



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8**

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Ref: 8EPR-EP

Patricia Wells, Chair
Water Quality Control Commission
4300 Cherry Creek Drive South
Denver, CO 80222-1530

**Subject: EPA Action on Revisions to the Water Quality
Standards for the South Platte River Basin**

Dear Ms. Wells:

The U.S. Environmental Protection Agency (EPA) has partially completed its review of the revisions to the Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin (Regulation #38) adopted by the Colorado Water Quality Control Commission (Commission). The revisions addressed today were adopted on August 10, 2009, with an effective date of January 1, 2010. The submission letter included an Opinion of the Attorney General certifying that the standards were duly adopted pursuant to State law. Receipt of the revised standards on August 28, 2009, initiated EPA's review pursuant to § 303(c) of the Clean Water Act (CWA or the Act). EPA has partially completed its review of the revisions, and this letter is to notify you of our action.

The Region commends the Commission's efforts to review and revise water quality standards for the South Platte River Basin. Although all revisions were adopted by the Commission on August 10, 2009, three separate rulemaking actions were completed. The changes included:

- Revisions to the chlorophyll numeric standard for Cherry Creek Reservoir following the rulemaking hearing on March 10, 2009;
- New chlorophyll and total phosphorus numeric standards for Bear Creek Reservoir following the rulemaking hearing on May 11, 2009; and
- Basinwide revisions to use classifications, numeric standards, and antidegradation designations following the rulemaking hearing on June 8-9, 2009.

In particular, we appreciate the decision to adopt new/revised chlorophyll standards for three reservoirs, adopt new temperature standards for all segments basinwide, and assign antidegradation “reviewable” status (by deleting Use Protected designations) for 58 segments or portions of segments. Generally, the adopted revisions that are the subject of today’s EPA action are well supported by the evidence submitted to the Commission during the State’s rulemaking process, and we congratulate the Commission and the Water Quality Control Division (Division) for the significant improvements to the water quality standards for the South Platte River Basin.

In addition, revisions to the Basic Standards and Methodologies for Surface Waters (Regulation #31) were adopted by the Commission on October 13, 2009, with an effective date of November 30, 2009. The submission letter included an Opinion of the Attorney General certifying that the standards were duly adopted pursuant to State law. Receipt of the revised standards on October 26, 2009, initiated EPA’s review pursuant to § 303(c) of the Clean Water Act (CWA or the Act). EPA has completed its review of the revisions, and this letter is to notify you of our action.

CLEAN WATER ACT REVIEW REQUIREMENTS

CWA § 303(c)(2) requires States and authorized Indian Tribes to submit new or revised water quality standards to EPA for review. EPA is to review and approve or disapprove the submitted standards. Pursuant to CWA § 303(c)(3), if EPA determines that any standard is not consistent with the applicable requirements of the Act, the Agency shall, not later than the ninetieth day after the date of submission, notify the State or authorized Tribe and specify the changes to meet the requirements. If such changes are not adopted by the State or authorized Tribe within ninety days after the date of notification, EPA shall promulgate the needed standard pursuant to CWA § 303(c)(4). The Region’s goal has been, and will continue to be, to work closely with States and authorized Tribes throughout the State or Tribal standards revision process as a means to avoid the need for such disapproval and promulgation actions.

TODAY’S ACTION

I am pleased to inform you that today, with certain exceptions, the Region is approving all water quality standards revisions adopted by the Commission on August 10, 2009 and October 13, 2009. The exceptions include certain provisions EPA is not acting upon today. Enclosure 1 presents a summary of the adopted revisions and the rationale for EPA’s action.

The water quality standards approvals in today's letter apply only to water bodies in the State of Colorado, and do not apply to waters that are within Indian Country, as defined in 18 U.S.C. Section 1151. Today's letter is not intended as an action to approve or disapprove water quality standards applying to waters within Indian Country. EPA, or authorized Indian Tribes, as appropriate, will retain responsibilities for water quality standards for waters within Indian Country.

ENDANGERED SPECIES ACT REQUIREMENTS

It is important to note that EPA approval of water quality standards is considered a federal action which may be subject to the Section 7(a)(2) consultation requirements of the Endangered Species Act (ESA). Section 7(a)(2) of the ESA states that “each federal agency...shall...insure that any action authorized, funded or carried out by such agency is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined to be critical...”

EPA has initiated consultation under ESA Section 7(a)(2) with the U.S. Fish and Wildlife Service regarding our approval of certain new or revised water quality standards. EPA also has a Clean Water Act obligation, as a separate matter, to complete its water quality standards approval action. Therefore, in approving these water quality standards revisions today, EPA is completing its CWA Section 303(c) responsibilities. However, because ESA consultation on EPA’s approval of these standards is ongoing, EPA’s approval is made subject to the outcome of the ESA consultation process. Should the consultation process with the U.S. Fish and Wildlife Service identify information regarding impacts on listed species or designated critical habitat that supports amending EPA’s approval, EPA will, as appropriate, revisit and amend its approval decision for those new or revised water quality standards.

STANDARDS APPROVED WITHOUT CONDITION

All water quality standards revisions in this category are approved without condition because the revisions are consistent with the requirements of the Clean Water Act and EPA’s implementing regulation. The revisions in this category include:

- Revisions to antidegradation designations;
- Revisions to recreation classifications;
- Revisions to numeric standards for the protection of recreation classifications;
- Revisions to water supply classifications;
- Revisions to human health-based numeric standards;
- Revisions to numeric standards for the protection of agriculture classifications;
- Revisions to the Cherry Creek Reservoir chlorophyll standard; and
- The new Bear Creek Reservoir chlorophyll standard.

STANDARDS APPROVED SUBJECT TO ESA CONSULTATION

All water quality standards revisions in this category are approved, subject to ESA consultation. The revisions in this category include:

- Revisions to aquatic life classifications;
- Revisions to numeric standards for the protection of aquatic life classifications;
- Revisions to aquatic life numeric standards for temperature;

- Revisions to ambient-based standards;
- Revisions to temporary modifications; and
- All other revisions, including resegmentation, renaming, and consolidation of segments.

PROVISIONS EPA IS NOT ACTING ON TODAY

Assessment thresholds for chlorophyll and total phosphorus were adopted for Big Dry Creek Segment 1 (Standley Lake) and added to Section 38.6(4) of Regulation 38. Because the Region does not consider these new assessment thresholds for chlorophyll and total phosphorus to be water quality standards subject to EPA review under CWA § 303(c), the Region is taking no action on these provisions.

In addition, the Region is taking no action on the total phosphorus numeric standard and the temporary modifications for chlorophyll and total phosphorus adopted for Bear Creek Segment 1c (Bear Creek Reservoir). The Region has not yet completed its review of these new provisions.

CONCLUSION

EPA Region 8 congratulates the Commission and the Division for the improvements to the State's water quality standards. The Region looks forward to working with the State to make additional improvements to water quality standards. If you have any questions concerning this letter, the most knowledgeable people on my staff are David Moon (303-312-6833) and Lareina Guenzel (303-312-6610).

Sincerely,



Eddie A. Sierra
Acting Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

Enclosure

RATIONALE FOR EPA'S ACTION ON THE REVISIONS TO THE WATER QUALITY STANDARDS

Today's EPA action letter addresses the revisions to water quality standards adopted by the Water Quality Control Commission (Commission) on August 10, 2009 and October 13, 2009. This enclosure provides a summary of the revisions and a rationale for the action taken by EPA. The discussion below covers the following categories of revisions: (1) revisions that are approved for purposes of CWA Section 303(c), (2) revisions that are approved for purposes of CWA Section 303(c), subject to ESA consultation, and (3) revisions EPA is not acting on today.

I. APPROVED REVISIONS

EPA has concluded that approval of certain revisions either will have no effect on listed or proposed endangered or threatened species, or is otherwise not subject to ESA consultation. For the revisions in this category, ESA consultation is not required. Major revisions in this category are discussed below.

Antidegradation Designations

The revisions to Regulation 38 include various changes to Use Protected designations for individual water bodies. These revisions are consistent with changes to the Use Protected eligibility criteria in the Regulation 31 adopted during the 2005 review of the Basic Standards regulation.

Where a Use Protected designation is deleted, this results in a more stringent antidegradation standard (i.e., the segment becomes "reviewable"). Such decisions are made pursuant to the eligibility criteria identified in Section 31.8(b) of the Basic Standards regulation. In this rulemaking, numerous revisions to delete the Use Protected designation were adopted. For example, the Use Protected designations were deleted for the following waters:

- Upper South Platte Segments 5c, 7, 10a, 16a, 16h, 17a and lakes and reservoirs in segments 11a, 11b, 16c, and 16g
- Cherry Creek segments 1, 3 and lakes and reservoirs in segment 4
- Bear Creek segments 1b, 2, 4a and 5
- Clear Creek segments 5, 12, 15, 17b and lakes and reservoirs in 13b and 16b
- Lakes and reservoirs in Big Dry Creek segment 1
- Boulder Creek segments 5, 6, 7b, 10 and lakes and reservoirs in segments 8 and 11
- St Vrain Creek segments 3, 5 and lakes and reservoirs in segment 6

- Middle South Platte segments 1b, 5a and lakes and reservoirs in segment 3a
- Big Thompson River segments 3, 4a, 4b, 4c, 5, 9 and lakes and reservoirs in segments 6 and 10
- Cache La Poudre segments 7, 8, 10, 11, 12, 13b and lakes and reservoirs in segment 13a
- Lower South Platte segment 1 and lakes and reservoirs in segments 2a and 2b
- Republican River segments 1, 5 and lakes and reservoirs in segments 6 and 7

Based on our review of the revisions and the supporting analyses, EPA has concluded that the revisions to antidegradation designations are consistent with Colorado's antidegradation rule, as contained in Section 31.8 of the Basic Standards and Methodologies for Surface Waters. Colorado's antidegradation rule has been approved by the Region on multiple occasions (most recently, on October 17, 2005). The revisions increase the universe of waters in Colorado subject to antidegradation review requirements and provide for a more stringent level of antidegradation protection. The Region has concluded that the segment-specific revisions to antidegradation designations are consistent with the federal antidegradation requirements at 40 CFR § 131.12. All revisions to antidegradation designations are approved.

Recreation Classifications

The recreation classifications for individual segments were revised on a basinwide basis, consistent with the re-named recreation classifications adopted during the 2005 review of the Basic Standards regulation. Most of the revisions reflect only a change in terminology, with no change in water quality protection. Generally, Class 1a, 1b, and 2 recreation classifications were replaced by Class E or U, P, or N classifications, respectively, with no change to the stringency of the numeric standards. The Region notes that the same bacteriological criterion is assigned to Class E and U and there is no difference in the level of protection provided by these classifications. For segments where Class N use classifications were adopted, the use attainability analyses were reviewed to determine whether there is new information indicating that primary contact uses are attainable.

Segment-specific revisions to recreation classification that did not involve a simple transition to the new classification terminology included Clear Creek segment 24, Big Dry Creek segment 4b (as re-defined in this rulemaking), Lower South Platte segment 4, and Republican River segment 8, which were revised by applying a more stringent recreation classification. Because these revisions resulted in adoption of a designated use subcategory that requires more stringent criteria, these revisions do not trigger the use attainability analysis requirement at 40 CFR Section 131.10(j).

The portion of Beaver Creek beginning at its source to the Fort Morgan Canal was moved from Lower South Platte segment 2b to segment 2a, and the recreation classification downgraded from Class 1a to Class N. This revision was supported by a use attainability analysis (UAA) submitted by Denver Metro Wastewater Reclamation District. The UAA and Metro's rebuttal comments adequately demonstrate that primary contact recreation uses are not attainable.

Based on review of the revisions and the supporting information, the Region has concluded that these revisions are consistent with the federal requirements found at 40 CFR Section 131.10. Accordingly, all revisions to recreation classifications are approved.

Numeric Standards for the Protection of Recreation Classifications

The fecal coliform standards were deleted from all segments in the basin. These revisions are consistent with EPA's national criteria document¹, which recommends that States use the indicator organisms *E. coli* or enterococci (and not fecal coliforms) as the basis for their freshwater bacteriological criteria.

In contrast to the wholesale deletion of the fecal coliform-based numeric standards, few changes were made to the *E. coli*-based numeric standards. Revisions to *E. coli* criteria included the adoption of more stringent criteria for Clear Creek segment 24, Big Dry Creek segment 4b, Lower South Platte segment 4, and Republican River segment 8, consistent with the adoption of more stringent recreation classifications for these segments. A less-stringent *E. coli* numeric standard was adopted for the portion of Beaver Creek that was moved to Lower South Platte Segment 2a, consistent with the change in use classification.

The revisions are consistent with federal requirements at 40 CFR § 131.11, because the adopted numeric standards describe a level of water quality that will protect the assigned recreation classifications. Accordingly, EPA approves all revisions to the numeric standards for the protection of recreation uses.

Water Supply Classifications

A water supply use classification was added to the following segments or portions of segments:

- Lakes and reservoirs formerly in USP segment 7 (now in segment 19).
- Lakes and reservoirs formerly in USP segments 11a and 11b (now in segment 21).
- Lakes and reservoirs formerly in USP 16c and 16g (now in segment 22).
- Lakes and reservoirs formerly in Cherry Creek segment 4 (now in segment 5).
- Lakes and reservoirs formerly in Big Dry Creek segment 1 (now in segment 7).
- Lakes and reservoirs formerly in Boulder Creek segment 8 (now in segment 16).
- Barbour ponds, which formerly were in St. Vrain segment 3 (now in segment 11).
- Lakes and reservoirs formerly in St. Vrain segment 6 (now in segment 13).
- Lakes and reservoirs formerly in MSP segment 3a (now in segment 7).
- Lakes and reservoirs formerly in Big Thompson segment 6 (now in segment 17).
- Lakes and reservoirs formerly in Big Thompson segment 10 (now in segment 19).
- Cache La Poudre segments 13a and 13c.
- Lakes and reservoirs formerly in CLP segment 13a (now in segment 21) except for Fossil Creek Reservoir.

¹ Ambient Water Quality Criteria for Bacteria – 1986. U.S. EPA, January 1986.

- Lakes and reservoirs formerly in LSP segment 2a (now in segment 4).
- Lakes and reservoirs formerly in LSP segment 2b (now in segment 5).
- Lakes and reservoirs formerly in Republican segments 6 and 7 (now in segment 8).

EPA has determined that these revisions to use classifications are consistent with federal requirements at 40 CFR Section 131.10(a), which requires that the classification of waters of the State must consider the use and value of water for various purposes including public water supply. Accordingly, all revisions to water supply classifications are approved.

Human Health-Based Numeric Standards

Revisions to human health-based numeric standards were adopted for most segments. Most commonly, the previous water supply table value standard for arsenic (50 ug/L) was replaced with the water + fish table value (0.02 ug/L), the water supply table value (0.02 - 10 ug/L), or the fish ingestion table value (7.6 ug/L). Other segment-specific revisions included, for example:

- USP segment 16c and MSP segment 1a. The fish ingestion standards were removed based on evidence that the site-specific conditions in these segments do not support fishing or fish consumption uses. Fish consumption standards were applied to USP segment 16c in 2000 when lakes and reservoirs were included in the segment description. In this rulemaking, the lakes and reservoirs in segment 16c were moved to segment 22, and evidence was presented that the waters remaining in segment 16c do not support fishing or fish consumption uses. Similarly, evidence was presented for MSP segment 1a that the fish assemblage is dominated by small native minnow species that do not reach a catchable size.
- Lakes and reservoirs formerly in USP segment 16g (now in segment 22). Fish ingestion standards were added.
- USP segment 19. Water+fish ingestion standards were added.
- Big Dry Creek Segment 2 (Standley Lake). A new chlorophyll numeric standard of 4 µg/L was adopted principally to address the public health concern raised by the Standley Lake Cities (Westminster, Northglenn, Thornton) regarding algal growth and associated formation of disinfection byproduct precursors. The Commission also revised the narrative trophic status standard. The numeric standard is intended to preserve current conditions and protect uses.
- MSP segment 7. Fish ingestion standards were replaced by water+fish ingestion standards, consistent with the fact that water supply is now a use classification.
- Various segments (listed in the previous section). Water supply numeric standards were added (e.g., for nitrate, chloride, sulfate, chromium III, iron, and manganese) consistent with the addition of a water supply use classification.
- 1,4-Dioxane. The October 13, 2009 revisions included postponing the effective date for the 3.2 µg/L statewide standard for 1,4-dioxane from March 22, 2010 to March 22, 2012 because of uncertainty as to whether the 3.2 µg/L standard is necessary and appropriate for the protection of human health. The currently effective 6.1 µg/L numeric standard will remain in effect until March 22, 2012 for the protection of human health. As

discussed in our February 23, 2005 action letter, the Region considers both numeric standards to be reasonable, consistent with CWA requirements, and consistent with the State's risk management discretion.

All revisions to human health-based standards are consistent with federal requirements at 40 CFR § 131.11 because the adopted numeric standards describe water quality levels that will protect the assigned use classifications. Accordingly, all revisions to human health-based numeric standards are approved.

Agriculture Standards

For a number of segments, revisions were made to numeric standards for the protection of the agriculture classification. Many of the changes involved either adoption or deletion of the agriculture standard for arsenic. For example, for certain segments without a human exposure pathway requiring protection, the chronic arsenic standard for protection of agriculture uses was added (e.g., Boulder Creek segment 8). For certain segments with a water supply classification, the chronic arsenic standard for protection of agriculture uses was replaced by the (more stringent) water+fish or water supply table value standard (e.g., Cache La Poudre segments 13a and 13c). For certain segments with a fish consumption exposure pathway requiring protection, but without a water supply classification, the chronic arsenic agriculture standard was replaced by the (more stringent) fish consumption table value standard (e.g., Upper South Platte segment 5a).

Revisions for various segments without a water supply use classification included the addition of a nitrate standard to protect agriculture uses. For example:

- Upper South Platte River Segments 5a, 7, 11a, 11b, 16a, 16c, 16d, 16e, 16f, 16g, 16h, 17a, 17b, and 17c
- Cherry Creek Segment 4
- Boulder Creek Segments 7a and 7b
- St. Vrain Creek Segments 3 and 6
- Middle South Platte River Segments 3a, 3b, and 5a
- Big Thompson River Segments 4b, 4c, 5, 6, 9, and 10
- Cache La Poudre River Segments 11, 12, 13b, and 16
- Lower South Platte River Segments 2b and 3
- Republican River Segment 4

The revisions are consistent with the CWA and EPA's implementing regulations at 40 CFR § 131.11 because the adopted standards describe a level of water quality that will protect agriculture uses. Accordingly, EPA approves all revisions to numeric standards for the protection of the agriculture classification.

Cherry Creek Reservoir Chlorophyll Standard

Revisions were adopted to the chlorophyll standard for Cherry Creek Reservoir. The previous seasonal mean standard was 15 µg/L based on July through September measurements in the upper 3 meters of the water column, with compliance required in 9 years out of 10. The revised seasonal mean standard is 18 µg/L based on July through September measurements in the upper 3 meters of the water column, with compliance required in 4 years out of 5.

The adopted revisions were based on many years of water quality monitoring and modeling studies. The data were thoroughly analyzed and the results have expanded the collective understanding of reservoir water quality. The revised numeric chlorophyll standard is supported by three separate lines of evidence.

First, evidence was submitted indicating that the previous numeric standard is not feasible to achieve. Primarily, modeling analyses submitted by the Cherry Creek Basin Water Quality Authority indicated that within a twenty-year planning period, and with implementation of wastewater and stormwater controls deemed by the Commission to be the best available, the lowest flow-weighted average total phosphorus reservoir input concentration² that can be achieved is 177 µg/L and the lowest average chlorophyll concentration that can be achieved is 16.2 µg/L. Considering year-to-year variability (i.e., an assumed standard deviation of 2.3), the 16.2 µg/L long-term average chlorophyll concentration can be translated to an 80th percentile concentration of 18 µg/L. Thus, the modeling analyses support a conclusion that 18 µg/L is the lowest seasonal average reservoir chlorophyll concentration that can be achieved 4 out of 5 years.

In addition to the water quality modeling, evidence pertinent to the feasibility evaluation was submitted regarding effects of watershed geology on water quality in Cherry Creek. It was reported that sedimentary rock in the watershed is rich in phosphates, and that at Castlewood Canyon, a relatively undisturbed upstream monitoring site on the mainstem of Cherry Creek, the median total phosphorus concentration is 190 µg/L. This high value indicates that even under natural conditions, phosphorus is abundant in the watershed.

It is also worth noting that adoption of numeric standards based on feasibility considerations was one of the options identified in the Region's January 27, 2009 responsive pre-hearing comments to the Commission. EPA's water quality standards regulation (40 CFR 131) authorizes removal of a designated use where "naturally occurring pollutant concentrations prevent the attainment of the use." See Section 131.10(g)(1). Further, the feasibility of remedying man-induced pollution is specifically addressed in section 131.10(g)(3), which authorizes removal of a designated use where "human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place." EPA Region 8 has

² Total phosphorus flow-weighted average input concentration is computed from the quotient of load divided by inflow volume.

approved numeric standards based on these same factors because in situations where there is credible evidence that these factors are limiting the attainable water quality condition, adoption of feasibility-based water quality criteria protects the highest attainable water quality condition and the highest attainable use.

Second, it is important to recognize that the adopted standard describes an ambitious water quality goal for the reservoir and that achieving it will require a continuation of the aggressive basinwide pollution control efforts that have been pursued since the reservoir chlorophyll standard was first adopted in 2000. These control efforts have included: (1) total phosphorus maximum 30-day average effluent limits at 50 $\mu\text{g/L}$ for many point sources, and (2) implementation of watershed BMPs that exceed State requirements. That the adopted standard is ambitious is supported by the observation that the magnitude of the revised standard (18 $\mu\text{g/L}$) has been exceeded in 6 out of the last 10 years, based on seasonal mean mixed layer chlorophyll concentrations for the period 1999 to 2008. See Figure 1. It is encouraging that the average (of the seasonal means) was 25 $\mu\text{g/L}$ for the period 1999-2003 but improved to 16 $\mu\text{g/L}$ for the period 2004-2008. However, the evidence submitted to the Commission indicates that the improvement in chlorophyll concentrations over the 1999-2008 period is not well understood or easily explained. For example, a similar improvement was not observed in mixed layer total phosphorus concentrations. Even with the improvement in water quality, the revised chlorophyll standard was attained by only a narrow margin for the period 2004-2008. Accordingly, the 1999-2008 chlorophyll monitoring data suggest that continued aggressive pollution control efforts will be required in order to attain the revised numeric standard

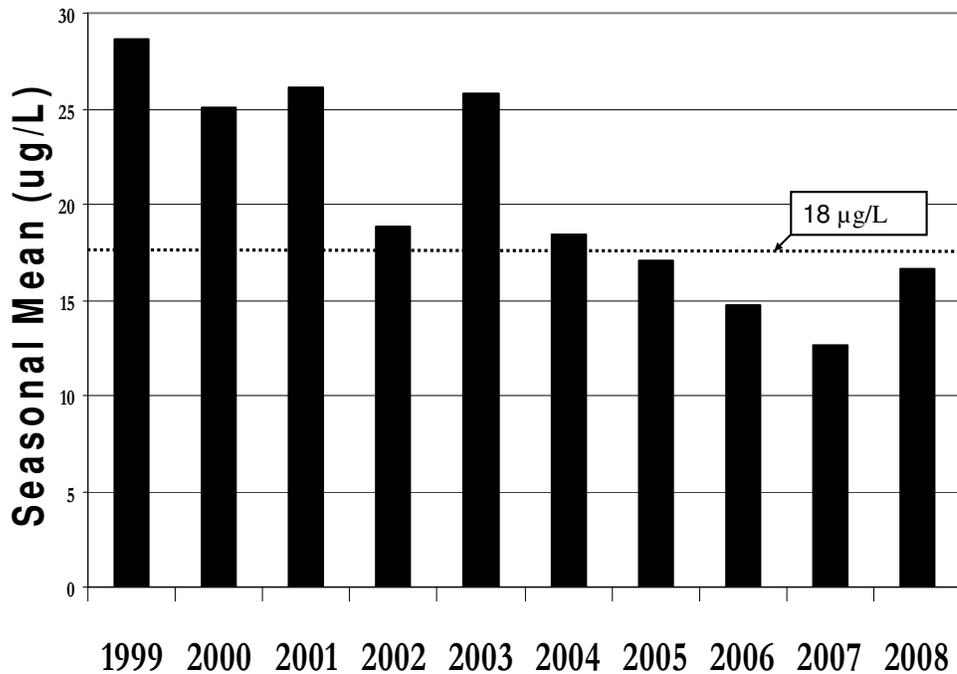


Figure 1 - Cherry Creek Reservoir Chlorophyll, 1999-2008

Third, data provided to EPA by the Colorado Division of Wildlife suggest that the revised numeric standard is not inconsistent with protection of the Warm Water Class 1 aquatic life use classification. Figure 2 illustrates the relationship between the walleye population (represented by catch per unit effort data) and the seasonal mean chlorophyll concentration. These data suggest that achieving a chlorophyll concentration between 10 $\mu\text{g/L}$ and 20 $\mu\text{g/L}$ is consistent with maximizing the walleye population in the reservoir. By comparison, the adopted chlorophyll standard requires an average chlorophyll concentration of 16.2 $\mu\text{g/L}$.

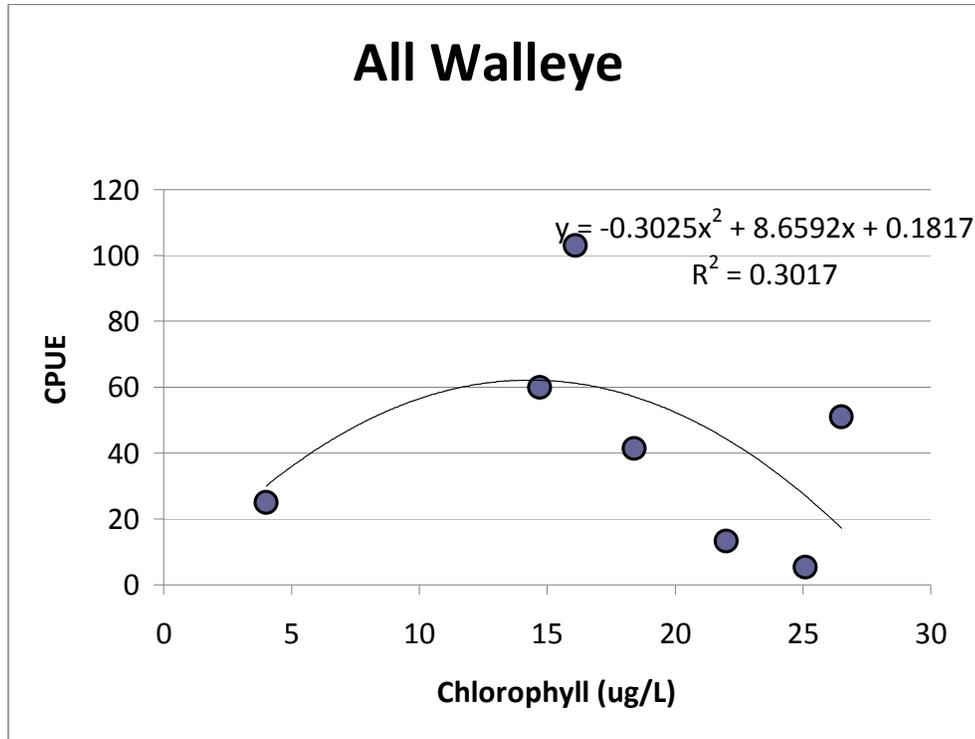


Figure 2 - Walleye Population and Cherry Creek Reservoir Seasonal Mean Chlorophyll

It is also important to recognize the federal requirement that from time to time, but at least once every three years, States shall hold public hearings for the purpose of reviewing applicable water quality standards and, as appropriate, modifying and adopting standards (40 CFR Section 131.20(a)). There are several reasons for ongoing review of the chlorophyll standard for Cherry Creek Reservoir:

- Ambient monitoring data indicate that reservoir chlorophyll concentrations have improved over the last ten years, for reasons that are not completely understood. Moving forward, the State should examine whether this trend continues, whether additional improvements in water quality are observed, and whether future monitoring data provide a basis for revising the chlorophyll standard.

- The revised chlorophyll standard is based in part on results of water quality modeling which estimated the lowest flow-weighted total phosphorus reservoir input concentration that is feasible to achieve within 20 years (i.e., 177 µg/L). The Region acknowledges that there is scientific uncertainty regarding this estimated concentration and a need for ongoing review to determine whether new data would support revisions to the total phosphorus target or the chlorophyll standard.
- The revised chlorophyll standard is based in part on a statistical relationship between flow-weighted total phosphorus input concentrations and mixed layer chlorophyll concentrations. This relationship was used to estimate the lowest 80th percentile seasonal mean chlorophyll concentration that is feasible to achieve within 20 years. There is scientific uncertainty regarding this statistical relationship (e.g., the R² is 0.39), and a need for ongoing review to determine whether new data would support revisions to the chlorophyll standard.

Based on review of the supporting data and analyses including the three lines of evidence summarized above, the Region has concluded that the revised chlorophyll standard is appropriate for protection of the use classifications assigned to the reservoir. Accordingly, today the Region approves the revised numeric standard as consistent with federal requirements at 40 CFR Section 131.10 and Section 131.11. However, the Region emphasizes that its approval decision is based on currently available data and analyses, and that there is a need for ongoing reservoir water quality monitoring and assessment to support triennial review of the numeric standard consistent with 40 CFR Section 131.20(a).

Bear Creek Reservoir Chlorophyll and Total Phosphorus Standards

The narrative standard for total phosphorus was deleted and replaced with numeric standards for both chlorophyll (10 µg/L) and total phosphorus (32 µg/L). Both numeric standards are mixed layer seasonal mean values for July through September and compliance is required in four years out of five. As discussed in Section III of this enclosure, today EPA is not acting on the numeric standard for total phosphorus.

The 10 µg/L chlorophyll standard was adopted as a numeric replacement for the previous narrative standard. The previous narrative standard required shifting the Bear Creek Reservoir trophic state to a range of mesotrophic to eutrophic. When the previous narrative standard was adopted by the Commission in 1992, the Statement of Basis and Purpose provided that:

The Commission determined that in order to improve the poor water quality and the resultant impacts on the beneficial uses and aesthetics, that the current trophic condition of hypertrophic to eutrophic will need to be improved. The Commission established that a reasonable goal for improvement is to shift the trophic condition to a range of mesotrophic to eutrophic. This desired condition would place Bear Creek Reservoir in a trophic state similar to those found in other important recreational reservoirs in the Denver-Metro region, such as Chatfield Reservoir

which is classified as mildly eutrophic to mesotrophic (Figure 17, Pg. 117 in Bear Creek Reservoir Clean Lakes Study).

Using the Organization for Economic Co-operation and Development (OECD) trophic classification scheme, a seasonal mean chlorophyll concentration of 8 µg/L was identified as a numeric representation of the eutrophic-mesotrophic boundary. Given that year-to-year variability in trophic state is to be expected, establishing the eutrophic-mesotrophic boundary as the target for a typical seasonal mean is consistent with the previous narrative goal to achieve a trophic state in the range of mesotrophic to eutrophic. A statistical relationship between seasonal mean and 80th percentile concentrations observed in Colorado lakes was used to translate the typical seasonal mean value (8 µg/L) to an 80th percentile seasonal mean value (10 µg/L).

The chlorophyll standard is not achieved under current conditions. Since 1995, Bear Creek Reservoir seasonal mean chlorophyll concentrations have averaged about 24 µg/L, the 80th percentile seasonal mean has been about 32 µg/L, and substantial year-to-year variability has been observed.

The Bear Creek Reservoir chlorophyll standard is identical to the Chatfield Reservoir chlorophyll standard adopted on February 9, 2009 and approved by the Region on June 23, 2009. Bear Creek Reservoir and Chatfield Reservoir are both located in the South Platte River drainage. They have the same use classifications (Aquatic Life Cold 1, Recreation E, Water Supply, Agriculture) and similar mixed layer summer temperature regimes. However, unlike Bear Creek Reservoir, Chatfield Reservoir currently is in attainment of its chlorophyll standard and is regarded as having a trophic state that supports all of its use classifications. Notably, the Chatfield Reservoir chlorophyll standard was not based on the OECD trophic classification scheme, but instead was derived from ambient monitoring data and adopted to maintain and protect the conditions that have been observed. This strongly suggests that a 10 µg/L chlorophyll standard is also appropriate for protection of the use classifications assigned to Bear Creek Reservoir.

The Region agrees that the 10 µg/L chlorophyll standard is a reasonable translation of the previous narrative standard and that it is consistent with achieving a trophic state in a range from mesotrophic to eutrophic. It is also clear that the adopted chlorophyll standard mandates substantial water quality improvement, and will provide a useful quantitative description of the desired condition of Bear Creek Reservoir. Further, the conditions and use attainment observed in Chatfield Reservoir strongly suggest that adoption of the same chlorophyll standard is appropriate for protection of the use classifications assigned to Bear Creek Reservoir.

Based on these considerations, the Region approves as consistent with federal requirements at 40 CFR Section 131.11 the Commission's action to: (1) delete the narrative standard for total phosphorus and (2) adopt a 10 µg/L standard for chlorophyll as a mixed layer seasonal mean for July through September with compliance required in four years out of five.

II. APPROVED REVISIONS, SUBJECT TO ESA CONSULTATION

The remaining revisions are approved for purposes of CWA Section 303(c), subject to the results of consultation under Section 7(a)(2) of the ESA. Should the consultation process with the U.S. Fish and Wildlife Service identify information regarding impacts on listed species or designated critical habitat that supports amending EPA's approval, EPA will, as appropriate, revisit and revise its approval decision for the identified water quality standards. The discussion below identifies major revisions in this category and the basis for EPA's approval action.

Aquatic Life Classifications

The aquatic life classifications were revised for several segments. Primarily, these revisions were a result of the efforts to apply the new temperature standards, which included review of biological and surface water temperature data for all segments. Changes to use classifications included both upgrades and downgrades. In each case, downgrades were adopted based on the results of a use attainability analysis, as required at 40 CFR 131.10(j). Revisions to aquatic life use classifications include the following:

Upper South Platte Segment 6c: Cold 1 to Warm 1 (moved to Segment 14)

Because some of the criteria associated with the new use classification are more lenient (compared to the previous classifications), this proposed change in use classification triggered the federal requirement to conduct a use attainability analysis (UAA). See 40 CFR Section 131.10(j). The UAA was provided for public review with the WQCD pre-hearing statement.

This portion of the South Platte River flows from the outlet of Chatfield Reservoir approximately 5.1 miles through the southern portion of the Denver metropolitan area to Bowles Avenue. The UAA concluded that while this is a transitional segment, the aquatic community is more similar to that in segment 14 (the downstream warm water segment) than it is to nearby cold water segments including Chatfield Reservoir. The fish species present are not typical of an expected cold water community. While trout are present in very small numbers below Chatfield Reservoir, the vast majority of the species are warm water fishes. Warm water fish species reported to be present include black bullhead, black crappie, common carp, creek chub, fathead minnow, Iowa darter, Johnny darter, largemouth bass, longnose dace, western mosquitofish, plains topminnow, smallmouth bass, green sunfish, white sucker, and yellow perch.

Temperature data presented in the UAA indicate that the physical habitat is more appropriate for a warm water fish community. Most summertime instantaneous measurements exceed 18.2 °C, which is the summer chronic table value standard that is typically applied to protect lower elevation cold water uses.

The UAA reported that point source discharges have a negligible effect on ambient temperature, and the presence of Chatfield Reservoir has a far greater influence. Segment 6c begins with the release of water from Chatfield Reservoir (i.e., a bottom-release structure), and the dam outflow is almost always warmer than the inflow. The increase of about 4°C (outflow temperature compared to inflow temperature) during the summer makes it unlikely that a cold classification could be maintained downstream of the reservoir.

Based on the evidence presented in the UAA, the adopted change in use classification is authorized by the EPA water quality standards regulation (40 CFR Section 131.10(g)(4) and (5)).

A portion of Upper South Platte Segment 10b: Cold 1 to Warm 1 (moved to Segment 10a)

Because some of the criteria associated with the new use classification are more lenient (compared to the previous classifications), this proposed change in use classification triggered the federal requirement to conduct a use attainability analysis (UAA). See 40 CFR Section 131.10(j). The UAA was provided for public review with the WQCD pre-hearing statement.

The approximately 1.5 mile stretch of West Plum Creek below the National Forest boundary and above Perry Park pond, as well as Stark Creek and Gove Creek below the National Forest boundary, were moved to segment 10a which has an Aquatic Life Warm 1 use classification. The UAA concluded that the original classification (Aquatic Life Cold 1) was in error. Evidence presented in the UAA indicated that the fish species present are not typical of a cold water community; all but one individual collected were warm water fishes. Although the UAA conclusion was based primarily on fish population data, the available temperature data showed that the thermal regime is indicative of a warm stream and that a warm temperature standard would be attainable. The UAA reported that there are no permitted point sources that discharge to this segment.

Additional evidence regarding the fish population in this segment was provided in the Colorado Division of Wildlife rebuttal statement. The CDOW rebuttal stated that:

CDOW fish survey data derive from 11 surveys at 3 sites bracketing this reach...These surveys indicate warm-water species both upstream and downstream of this reach of West Plum Creek. Additionally, this reach is not characterized by a defined channel but, rather, by a wetland complex. Given the elevation, a lack of canopy cover, and the presence of standing water, this reach is likely to support a warm-water community similar to that documented at both the upstream and downstream sites. The single brook trout observed below this reach (Site SP3368) is not surprising given that a brook trout population is known to exist in Gove Creek above the National Forest boundary.

Based on the evidence presented in the UAA, the adopted change in use classification is authorized by the EPA water quality standards regulation (40 CFR Section 131.10(g)(5)).

Upper South Platte Segment 12: Cold 1 to Warm 1

Because some of the criteria associated with the new use classification are more lenient (compared to the previous classifications), this proposed change in use classification triggered the federal requirement to conduct a use attainability analysis (UAA). See 40 CFR Section 131.10(j). The UAA was provided for public review with the WQCD pre-hearing statement.

This segment consists of the mainstem of Garber Creek and Jackson Creek from the boundary of the National Forest lands to the confluence with West Plum Creek. Garber and Jackson Creeks are adjacent tributaries to West Plum Creek that flow north east from the Rampart Range, entering West Plum Creek just west of Castle Rock, Colorado. Approximately 4 miles of Jackson Creek and 5 miles of Garber Creek are downstream of the National Forest boundary.

The UAA concluded that the original classification (Aquatic Life Cold 1) of Garber and Jackson creeks below the National Forest boundary was in error. The fish present are not typical of an expected cold water community. While there are trout present, the majority of species are considered warm water fish. The UAA reported that there are no permitted point sources that discharge to this segment.

Additional evidence regarding the fish population in this segment was provided in the Colorado Division of Wildlife rebuttal statement. The CDOW rebuttal stated that:

CDOW survey data for Segment 12 consists of five surveys at three sites in Jackson Creek and seven surveys at five sites in Garber Creek between 1979 and 1999. Survey data indicate a generally warm-water community typical of the Plum Creek system, although salmonids have been documented on an occasional basis. Like much of the Plum Creek tributary system, these streams provide important habitat for native warm-water plains fishes, including species of conservation priority (i.e., common shiner, northern redbelly dace, Iowa darter).

Based on the evidence presented in the UAA, the adopted change in use classification is authorized by the EPA water quality standards regulation (40 CFR Section 131.10(g)(5)).

Bear Creek Segment 1c (Soda Lakes): Cold 1 to Warm 2 (moved to Segment 11)

Because some of the criteria associated with the new use classification are more lenient (compared to the previous classifications), this proposed change in use classification triggered the federal requirement to conduct a use attainability analysis (UAA). See 40 CFR Section 131.10(j). The UAA was provided for public review with the WQCD pre-hearing statement.

The Soda Lakes were moved from Bear Creek Segment 1c, which has an Aquatic Life Cold 1 classification, to Segment 11, which has an Aquatic Life Warm 2 classification. The Soda Lakes are off-channel reservoirs that store water for use and for water rights exchanges. Big Soda Lake and Little Soda Lake are also a part of the Bear Creek Lake recreational area of the City of Lakewood, offering water-skiing, sailing, and windsurfing. Located near Morrison, Colorado, Little Soda Lake is approximately 3 meters deep, has 20 acres of surface area, and has a surface elevation of 5729 feet. Big Soda Lake is approximately 9 meters at its deepest point, has 102 acres of surface area, and has a surface elevation of 5703 feet.

The UAA concluded that the original classification of Soda Lakes was in error, and that the Lakes do not have the diversity of species expected in a class 1 water body. Evidence presented in the UAA showed that although Soda Lakes are located in a transition zone, they generally support a limited warm water fish community that includes common carp, largemouth bass, saugeye, white sucker and yellow perch. That the previous cold water classification is not appropriate is supported by a 2004 fish survey by the Colorado Division of Wildlife, which found that over 97 % of the catch consisted of warm water fish, and less than 3% were brown trout, a cold water species. The UAA also reported that the CDOW does not stock cold water fish species in the Soda Lakes, and water management results in relatively large fluctuations in water depth. The fluctuations in depth are not conducive for maintaining fish in general, particularly cold water species. Effects of water management on the physical habitat support the conclusion that a Class 2 classification is appropriate.

The UAA reported that the available ambient temperature data indicate that Soda Lakes exceed the Cold Large Lake temperature standard in July and August, but attain the Warm Lake temperature standard on all dates. The UAA also reported that there are no permitted point sources that discharge to this segment.

Based on the evidence presented in the UAA, the adopted change in use classification is authorized by the EPA water quality standards regulation (40 CFR Section 131.10(g)(4) and (5)).

Lakes and reservoirs in Clear Creek segment 13b: Cold 2 to Cold 1 (moved to segment 22)

A more stringent Aquatic Life Cold 1 classification was assigned to these waters, which include the lakes and reservoirs within the North Clear Creek drainage from a point just below the confluence with Chase Gulch to its confluence with Clear Creek. Because the new use classification has more stringent water quality requirements, the proposed revision did not trigger the federal requirement to conduct a use attainability analysis (UAA).

Lakes and reservoirs in Clear Creek segment 16b: Warm 2 to Warm 1 (moved to segment 24)

A more stringent Aquatic Life Warm 1 classification was assigned to these waters, which include the lakes and reservoirs in the Clear Creek system from the Farmers Highline Canal diversion in Golden, Colorado to the confluence with the South Platte River, with

certain exceptions. Because the new use classification has more stringent water quality requirements, the proposed revision did not trigger the federal requirement to conduct a use attainability analysis (UAA).

EPA Action

Based on review of the adopted revisions and the supporting information, including the use attainability analyses, EPA has determined that the revisions are consistent with federal requirements at 40 CFR Part 131.10. Accordingly, EPA approves all revisions to aquatic life use classifications, subject to ESA consultation.

Numeric Standards for the Protection of Aquatic Life Uses

The adopted revisions included changes to numeric standards for protection of aquatic life classifications. Revisions in this category include:

- Arsenic. For a number of segments, the acute table value standard was adopted. Colorado's acute table value is identical to the CWA § 304(a) acute criterion.
- Cadmium (trout). For segments with a cold water aquatic life classification and populations of trout, the acute (trout) table value standard was adopted. Colorado's acute (trout) cadmium table value is more stringent than the CWA § 304(a) acute criterion.
- Cadmium and Zinc – For most aquatic life segments, revisions were adopted to apply the updated acute and chronic table value standards that were added to the Basic Standards regulation in 2005. Although these updated acute and chronic table value standards are less stringent than the latest CWA § 304(a) criteria guidance, they were approved in EPA's October 17, 2005 action as consistent with the requirements of the Clean Water Act and EPA's implementing regulation. EPA notes that CWA Section 304(a) criteria are national guidance values, and that EPA's regulation provides States and Tribes with the flexibility to adopt alternative numeric criteria on a statewide or site-specific basis³.
- Chromium III. The chronic aquatic life table value standard was applied to segments with both water supply and aquatic life classifications and where, based on ambient hardness, the water supply table value alone is not protective of aquatic life. The chronic aquatic life table value is consistent with the CWA § 304(a) criterion. Segments where such revisions were adopted include:

Upper South Platte River Segments 2a, 3, 4, 5b, and 9

Bear Creek Segments 1a, 1b, 3, and 7

Clear Creek Segments 1, 3a, 3b, 6, 9a, 10, and 17b

³ EPA's implementing regulation at 40 CFR § 131.11(b) allows States to adopt water quality criteria based on CWA § 304(a) criteria, CWA § 304(a) criteria modified to reflect site-specific conditions, or other scientifically defensible methods.

Boulder Creek Segments 1, 2, and 3
St. Vrain Creek Segments 1 and 2
Big Thompson River Segments 1 and 2
Cache La Poudre River Segments 1, 2, and 6

- Site-Specific Revisions to Copper Numeric Standards. For several segments previously-adopted water effect ratio (WER)-adjusted site-specific numeric standards were deleted and replaced by table value standards. Segments where such revisions were adopted included Upper South Platte segments 10a, 14, 15, 16a and 16g, and Clear Creek segments 14a, 14b, and 15.
- Upper South Platte Segment 5c. The trout-specific chronic numeric standard for silver was deleted and replaced by the regular chronic table value standard. In addition, the trout-specific acute numeric standard for cadmium was deleted and replaced by the regular acute table value standards. These revisions were based on evidence submitted by Mountain Water and Sanitation District that fish populations are precluded because of factors such as naturally low flows and poor instream habitat. The evidence reasonably supports the conclusion that trout-specific numeric standards are not warranted for the protection of aquatic life in this segment.
- Upper South Platte Segment 15 - Mercury. The 0.4 µg/L site-specific mercury numeric standard was deleted and replaced by the 0.01 µg/L chronic table value standard to better protect the aquatic life use classification.
- USP Segment 15 and MSP Segment 1a – Dissolved Oxygen. Revisions were adopted to Section 38.6(4)(c) to indicate that the standards apply to the flowing portion of the river and not to pools such as the Fulton Pool. These revisions were adopted for clarification purposes only and are consistent with the previously-approved action to establish site-specific dissolved oxygen standards.
- Clear Creek Segments 2a, 2c, 3a, 3b and 11 – Zinc. Site-specific acute and chronic numeric standards for zinc were adopted based upon a recalculation analysis submitted by the Upper Clear Creek Watershed Association. The analysis included a review of the data base supporting the statewide Colorado table value standards for zinc to determine whether new toxicity data should be added. This review resulted in increasing the acute database from 57 to 69 genera while also adding data for two species to the chronic database. Next, toxicity data were deleted from the database for species not expected to occur, and site-specific zinc standards were calculated. The site-specific standards are less stringent than table values at all levels of hardness. However, the evidence reasonably supports a conclusion that the adopted site-specific numeric standards are appropriate for the protection of the species expected to occur at the site.

The Region acknowledges the issues raised by Colorado Trout Unlimited regarding Segment 2a and the potential need to split Segment 2a to better reflect within-segment differences in water quality and fish population (i.e., above and below Lake Georgetown).

The Region believes these issues should be revisited as additional information is gained through the ongoing CERCLA activities and plans. For example, it is possible that further analyses will indicate that more stringent numeric standards for zinc are attainable downstream of the reservoir, as compared to the portion of Segment 2a upstream of Lake Georgetown.

- Nonylphenol – The October 13, 2009 revisions included changing the effective date of the statewide numeric aquatic life standards from July 1, 2010 to January 1, 2011 to avoid implementation of the standards prior to the June 2010 rulemaking hearing. As discussed in our March 28, 2008 action letter, the Region agrees that developing the capacity to accurately measure nonylphenol and nonylphenol ethoxylate concentrations is important, e.g., for source tracking and to help evaluate the effectiveness of best management practices.

EPA has determined that all revisions in this category are consistent with federal requirements at 40 CFR Section 131.11 because the adopted aquatic life standards describe a level of water quality that will protect the assigned aquatic life classifications. EPA approves all revisions to aquatic life numeric standards, subject to ESA consultation.

Aquatic Life Numeric Standards for Temperature

Segment-by-segment application of the new Colorado-specific table value standards for temperature was an important aspect of the rulemaking action. Except where ambient-based temperature standards were adopted (see separate discussion of ambient-based standards below), table values for temperature were applied to individual segments based upon fish population data, surface water temperature data, and other pertinent information.

EPA has determined that all revisions in this category are consistent with federal requirements at 40 CFR Section 131.11 because the adopted daily maximum (DM) and maximum weekly average temperature (MWAT) standards describe temperature conditions that will protect the assigned aquatic life classifications. Each of the table value standards was previously approved in EPA's August 14, 2007 action addressing temperature revisions to the Basic Standards Regulation (Regulation 31). Today, EPA approves all Regulation 38 segment-specific revisions to apply the new table value standards for temperature, subject to ESA consultation.

Ambient-Based Standards

Revisions to ambient-based numeric standards were adopted pursuant to Section 31.7(1)(b)(ii) of the Basic Standards regulation. Ambient-based standards are adopted where the evidence supports a conclusion that the existing condition is wholly the result of natural or irreversible anthropogenic causes.

EPA's water quality standards regulation (40 CFR 131) authorizes removal of a designated use where "naturally occurring pollutant concentrations prevent the attainment of

the use.” See Section 131.10(g)(1). Further, the feasibility of remedying man-induced pollution is specifically addressed in section 131.10(g)(3), which authorizes removal of a designated use where “human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied or would cause more environmental damage to correct than to leave in place.” EPA approved Section 31.7(1)(b)(ii) of the Basic Standards regulation because in situations where: (1) “naturally occurring pollutant concentrations” or “human caused conditions” may be a basis for removing the designated use under 40 CFR 131.10(g), and/or (2) there is credible evidence that these same factors are limiting the attainable water quality condition, establishing ambient-based standards protects the highest attainable water quality condition and the highest attainable aquatic life use.

Metals/Inorganics

- For Clear Creek Segments 14a and 14b, the chronic ambient-based manganese standard was changed from 500 µg/L to 244 µg/L. This proposed revision was submitted by the Division, and is based on updated water quality data for these two segments. The previous numeric standard was adopted in 1997, and more recent ambient data are now available which were used by the Division to re-evaluate the natural/irreversible condition pursuant to Section 31.7(1)(b)(ii) of the Basic Standards regulation.

Temperature

As a result of the efforts to adopt temperature standards for all segments, there were several segments where it was determined that the table values for temperature are not attainable due to natural conditions. For these mostly lake and reservoir segments, ambient-based temperature standards were adopted, based primarily on supporting information submitted by the Division (certain parties also submitted evidence in some cases).

Table 1 – Ambient-Based Numeric Standards for Temperature

| Segment | Waterbody Name | Ambient-Based Temperature Standard |
|-----------------------------|--|---|
| Upper So. Platte Segment 6b | Chatfield Res. | April-December T(WAT) = 23.5°C |
| Upper So. Platte Segment 19 | Antero Res | April-December T(WAT) = 19.6°C |
| | Spinney Mt. Res. | April-December T(WAT) = 20.2°C |
| | Eleven Mile Res. | April-December T(WAT) = 19.8°C |
| | Cheesman Res. | April-December T(WAT) = 21.9°C |
| | Strontia Spr. Res. | April-December T(WAT) = 22.6°C |
| | Platte Canyon Res. | March-Dec T(WAT) = 25.0°C |
| Bear Creek Segment 1b | Bear Creek (Harriman Ditch to Bear Creek Res.) | April-December T(WAT) = 19.3 °C |
| Bear Creek Segment 1c | Bear Creek Reservoir | April-December T(WAT) = 23.3°C |

| Segment | Waterbody Name | Ambient-Based Temperature Standard |
|----------------------------|-----------------------|---|
| Boulder Creek Segment 15 | Gross Res. | April-December T(WAT) = 19.4°C |
| Big Thompson Segment 11 | Carter Lake | April-December T(WAT) = 22.7°C |
| Cache La Poudre Segment 14 | Horsetooth Res. | April-December T(WAT) = 22.8°C |
| Cache La Poudre Segment 20 | Seaman Res. | April-December T(WAT) = 22.5°C |
| Lower So. Platte Segment 3 | Jackson Res. | April-December T(WAT) = 28.1°C |
| | No. Sterling Res. | April-December T(WAT) = 26.1°C |
| | Jumbo Res. | April-December T(WAT) = 27.0°C |

Today EPA is approving all new/revised ambient-based standards. EPA has concluded that the adopted standards are authorized by, and consistent with, Section 31.7(1)(b)(ii) of the Basic Standards and Methodologies for Surface Waters (Regulation #31). In addition, EPA has concluded that adoption of numeric standards that describe the highest attainable level of water quality is reasonable and appropriate for the protection of the use classification (40 CFR § 131.10(g)(1) and (3)). Accordingly, all revisions to ambient-based standards are approved, subject to ESA consultation. The ambient-based standards should be reviewed in future triennial reviews, to determine whether there is new information (e.g., new monitoring data) that would support adoption of revised numeric standards.

Temporary Modifications

Various revisions to temporary modifications were adopted. A total of 31 new temporary modifications were adopted (9 for selenium and 22 for other parameters), 54 previously-adopted temporary modifications were revised, and 11 temporary modifications were deleted. The revisions to temporary modifications are summarized in Table 2.

Table 2 - New/Revised/Deleted Temporary Modifications

| Segment | Temp Mod Parameters | Description | Action |
|--|----------------------------|-------------------------------|---------------|
| Upper So. Platte 2b | Zn | | Deleted |
| Upper So. Platte 2c | Cd, Zn | | Deleted |
| Upper So. Platte 5c | NH3 | Type (iii) Exp. 12/31/2011 | Revised |
| Upper So. Platte 10a, 14, 15, 16a, 16g | Cu | Type (iii) Exp. 12/31/2014 | New |
| Upper So. Platte 10a, 11b, 14, 15, 16a, 16c, 16g | NH3 | Type (i) Exp 12/31/2011 | Revised |
| Upper So. Platte 14, 15, 16g | Temperature | Type (iii) Exp. 12/31/2014 | New |

| Segment | Temp Mod Parameters | Description | Action |
|--------------------------|-------------------------------|-------------------------------|---------------|
| Upper So. Platte 14 | Se | Type (iii) Exp. 12/31/2013 | New |
| Cherry Creek 3 and 4 | NH3 | Type (i) Exp 12/31/2011 | Revised |
| Bear Creek 1c | Chlorophyll, total phosphorus | Type (i) Exp. 12/31/2014 | New |
| Bear Creek 4a | NH3 | Type (i) Exp 12/31/2011 | Revised |
| Clear Creek 2a | Zn | Type (i) Exp. 7/01/2014 | Revised |
| Clear Creek 2a | Cu | | Deleted |
| Clear Creek 2a, 11 | Cd | Type (iii) Exp. 7/01/2014 | New |
| Clear Creek 2b | Zn, Cu | | Deleted |
| Clear Creek 2c | Zn | | Deleted |
| Clear Creek 2c, 9a | Cu | Type (iii) Exp. 7/01/2014 | Revised |
| Clear Creek 11 | Zn | | Deleted |
| Clear Creek 13b | Temperature | Type (iii) Exp. 12/31/2014 | New |
| Clear Creek 13b | Cd, Mn, Zn, Fe | Type (iii) Exp. 12/31/2014 | Revised |
| Clear Creek 14a, 14b, 15 | Cu, Temperature | Type (iii) Exp. 12/31/2014 | New |
| Clear Creek 15 | NH3 | Type (i) Exp 12/31/2011 | Revised |
| Big Dry 1, 3 | NH3 | Type (i) Exp 12/31/2011 | Revised |
| Boulder Creek 7b, 9, 10 | NH3 | Type (i) Exp 12/31/2011 | Revised |
| Boulder Creek 8 | Se | Type (iii) Exp. 12/31/2014 | New |
| Boulder Creek 9 | Cu | Type (iii) Exp. 12/31/2014 | Revised |
| St. Vrain 2b | Cu | Type (iii) Exp. 12/31/2014 | New |
| St. Vrain 3, 6 | NH3 | Type (i) Exp 12/31/2011 | Revised |
| St. Vrain 6 | Se | Type (iii) Exp. 12/31/2011 | Revised |
| Middle So. Platte 1a, 3a | NH3 | Type (i) Exp 12/31/2011 | Revised |
| Middle So. Platte 1a | Se | Type (iii) Exp. 12/31/2014 | New |
| Middle So. Platte 1b | NH3 | | Deleted |

| Segment | Temp Mod Parameters | Description | Action |
|--------------------------------------|--|-------------------------------|---------------|
| Middle So. Platte 4 | pH | Type (iii) Exp. 12/31/2014 | New |
| Big Thompson 2 | D.O., E. coli, NH ₃ , NO ₃ , B, Cd, Cu, Pb, Hg, Ni, Se, Ag, Zn | Type (iii) Exp. 12/31/2014 | Revised |
| Big Thompson 2 | Cu | Type (iii) Exp. 12/31/2014 | New |
| Big Thompson 5, 6, 9, 10 | NH ₃ | Type (i) Exp 12/31/2011 | Revised |
| Big Thompson 5, 9 | Se | Type (iii) Exp. 12/31/2014 | New |
| Cache La Poudre 11, 12 | Cu | | Deleted |
| Cache La Poudre 11, 12, 13a, 13b, 22 | NH ₃ | Type (i) Exp 12/31/2011 | Revised |
| Cache La Poudre 11, 12, 13b | Se | Type (iii) Exp. 12/31/2014 | New |
| Lower So. Platte 1, 2b | NH ₃ | Type (i) Exp 12/31/2011 | Revised |
| Lower So. Platte 1 | Se | Type (iii) Exp. 12/31/2014 | New |

Generally, two different types of temporary modifications were retained or added. First, temporary modifications were retained/added to relax ambient water quality requirements while pollution controls are implemented as necessary to attain underlying numeric standards (consistent with 31.7(3)(a)(i) of the Basic Standards regulation). For example, chronic total ammonia temporary modifications were clarified for several segments, pursuant to 31.7(3)(a)(i), to better describe the ambient chronic ammonia requirement during the term of the “type (i)” temporary modifications. These chronic temporary modifications were clarified by replacing “TVS (old)” with either 0.02 mg/L, 0.06 mg/L, or 0.10 mg/L, as appropriate for the cold water or warm water aquatic life use classification.

Second, temporary modifications were retained or added to relax water quality requirements while additional studies are conducted for the purpose of reviewing use classifications and/or numeric standards (consistent with 31.7(3)(a)(iii) of the Basic Standards regulation). For example, new temporary modifications for copper, selenium, and temperature were adopted for several segments based on significant uncertainty regarding what underlying numeric standards are appropriate. In addition, the temporary modifications for Wapiti Wetland in Big Thompson River segment 2 were retained and extended to allow additional time to sample water quality into and out of the wetland, characterize wetland functions, explore regulatory and treatment alternatives, and consider alternative approaches for deriving site-specific water quality standards.

EPA approves subject to ESA consultation all revisions to temporary modifications with the exception of the chlorophyll and total phosphorus temporary modifications adopted for Bear Creek segment 1c (see Section III below). These approved revisions to temporary modifications were adopted consistent with the authorizing provision, previously approved by EPA, which is included in section 31.7 of Colorado's Basic Standards and Methodologies for Surface Waters. The status and need for each of the new/revised temporary modifications will be reviewed on an annual basis beginning two years prior to the expiration date, pursuant to 31.7(4)(b) of the Basic Standards regulation. Resolution of the issues necessitating adoption of the new/revised temporary modifications should be considered a high priority.

Other Revisions, Including Resegmentation, Renaming, and Consolidation of Segments

Various other changes were adopted, including revisions to re-segment, re-number, and/or re-configure particular segments or to change the description of segments. The Region approves all such revisions, subject to ESA consultation.

III. REVISIONS EPA IS NOT ACTING ON TODAY

Standley Lake Assessment Thresholds

Assessment thresholds for chlorophyll and total phosphorus were adopted for Big Dry Creek Segment 1 (Standley Lake) and added to Section 38.6(4) of Regulation 38. Because the Region does not consider these new provisions to be water quality standards revisions subject to EPA review under CWA § 303(c), the Region is taking no action on these provisions.

The assessment thresholds are based on a statistical 90 percent confidence limit and are intended to address the concern about the risk of incorrectly identifying an exceedance when a summer average value is (slightly) greater than the standard because of expected year-to-year variability, but does not indicate a substantive change in trophic condition.

In 2005, EPA determined that changes to water quality criteria were those that affected magnitude (i.e., "how much"; usually expressed as a concentration such as "milligrams per liter"), duration (i.e., "how long"; usually expressed as an averaging period in hours or days), and frequency (i.e., "how often"; usually expressed as a return interval such as "no more than once every three years" or as a percent of time)⁴. These decisions are contained in EPA's action on Florida's water quality standards revisions dated 2/18/2009⁵. The 2009 action letter and the 2005 determination document are available upon request.

⁴ Unites States Environmental Protection Agency Determination Referral Regarding Florida Administration Code Chapter 62-303, Identification of Impaired Surface Waters, July 6, 2005.

⁵ United States Environmental Protection Agency action letter dated 2/14/2009 and attached decision documents from James D. Giattina, Region 4 Water Management Division Director, to Michael W. Sole, Florida Department of Environmental Protection Secretary.

Revisions to such provisions change the level of protection or underlying expectation for ambient water quality.

EPA further determined in 2005 that provisions related to ambient data reliability/sufficiency are not elements of water quality standards. With respect to the assessment thresholds adopted for Standley Lake, the Region's position is that the use of statistical confidence limits for assessment purposes falls into the category of ambient data reliability and sufficiency, because it does not change the level of protection or underlying expectation for ambient water quality. Therefore, a decision to use statistical confidence limits as a basis for making assessment decisions is not considered by the Region to be a revision to water quality standards subject to EPA review under CWA § 303(c). Rather, we believe the Commission has adopted a new assessment method (or listing policy), albeit one that is specific to Standley Lake.

Because the Region does not consider these new Standley Lake assessment thresholds to be water quality standards revisions subject to EPA review, the Region is taking no action on these provisions today.

Bear Creek Reservoir Total Phosphorus and Temporary Modifications

The Region is taking no action on the total phosphorus numeric standard and the temporary modifications for chlorophyll and total phosphorus adopted for Bear Creek Segment 1c (Bear Creek Reservoir). The Region has not yet completed its review of these new provisions.

Regarding the total phosphorus numeric standard, EPA is still reviewing the technical basis for using a median response ratio of 0.318 to predict the total phosphorus concentration necessary to achieve the chlorophyll standard (10 µg/L).

Regarding the temporary modifications for chlorophyll and total phosphorus, EPA is reviewing whether these new temporary modifications are consistent with Colorado's approved policy at Section 31.7(3)(a)(iii), which authorizes a temporary modification "where there is significant uncertainty regarding the appropriate long-term underlying standard." In addition, EPA is reviewing whether these new temporary modifications are consistent with the Clean Water Act and EPA's implementing regulation.