Colorado Nonpoint Source Program 2012 Management Plan

Colorado Department of Public Health and Environment

Colorado Department of Public Health and Environment
Water Quality Control Division
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Authority:

Section 319(b) of the Federal Water Pollution Control Act (Clean Water Act) as amended by P.L. 100-4 on February 4, 1987. Colorado Water Quality Control Act (CWQCA), part 3, 25-8-301 through 25-8-308 of the Colorado Revised Statutes.

Policy: The 2012 *Colorado Nonpoint Source Management Program* outlines the Division's plan to address nonpoint source (NPS) pollution through 2017. This document supersedes and replaces Division's 2000 and the 2005 Supplement NPS Management program plan that was approved by EPA in 2000.

Purpose: CWA Section 319 requires each state to prepare an assessment report and a management plan in order to be eligible for funding from the EPA to implement the provisions of the management plan. This document addresses this requirement and also establishes the overall strategy the WQCC adopted to implement nonpoint source activities for the next five years.

Roles and Responsibilities: The Water Quality Control Commission (WQCC) and the Water Quality Control Division (Division) as staff to the WQCC have the primary responsibility for water quality control in Colorado. Both the WQCC and the Division are located within the Colorado Department of Public Health and Environment (CDPHE).

The WQCC is a nine-member citizen body appointed by the Governor and confirmed by the state Senate. The WQCC is responsible for developing and maintaining a comprehensive and effective program for prevention, control and abatement of water pollution and for water quality protection throughout Colorado. The duties of the WQCC are stated in part 2 of the CWQCA and described in sections 25-8-202 through 25-8-209. The WQCC fulfills the legislative intent of the CWQCA with the exercise of its authority to establish policy and adopt rules and regulations governing the quality of the State's surface water and groundwater. Duties include classifying all waters, assigning water quality standards and promulgating regulations, including control regulations to implement the classifications and standards. In 2007 all water quality related duties of the State Board of Health's were transferred to the WQCC. The WQCC approves every year the NPS program's project proposals funding recommendations, prior to the annual CWA 319 grant application.

The Division's overall responsibilities are stated in part 3 of the CWQCA, in sections 25-8-301 through 25-8-308 of the Colorado Revised Statutes. The Division also has administrative responsibility for the federal Safe Drinking Water Act (SDWA) and Clean Water Act (CWA) including the Nonpoint Source program in Section 319.

Other Institutions with Roles and Responsibilities:

Regional/Areawide Planning Agencies

The Colorado Continuing Planning Process, as required in section 303(e)(2) and 205(j) of the Clean Water Act and (40 CFR 130.5) and as implemented through the Colorado Water Quality Control Act (CRS 1973, 25-8-101) and further specified in the rules, regulations and policies of the Water Quality Control Commission define elements of areawide 208 plans for Colorado. Areawide planning agencies are designated by the Governor to produce and maintain water quality management plans for designated areas. As of January 1, 2011, the council of governments (COG) for region 3 elected to withdraw from 208-related water quality planning, leaving four remaining Governor-designated planning associations or COGs. 208 planning for the 10 non-designated planning and management regions is the responsibility of the Division.

Local Governments and Health Departments

Organized local health departments exist in many areas of Colorado. These agencies are authorized by state law to provide health and environmental protection services at the local level. Local governmental entities can be cities, towns, water and irrigation districts, conservation and conservancy districts and counties; they participate on a voluntary basis in watershed planning efforts, in local coordination and partnering in the implementation of nonpoint source projects.

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2012 Colorado Nonpoint Source Management Plan

Executive Summary

The amendments to the federal Clean Water Act in 1987 authorized Section 319 and created the Nonpoint Source Management Program. Nonpoint source pollution typically comes from dispersed sources such as nutrient-rich runoff from agricultural lands or metals-laden sediments from mine waste or tailings. This diffuse nature distinguishes nonpoint source pollution from point source pollution, which in contrast requires some form of a discrete conveyance, such as a pipe.

The Water Quality Control Division (the Division) of the Colorado Department of Public Health and Environment is the lead agency for monitoring and reporting on the quality of state waters, preventing water pollution, protecting, restoring and enhancing the quality of surface and groundwater, and assuring that safe drinking water is provided from all public water systems. The Division also has primary responsibility to administer the Nonpoint Source Management Area (NPS program).

The Division, working closely with a group of stakeholders, updated the Statewide Water Quality Management Plan (SWQMP) which was approved in June of 2011. The SWQMP provides an overall framework for water quality planning and is based on section 130.6 of title 40 of the *Code of Federal Regulations* (40 CFR 130.6). The framework is watershed-based and presents comprehensive information about current *statewide* water quality to assist water policymakers, managers, and others in setting priorities, developing strategies, and evaluating the progress of water quality protection and restoration efforts. The plan is comprised of nine elements: water quality management agencies, effluent limitations, total maximum daily loads, municipal and industrial waste treatment, ***nonpoint source management and control***, basin plans, water quality management plan implementation measures, dredge and fill, and groundwater.

CWA Section 319 required two major activities to initiate the program: an assessment report describing the impact of nonpoint sources on the water resources of a state; and a management program outlining how the state proposed to address the impacts identified in the assessment report. Colorado prepared the Nonpoint Source Assessment Report and submitted it to the US Environmental Protection Agency EPA in April of 1988. The first Colorado Nonpoint Source Management Plan was prepared and submitted to EPA in October of 1990. The initial plan was updated twice, in 2000 and 2005. CWA Section 319 requires that the NPS Management Plans be updated regularly. The preparation of the 2012 NPS Management Plan addresses this requirement. This document supersedes the 2000 plan and also establishes the overall strategy Colorado will use to implement nonpoint source activities during the next five year period.

In May of 1987, the Division established a NPS Task Force to serve as an advisory group to the NPS program. In 2006 the NPS Task Force was re-organized into the NPS Alliance (Alliance) that continues to fulfill this advisory role. The Alliance participation is described in more detail in chapter 5.

Colorado's NPS program has two overarching objectives. These two objectives, which originate from the Division's strategic goals, are:

- To restore nonpoint source water quality impacts in impaired waterbodies, and
- To protect existing water quality from future nonpoint source pollution.

A summary of the causes of impairments, derived from the 2010 The Integrated Water Quality Monitoring and Assessment Report (IR), indicates that the main pollutant causing water quality impairment in Colorado rivers and streams is selenium, followed by metals (if adding all metals impairments, with copper, iron, zinc and cadmium the highest) and followed by pathogens. In lakes, the pollutants are mercury, selenium and low levels of dissolved oxygen. The great majority of the Total Maximum Daily Loads (TMDLs) developed by the Division

(89%) addresses mine-related impairments, mostly due to legacy mining. These impairments are considered nonpoint sources because they are related to runoff and drainage from Abandoned Mine Lands (AML) sites for which there are no remaining financially viable "responsible parties". Legacy mining problems are a logical priority for the NPS Management Plan over the next 5 years, followed by selenium impacts. The NPS program will be developing a framework to address anthropogenic selenium impacts, based on the work currently being undertaken by Colorado State University and the Selenium Task Force.

National priority pollutants – sediment, phosphorus and nitrogen – will continue to be addressed by the NPS program via implementation of stream restoration projects, outreach and education efforts targeted to the agricultural community, and in monitoring and assessing paths of nonpoint sources of pollution related to excessive sediment loading and nutrients.

In addition to restoring impaired waters, the NPS program will continue to implement and fund activities that lead to protection of water quality. Education and public outreach remains a cornerstone of the NPS program and a requirement in every implementation project and watershed plan. Working collaboratively with project sponsors and program partners continues to be a priority. This will ensure that surface and groundwater resources will be protected and the public and partner organizations will gain an increased understanding of water quality issues, goals and responsibilities.

To achieve these objectives, this version of the NPS Management Plan establishes a plan that is intended to be flexible and responsive to changing conditions and situations. Successful implementation of the plan will lead to measurable improvements in water quality in segments currently impaired by nonpoint sources of pollution. Additionally, efforts to protect existing good water quality will continue whenever nonpoint source related opportunities are identified.

The Plan is organized into eight chapters.

- Chapter 1 **Introduction -** NPS program background, goals and objectives including the program's relation to the Water Quality Control Division;
- Chapter 2 **Program Strategy and Action Plan - Program** strategy and objectives for the next 5 years to address key NPS pollution of concerns;
- Chapter 3 **Nonpoint Source Categories -** Categories of land use and activities posing potential threats to water quality as sources of NPS pollution and the strategy to address them;
- Chapter 4 **Project Development and Implementation** – Information about processes to take **projects** from conception to implementation and evaluation;
- Chapter 5 **Partners -** Agencies, organizations and other entities active in addressing nonpoint sources of pollution and serving as program partners;
- Chapter 6 **Implementation -** Summary of accomplishments of current and recent projects to establish baseline information for future planning to meet program priorities;
- Chapter 7 **Plan and Program Effectiveness Evaluation -** Evaluation approach to measure accomplishment and effectiveness; and,
- Chapter 8 **Challenges -** Challenges the NPS program faces and how to address them.

The appendices provide detailed information about priority watersheds and streams, guidance for watershed-based plans, best management practices, and potential sources of funding for project and BMPs implementation.

Chapter 1 – Introduction

Colorado has 105,344 river miles and more than 249,787 lake acres. There are seven major river basins in Colorado: the Arkansas, Rio Grande, San Juan, Colorado, Green, Platte and Republican. The majority of Colorado's rivers originates in the high alpine environment of the Rocky Mountains and flows downstream through the high desert or high plains regions before leaving the state. Within the interior of the Rocky Mountains are several high broad basins. Just south and west of the Continental Divide is Middle Park, drained by the Colorado River. The Western Slope is generally drained by the Colorado River and associated tributaries. In the north, on the east side of the Continental Divide is North Park. North Park is drained by the North Platte River, which flows north into Wyoming and ultimately to the Missouri River. South Park is the headwaters of the South Platte River that also drains to the Missouri. The Republican River rises in the far eastern part of the state and flows through Kansas and Nebraska. To the south lie the San Luis Valley and the headwaters of the Rio Grande that drains into New Mexico and ultimately to the Gulf of Mexico. Across the Sangre de Cristo Range, to the east of the San Luis Valley lie the Wet Mountain Valley and the headwaters of the Arkansas River that ultimately drains into the Mississippi River. The headwaters of the Republican River, which is the only river basin in Colorado that doesn't originate in the Rocky Mountains, originate on the western edge of the High Plains and generally flows east, exiting into northwestern Kansas.

Nearly half of the state is relatively flat in contrast to Colorado's rugged Rocky Mountains. East of the Southern Rocky Mountains are the Colorado High Plains, the section of the Great Plains within Colorado. Most of the plains is sparsely populated with most population centers located near the mountains along the South Platte or Arkansas Rivers. Numerous dams and water diversion, storage and delivery projects provide water for irrigation, hydroelectric power generation, and municipal and industrial use. The Colorado-Big Thompson and the Frying Pan-Arkansas projects are two of the largest such projects that divert water from the Western Slope, to the Eastern Slope, where most of the State's population and farmland are concentrated.

Statewide Water Quality Management Plan

The SWQMP was approved by the WQCC on June 1st, 2011. It provides a framework for water quality planning based on federal regulations at section 130.6 of title 40 of the *Code of Federal Regulations* (40 CFR 130.6). Within this framework, comprehensive information about current statewide water quality is presented to assist water policymakers, managers, and others in setting priorities, developing strategies, and evaluating the progress of water quality protection and restoration efforts. The water quality information is based on readily available, peer reviewed water quality information, particularly the data in the 2010 IR. In addition to the statewide aggregation of data, the SWQMP also presents water quality data at a basin scale. This information is incorporated into the 40 CFR 130.6 framework as Basin Plans. The other elements defined in 40 CFR 130.6 complete the foundation for the SWQMP and provide information about water quality management agencies, effluent limitations, total maximum daily loads, municipal and industrial waste treatment, nonpoint source management and control, water quality management plan implementation measures, dredge and fill, and groundwater. These elements are primarily discussed at a programmatic level, with focus placed on summarizing Division activities. The element discussions are based on information in existing documents such as the Nonpoint Source Management Program, and these existing documents are incorporated in the SWQMP by reference[1].

Integrated Water Quality Management

The following integrated program elements form a complete water quality management program for ground water and surface water:

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1 - This Statewide Water Quality Management Plan represents a compilation of internally and externally-derived information, including information produced by a variety of public and other outside sources. As such, the Colorado Department of Public Health and Environment makes no representations or warranties of any kind, express or implied, about the completeness, accuracy, reliability, or suitability with respect to any information derived from such outside sources. In no event shall the Colorado Department of Public Health and Environment be liable to anyone for special, incidental, consequential, or exemplary damages incurred due to reliance on such information.

- *Monitoring* provides data to form a picture of the current status and trends in this state's water quality.
- *Assessment* evaluates the monitoring data and provides the scientific support for establishing the framework for water quality including standards for surface water and groundwater.
- *Water Quality Management Planning and TMDL Development* is the process of translating the standards framework into specific terms for identified water bodies in relation to the threats and impacts presented by point source discharges and nonpoint source discharges, which result in non-attainment of water quality standards. Water quality management planning may also result in source water protection strategies to ensure the safety of drinking water supplies while minimizing the costs for required treatment and monitoring.
- *Permits and Control Mechanisms* translate the standards framework (including total maximum daily loads along with applicable technology-based requirements, into very specific terms and conditions for regulated entities.
- *Compliance Assurance* includes all of the activities that go into assuring regulated drinking water and pollution control facilities know what requirements must be met and have the necessary facilities and operational capabilities to maintain compliance with regulatory requirements.
- *Water Quality Restoration and Enhancement Efforts* result in actual improvements to water quality through nonpoint source projects and voluntary cleanup projects, and through education and outreach efforts.
- *Financial Assistance Programs* provide funds through grants and low interest loans to drinking water systems and publicly owned pollution control facilities.

1.1 – Water Quality Control Division and Watershed Program Mission, Goals and Results Measures

The Water Quality Control Division (the Division) has the following mission statement:

> "Protect and restore water quality for public health and the environment in Colorado."

The Division will achieve its Mission by pursuing the following Clean Water Program goals:

- Prevent waterborne disease and reduce chronic public health risks from drinking water through improved implementation of the federal Safe Drinking Water Act and Colorado's drinking water statutes and regulations
- Protect all designated uses by fully attaining water quality standards through improved implementation of the federal Clean Water Act and Colorado Water Quality Control Act and their associated regulations
- Restore impaired water quality to attainable standards through improved implementation of the federal Clean Water Act and Colorado Water Quality Control Act and their associated regulations

The Division is comprised of four large programs: Operations, Water Pollution Control, Safe Drinking Water and Watershed. These programs are responsible for achieving the Division's mission. The Operations Program is responsible for providing fiscal and business support and by managing the information system for the Division. The Water Pollution Control Program is primarily responsible for providing permitting, compliance assurance and technical and financial support services to regulated entities. The Safe Drinking Water Program implements the Safe Drinking Water Act.

The purpose of the Watershed Program is to provide information, planning, financial, and scientific support services to the Water Quality Control Commission, government agencies, Division programs, sections and units, customers, and performance partners so they can protect, improve, and restore water quality in Colorado. The Program is comprised of three units that execute various regulatory and non-regulatory functions on a small to large watershed-scale across Colorado. The Environmental Data Unit is primarily responsible for collecting water quality data and assessing the quality of Colorado's surface waters to determine protection of public health, classified uses, and associated water quality standards. The Standards Unit acts as primary staff to the Water Quality Control Commission to develop surface and groundwater quality standards. The Restoration and Protection Unit is primarily responsible for non-regulatory implementation of the CWA and

focuses on restoring waters to full attainment of applicable standards, and protecting the quality of those waters that are in attainment. NPS management activities are addressed within the Restoration and Protection Unit of the Watershed Program.

Grant requirements under the CWA Section 319 stipulate that nonpoint source projects for on-the-ground restoration and remediation activities report measurable results. EPA defines measurable results as "restoring waters to partial or full uses and standards, or as a minimum, reducing pollutant loads such as nutrients and sediment." To accomplish this, existing nonpoint source impacts must be quantified in order to provide water quality baseline from which to measure improvements. Project sponsors are required to provide water quality baseline data and subsequent post-project data to substantiate project outcomes. These monitoring requirements are part of NPS implementation projects. Nonpoint source monitoring needs are also addressed within the basin-monitoring schedule used to collect water quality data in support of the triennial review of basin classifications and standards.

1.2 – Nonpoint Source Management Area (NPS program) Overview

The Division's NPS program was established in 1988, following the enactment of the 1987 CWA Amendments. The 1987 CWA amendments created section 319 and the Nonpoint Source Program. Two items needed to be completed by the states so that the States' NPS programs could start receiving grants to address NPS pollution: a State Assessment Report and a State Management Program. In April of 1988, Colorado released the first Colorado Nonpoint Source Assessment Report; this assessment is now superseded by the IR. Following that document, the state was required to develop a NPS Management Program (now referred to as the Nonpoint Source Management Plan). The Division's first Nonpoint Source Management Plan was released in October of 1990, and has been updated twice, in 2000 and 2005.

The original assessment report included the impact of nonpoint source pollutants on the seven Colorado major basins, the magnitude of the effect of human activity to streams, and the degree of severity of the NPS impact per basin. Overall, the assessment concluded that rivers and streams were impacted primarily by sediment, followed by salinity, metals, nutrients and bacteria. Agriculture was found to impact about 58% of total river and stream miles assessed, followed by resource extraction (35%), urban/construction runoff, silviculture and hydrologic modification.

More recently, the State Assessment Report has been superseded by the IR, which includes the 303(d) list and the 305(b) report. The IR identifies the waterbodies in the state that are not meeting water quality standards, and the suspected causes and sources of impairments. For impaired waters in Colorado, the leading cause of impairment is metals including selenium in rivers and mercury in lakes. Selenium issues are widespread mainly due to the prevalence of Cretaceous aged marine sedimentary rock formations in the state. These rock formations can naturally liberate selenium, and some activities, such as irrigation or construction, can increase the amount of selenium that is liberated. The major source or contributor of mercury in Colorado is still unknown, as it is mostly airborne deposition from diverse sources. Where the source of other metals has been identified, it is primarily associated with resource extraction – "legacy mining". Review of the completed and approved TMDLs indicates that approximately 90% are addressing legacy mining issues. Of this total, approximately 55% have been written to address cadmium, copper and zinc impairments, all of which is associated with legacy mining impairments. The remaining 10% of completed TMDLs address a range of issues, including sediment, nitrates and mercury-related fish consumption advisories. Although the Division develops and updates the list of impaired waters regularly, there are many segments and waterbodies that may still be impacted by other factors, such as hydromodification, and are not included in the impaired waters list. There are other cases where waters could be impaired but because there is a plan to address that impairment, they are not placed on the impaired waters list. The universe of nonpoint source-related impaired waters may be larger than the 303(d) list of impaired waters.

The 1990 Management Program established the initial framework for the NPS program and also established the Nonpoint Source Task Force, formed in May of 1987, and subsequently known as the NPS Council, and now

reorganizes as the NPS Alliance. Twenty years ago, with the NPS Task Force, the program identified the four most prominent NPS categories as Agriculture/Silviculture, Urban/Construction Runoff, Abandoned/Inactive Mining and Hydrologic Modifications. The initial Nonpoint Source Management Plan also identified education as an important component of program implementation.

This update to Colorado's Nonpoint Source Management Program is, in part, to position the program to address more fully the national performance expectations established by EPA. In addition, the program has moved from the targeting provided by the Unified Watershed Assessment to priorities linked specifically to a state's List of Waters Still Needing TMDLs, also known as the 303(d) list. More than half of the funds allocated to Colorado in the past three years can be used only to implement watershed-based plans in watersheds where streams or lakes are identified on the 303(d) list.

The long-term goal of the Colorado's nonpoint source program is to restore to full use those waters, both surface and groundwater, impaired by nonpoint sources, and to prevent future impairments to Colorado's waters, using an effective, efficient and open process that fully involves the public and brings together the necessary regulatory and non-regulatory authorities, agencies and programs.

A short-term goal for this update is to reposition the Colorado Nonpoint Source Program from one focused on implementation based on pollutant categories to one where the categories are integrated on a sub-river basin basis. This will allow the program to address NPS needs on a watershed basis, regardless of pollutant category.

Since its inception, the NPS program has worked collaboratively with many outside partners and funded many projects such as production of educational materials and implementation of demonstration projects. The program progressed to funding more planning activities and implementation projects that addressed targeted priorities identified in the planning documents. Over the past 6 years, 20 watershed plans, 7 watershed characterization/ assessment projects and 27 implementation projects have been funded.

From 2005 to 2010, the NPS program awarded 67% of the total grant amount to subcontractors, mostly for on-the-ground BMP implementation and document preparation; approximately 13% of the total grant amount was awarded to statewide and local education and outreach efforts.

1.3 – Nonpoint Source Program Strategy

Although it is the leading cause of water quality problems in Colorado, controlling NPS pollution remains a challenge. Sources are difficult to characterize and the effects of NPS pollutants on specific waters vary spatially and temporally, and may not always be fully assessed. However, these pollutants can impact water supply, recreation, aquatic life, and agriculture classified uses. Below is a description of the approach the Division takes to characterize and control nonpoint sources of pollution.

The program is implemented at two tiers:

1. The program level identifies and prioritizes NPS issues, coordinating resources and partners to address these issues, and tracking progress in water quality improvement.
2. The project level addresses state program priorities through on-the-ground watershed restoration efforts and information/educational campaigns to broaden public awareness of NPS issues.

The first tier is specific to the NPS program's ongoing commitment to address the national performance expectations established by EPA, which are established annually between the EPA and Division, in the Performance Partnership Agreement (PPA). The PPA includes several NPS-specific Program Activity Measures (PAMs) related to the Division's implementation of the NPS program. These PAMs relate to two broad requirements related to overall water quality improvement. These include reporting on the annual reduction of NPS related phosphorus, nitrogen, and sediment loads as well as the restoration of impaired waterbodies[2]. The

2 - For more information about the PPA and PAMs, please consult the EPA's National Water Program Guidance at http://water.epa.gov/resource_performance/planning/FY-2012-National-Water-Program-Guidance.cfm

intent of this management plan is to further focus the implementation of the NPS program on achieving these broad requirements.

Tier two activities represent the implementation of the tier one goals. These activities include outreach, technical assistance, and funding for local groups to plan, design, and implement various efforts to address NPS issues that are causing or contributing to degraded water quality. In most cases, the NPS program's annual project solicitation process is directed toward fostering and developing tier two activities. By establishing priorities based on the Division's identification of impaired waterbodies, the NPS program is actively pursuing local support and development of projects that will address the tier one objectives.

For the next 5 years, the NPS program will continue improving how the program is implemented and focusing the efforts toward achieving restoration through water quality improvements and attainment of standards for impaired segments. A recent analysis of the Division's completed TMDLs and the most recent list of impaired waters indicate that the universe of impaired waters in the state is comprised mostly of waters impaired by NPS pollution, most specifically impairments associated with historical mining activities (legacy mines). The Colorado Division of Reclamation, Mining and Safety (DRMS) has the authority to address mine-related activities and as such, is an active partner with the NPS program. The program will focus on working collaboratively with the DRMS in implementing TMDL-based mine reclamation projects. Other causes of impairment and other types of projects will also be addressed and continue to be funded, such as projects addressing selenium impacts, stream restoration projects, agriculture-related projects and others. Outreach and education efforts will be emphasized as a task in every NPS implementation and watershed plan project. This new approach is addressed in more detail in Chapter 2.