# Chapter 1 Introduction and Background

## 1.1 Purpose and Overview

This document is the first edition of the *Colorado Statewide Water Quality Management Plan* (SWQMP). It is intended for use by members of Colorado's water quality community—those from all levels of government and from nonprofit and other organizations whose aim is to realize the fundamental goal of the Clean Water Act (CWA)<sup>1</sup> at the state level, i.e., to protect and restore the biological, chemical and physical integrity of the state's surface waters. The document has three major goals:

- 1. To promote water quality improvement by presenting the current condition of the quality of the state's surface waters on a basin scale to aid policymakers and others in establishing protection, maintenance, and restoration priorities and in developing initial strategies to address key water quality management issues. The SWQMP summarizes key water quality regulations and policies which, by design, are constantly updated. In order to document the status of the regulations and policies Appendix A tabulates the versions that were utilized in developing the SWQMP.
- 2. To meet one of the state's obligations under the CWA and, specifically under section 130.6 of title 40 of the *Code of Federal Regulations* (CFR), to develop a water quality management plan.<sup>2</sup>
- 3. To serve as an educational tool for both current and future stakeholders.

The SWQMP is intended to be a living document. The Colorado Department of Public Health and Environment (CDPHE) Water Quality Control Division (WQCD) will periodically update the document. The Water Quality Control Commission (WQCC) will identify the process and schedule for revising the plan. This development of the SWQMP was made possible through a grant received under the American Recovery and Reinvestment Act (ARRA).<sup>3</sup>

## **1.2 The Watershed Approach**

The *watershed approach* denotes a framework in which water quality concerns can be addressed. The approach focuses water quality prevention and restoration activities at a particular geographic scale, such as a watershed, and many believe it is a very effective framework for managing

A watershed is the land area that drains to a common waterway, such as a stream, lake, estuary, wetland, or ultimately the ocean (USEPA 2008).

<sup>&</sup>lt;sup>1</sup> Federal Water Pollution Control Act. Title 33 of the United States Code (U.S.C.) § 1251 et seq.

<sup>&</sup>lt;sup>2</sup> Per the requirements of 40 CFR 130.6, state water quality management plans are to be developed in accordance with areawide waste treatment management plans (CWA section 208 plans) and water quality standards and implementation plans (CWA section 303 plans). Their intended use is to indicate the means by which the state will address water quality problems as identified in the state's water quality assessment reports (CWA section 305(b) reports).

<sup>&</sup>lt;sup>3</sup>American Recovery and Reinvestment Act of 2009. Public Law 111-5. 123 Stat. 115.

water quality. The watershed approach is characterized by the following unique features:

- It is hydrologically defined.
  - It has a geographic focus based on hydrologic connections (i.e., a watershed or drainage area).
  - \* It includes all stressors/causes and pollutant sources within that geographic area.
- It involves all stakeholders.
  - \* It includes public (federal, state, local), private, and nongovernmental sectors.
  - ✤ It is community-based.
  - It includes a coordinating framework.
- It strategically addresses priority water resource goals.
  - It integrates multiple regulatory and voluntary programs.
  - It is based on sound science.
  - ✤ It uses adaptive management for continual improvement (USEPA 2010).

These features of a watershed approach are fundamental to the SWQMP.

The SQWMP is oriented at a statewide scale and thus includes generalized discussions of the state's river basins, their water quality, and potential strategies that can be used to mitigate water quality problems. Across Colorado there are numerous watershed interests that are working to address water quality at the local level and the efforts of these groups are not reflected in the SWQMP.

### 1.2.1 Hydrologically Defined

Historically, water quality has been managed nationally and in Colorado at the river reach or on a segment basis. As the nation's understanding of surface water systems has increased, so too has the thinking in terms of how water quality activities and management programs should be structured. The SWQMP represents one means by which Colorado is shifting from a segment-based approach to one constructed on watershed principles. The SWQMP provides basin plans (chapters 6–12) for Colorado's seven major river basins<sup>4</sup> and are examples of this effort.

#### **1.2.2 Stakeholder Involvement**

In order to meet ARRA funding requirements, the initial version of the SWQMP was developed over a short timeframe between October 2009 and February 2011. Therefore, stakeholder involvement efforts needed to be targeted. In the early stages of SWQMP development, WQCD representatives met with representatives of the Councils of Government (COGs) in the designated water quality planning regions to discuss the purpose and intent of the SWQMP and to solicit input. A key point of the meeting was to make clear that the SWQMP would *not* replace the CWA section 208 plans developed by the designated planning agencies *or*, at least initially, the existing 208 plans for the non-designated planning regions. Instead, the SWQMP would augment these documents. COG input continued to be critical throughout SWQMP

<sup>&</sup>lt;sup>4</sup> For water quality purposes, the WQCC and the WQCD define Colorado's major river basins through regulation and program activities as the Arkansas, Colorado, Green, San Juan, Rio Grande, Platte, and Republican River Basins.

development, primarily through the SWQMP Citizens Advisory Group (CAG) as described below.

The CAG was established to provide input to the development of the SWQMP. Members of the CAG include representatives from COGs; watershed organizations; and other state, federal, and local agencies. A list of specific CAG members is provided in Appendix C. Three CAG meetings were held between July 2010 and January 2011.

Overviews of the SWQMP were also provided through informational briefings to the WQCC in July 2010 and December 2010 and through a presentation to the general public at the 2010 Sustaining Colorado Watersheds Conference in October 2010. A summary of input received from all stakeholders is provided in Appendix C.

#### **1.2.3 Strategic Goals**

The SWQMP integrates the nine planning and implementation elements required under federal CWA regulations at 40 CFR 130.6. It also aligns with the WQCD's 3-year strategic plan that began in April 2009 (WQCD 2009). This plan identifies five basic goals: (1) prevent waterborne disease and reduce chronic public health risks from drinking water, (2) protect all designated uses, (3) restore impaired water quality to attainable standards, (4) increase funding to water quality-related infrastructure and nonpoint source projects, and (5) evaluate Division services that are currently not supported with adequate funding resources. These strategic goals and their inter-relationship with the SWQMP are further discussed in chapter 2, "Water Quality Planning and Management in Colorado," of this document.

Watershed protection and restoration activities are part of an adaptive management process, meaning that the cycle of activities never stops (exhibit 1-1).<sup>5</sup> Each step is iterative and is improved due to lessons learned in previous cycles. The basin plans presented in chapters 6-12 are organized around the first four steps in the adaptive management cycle.<sup>6</sup>

<sup>&</sup>lt;sup>5</sup> The adaptive management cycle presented is based on one developed by The Nature Conservancy and called the "Five-S Framework"—(1) System, (2) Stressors, (3) Sources of Stressors, (4) Strategies, and (5) Success. EPA and others have devised similar frameworks (USEA 2008).

<sup>&</sup>lt;sup>6</sup> Measures of success are an important step in the adaptive management cycle. The WQCD specifies its evaluation measures in its Strategic Plan (WQCD 2009).



#### Exhibit 1-1. Adaptive Management Cycle

## **1.3 Plan Organization**

The SWQMP is organized into 12 chapters, each of which has been designed as a stand-alone document so that readers can pull the chapters most relevant to their needs and use them on their own. The purpose and intent of the document are described in chapter 1. Chapter 2 provides an overview of the state's statutory and regulatory authority for water quality activities, especially planning activities. It also describes the various elements and interrelationships of the state's water quality activities, as required by 40 CFR 130.6.<sup>7</sup> Last, it describes the relationship between Colorado's current water quality planning efforts and the basin planning requirements of Section 209 of the CWA. Chapter 3 is a summary of the current condition of the state's water quality, presented at the statewide level. It aggregates information presented later in the document for each of Colorado's seven major river basins—the Arkansas, Colorado, Green, San Juan, Rio Grande, Platte, and Republican River Basins.

Chapter 4 is a catalog of potential, initial strategies that can be employed to mitigate water quality problems at various watershed scales. The strategies are discussed in the context of nonpoint and point sources of pollution and their respective control activities. It is important to note that this catalog is not all-encompassing. It does *not* require or promote the use of any particular strategies through the discussion. The intent is to present general information on an array of strategies to provide readers available options and to point to resources where further information can be obtained. Chapter 4 highlights several "green" strategies—those water quality protection or restoration activities that save water or energy and reduce greenhouse gas emissions consistent with the goals of the state's *Climate Action Strategic Plan* (Ritter 2007).

Chapter 5 of the SWQMP briefly summarizes the information gaps identified as the document was being developed. They are presented to inform the preparation of future versions of the plan. Chapters 6–12 of the document contain the basin plans, one for each of the state's seven major

<sup>&</sup>lt;sup>7</sup> 40 CFR 130.6 requires a discussion of the following program elements in a state water quality management plan:
(1) management agencies, (2) total maximum daily loads, (3) effluent limitations, (4) municipal and industrial waste treatment, (5) nonpoint source management and control, (6) implementation measures, (7) dredge or fill program, (8) groundwater, and (9) basin plans.

river basins noted above. The basin plans present information at the basin scale and for selected sub-basins. The apportionment of sub-basins is described in chapter 3. The plans provide system description information, such as location and physical setting, ecology, climate, land ownership and land use, demographic and socioeconomic conditions, and hydrography and hydrology. The plans also summarize the classified uses the WQCC has defined through regulation for segments within each sub-basin and basin (WQCC 2010a to 2010g). They also discuss the water quality stressors, which include impairments based on the latest water quality assessment prepared by WQCD and approved by WQCC (WQCC 2010h).

The basin plans also identify sources of the stressors as identified in the latest assessment or in completed total maximum daily loads (TMDLs). The number of TMDLs to be developed and the number recently completed are also provided. Finally, each basin plan identifies current projects or strategies that have been employed to address specific water quality problems in the basin for both nonpoint and point sources. The nonpoint discussion is essentially a summation of known CWA section 319 projects in the basin for the past five years. The point source discussion includes a list of the types of wastewater treatment projects planned within the basin by type and county. These lists are based on the 2008 Clean Water Needs Survey<sup>8</sup> and cross-referenced with information contained in EPA's Envirofacts database and the state's latest Intended Use Plan.<sup>9</sup>

Each SWQMP chapter contains its own set of references. A master bibliography is provided at the end of the document. Finally, the SWQMP contains four appendices:

- Appendix A identifies the WQCC regulations, policies, and other actions referenced in the development of the SWQMP.
- Appendix B summarizes key characteristics of level IV ecoregions in Colorado.
- Appendix C provides a list of members of the Citizens Advisory Group (CAG) convened to provide input to the SWQMP development process.
- Appendix D is a summary of the various public comments received on the draft SWQMP.
- Appendix E is an extensive resource list of potential strategies that can be used to mitigate water quality problems and is provided to supplement chapter 4 of the SWQMP.

<sup>&</sup>lt;sup>8</sup> The Clean Water Needs Survey is a comprehensive assessment of the capital needs to meet the water quality goals set in the Clean Water Act. Every 4 years, the states and EPA collect information about: publicly owned wastewater collection and treatment facilities, stormwater and combined sewer overflow control facilities, nonpoint source pollution control projects, and decentralized wastewater management.

<sup>&</sup>lt;sup>9</sup> Authorized National Pollutant Discharge Elimination System (NPDES) states operate Clean Water State Revolving Funds (SRFs). Initial and annual funds are appropriated to the states from Congress to capitalize these funds. The states provide additional resources through their own budgetary processes. The basic purpose of the SRFs is to enable states to make low-cost and long-term loans (and some grants) to point sources, nonpoint sources, and others to address water quality problems. States articulate their SRF loan application and approval processes in an annual Intended Use Plan (IUP). In these plans, the states also specify the projects they intend to fund in the given fiscal year. In Colorado, the SRF is called the Water Pollution Control Revolving Fund (WPCRF). See chapter 2, "Water Quality Planning and Management in Colorado," for a further discussion of Colorado's WPCRF.

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