

## 3. Regional Water Quality Assessment

### 3.1. Overview

This section provides a regional water quality assessment, gives an overview of water quality standards and classifications for surface water and groundwater, and describes the process for development of water quality-impaired stream segments and applicable state regulations and policies regarding water quality.

### 3.2. Standards and Classifications

Colorado streams are divided into individual stream segments for classification and standards identification purposes. Segmentation occurs either at some easily defined geographic point or at a point where some physical or chemical factor changes the character of the watercourse significantly.

### 3.3. Surface Water

The water quality classification and standards rulemaking hearings, which establish basic and basin-specific standards, occur once every five years on a rotating basis.

- Regulation # 31: Basic Standards and Methodologies for Surface Water (5 CCR 1002-31) was last updated in December 2018; the next rulemaking hearing is scheduled for June 2021.
- Regulation # 32: Classifications and Numeric Standards for Arkansas River Basin (5 CCR 1002-32) was last updated in August 2018; the next rulemaking hearing is scheduled for June 2023.
- Regulation # 38: Classifications and Numeric Standards for South Platte River Basin (5 CCR 1002-38) was last updated in January 2018; the next rulemaking hearing is scheduled for June 2020.

The issues scoping hearing occurs in October two years preceding the rulemaking hearing and the issues formulation hearing occurs in November of the year preceding the rulemaking hearing. These hearings identify and finalize the issues that will be evaluated during the rulemaking hearings.

Under the CWA, every state must adopt water quality standards to protect, maintain, and improve the quality of the nation's surface waters. These standards represent a level of water

quality that will support the goal of “swimmable/fishable” waters. Colorado’s water quality standards include four major components:

- Numeric criteria set the maximum acceptable concentrations of specific pollutants in streams, lakes, and reservoirs and limit the toxicity of waste discharges to aquatic species without adversely impacting its designated uses.
- Narrative criteria describe the water quality goals for all state surface waters in a list of six general statements. Narrative criteria currently exist for sedimentation.
- Antidegradation provisions establish additional protections for higher quality waters to protect them at their existing quality.
- State Use Classifications (WQCC Regulation #31) consist of categories of uses for which surface waters are to be protected. Colorado recognizes the following classifications:
  - Recreation: Class E - Existing Primary Contact Use; Class P - Potential Primary Contact Use; Class N - Not Primary Contact Use; and Class U - Undetermined Use.
  - Agriculture.
  - Aquatic life protection: Class 1—Cold Water Aquatic Life, Class 1—Warm Water Aquatic Life, and Class 2—Cold and Warm Water Aquatic Life. Class 1 waters are currently capable of sustaining a wide variety of warm or cold-water biota, including sensitive species and Class 2 waters are not capable of sustaining a wide variety of warm or cold-water biota, due to physical habitat, water levels, or uncorrectable water quality conditions.
- Domestic Water Supply.

A single stream segment is usually protected for several uses. Protection of each use requires a different numeric criterion for each chemical constituent. The most sensitive designated use drives the final standard for a water quality parameter on a segment; meaning the lowest numeric standard of all uses is adopted because it is most protective of human or

environmental health.

Standards are designed to protect the associated classified uses of the streams; for example, a stream segment classified for Cold Water Aquatic Life Class 1 is expected to maintain a population of cold-water fish. Such fish require relatively high dissolved oxygen (DO) concentrations year-round and even higher concentrations during spawning season. A water quality standard for DO on such a segment would include a minimum numeric criterion of 6 mg/L for DO year-round with a seasonal criterion of 7 mg/L for DO during the spawning season. Most criteria, such as those for metals, represent maximum allowable limits.

Stream classifications can only be downgraded if it can be demonstrated that the existing use classification is not presently being attained and cannot be attained within a twenty- year time period (Section 31.6(2)(b)). A use attainability analysis must be performed to justify the downgrade.

Temporary modifications to numeric standards can be adopted if a current standard is not being met, where there is uncertainty regarding the standard needed to protect the use, and the WQCC believes the existing quality of a segment can be improved. Temporary modifications are re-examined at least once every three years.

PPACG will continue to assess the impacts of how changes in water quality standards get reflected in stormwater and wastewater permits.

### **3.3.1. Basic Standards**

There were many changes made to the Basic Standards and Methodologies for Surface Water, Regulation #31, during rulemaking hearings held between 2010 and 2019. Some of the most significant changes include:

- *Updates to the process for establishing discharge-specific variances.* The discharge-specific variance provisions which became effective January 1, 2013, were updated based on the EPA's 2015 update.
- *Adoption of nutrient standards in Regulation 31 and Regulation 85.* Nutrient criteria for total nitrogen, total phosphorus and chlorophyll-a were adopted into Regulation 31 in 2012, although EPA only approved a portion of these standards. Additionally, technology based limitations for total inorganic nitrogen and total phosphorus were

adopted into Regulation 85, also in 2012.

- *Adoption of the Voluntary Incentive Program for Nutrients.* The WQCC adopted an incentive program as Policy 17-1 to encourage dischargers to go beyond the requirements of Regulation #85. Under this program, dischargers can earn additional compliance schedule time for meeting the eventual Regulation #31 nutrient criteria which will be adopted in 2027. More information can be found at <https://www.colorado.gov/pacific/sites/default/files/Policy17-1.pdf>
- *Changes to ambient based standards process.* The WQCC adopted revisions to this process to identify two types of ambient based standards (feasibility based and a natural or irreversible quality based) and to provide clarity regarding the analysis and documentation required.
- *Antidegradation.* The WQCC removed the water supply parameters of dissolved iron, dissolved manganese and sulfate from the antidegradation requirements as they are not part of the fishable/swimmable portion of the CWA.
- *Updates to the temperature standards.* The WQCC adopted new definitions of existing quality and updated the acute and chronic cold and warm water standards.

### **3.3.2. Environmental Protection Agency (EPA)**

EPA has adopted new criteria for cadmium, ammonia (mussels based) and selenium (fish tissue based) that the WQCC will review for adoption. For cadmium, the new criteria is slightly less stringent than the previous criteria at hardness concentrations greater than approximately 50 mg/L. The WQCC will likely be adopting this criterion statewide in December 2019. The mussels-based ammonia criteria are expected to be significantly more stringent than the current ammonia criteria and is under review and development by the WQCD. The fish-tissue based selenium criteria is more stringent than the current selenium criteria and is also being evaluated by the WQCD. Both of these are expected to be proposed to the WQCC in 2027.

### 3.3.3. Other Future Regulatory Action

Based on EPA's 2016 partial disapproval of the Regulation #31 nutrient standards for total nitrogen and total phosphorus for streams, which was adopted by the WQCC in 2012, the WQCD is working on developing new nutrient criterion. The new criteria is expected to be more stringent than standards adopted in 2012. For rivers and streams, the WQCD intends to have draft criteria ready in 2025 and a proposal in front of the WQCC in 2027. For lakes and reservoirs, criterion is expected in 2022.

## 3.4. Groundwater

Numeric standards for groundwater are different than for surface water and are based on classifications of: Domestic Use Quality, Agriculture Use Quality, Surface Water Quality Protection, Potentially Usable Quality, and Limited Use. Standards are established to protect classified uses. An "Interim Narrative Standard" is used for all groundwater in which standards have not already been assigned in the state. This information is discussed in:

- Regulation #41: The revised Basic Standards for Groundwater (5 CCR 1002-41), was last updated in November 2016, and reviewed in May 2019; the next rulemaking hearing is scheduled for April 2020.
- Regulation #42: Site Specific Standards for Groundwater (5 CCR 1002-42), was last updated in May 2018, and was reviewed in May 2019; the next rulemaking hearing is scheduled for April 2020.

Regulation #41 contains the basic standards for groundwater and interim narrative standards to protect these groundwaters prior to the adoption of use classifications and numeric standards for specific areas. Regulation #42 contains the specific areas where groundwater standards and uses were adopted. Regulation #42 applies to the following locations in this 208 Plan area in El Paso County:

- Fountain/Security/Stratmoor Hills/Widfield Wellfields
- Upper Black Squirrel Creek Alluvial Aquifer
- Upper Cherry Creek and Denver Basin Alluvial Aquifers
- Woodmoor Water and Sanitation District Wellfield

In April 2018, the WQCC adopted site-specific standards for perfluorooctanic acid (PFOA) and

perfluorooctane sulfonate (PFOS) for the Widefield Aquifer. This is the Fountain/Security/Stratmoor Hills and Widefield Wellfields identified above. The WQCC also expanded this area to include areas that contribute groundwater to the Widefield Aquifer.

Currently, Onsite Wastewater Treatment Systems (OWTS) of greater than 2,000 gallons per day are required to be reviewed by CDPHE and PPACG, and usually require nitrate limits of 10 mg/l. The effluent limits are established during the CDPHE review and approval of the site application associated with these higher-flow OWTS. The CDPHE OWTS Working Groups are currently evaluating if a different approach, such as a risk-based approach, should be used to evaluate these systems.

### **3.5. Water Quality Data Collection**

Water quality data is collected by several local, state and federal agencies.

- The United States Geological Survey (USGS) collects water quality data at many of the monitoring stations throughout each of the watersheds. Information is available at the following website:  
<http://waterdata.usgs.gov/co/nwis/rt>
- The CDPHE conducts periodic water quality monitoring; more intense monitoring is usually conducted a year or so in advance of a basin rulemaking hearing.

### **3.6. Unregulated Pollutants**

Within Colorado and throughout the United States, water quality standards currently do not exist for some water quality pollutants. As more water quality data is collected and studies are conducted, additional standards will be developed. It is difficult to determine what new standards will be in place prior to the next update of the 208 Plan and their potential impacts. PPACG will continue to participate in working groups to assess potential trends and recommendations by the WQCD to the WQCC.

#### **3.6.1. Emerging Contaminants**

Emerging contaminants (ECs) are chemicals recently discovered in numerous water bodies throughout the United States. Some of these substances may represent a potential environmental or public health risk, although in many cases adequate data does not yet exist to determine which substances pose a risk or how significant that risk might be. ECs come from

products used every day in our homes, farms, or businesses and include detergents, fragrances, prescription and non-prescription drugs, disinfectants, and pesticides. More information on emerging contaminants can be found at <http://toxics.usgs.gov/regional/emc/index.html>

### **3.6.2. Sediment**

The CDPHE does not have any regulations or standards for sediment, although Policy 98-1 (CDPHE-WQCD, 2014) provides guidance to address sediment levels and general language within the State of Colorado’s Basic Standards and Methodologies for Surface Waters. Policy 98-1 applies a narrative standard to address the effects of deposited sediment on classified uses. The narrative standard states “surface waters shall be free from substances attributable to human-caused point sources or nonpoint source discharge in amounts, concentrations or combinations which for all surface waters except wetlands can settle to form bottom deposits detrimental to the beneficial uses.

Depositions are stream bottom buildup of material which include but are not limited to anaerobic sludges, mine slurry or tailings, silt or mud” (CDPHE-WQCD, pg. 3, 2005).

Although policies currently govern sediment loads within the watersheds, in the near future this could become a more prominent numeric constraint. Studies need to be conducted to determine stable sediment threshold levels.

## **3.7. 305(b) Report**

Section 305(b) of the CWA requires states to prepare and submit a report biennially to EPA on the status of water quality within the state. The WQCD’s Integrated Water Quality Monitoring and Assessment Report, released in 2018, is the latest version of its 305(b) Report. The report provides a means for states to report to EPA and Congress on the quality of their waters, the status of water quality management programs, the environmental impacts, and the social and economic costs and benefits associated with achieving the objectives of the CWA. The report can be found at: <https://www.colorado.gov/pacific/cdphe/wqcc-reports-and-plans>

## **3.8. 2018 303(d) List and Total Maximum Daily Loads and 2018 Monitoring and Evaluation List (Regulation #93)**

### **3.8.1. Background**

Section 303(d) of the CWA requires states to submit to the EPA a list of waters that do not or may not meet water quality standards. This is used to set pollution abatement program

priorities and must be done for stream segments where technology-based controls for point sources and controls for nonpoint sources are not able to meet the standards. The 303(d) list identifies priority waters requiring a Total Maximum Daily Loads (TMDLs) process be initiated. A TMDL process is a mechanism to allocate pollutant loads, or potential pollutant loads, among all identified sources in a manner that the combined discharges do not cause the water quality standards for a given waterbody to be exceeded under existing and future conditions. To control the pollutant levels, TMDLs are included in discharge permits. TMDLs are not required for a waterbody unless the waterbody appears on the 303(d) list and are only required for those parameters for which the waterbody is listed.

Waterbodies are considered impaired if they do not meet the water quality uses and standards assigned to them. The listing and delisting criteria are contained in the 303(d) Listing Methodology, which is typically updated every two years prior to developing the 303(d) list. All 2018 303(d) segments specific to each watershed are listed in the corresponding water quality analysis section for each watershed. A map identifying the location of each of these stream segments is included in the Water Quality Analysis Sections for each of the watersheds.

Stream segments lacking sufficient information to determine the source of pollution, but where there are still concerns with attaining water quality standards, are placed on the Monitoring and Evaluation list. This list identifies waterbodies may have water quality problems but where uncertainties within various evaluation criteria necessitate further evaluation.

### **3.8.2. TMDL Development**

The five steps in TMDL development are:

1. Select the pollutant to consider,
2. Estimate the assimilative capacity of the waterbody,
3. Identify the contribution of the specified pollutant from all significant sources,
4. Analyze the information to determine the total allowable pollutant load,  
and
5. Allocate (within a margin of safety) the allowable pollution among the sources so water quality standards can be achieved.



### 3.8.3. TMDL Implementation

Implementation of the TMDL requires participation from all the stakeholders. The point source waste load allocation portion of the TMDL can be implemented through effluent limits in discharge permits. Nonpoint sources are implemented through voluntary BMPs and other locally enacted controls which target a specific reduction in pollutant loading.

The PPACG regional planning process recognizes TMDL implementation requires significant stakeholder involvement in collecting and evaluating information and making recommendations. It is anticipated that existing and future water quality management associations and watershed groups will evaluate water quality issues in streams; the need for additional and/or special monitoring; water quality standards; effects of NPDES discharge standards; and will participate in the collection of water quality data. This has been highly successful and effective in the Fountain Creek Watershed, where concerns by the stakeholders and improvements in technology have improved water quality. TMDL implementation activities being conducted are discussed in the water quality sections for each watershed.

TMDL implementation requires complete water quality characterization to determine specific sources that need to be targeted so water quality improvements can be made in a cost-effective manner. For many stream segments, there is a lack of sufficient water quality data to assess the specific sources to target. Stream segments will continue to be assessed to differentiate between natural and anthropogenic sources.