

WATER: HEALTH EXPOSURES OF CONCERN

AN INVESTIGATION OF COLORADO WATER QUALITY AND HEALTH

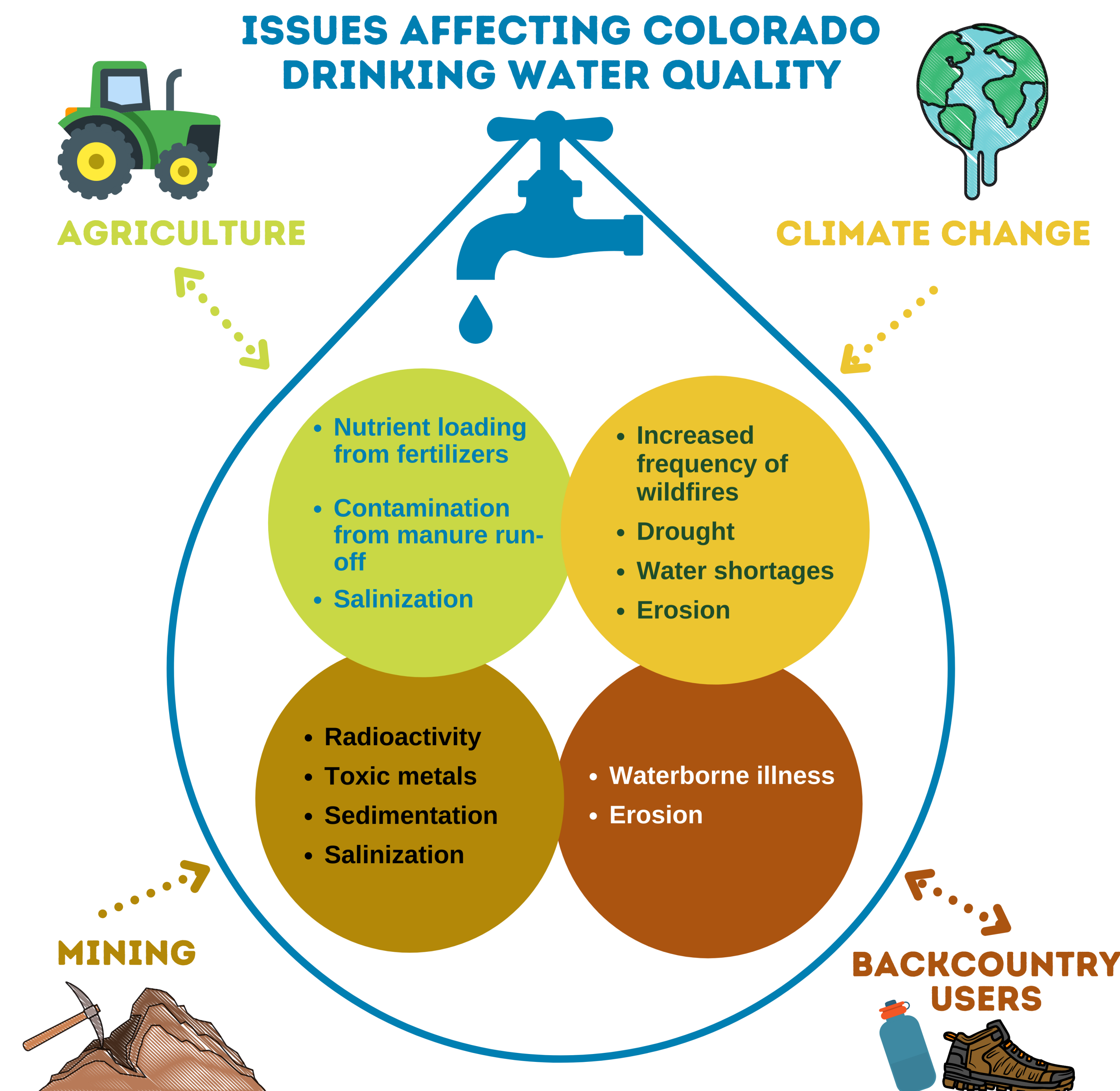
Abbie Modafferi, M.S.

Advisors
Dr. Marisa Bunning- Extension Specialist and Professor
Dr. Howard Ramsdell- Professor

PROJECT OVERVIEW

Water is a ubiquitous resource, but its quality varies wildly depending on climate, region, and anthropogenic influences. Coloradans have access to some of the best drinking water in the world, thanks to stringent standards set by the United States Environmental Protection Agency and the Colorado Department of Public Health and the Environment (CDPHE). Despite efforts to ensure high quality drinking water throughout the state, there are many influences that change the characteristics of water among regions. Understanding common water issues and areas of the state they might affect is vital to public knowledge, but many Coloradans are unaware of potential contaminants in their drinking water. Furthermore, the popularity of outdoor recreation in Colorado poses a unique challenge. Residents and tourists alike need up-to-date information regarding water use as it relates to recreation. Developing and distributing information related to water quality and health exposures of concern aligns with CSU Extension's mission to empower Coloradans to address emerging community issues.

Water experts across the state identified the following as the most widespread issues affecting Colorado's water supply:



ACCOMPLISHMENTS

Broadly, the focus of this project was to identify local water issues, and compile recommendations and public health information that is most relevant to inform residents of Colorado and Extension professionals. The most notable deliverable of the project was a re-write and revision of the CSU Extension Fact Sheet titled "Drinking Water Quality and Health." To ensure the most up-to-date and relevant material was included in this rewrite, extension specialists from across the state were asked a series of questions about the most pressing water quality issues in their river basin.

Many of the water issues identified were determined to be a concern in most areas across the state. Therefore, it was decided that the most widespread issues would be included in the fact sheet, with information about applicable regulations, potential health effects, and treatment options clearly identified. The fact sheet contains detailed information about where contaminants may originate, and what users should do if they think their water might be affected. Furthermore, other resources were compiled to provide additional information to make informed decisions based on their drinking water source.

Throughout the project, it became clear that there was a need to develop material communicating how to safely use water while recreating in Colorado. An informative guide focusing solely on water treatment in the backcountry was created to meet this need.

SUSTAINABILITY

Conserving Colorado's water supply is becoming increasingly important. Reduce your water bill and water use with these simple changes to your routine:

- Choose to use a refillable water bottle instead of purchasing bottled water. This saves money and reduces your carbon footprint. Take advantage of Colorado's exceptional drinking water supply!
- Take shorter showers and turn off the tap when you aren't using it.
- Fix leaks and drips from faucets and pipes or replace your fixtures with newer, more efficient models.
- Install a rain barrel or greywater collection system in your home.
- Encourage others to learn about water quality in their area and what they can do to reduce their impact.

WATER SOURCES

Municipal water: Public water supplies that are monitored, tested, and treated to meet specific guidelines regulated by the Environmental Protection Agency (EPA).

Well water: Private wells that provide water for individual homes are not subject to federal drinking water regulations, which means it is the owner's responsibility to have the water regularly tested and treated according to need.

Bottled water: The U.S. Food and Drug Administration (FDA) has responsibility for ensuring the quality standards for bottled water are compatible with EPA standards for tap water. The source of bottled water may be artesian wells, springs, wells, or tap water.

Backcountry: Water in isolated wilderness often used during recreational activities. Differs from other sources of drinking water because it is untreated, and often the quality is unknown. Water in the backcountry should *always* be treated according to guidelines before consumption.

Grey Water: Wastewater produced from domestic sources. This water is created from household activities such as bathing, cooking, washing or cleaning. It is usually considered "less dirty" than blackwater and may have a secondary application for conservation purposes.

Black Water: Water from toilets and urinals contaminated with human waste.

Wastewater: Water that has been used domestically, for businesses, or for industrial processes. This can include any process that decreases the water quality. In a municipal water system, this is the water that flows through sewage pipes.

INTERNSHIP GOALS

At its core, CSU Extension aims to find solutions to community level problems and engage the public in skill building with the purpose of improving quality of life for current and future generations. This internship was a collaborative effort, to identify water quality issues by region. The primary goal of the internship was to engage with water specialists across the state to encourage conversation about water quality issues, and to develop educational outreach materials to increase awareness about the most critical water issues

APPLICATION

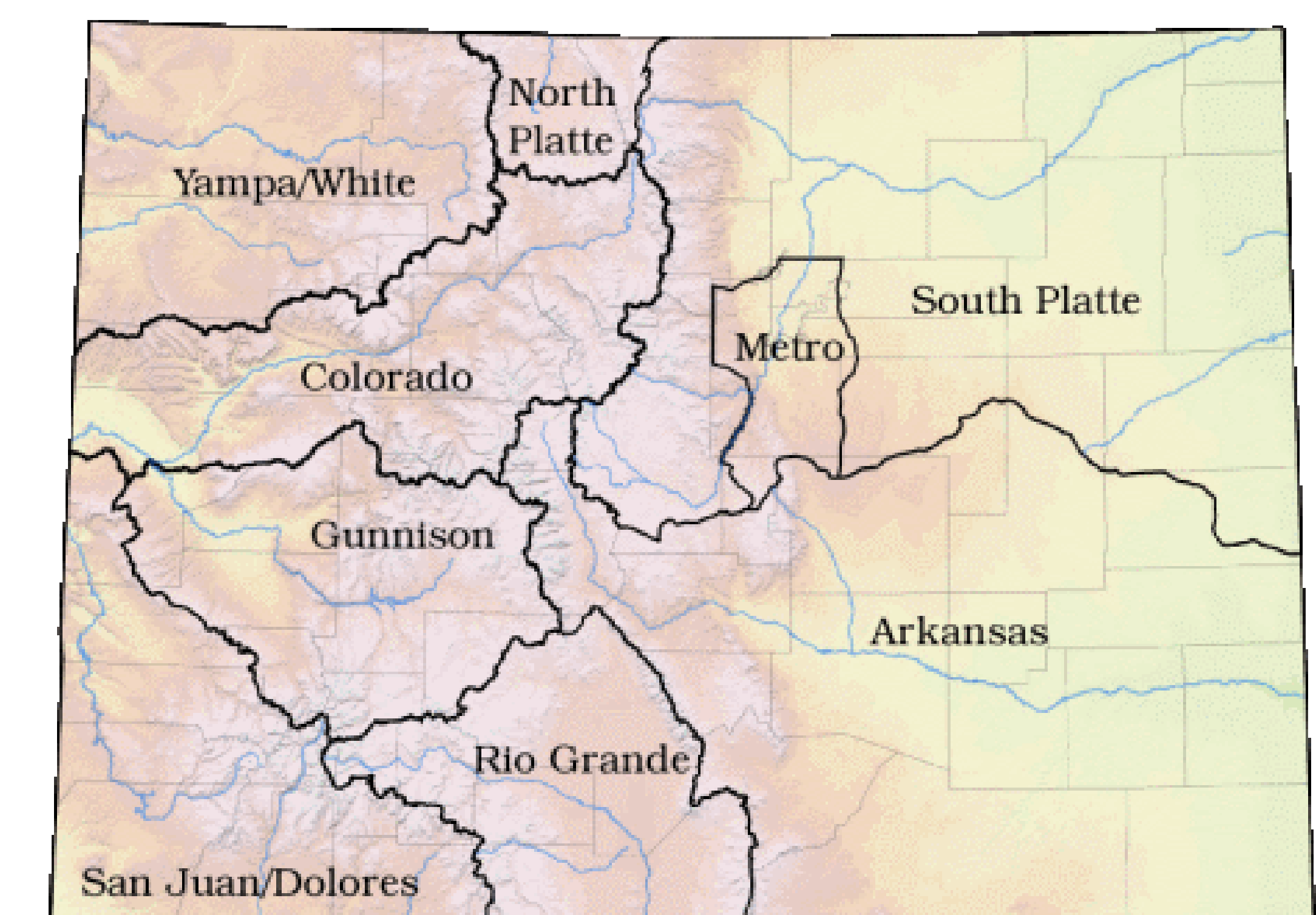
My education focuses on Environmental Health and Toxicology. Drinking water quality is a core necessity to human health and the environment. This project challenged me to interpret the chemical and biological curriculum I learned about in many of my classes and find novel ways to communicate important information to the general public in an attainable format. The updated information published in the fact sheet will be used for many years and is accessible to anyone who is interested in learning more about water quality. Education and outreach is crucial to increase awareness about specific Colorado water quality issues and public health.

FUTURE CONSIDERATIONS

While it is helpful to have more information available about water quality, it does not guarantee that individuals will take action to improve their water quality. The best way to be informed about the quality of available drinking water is to have the source tested using a reputable and thorough analysis. Household well water should be tested annually. Unfortunately, analytics can be expensive and difficult to access. An extensive and affordable testing program would greatly benefit many communities across Colorado.

Another consideration for a future project would be to develop a current resource for accessing regional water quality data. In my experience, most detailed resources required access to GIS or other software. It would be helpful to have a visual resource that documents current quality parameters with a robust ranking system for consumers.

Colorado's River Basins



Source: Basin Roundtables | DNR CWCB (colorado.gov)