater Quality Study, March 2011).

- (d) The existing extent of pollution or the maximum extent of pollution to be tolerated as a goal;

As noted above, TDS concentrations throughout the UBSCAA specified area are generally less than 300 mg/l with several locations where concentrations above 400 mg/l and even 600 mg/l are found. As land use patterns change TDS concentrations near new development are expected to increase.

- (e) Whether the pollutant arises from natural sources;

TDS is naturally occurring in the UBSCAA and is also influenced by anthropogenic sources such as urban runoff, agriculture, municipal wastewater and onsite wastewater treatment systems.

- (f) Beneficial uses of water; and

The UBSCAA specified area is located about 15 miles east of Colorado Springs, Colorado. The primary aquifer is a productive section of unconsolidated deposits that overlies bedrock units of the Denver Basin and is a critical resource for local water needs, including irrigation, domestic, and commercial use. The primary aquifer also serves an important regional role for aquifer storage and export of water to nearby communities in the Colorado Springs area.

- (g) Such information as may be available to the Commission regarding the risk associated with the pollutants including its persistence, degradability, the usual or potential presence of the affected organisms in any waters, the importance of the affected organisms, and the nature and extent of the effect of the pollutant on such organisms.

Findings by both the EPA and the World Health Organization (WHO) show that TDS does not present a risk to public health and each agency identifies TDS concentrations that impact the aesthetic quality of a water such as taste. The 1979 EPA national secondary (non-enforceable) drinking water standard for TDS of 500 mg/l was based upon consumer surveys that rated the taste (aesthetic quality) of the water as “good” at TDS values ranging from 398 to 755 mg/l and from 320 to 658 mg/l. The EPA secondary drinking water standards website notes: “Secondary standards are set to give public water systems some guidance on removing these chemicals to levels that are below what most people will find to be noticeable.” The 2011 WHO Guidelines for Drinking-water Quality states “The palatability of water with a total dissolved solids (TDS) level of less than about 600 mg/l is generally considered to be good...” based upon panels of tasters that rated the taste as “good” at TDS values ranging from 314 to 638 mg/l and these TDS values were rounded down to 301 to 600 mg/l.

Analysis

The Commission recognizes that the TDS standard in Table 4 of the Basic Standards for Ground Water does not apply to the domestic use-quality classification. However, the Commission, in consideration of concerns of ground water users, determined that it is appropriate to adopt a site-specific TDS standard that is protective of good aesthetic quality of the water in the aquifer.

In determining an appropriate standard to ensure that the aesthetic quality of the water in the UBSCAA is good, the Commission took into account the following factors: 1) that TDS does not present a public health concern, 2) the significant cost of treatment to remove TDS for the required RO treatment, 3) the significant loss of water for disposal of brine produced by RO treatment, and 4) that the TDS at any value it sets will be above the acceptable taste threshold for some and below that for others.

The Commission found it necessary to strike a balance between the desired aesthetic quality of the water and the cost and other impacts required to achieve the final TDS standard. In consideration of the above factors the Commission finds that the appropriate TDS standard for maintaining good aesthetic water quality and protecting the domestic use is 600 mg/l. The Commission understands that this level of TDS may not meet some peoples desired taste for the water but that was balanced against the costs of achieving a lower TDS value that would provide no added human health protection benefit. Also, this value is within the range of what people found to be of good aesthetic quality in the studies cited by the EPA and the WHO.

The Commission also found that establishing standards for electrical conductivity (EC) and sodium absorption ratio (SAR) are necessary to protect the agricultural use for the approximately three percent of the UBSCAA specified area on which irrigated agriculture takes place. The Commission found that the previously applicable 400 mg/l TDS standard for the agricultural use was inconsistent with the more recently developed approaches in WQP-24 for protecting crops and soils. The EC and SAR standards to be applied to the activity would be determined and implemented at the time the Water Quality Control Division issues a discharge permit to the owner of an activity or when an implementing agency establishes protection levels for an activity under its jurisdiction. WQP-24 was developed to implement

the narrative surface water standard in Section 31.11(1)(a)(iv) of the Basic Standards and Methodologies for Surface Waters. The Commission finds that this policy, developed through a broad, multidisciplinary, stakeholder process, provides the best scientifically-sound approach to ensure that crops and soils in fields irrigated with ground water from the UBSCAA are protected from salts in irrigation water affected by up-gradient activities. The Commission added a specific provision in subsection 42.7(3)(c)(ii) requiring the SAR value to be calculated using the EC_w value for the protection of the most sensitive crop to provide clear guidance to stakeholders, implementing agencies, and the Division on how the standard is to be calculated and implemented into discharge permits.

The Commission agreed that adopting a two part TDS standard is the best way to protect the classifications of domestic use-quality and agricultural use-quality for the UBSCAA specified area.