

clarification of some water quality terms and made suggestions about improving readability. These suggestions were incorporated in the attached version 3 of the subsection.

Next Steps

The process for finalizing Subsection 5.4 Water Quality is:

Timeline	Activities and Opportunities for Input
April 30	Final draft subsection is submitted to the commission, distributed to the WQ Forum, and posted to the WQ Forum website for review and comment
May 8	WQ Forum written comments on the final draft subsection are due to the division
May 12	Commission and public input on the final draft subsection
May 15	Final draft subsection is distributed to the WQ Forum and commission and posted to the WQ Forum website
May 19	Final draft subsection is presented to WQ Forum
May 30	Final draft subsection is submitted to CWCB

The division plans to work until May 30 on:

- A submittal memorandum to CWCB documenting the process we used to develop the section.
- Simplifying language, reviewing for grammar, and making sure we have linked information appropriately throughout the document. The substance of the subsection will not change, especially as it relates to policy direction given throughout the development process.
- Graphics that help clarify main points.

The division also plans on-going conversations with CWCB as the water quality subsection is finalized.

The division looks forward to input from the commission and the public at the meeting on May 13, 2014.

Attachments

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Attachment 2

Section 5.4 Water Quality

DRAFT Chapter 5: Water Management

5.4 Water Quality

NOTE: This draft section will be modified and supplemented upon receipt of the draft Basin Implementation Plans from the Basin Roundtables and additional work completed by the IBCC.

Coloradans have a strong connection to water. The quality of water in the state needs to be protected and in some cases restored to support Colorado's heritage, communities and way of life - now and into the future. Executive Order D 2013-005 recognizes this by stating "Colorado's water quantity and quality questions can no longer be thought of separately. Each impacts the other and our state water policy should address them conjunctively." The Executive Order also lists "a strong environment that includes healthy watersheds, rivers and streams and wildlife" as one of three core Colorado values. In addition, recent public survey results highlight the value Coloradans place on safe, clean water. These surveys indicate Coloradans believe the quality of both surface and groundwater is very important as a source of drinking water received in homes. Coloradans also believe the quality of water in streams and lakes is very important to support recreational uses. The survey shows public health is the most motivating reason to improve water quality, followed by wildlife and fish habitat (Water Quality Control Division 2007 and Colorado Water Conservation Board 2013).

Water quality and quantity are inextricably connected. Understanding water supply and demand alone is an incomplete picture. Not only must there be enough water available for use, but the quality of water must also be sufficient for irrigation, drinking water, recreational uses and the protection of aquatic life. Over the past 40 years Colorado's water quality management programs have benefitted those exercising water rights by ensuring clean water for such uses as growing crops to providing drinking water to enjoying water-based recreation. In fact, Colorado's water quality management programs benefit all Coloradans because clean water is essential to the state's healthy environment, diverse economy and quality of life. This is why both protecting and restoring water quality are fundamental to supporting Colorado's water values and implementing Colorado's Water Plan.

Colorado's water quantity and quality questions can no longer be thought of separately. Each impacts the other and our state water policy should address them conjunctively.

modifications can result in low stream flows that can cause low oxygen concentrations, high water temperatures, and higher concentration of pollutants. In Colorado, solutions are explored to mitigate problems caused by these modifications in a way that protects water quality while still meeting project needs.

- One option for addressing future municipal water supply needs is through alternative agricultural transfers such as rotational fallowing and interruptible supply options. However, high concentration of salts and other pollutants from this source water may require advanced water treatment technologies such as reverse osmosis to make the water useable for communities. The waste product from reverse osmosis has very high salt levels and cannot be discharged into the stream. Other disposal options for the waste product are limited. However, if a municipal provider has higher quality source water to blend with lower quality sources then this issue can be avoided. For example, Aurora Water recently completed the Prairie Waters Project where both natural and constructed treatment allow for potable water reuse to proceed without requiring any new Clean Water Act permits.
- Implementing and maintaining drinking water and wastewater treatment in a semi-arid environment is challenging today and will continue to be in the future. Treatment infrastructure is critical to protecting public health and the environment. The ability of the stream to accept pollutants in wastewater without a negative impact to quality depends on the amount of water flowing in the stream. Water diversions upstream can result in fluctuating stream levels and therefore affect water quality. Changes in treatment process necessary to meet new, more stringent discharge limits or needed upgrades to aging infrastructure can increase operational costs for wastewater treatment facilities. However, protecting water quality through wastewater treatment and other measures can result in cost savings for downstream drinking water treatment facilities because it results in a higher quality of source water that could require less treatment.
- The Colorado Water Conservation Board (CWCB) is responsible for the appropriation, acquisition, protection and monitoring of instream flow and natural lake level water rights to preserve and improve the natural environment to a reasonable degree. These water rights are established exclusively by CWCB for nonconsumptive, in-channel or in-lake water uses in support of minimum flows between specific points on a stream or levels in natural lakes. These rights are administered within the state's water right priority system. While Colorado law explicitly prohibits the Water Quality Control Commission and Water Quality Control Division from taking any action that requires minimum instream flows, the instream flow program has provided tangible water quality benefits across the state specifically for aquatic life classified uses.

Understanding the cause and effect between water quality and quantity is integral to making sound water management decisions.

These water quality and quantity cause-and-effect connections are integral to making sound water management decisions and are considered during decision-making processes that are dependent on water quality and quantity statutory, regulatory and management relationships.

5.4.1.2 Statutory and Regulatory Relationships

At the state level, water quality and quantity are managed separately based on different constitutional, statutory and regulatory provisions. However, state and federal statutes that protect in-stream water quality recognize the importance of protecting water rights while still providing the authority to impose water pollution controls. The federal statute that protects drinking water quality also recognizes integration with water quantity by including protections for source water that reduces treatment costs.

Many state and federal water quality-specific regulations intersect with quantity management. The quantity of water available is integral to establishing water quality standards and ensuring standards are attained as required in state and associated federal water quality regulations. Water quality is also recognized in state regulations via addressing the quality of substitute water supplies used in exchanges and substitute water supply plans. Regulations governing reuse also support integration between water quality and quantity management.

One of the primary examples of the regulatory quality and quantity relationship is the Water Quality Control Division's water quality certification of federal permits and licenses under Section 401 of the federal Clean Water Act as implemented through Water Quality Control Commission Regulation No. 82 (known as 401 certification). Section 401 of the Clean Water Act directs states to certify that activities needing federal permits and licenses, such as many water development projects, will maintain the state's water quality use classifications, standards and designations during both construction and operation over time. Water Quality Control Commission Regulation No. 82 gives the Water Quality Control Division three certification options for federal permits or licenses including the ability to certify, conditionally certify through identified mitigation measures or deny certification. Certification by the Water Quality Control Division means that when the federal permit or license is implemented, the proposed project will comply with surface and groundwater standards regulations, classifications and all other applicable water quality requirements for the affected waters. For example, if a project requires a Clean Water Act Section 404 individual permit from the Army Corps of Engineers, a 401 water quality certification is required from the Water Quality Control Division. Section 5.10 discusses the 401 water quality certification in more detail.



Expansion of Gross Reservoir is part of the proposed Moffat Collection Expansion Project. This project will require 401 certification.

Another example of a quantity and quality regulatory relationship is the Water Quality Control Commission's adoption of site-specific standards and designations. Site-specific standards and designations are often adopted to reflect a lower level of water quality than would have existed

before a hydrologic modification such as a dam, diversion or return flows associated with exercising water rights throughout Colorado.

The Water Quality Control Commission is solely responsible for the adoption of water quality standards and classifications; however, local government regulations can also have a water quality and quantity connection. For example, local governments have been delegated permit authority over certain matters under the Areas and Activities of State Interest Act. Under the act, local governments can adopt regulations that address the impact of municipal and industrial water projects. These regulations, referred to as 1041 regulations, often require mitigation of water quality impacts from these water projects. Associations of local governments also prepare Regional Water Quality Management Plans that establish water quality goals and recommendations for regional water quality management. Typically, local 1041 regulations require new water projects to comply with these plans.

5.4.1.3 Water Management Relationships

The roles and responsibilities defined in the statutes and regulations are shared by a number of entities, which creates a complex system for overseeing the state's water resources. At the state level alone, there are many entities involved with protecting water quality which requires coordination and integration to make sure water resources are appropriately managed.

The Water Quality Control Commission and Water Quality Control Division have defined water quality roles and responsibilities. The Colorado Water Quality Control Act also identifies several additional water quality implementing agencies:

- The Division of Reclamation, Mining, and Safety.
- The State Engineer.
- The Oil and Gas Conservation Commission.
- The Colorado Department of Public Health and Environment - Hazardous Materials and Waste Management Division.
- The Division of Oil and Public Safety at the Department of Labor and Employment.

These agencies have initial responsibility for implementing groundwater quality classifications and standards adopted by the Water Quality Control Commission. These implementing relationships are defined through Memoranda of Agreement. The Water Quality Control Commission has residual authority to intervene in the event it determines an implementing agency is not assuring compliance with water quality classifications and standards.

The Department of Natural Resources (DNR) plays a critical role in managing water quantity in the state. The Division of Water Resources within DNR is responsible for water administration, while the CWCB, another division within DNR, sets water policy, completes water planning and reviews state wildlife mitigation plans. DNR's Colorado Parks and Wildlife develops state wildlife mitigation plans, which address fish and wildlife resources affected by the construction, operation or maintenance of water diversion, delivery or storage facilities.

The Water Quality Control Commission and the Water Quality Control Division are required by the Colorado Water Quality Control Act to consult with the CWCB before making any decision or

adopting any rule or policy that has the potential to cause material injury to water rights. This agency receives copies of all Water Quality Control Commission rulemaking hearing notices and all notices include a provision requesting information from the public regarding potential impacts on water rights.

5.4.2 Water Quality and Quantity Integration Goal

Executive Order D 2013-005 states “Colorado’s water quantity and quality questions can no longer be thought of separately. Each impacts the other and our state water policy should address them conjunctively.” As section 5.4.1 described, the quality of Colorado’s waters is important to both consumptive and nonconsumptive water needs. Therefore, it is important to establish a goal related to quantity and quality integration between now and 2050. To inform development of this goal the federal Clean Water Act, federal Safe Drinking Water Act, the U.S. Environmental Protection Agency’s strategic plan, Colorado’s Water Quality Control Act, the Water Quality Control Division’s strategic goals, the Water Quality Control Commission’s strategic water quality goal and the Basin Roundtable Implementation Plans were reviewed. These laws, goals and plans focus on broader actions than quality and quantity integration but provide important insight for developing a quality and quantity integration goal as part of Colorado’s Water Plan.

The federal Clean Water Act sets a national goal “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters”, with interim goals that all waters be fishable and swimmable where possible. The federal Safe Drinking Water Act authorizes the U.S. Environmental Protection Agency to set national health-based standards for drinking water to protect against both naturally occurring and man-made contaminants that may be found in drinking water. The U.S. Environmental Protection Agency, states, and water systems work together to make sure that these standards are met. The U.S. Environmental Protection Agency’s current strategic plan has a goal regarding protecting America’s waters to “protect and restore waters to ensure that drinking water is safe and sustainably managed, and that aquatic ecosystems sustain fish, plants, wildlife, and other biota, as well as economic, recreational, and subsistence activities.”

The legislative declaration of the Colorado Water Control Act includes the following goals:

- To achieve the maximum practical degree of water quality in the waters of the state.
- Provide that no pollutant be released into any state waters without first receiving the treatment or other corrective action necessary to reasonably protect the legitimate and beneficial uses of such waters; to provide for the prevention, abatement and control of new or existing water pollution; and to cooperate with other states and the federal government in carrying out these objectives.

In addition, there are several Colorado Water Quality Control Act provisions that are related to water quantity and water rights:

- A primary goal of the Water Quality Control Act is protect, maintain and improve the quality of state waters for beneficial uses including domestic, wildlife and aquatic life, agricultural, industrial and recreational uses.

- Dischargers of pollutants may be required to meet a high degree of treatment in order to protect water rights.
- The Water Quality Control Commission and Water Quality Control Division must consult with the CWCB before making any decision or adopting any rule or policy that has the potential to cause material injury to water rights.
- The Water Quality Control Commission and Water Quality Control Division shall not require an instream flow for any purpose.

The Water Quality Control Division's mission is to protect and restore water quality for public health and the environment in Colorado. The Water Quality Control Division's strategic plan states that it will achieve its mission by pursuing the following 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 attaining water quality standards through improved implementation of the federal Clean Water Act and Colorado Water Quality Control Act and 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 associated regulations.

Finally, the Water Quality Control Commission's strategic water quality goal is that Colorado's waters will fully support their designated uses by 2050 and these uses could include drinking water, agriculture, recreation, aquatic life and wetlands.

Better integration of water quality and quantity will be required to address the Water Quality Commission's overall goal for water quality. Based on review of the laws, goals and plans summarized above a quality and quantity integration goal was developed. The recommendations in section 5.4.4 address the following quality and quantity integration goal:

Strategies designed to meet Colorado's current and future consumptive and recreational/environmental needs will recognize the inter-relationship between quality and quantity in order to protect and restore water quality.

The following steps further refine and advance this goal:

- The Basin Roundtables should actively incorporate water quality into decision making processes for consumptive and nonconsumptive projects. To help facilitate this effort the Water Quality Control Division will provide basin scale water quality information to the Basin Roundtables for their use in updating their future Basin Roundtable Implementation Plans. This information was developed as part of the Statewide Water Quality Management Plan.
- Project proponents must understand the water quality and quantity nexus and work to avoid or mitigate water quality impacts of a project through the implementation of best management practices, whether associated with 401 certifications or otherwise. The Water Quality Control

Division will develop guidance on the 401 certification application process and will identify best management practices guidance documents to increase project proponent understanding.

- The Water Quality Control Division, in concert with other stakeholders including watershed groups and those with point and nonpoint discharges, will continue to employ available programs to maintain and in some cases improve water quality at a basin scale and will document this over time in the Water Quality Control Division's Integrated Report (discussed in 5.4.2.1) and Water Quality Control Division's Statewide Water Quality Management Plan (discussed in 5.4.3). The Integrated Report is typically updated every two years and this document will be used to track progress on the quality portion of the integration goal over time. The Water Quality Control Division will develop a baseline for tracking water quality improvements by 2016.
- The information reported in the Water Quality Control Division's Integrated Report can also be used in CWCB's scenario planning efforts when evaluating the status of future *signposts* (see Chapter 5.2). By tracking this information through time, water quality and quantity managers will know if efforts to integrate water quantity and quality are successful and can make course corrections as part of CWCB's adaptive management plan efforts.

5.4.2.1 Current Water Quality Conditions

As plans for meeting consumptive and nonconsumptive needs are produced that recognize the many interactions of statute, regulation and management activities, it is important to understand current water quality conditions in the state. These current conditions provide a baseline for evaluating potential impacts, mitigation and measuring how we are meeting our water quality and quantity integration goal. Understanding current water quality conditions is also fundamental to water supply planning and implementation activities for ensuring compliance with water quality regulations.

Evaluating the status of surface water quality in Colorado requires understanding the classified uses identified for waterbodies throughout the state. A classified use is a specific type of use for an identified waterbody and can include domestic water supply, agriculture, recreation, aquatic life and wetlands. After classified uses are assigned to stream segments by the Water Quality Control Commission, water quality standards are adopted for many different pollutants to protect these waterbody-specific uses.

The state is also required to have an antidegradation policy as part of its water quality standards. Antidegradation protects the intrinsic value of high quality surface waters. Colorado's antidegradation policy establishes that at a minimum for all surface waters, the existing classified uses and the level of water quality necessary to protect such uses are to be maintained; these are *use protected waters*. The antidegradation policy also provides extra levels of protection for two types of waters that are designated by the commission. *Outstanding waters* receive the highest level of protection requiring that quality must be maintained at the current levels (no degradation). *Reviewable waters* are high quality waters which receive an intermediate level of protection. The rules for antidegradation review require a public review process before the natural capacity of a waterbody to dilute and absorb pollutants and prevent harmful effects is completely allocated to a

for addressing the municipal and industrial supply gap as well as meeting environmental and recreational needs over the next 35 years.

Future water quality conditions will not only be affected by water quantity decisions but will also be influenced by changing water quality regulations. Currently, there are additional proposed regulations designed to further protect and restore water quality. Examples include increased nutrient controls, more stringent arsenic standards and a revised selenium standard. There is also a renewed emphasis on implementing actions that will produce measurable, positive changes in water quality. Recognizing the possibilities associated with potential change, both water quantity and quality managers need to seek opportunities to protect and enhance water quality in the future.

Other factors affecting future water quality condition are also important. As the economy and population grow and land uses change, there will be increased water quantity demands and additional stressors on water quality. Future land use decisions are a factor as water quality can be impacted by increased urbanization and associated stormwater runoff, volumes of discharged municipal wastewater, and industrial discharges including those from the energy sector. As streams are depleted from additional diversions, existing concentrations of pollutants increase, and water treatment and wastewater treatment processes relying on those streams will become more difficult. New issues may also arise from emerging contaminants or interactions between different constituents that are not now known. These potential impacts could be negative though there can also be opportunities for positive change which reinforces the critical nature of informed, integrated water resource management decisions.

The potential for future positive or negative water quality impacts is compounded by climate change. Predicted effects from a changing climate on water quality include (EPA 2013):

- Potential streamflow volume decreases in the Rockies and interior southwest, and increases in the east and southeast coasts.
- Higher peak streamflow will increase erosion and sediment transport; loads of nitrogen and phosphorus are also likely to increase in many watersheds.
- Many watersheds are likely to experience significant changes in the timing of streamflow and pollutant delivery. In particular, there will be a tendency to shift from snowmelt-dominated spring runoff systems to rain-dominated systems with greater winter runoff.
- Changes in nutrient and sediment loads are generally correlated with changes in hydrology.

Planning for water quality impacts from these potential fundamental system shifts is challenging and highlights the need to make measurable progress on the water quality and quantity integration goal.

5.4.3 Water Quality Management

Current water quality decisions are made in the context of a management system based on statutes, regulations and implementation processes. This system defines the boundaries to protect and restore water quality, and it also offers opportunities for flexible, integrated approaches for meeting consumptive and nonconsumptive needs. The existing water quality management system

is a starting point for finding opportunities and maximizing them to facilitate improved integrated water resource management decisions.

The statutory and regulatory framework for water quality discussed in Subsections 1.2 and 5.4.1.2 establishes the requirements for protecting and restoring water quality in the state. This framework is implemented through processes at the state and local level. Subsection 5.4.2.1 discusses classified uses and the water quality standards established to protect these uses. Both are critical to protecting and restoring water quality in the state and are established through Water Quality Control Commission processes with public input.

Water quality management processes also include monitoring, data assessment and reporting. Monitoring and data assessment are essential to identifying and characterizing water quality problems, revising water quality standards, and developing and evaluating the results of control programs. Monitoring is completed in conjunction with many statewide partners. The Water Quality Control Division utilizes its own data as well as partners' data in assessments that support evaluating the status of statewide and basin-scale water quality with respect to meeting water quality standards. Information about attainment of water quality standards is provided in the Integrated Report discussed in 5.4.2.1 and is also identified in regulation (Water Quality Control Commission Regulation No. 93, Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List); both are adopted by the Water Quality Control Commission through public processes.

Once streams and lakes are identified as not meeting water quality standards, a restoration plan is produced that defines how much of the pollutant causing the impairment can be in the stream or lake to ensure water quality standards are attained. The allowable amount of the pollutant is then divided between all the different sources of the pollutant, both point and nonpoint. A point source is a sewage treatment plant or industrial facility discharge and nonpoint sources are diffuse sources of pollution such as runoff from agricultural field or abandoned mines. This restoration plan is called a Total Maximum Daily Load (TMDL). There is a public notice process associated with TMDL development. Once the TMDL is approved by the U.S. Environmental Protection Agency, the TMDL is the basis for implementing necessary actions to bring the stream or lake back into attainment. As an alternative to implementing point or nonpoint source controls to meet existing water quality standards, TMDLs can also result in a re-evaluation of standards and sometimes classifications. Implementation actions can be defined in a TMDL implementation plan, in a locally-driven watershed plan or in a locally-driven regional water quality management plan (208 plan). Watershed plans and 208 plans identify stressors to water quality and address other water quality improvement and protection activities necessary to meet local and regional goals. The Water Quality Control Division works with local partners and local plans to implement priority projects to restore and maintain water quality at a watershed or regional scale.

The Water Quality Control Division also uses information from local plans to support its own planning efforts. The Water Quality Control Division produces a Statewide Water Quality Management Plan (SWQMP) for approval by the Water Quality Control Commission. The SWQMP compiles water quality information at a statewide and basin scale in support of implementation activities. This compilation, as well as the information in the Integrated Report, Water Quality

Control Commission policies, and other Water Quality Control Division reports, agreements and documents, supports Water Quality Control Division strategic planning that promotes progress toward national water quality goals and provides specific metrics for measuring that progress.

The purpose of these plans at different scales by numerous partners is defining and prioritizing actions for the improvement, restoration and protection of water quality. Implementation tools utilized by the Water Quality Control Division include Section 401 water quality certifications (discussed in subsection 5.10), permits that allow discharges to streams and lakes as long as certain limits or control measures are met, and funding support for partners. The federal Clean Water Act prohibits the discharge of pollutants from a point source to surface water without a permit. Because the state has developed a program that meets the requirements of the federal Clean Water Act, the primary discharge permit program in Colorado is administered by the Water Quality Control Division rather than by the U.S. Environmental Protection Agency. The permits issued to point sources specify the limits or controls that are required to meet Colorado's water quality standards.

These implementation tools often require the development of strategies or best management practices that when completed result in the improvement, restoration and protection of water quality. Strategies are also used to address consumptive and nonconsumptive needs. These are summarized in sections 5.6 through 5.9 of this plan. Examples of strategies that have a quality and quantity nexus include, but are not limited to:

- Water reuse including direct potable reuse, indirect potable reuse, non-potable reuse and graywater use. These strategies are further described in section 5.6.
- Storage including reservoirs and aquifer storage and recovery.
- Source water protection best management practices such as proper storage and disposal of pesticides and proper management of septic systems.
- In Colorado, stormwater has not typically been considered a source of supply but this could be explored in the future. Stormwater best management practices including retention and detention could improve the quality and quantity of this supply.
- Nonpoint source best management practices will be critical to improving water quality for nonconsumptive and consumptive needs in the future. Examples of nonpoint source best management practices include mine tailings removal, riparian buffers, constructed wetlands and habitat restoration.
- The concept of green infrastructure is being discussed at a national level and application of these concepts are being explored in Colorado. The focus of green infrastructure is to weave natural processes into the built environment, which can provide stormwater management, flood mitigation and air quality management.
- Water quality trading is based on the fact that sources in a watershed can face very different costs to control the same pollutant. Trading programs allow facilities facing higher pollution control costs to meet their regulatory obligations by purchasing environmentally equivalent (or

superior) pollution reductions from another source at lower cost, thus achieving the same water quality improvement at a lower overall cost.

Funding and financing is discussed in detail in Chapter 6, however, the Water Quality Control Division provides various financial assistance opportunities to assist with the efforts to protect public health and the environment. Financial assistance programs administered by the Water Quality Control Division include:

- State Revolving Funds provide low-interest loans to governmental entities for drinking water and water quality improvement projects.
- The Water Quality Improvement Fund provides grant funds for water quality improvement projects using civil penalties from water quality violations. State House Bill 11-1026 amended the statute to authorize grants for stormwater management training and best practices training to prevent or reduce the pollution of state waters.
- Source water protection grants provide funding for pilot planning projects and development and implementation projects.
- The Small System Training and Technical Assistance set-aside provides grant funding to assist with the costs of planning and design for small drinking water systems serving less than 10,000 people
- State statutes 25-8-703 and 25-1.5-201 authorize funding, when appropriated by the legislature, for small community domestic wastewater and drinking water projects. These programs provide grants to municipalities for costs associated with planning, design and construction of drinking water and wastewater treatment plants.
- Nonpoint source grant funds are distributed through a competitive process to local project sponsors to implement projects which restore impaired waters, prevent future impairments or raise public awareness.

5.4.4 Recommendations

In developing this section, the Water Quality Control Division worked with the Colorado Water Quality Forum and the Water Quality Control Commission in developing recommendations. Because this is the first water planning effort to integrate water quantity and water quality, these recommendations are general in nature. As Colorado's Water Plan is updated in the future, these recommendations serve as a starting point for implementation efforts focused on:

- Integrated water quality and quantity management.
- Policy considerations.
- Financial considerations.
- Stakeholder and public outreach.

In addition, these recommendations need to be assigned to a responsible party and prioritized for implementation over time.

5.4.4.1 Integrated Water Quality and Quantity Management

Recommendations to promote increased integration of water quality and quantity management include:

- Evaluate water quality impacts associated with proposed solutions and scenarios presented in the Basin Implementation Plans and in Sections 5.6 through 5.9 of Colorado's Water Plan. Identification of impacts will define the scope of strategies that need to be explored to protect and restore water quality.
- Define opportunities, in cooperation with Basin Roundtables and others, to address potential water quality impacts that arise from implementing water quantity solutions through projects and processes that restore and enhance existing water quality conditions. An initial step to implement this recommendation is to assist the Basin Roundtables in developing water quality goals, objectives and measurable outcomes based on current water quality information for each basin that they could use when updating their Basin Implementation Plans. This collaboration supports the Basin Roundtables in identifying projects and methods that integrate water quality and quantity management to protect and restore water quality.
- Define green infrastructure approaches for the arid west and explore how green infrastructure can be utilized to address Colorado's consumptive and nonconsumptive gaps. For example, green infrastructure in the arid west can go beyond stormwater management activities and low impact development methods to include landscape-scale land use planning that addresses where activities should occur on the landscape in order to meet dynamic goals, including protecting and restoring water quality. Existing information developed by green building and stormwater management groups provides a starting point for developing and maintaining a catalog or library of green infrastructure options.
- Evaluate new water supply projects and the potential for multiple benefits, including water quality protection and enhancement. Strive to ensure that all water quality benefits are incorporated into the project plans.
- Examine how new or existing supply projects can be designed and/or operated to advance water quality objectives. Actively pursue incorporation of these design/operation considerations into proposed projects.
- Identify the role of reuse by developing a catalog of reuse examples such as direct potable reuse, indirect potable reuse, non-potable reuse, graywater use and the associated water quality issues that need to be addressed for each type of reuse. Ensure that these issues are addressed in any initiative that desires to utilize these resources.
- Promote use of aquifer storage and recovery as the water quality impacts associated with this storage strategy are minimal.
- Explore the role of stormwater management from both a quality and quantity perspective to determine if stormwater is a viable additional source of supply to address consumptive needs.

- Address nonpoint sources through on-going management activities that play an important role in protecting and restoring water quality for the benefit of future water uses. These activities should include cataloguing and evaluating local government land use planning tools that minimize nonpoint source pollution associated with development. A comprehensive approach to nonpoint source management including water quality trading should be explored.
- Identify the risks of climate change as it relates to integrated water quality and water quantity management and develop specific recommendations for addressing these risks.
- Explore how CWA requirements and SDWA requirements can be most efficiently and cost effectively integrated. Develop specific recommendations for implementation.

5.4.4.2 Policy Considerations

Chapter 8 of the water plan summarizes legislative recommendations. In addition to the legislative recommendations, policy considerations related to quality and quantity integration include:

- Continue to engage in creative, solution-oriented actions such as site-specific standards, temporary modifications, discharger specific variances and pollutant trading. Maintain ongoing, non-regulatory programs including nonpoint source management and source water protection planning. These solution orientated actions will also be necessary when addressing impacts from climate change.
- Establish a more complete understanding of the concept of net environmental benefit as wastewater reuse continues to be maximized in Colorado. This concept is focused on the demonstration that the ecological value of using effluent to support riparian and aquatic habitats exceeds the ecological benefits of removing the discharge from the waterbody.
- Review and appropriately modify existing regulations, guidance and policy documents for new types of wastewater reuse so that all revisions will protect public health and the environment while also providing sufficient flexibility for water suppliers to develop new water reuse projects across the state.
- Consider and document the water rights implications of water quality strategies as they pertain to integrated water quality and quantity management. For example, integrated stormwater management may have impacts on downstream flows and possible water rights impacts would have to be understood and addressed before such a strategy could be implemented.
- Continue to work with neighboring states to address interstate water quality and quantity issues to protect Colorado's compact entitlements.
- Continue statewide monitoring that supports assessment of the quality and quantity integration goal and measures.

5.4.4.3 Financial Considerations

Future efforts to integrate water quality and quantity will require funding. The recommendations outlined below may be further detailed in Chapters 6 and 8 of Colorado's Water Plan. Because this

is the first water planning effort that includes integration of water quantity and quality, the following recommendations are general:

- Continue to fund nonpoint source pollution management efforts and identify new funding opportunities and nonpoint source pollution control strategies.
- Identify costs and funding sources for implementation of green infrastructure and reuse.
- Pursue state funding of regional watershed-based water quality planning to better integrate current and future water quantity efforts.
- Develop and implement state funding mechanisms for future water projects that implement consumptive and nonconsumptive strategies consistent with Colorado's Water Plan, with emphasis placed on funding those portions of water projects that result in a public benefit.
- Develop and implement state funding mechanisms for implementation of mitigation activities required under a state water court water rights decision or a federal or state water quality protection regulatory action.
- Develop and implement funding mechanisms for the protection, restoration or enhancement of water quality values in river or stream reaches.
- Explore ways to facilitate innovative treatment and engineering solutions through technology transfer and liability management techniques.

5.4.4.4 Stakeholder and Public Outreach

Stakeholder and public outreach is critical to meeting the water quality and quantity integration goal. The recommendations outlined below may be further detailed in Chapter 7 of Colorado's Water Plan. Because this is the first water planning effort that includes integration of water quantity and quality, the following recommendations are general:

- Use a watershed approach for outreach and community engagement around water quality, ways to protect water quality and solutions to address water quality issues. Colorado's many watershed groups already utilize a watershed approach to effectively plan for and implement actions that protect and restore water quality and this approach can be used when developing and implementing strategies that integrate water quality and quantity management.
- Monitor public attitudes and opinions about water quality as it relates to domestic water supply as well as environmental and recreational uses of water to inform refinement of future water quality goals and measurable outcomes.
- Develop additional water quality goals and performance measures based on the completed Basin Implementation Plans from the Basin Rountables.
- Conduct joint CWCB and Water Quality Control Commission meetings at least annually to discuss water quality and quantity integration issues.
- The Water Quality Control Commission should consider holding workshops as part of its annual basin rulemaking process. These workshops with basin roundtable representatives for the

ATTACHMENT 3

04/30/14 Response to Public Comments

Subsection 5.4 - Water Quality, Colorado's Water Plan

#	Entity	Date	Comment	Resolution
60b	COCO	3/24/2014	Moreover, while it is true that water quality regulations are designed to become tighter over time (to reach the Clean Water Act 1983 goal of 100% fishable/swimmable waters and 1985 goal of zero discharge of pollutants), our nation's and Colorado's commitment to clean water has enormous economic benefit as well. Clean water in streams has saved billions of dollars of health costs and is a basis for Colorado's \$9B recreation economy. Finally, the Colorado Water Quality Control Act currently limits the state from adopting regulations that are more stringent than federal requirements. In the long term (50 year) planning horizon of Colorado's Water Plan, it may be appropriate to reconsider this limitation. The benefits that accrue from protecting the relatively high water quality of many of Colorado's waterbodies may outweigh the additional costs of regulatory compliance where clean water supports the state's recreation economy and keeps sensitive species off federal lists. Conservation Colorado recommends addition of a fourth bullet to discuss how Colorado's instream water rights program assists in the maintenance of water quality standards in some waterbodies in the State. While Colorado law explicitly prohibits the Commission and Division from taking any action that requires minimum stream flows, Colorado's Water Plan should recognize that the CWCB program has tangible benefits for Colorado's water quality control. And the CWCB worked to narrow the channels below the Rio-Chama diversions on the Rio Blanco to create a stream within a stream that collected the water to keep it cooler and flowing more quickly during low flow conditions. The 2nd bullet gives a negative example about how requiring reverse osmosis can lead to a brine waste stream too salty to discharge back into the waterbody. Aurora's recently completed Prairie Waters Project provides a counter example of a reuse project where the city was creative and used both natural and constructed means to allow potable water reuse to proceed – all without needing any new Clean Water Act permits. The 3rd bullet suggests that protecting water quality has costs which adversely affect the economy. This is a one-sided view. Water quality protection employs many people in the State of Colorado (and elsewhere). Protecting water quality can save money for water suppliers (e.g., by lessening their need for nutrient removal, a strategy that is both costly and results in difficult to remove pollutants that adversely affect human health). In addition, some of the costs that current discharges face are driven as much, if not more, by deferred maintenance on aging infrastructure as much as by new, more stringent regulations; one can "blame" the costs of upgrading a 30-year old plant on new regulations, but as a practical matter, upgrading aging infrastructure to maintain services would also have costs.	Change in text. Information was added/revised in 5.4.2.1 to address the majority of the comments provided. The economic benefit associated with clean water was not specifically addressed in text changes, and the comment provided about potentially reconsidering the Colorado Water Quality Control Act limiting the state from adopting regulations that are more stringent than federal requirements will be shared with CWCB for consideration in Section 8.

ATTACHMENT 3

04/30/14 Response to Public Comments

Subsection 5.4 - Water Quality, Colorado's Water Plan

#	Entity	Date	Comment	Resolution
65	COCO	3/24/2014	Written comment: 5.4.4 Water Quality Recommendations: Conservation Colorado suggests the following additional specificity for the bulleted recommendations: Reuse: The Division and Commission will review existing regulations, guidance and policy documents to consider revisions that will protect human health and water quality while also providing sufficient flexibility for water suppliers to develop a substantial number of new water reuse projects across the state. To the extent that it is appropriate, the Division and Commission will seek input on regulatory improvements from the Water Quality Forum and the CWCB. Green Infrastructure: Similar to above. In addition, consultation with green building groups and storm water management interests may provide additional opportunities for using green infrastructure to maintain or improve water quality while conserving water supplies and meeting increased water demands at competitive if not lower costs. The Division and Commission should consider development guidance documents that would enable Colorado to grow the number of communities, water suppliers and dischargers who rely on green infrastructure. Goals & Performance Measures: The recommendations should include quantified targets and commitments, consistent with the goals, objectives and measurable outcomes in the BIPs related to water quality. In addition, consistent with some of the earlier comments from the Wastewater Utility Council, there should be a recommendation (or two) about using Colorado's Water Plan as an opportunity to consider adding water quality program elements that improve control of pollutants entering the state's waterbodies through non-point sources (polluted runoff).	Change in text. 5.4.3 was revised to incorporate the comment concepts.
66	COCO	3/24/2014	Written comment: Concluding remarks: water quality control in Colorado is critical to the quality of life we currently enjoy, and will remain critical to quality of life for future generations. Conservation Colorado appreciates the Division's efforts in putting together this section of Colorado's Water Plan. We agree with Governor Hickenlooper's Executive Order that integration of water quality control with water quantity management is important for Colorado's future. As work on Colorado's Water Plan proceeds, we hope to see the information and ideas in §5.4 make their way into other relevant parts of the Plan, including the assessment of water demands, the Basin Implementation Plans, the descriptions of other water management strategies elsewhere in Chapter 5 and the Recommendations that the Plan will make in Chapter 8. Chapter 6 of the Plan will include discussions of funding. Conservation Colorado urges the Division to participate in the crafting of that section of the Plan. Many sources of funding exist to protect water quality in the State, including Colorado's revolving fund created through Clean Water Act funds, the Salinity Control Program that also receives federal money and a number of Farm Bill loan programs. Recently, Colorado made funds available to small wastewater treatment facility operators to help them comply with nutrient standards and regulations. These kinds of responsive programs will continue to be important as the state more closely integrates water quality control and water quantity management.	Input will be shared with CWCB.

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#	Entity	Date	Comment	Resolution
119	NWCCOG	4/24/2014	Page 13 with respect to the term flexibility: We are concerned about this term meaning a lot of different things to different people. What about "Continue to engage in creative, solution-oriented application of regulations..."	Change in text: see response to # 104.
120	NWCCOG	4/24/2014	Suggested to add the following as a reference: Coley/Forrest. "Water and its Relationship to the Economies of the Headwaters Counties," http://nwccog.org/docs/gg/QQStudy_Outreach%20Summary%20Jan%202012.pdf .	No change in text: we did not reference this document when developing the text.