



Colorado Department
of Public Health
and Environment

SAFE DRINKING WATER PROGRAM - ANNUAL REPORT

WATER QUALITY CONTROL DIVISION

2013



Page left intentionally blank.

INTRODUCTION

This report is designed for our customers: Colorado’s citizens, water consumers, tax payers and decision makers. It provides information on the ultimate outcomes achieved by the many activities conducted by the Colorado Safe Drinking Water Program. Its main focus is to report progress made in the past year relative to five high level, health-based performance measures.

The measures relate both the population affected and to the compliance status of Colorado’s public drinking water systems. Each measure has a numerical performance target against which program performance is measured accompanied by a visual progress gage presented in the form of traffic lights: green signifies that the target has been achieved, yellow indicates progress towards meeting the target and red indicates no substantial progress to meet the target.

A COMMUNITY PUBLIC WATER SYSTEM SERVES 15 OR MORE SERVICE CONNECTIONS USED BY YEAR-ROUND RESIDENTS OR REGULARLY SERVES AT LEAST 25 YEAR-ROUND RESIDENTS

THIS REPORT SERVES TWO ADDITIONAL PURPOSES:

- To share past year and coming year significant program activities.
- To explain the multiple risks to safe drinking water and the how the program and public drinking water systems take action to intersect and mitigate these risks.

THE REPORT IS ORGANIZED INTO FOUR MAJOR SECTIONS:

- Program mission, strategic goal and purpose.
- Performance targets and results.
- Program manager’s message.
- Contamination risks and program mitigation measures.

COLORADO SAFE DRINKING WATER PROGRAM MISSION:

Always safe drinking water!

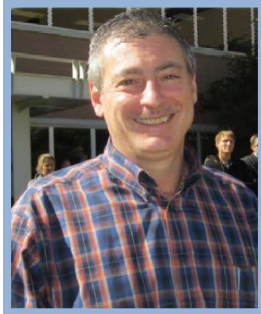
STRATEGIC GOAL

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.

PURPOSE

The purpose of the Safe Drinking Water Program is to provide compliance oversight, assistance, financial support and training to public drinking water systems so that they can always provide safe drinking water to the public.

PROGRAM MANAGER'S MESSAGE



Spring is a wonderful season filled with vibrant, new colors and the promise of good things to come. Spring also brings Colorado Safe Drinking Water Week during the first week of May. During this week, there are a variety of educational opportunities to learn about Colorado's Safe Drinking Water program.

This week also triggers us to evaluate program progress over the past year, establish goals for the upcoming year and share our program's annual report of accomplishments and measurable results.

I am proud of the work performed by the dedicated staff of your safe drinking water program on a daily basis. I have highlighted a few examples of their outstanding efforts in this report.

2013 was a notable year for Colorado's drinking water community. Notably, the September floods posed as a challenge to hundreds of treatment plants and thousands of citizens impacted by the floods. Hundreds of hours of manpower were put in by our staff, working closely with affected public water systems to return drinking water to safe levels.

The success of our program is ultimately measured by the degree to which Colorado's public drinking water systems deliver safe drinking water to protect public health. We are more likely to succeed in this effort if public drinking water systems are fully aware of their requirements.

2013 brought Colorado challenges that ranged from floods to drought conditions, blizzards to wildfires and everything in between. Colorado's Safe Drinking Water Program is committed to making sure that the citizens will always have safe drinking water.

If you have any questions or concerns, please feel free to contact me by telephone at (303) 692-3569 or by email at ron.falco@state.co.us.

Thank you!

RON FALCO, P.E.,
SAFE DRINKING WATER PROGRAM MANAGER



2013 MAJOR ACCOMPLISHMENTS

Last year, in addition to our routine work providing compliance assistance and assurance, program staff, with the support and input of numerous stakeholders, completed two initiatives to make requirements much more transparent. The first was the revision of Colorado's *Design Criteria for Potable Water Systems*. This was the first revision of the design criteria in more than 15 years. It not only updates the minimum criteria protecting the reliability and quality of drinking water by systems using traditional treatment processes but also includes minimum criteria for newer treatment technologies.

The second was a revision of the *Colorado Primary Drinking Water Regulations*. This effort reorganized, simplified and clarified language without modifying regulatory requirements. The revisions were approved by the Water Quality Control Commission in December 2013 and became effective March 1, 2014. The regulations are now much easier to understand and navigate. We are thankful for the assistance provided by the many stakeholders that participated and are confident the new format will make it easier for public drinking water systems to understand the requirements and achieve full compliance.

Consistently providing safe drinking water requires more than understanding and complying with the regulations. September's floods reinforced the need for water systems and public agencies to effectively implement emergency response plans. I am pleased to report that both our program staff and the utility run Colorado Water and Wastewater Agency Response Network (CoWARN) worked together closely and successfully to help with flood response and recovery efforts which assisted many impacted utilities and response agencies.



federal aid.

Simultaneously, impacted utilities requesting resources from CoWARN received assistance within one day from member utilities, industry and water organizations. We continue efforts to provide technical assistance to drinking water systems working to rebuild and recover after the flood. While September's floods have passed, the need for robust emergency response has



not. Each season presents its own risk for the occurrence of unusual conditions including drought, tornados, forest fires, spills and floods. Our communities and our citizens require safe drinking water regardless of these challenges. We encourage all utilities to actively prepare and participate in CoWarn and encourage consumers to become aware of water issues in their communities.

2014 MAJOR PROGRAM INITIATIVES



In January 2014, we began regulatory development and stakeholder efforts to adopt the federal revised total coliform rule. This rule was implemented by the Environmental Protection Agency (EPA) in February of 2013. Our staff is working with stakeholders to identify existing problems and improve regulations. The program will adopt the new provisions no later than February 2015 with an effective date of April 1, 2016.

Several issues have been identified and addressed are motivated by the post Alamosa outbreak investigation that identified the need to strengthen practices to prevent pathogenic contamination of treated drinking water.

- We are developing a specific rule for the operation of tanks used to store treated water. The rule will ensure the tank's mechanical integrity is maintained so disease causing microorganisms are prevented from entry. Specific requirements will include planned internal and external inspections and a requirement to timely fix any deficiencies uncovered by the inspection.
- We are also working with stakeholders to improve the effectiveness of the residual maintained in the distribution system piping. A significant decrease in the incidence of E. coli positive drinking water samples occurs when adequate chlorine residual is maintained. Program staff has been working with stakeholders to establish a minimum numerical limit for chlorine residual to be maintained within a system's distribution system thereby providing additional public health protection from disease outbreaks.
- We are also going to update our cross connection control requirements. Originally developed over 30 years ago, the revision effort will better define adequate device standards, and inventory and maintenance requirements to ensure the potable supply is always protected.
- All of a water system's effective work to properly treat and safely distribute safe drinking water can be undermined if an unsafe source is improperly connected to the potable water supply causing an uncontrolled cross connection. Connections need correctly designed, installed and maintained devices to prevent hazardous conditions in the potable system.



- Finally, we are working with entities that haul water for human consumption to better ensure that their transportation practices do not impair the sanitary quality of the water they deliver.

PERFORMANCE TARGETS AND RESULTS

How do we measure performance? We use a visual traffic light measurement system. Green signifies that the target has been achieved, yellow indicates progress towards meeting the target and red indicates no substantial progress to meet the target.

PERFORMANCE TARGET: ZERO WATERBORNE DISEASE OUTBREAKS AT PUBLIC DRINKING WATER SYSTEMS IN THE LAST FOUR YEARS.



RESULTS

- Zero waterborne disease outbreaks at public drinking water systems in Colorado from 2009-2013.

PRIOR YEARS

- 2008 - Alamosa outbreak (Salmonella).
- 2007 - Skyline ranch outbreak (Norovirus).

PERFORMANCE TARGET: 98 PERCENT OF POPULATION SERVED BY COMMUNITY PUBLIC DRINKING WATER SYSTEMS RECEIVES DRINKING WATER THAT MEETS ALL HEALTH-BASED STANDARDS.



RESULTS

2013	96%
2012	97%
2011	93%
2010	96%
2009	98%

- Flood significantly impacted 2013 results.
- National target in 2012: 91%.

PERFORMANCE TARGET: ZERO PEOPLE RECEIVE DRINKING WATER EXCEEDING HEALTH-BASED STANDARDS FOR URANIUM, RADIUM AND OTHER RADIONUCLIDES.



RESULTS

	Systems Impacted	Population Served
2013	31	21,874
2012	27	21,000
2009	30	21,120
Historically	>50	>32,680

PERFORMANCE TARGET: 95 PERCENT OF COMMUNITY DRINKING WATER SYSTEMS PROVIDE WATER THAT MEETS ALL HEALTH-BASED STANDARDS.



RESULTS

2013	91%
2012	92%
2011	90%
2010	91%
2009	91%

- Shows issues with small systems.
- National target is 90%, achieved in 2012.

PERFORMANCE TARGET: 80 PERCENT OF ALL PUBLIC DRINKING WATER SYSTEMS COMPLY WITH ALL REQUIREMENTS






RESULTS

2013	76%
2012	75%
2011	75%
2010	78%
2009	70%

- Most violations are failure to collect required samples. 450 systems total, only 90 were health based violations.
- 2009 was a red-year, all others were yellow.

POTENTIAL SOURCES OF DRINKING WATER CONTAMINATION

WATER SYSTEM COMPONENT	POTENTIAL SOURCE OF CONTAMINATION
<p>GROUND WATER SOURCES</p> <ul style="list-style-type: none"> • Wells. • Springs. 	<p>Leaking storage tanks/pipelines.</p> <ul style="list-style-type: none"> • Industrial and agricultural chemicals. • Transportation fuels. <p>Septic system discharges.</p> <ul style="list-style-type: none"> • Bacteria and viruses. • Household chemicals. • Pesticides and fertilizers. <p>Improperly managed injection wells.</p> <p>Sewage system leaks/breaks.</p> <ul style="list-style-type: none"> • Surface spills. • Excess chemical application. • Feed lot waste. <p>Naturally occurring compounds.</p> <ul style="list-style-type: none"> • Organic. • Inorganic. • Radium and uranium. • Bacteria and viruses.
<p>SURFACE WATER SOURCES</p> <ul style="list-style-type: none"> • Rivers and creeks. • Reservoirs and lakes. • Shallow ground water wells. 	<p>Surface runoff.</p> <ul style="list-style-type: none"> • Lawn fertilizers and pesticides. • Agricultural feedlot runoff. • Streets, roads and parking lots. • Flood contamination. • Airborne deposition. <p>Domestic and industrial wastewater discharges.</p> <p>Naturally occurring compounds.</p> <ul style="list-style-type: none"> • Organic. • Inorganic. • Radium and uranium. • Bacteria and viruses.
<p>WATER TREATMENT PLANT</p> 	<ul style="list-style-type: none"> • Treatment chemical impurities. • In-plant cross connections. • Disinfection byproduct formation. • Chemical overdoses. • Unapproved treatment processes. • Inadequate treatment infrastructure. • Improper management or operation. • Improperly trained/certified operators.

WATER SYSTEM COMPONENT

POTENTIAL SOURCE OF CONTAMINATION

TREATED WATER STORAGE TANKS



Unprotected openings.

- Vents.
- Hatches.
- Penetrations for wiring, pipes, etc.
- Tank deterioration.

Corrosion.
Old paint coatings.
Bacterial growth.

TREATED WATER DISTRIBUTION SYSTEM



Leaks and breaks.
Inadequate pressure.
Bacterial growth.
Cross connections.

- Industrial.
- Residential.

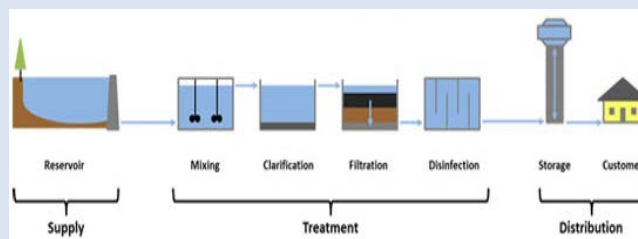
Pipe corrosion.
Improperly trained/certified operators.

CONSUMER'S PLACE OF USE



- Lead service line leaching.
- Lead plumbing.
- Cross connections.

THE DRINKING WATER SYSTEM



ABOUT US: COLORADO SAFE DRINKING WATER PROGRAM

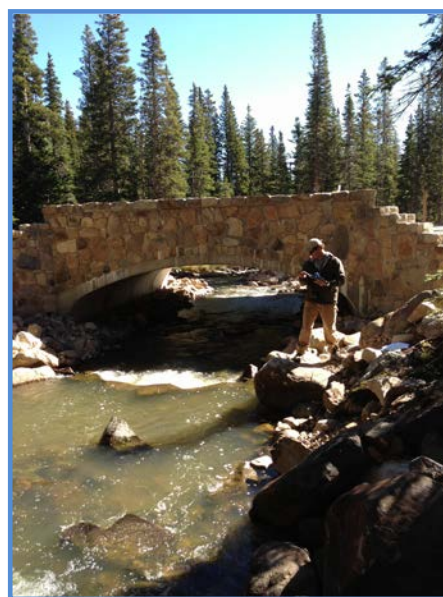
The Colorado Safe Drinking Water Program and public drinking water systems take steps to eliminate or reduce the multiple contamination risks outlined above. Regulations require specific activities, but many public drinking water systems also participate in our program's voluntary activities to keep drinking water as safe as possible. Additional information regarding all activities is available on our website at www.colorado.gov/pacific/cdphe/water-quality-control-division-topics.

PROGRAM ACTIVITIES TO KEEP WATER SAFE

PROTECTING WATER SOURCES

The program helps public water systems protect their sources of raw water. About ten years ago, each public drinking water system received a source water assessment report that detailed potential contamination risks. Source water protection efforts are now directed at proactive efforts that water systems can take to protect water quality and safety.

- **DEVELOPMENT AND IMPLEMENTATION GRANTS**
Protection plan development and implementation grants of up to \$5,000 are currently available.
- **PILOT PLANNING PROJECT GRANTS**
Source water assessment and protection Pilot Planning Project (PPP) Grants of up to \$50,000 are currently available.



FINANCIAL ASSISTANCE FOR WATER INFRASTRUCTURE

The costs for the equipment needed to collect, treat, store, and distribute safe drinking water to the public can be very large and sometimes very overwhelming for small or disadvantaged communities. Colorado implements a federally funded program that provides grants and low interest loans to help these systems improve their infrastructure.

GRANTS AND LOANS

System planning and design grants of up to \$10,000 are available to small systems.

State revolving loan fund loans are available for treatment upgrades, distribution line replacement, water meters and treated water storage (dams, water rights, reservoirs and projects needed primarily for growth are not eligible). These loans are provided with below market rates, extended loan terms and no matching requirements.

Additional information about financial assistance for public water systems can be found on our website (listed above) or the web site of our program partner, the Colorado Water Resources and Power Development Authority:

www.cwrpda.com/programs/state-revolving-funds/drinking-water.

BUILDING TECHNICAL, MANAGERIAL, AND FINANCIAL CAPACITY

Having the necessary infrastructure is essential to providing continuously safe drinking water, but it is not enough. A public water system needs staff with critical skills to properly manage, operate and maintain the often sophisticated equipment and controls used to treat and distribute safe drinking water. Only when properly working together can a water system's physical and human resources provide continuously safe drinking water. This takes money too so a water system needs to charge rates that will meet today's needs and build a foundation to also meet tomorrow's needs. Taken together these traits for success are referred to as having technical, managerial, and financial capacity. The program offers capacity based training and support:

- **COACHING**
Certified program staff provides water system operators with on-site coaching on a wide range of proper operational practices.
- **SECURITY AND EMERGENCY PREPAREDNESS**
Staff promotes security and all hazards preparedness for public water systems including training and planning exercises.
- **TRAINING PARTNERSHIPS**
Partnering with numerous training providers to deliver focused workshops on topics that water systems need to enhance their capacity.
- **EXCELLENCE**
Excellence activities promote treatment process optimization, and provide advanced and highly specialized technical training.



REGULATORY ACTIVITIES TO KEEP WATER SAFE

In addition to supporting voluntary activities, the program establishes and ensures that water systems comply with the Colorado Primary Drinking Water Regulations adopted by the Water Quality Control Commission.

REGULATORY DEVELOPMENT AND IMPLEMENTATION

Research into waterborne disease outbreaks and long term health risks such as cancer has revealed common water safety risks. These are addressed by the Colorado Primary Drinking Water Regulations. The regulations require public drinking water systems to implement certain treatment technologies depending upon the contamination risk posed by their water's source: surface (such as lakes, rivers and streams) or ground (such as springs or wells). Water systems are also required to routinely sample the quality of the water they serve to the public and report those results to the program. If a problem occurs, then water systems must also notify the public while addressing the problem. Considering the scope of knowledge required to properly operate a public water system, the wide range of water system sizes and complexity and the public health risks associated with improper operation, the Colorado legislature requires that public water systems employ at least one certified operator. Colorado Regulation 100 establishes requirements for experience, skills and exams needed to become a certified drinking water facility operator.

MAINTAINING THE INVENTORY OF PUBLIC DRINKING WATER SYSTEMS IN COLORADO

The specific requirements that apply to a particular public drinking water system depend on a number of system characteristics such as size, type of population served, and threat of contamination. For example, water systems that serve a large resident population typically must sample much more frequently than very small systems, like campgrounds, that do not serve year-round residents. Inventory development and maintenance is important not only for identifying the regulated community, but also to ensure that regulatory requirements are applied with health risks and costs in mind.

COMPLIANCE ASSISTANCE

The program provides assistance to public water systems via multiple avenues:

- **PUBLIC NOTICE DURING EMERGENCIES**

Program staff is frequently notified of problems that may have serious implications such as loss of treatment or reports of illness. We assemble our acute team of engineering and compliance experts to consult with water system representatives and devise appropriate actions to protect the health of consumers. If necessary, the public is notified to boil their water prior to drinking, or to consume bottled water.



- **ROUTINE COMPLIANCE ASSISTANCE**

Additionally, program staff monitors the compliance status of all public water systems. Systems that fail to collect required samples or that detect violations of water quality standards are notified of the violation and generally offered assistance over the telephone or in person. We also support a variety of training events for water system operators.

- **PERIODIC SANITARY SURVEYS**

A sanitary survey is an on-site, top to bottom review of a water system's practices. During the survey, program staff has the opportunity to review best practices and clarify regulatory requirements with the water system.

- **DESIGN REVIEW**

Prior to construction, all new and modifications to existing waterworks must be approved by the program to ensure compliance with Colorado's design criteria and all applicable laws, standards, rules and regulations.

ENFORCEMENT

When compliance assistance efforts fail or where egregious or purposeful violations are discovered, staff may issue enforcement orders that can include penalties. In these cases, staff tries to work with the public drinking water system to determine the best course of action and timeframe to reestablish compliance.

CONSUMER ASSISTANCE

Program staff ensures that public water systems provide their customers with annual consumer confidence reports that provide plain language information about their water system, drinking water quality sampling results and whether any violations occurred. Additionally, staff responds to consumer questions.