2020
CITY OF GOLDEN

Water Quality Report

The City of Golden is committed to providing its customers with safe and dependable drinking water. This is your annual summary of drinking water quality along with updated information about Golden's water treatment plant, water service lines, and Clear Creek – our raw water supply. We hope you will find this report useful and welcome any comments you may have. The Environmental Services Division can be reached at 303-384-8181 or to learn more, go to www.cityofgolden.net/DrinkingWater.

Clear Creek – Our Mountain Water Source

Golden's drinking water source is predominately snowmelt from Clear Creek and its tributaries. As it flows through the watershed, it dissolves naturally occurring minerals and, in some cases, radioactive materials from rock surfaces and the riverbed, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- **Microbial contaminants:** viruses and bacteria that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants:** salts and metals, which can be naturally occurring or result from urban storm water runoff; industrial or domestic wastewater discharges; oil and gas production, mining, or farming.
- **Pesticides and herbicides:** may come from a variety of sources, such as agriculture, urban storm water runoff, and residential uses.
- **Radioactive contaminants:** can be naturally occurring or be the result of oil and gas production and mining activities.
- **Organic chemical contaminants:** including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and also may come from gas stations, urban storm water runoff, and septic systems.

In order to ensure that tap water is safe to drink, the Colorado Department of Public Health and Environment (CDPHE) prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. The Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

Drinking water sources are susceptible to contamination from a wide variety of natural and man-made origins. Potential contaminant sources for Golden include anything likely to manufacture, produce, use, store, dispose, or transport regulated and unregulated contaminants of concern. These sources are divided into discrete or dispersed sources.

Discrete contaminant sources generally include facility-related operations from which the potential release of contamination would be confined to a relatively small area.

Potential discrete contaminant sources in our source water area have been identified as:

- Environmental Protection Agency (EPA) Superfund sites
- EPA abandoned contaminated sites
- EPA hazardous waste generators
- EPA chemical inventory/storage sites
- Permitted wastewater discharge sites
- Aboveground, underground, and leaking storage tank sites

- Solid waste sites
- Existing/abandoned mine sites

Dispersed contaminant sources generally include broad-based land uses and miscellaneous sources from which the potential release of contamination would be spread widely over a relatively large area.

Potential dispersed contaminant sources in our source water area have been identified as:

- Commercial/industrial/transportation
- High and low intensity residential land use
- Urban recreational grasses or fallow
- Quarries/strip mines/gravel pits
- Row crops
- Pasture/hay
- Deciduous, evergreen, and mixed forests
- Septic systems
- Oil/gas wells
- Road miles

The CDPHE provided consumers with a Source Water Assessment Report that is specific to Golden's raw water supply. The report is not an indication of the current quality of our water source, but provides a screening level evaluation of potential impacts to Clear Creek and rates the possible susceptibility to those sources. Information from the report is available to Golden to develop and implement water management strategies in order to optimize treatment and protect the quality of our drinking water. The report is available online at http://wqcdcompliance.com/ccr or may be obtained by contacting the City of Golden Environmental Services Division at 303-384-8181.

Water Quality and Your Health

LEAD – WHAT YOU NEED TO KNOW

Young children and pregnant women are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than other homes in the community as a result of materials used in your home's plumbing. The City of Golden is responsible for providing high quality drinking water, but cannot control the variety of materials used in water service lines and home plumbing components. You can minimize your exposure by flushing your tap for 30 seconds to 2 minutes before using water for cooking or drinking. If you are concerned about levels of lead in your home, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize your exposure is available from the Safe Drinking Water Hotline at 1-800-426-4791 or at www.epa.gov/safewater/lead.

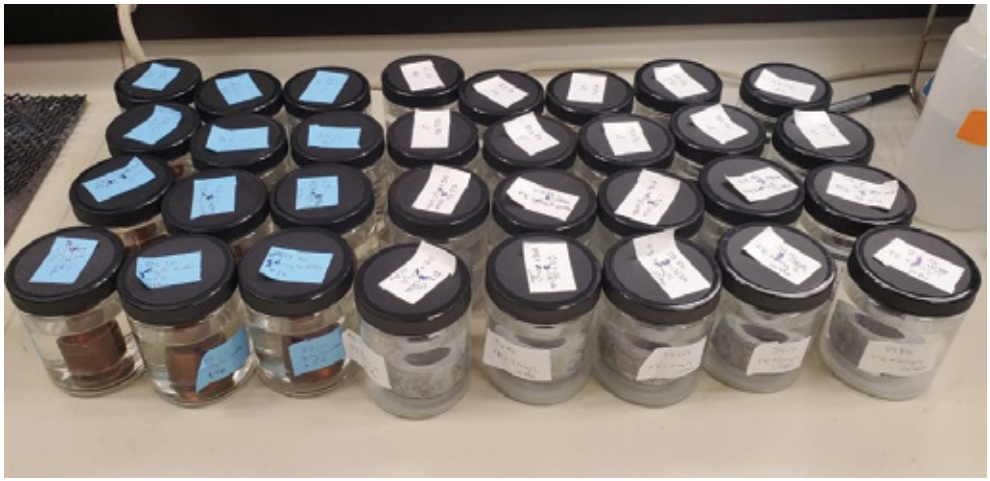
If You Have Special Health Concerns:

Both public and bottled water supplies may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. However, some people may be more vulnerable to contaminants in drinking water than the general population. Immuno - compromised individuals such as persons undergoing chemotherapy, persons who have undergone organ transplants, those with HIV/AIDS or other immune system disorders, and some elderly and infants can be particularly at risk for infection. These people should seek advice about drinking water from their health care providers. For more information about contaminants and potential health effects, or to receive a copy of the EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia or other microbiological contaminants, call the EPA Safe Drinking Water Hotline toll free at **1-800-426-4791** or visit http://epa.gov/ground-water-and-drinking-water.

Lead and Copper

Under the Lead and Copper Rule established in 1991, Golden is required to conduct regular sampling from customer's homes. Lead is a common metal found in the environment, but in drinking water, lead either comes from a lead service line running from the water main to the home and/or from the plumbing inside the home. Lead can leach from these plumbing materials when it is exposed to corrosive water. The Golden Water Treatment Plant has a corrosion control program that prevents corrosive water from getting into the distribution system. We constantly monitor pH, alkalinity, hardness, temperature and various other characteristics to ensure corrosion control is correctly implemented at all times. The lead and copper sampling program helps us to ensure that our corrosion treatment is adequate.

In addition to what we already do, The City of Golden conducted a corrosion control study (CCS) to identify the optimal corrosion control treatment (OCCT) for the distribution system. The CCS consisted of an 18-week long bench scale immersion test from treated surface water received from Clear Creek. Golden currently uses pH and alkalinity adjustment without the addition of a corrosion control inhibitor. The current treatment was compared alongside two types of corrosion control inhibitors. These inhibitors would take the place of the current alkalinity and pH adjustment if they had resulted in better corrosion control. After the study was completed, the drinking water lab submitted the results to The State of Colorado, which then confirmed that Golden's current treatment process is "optimal" and these other corrosion inhibitors would not necessarily help reduce lead at customer taps.



There are changes coming with the new Lead & Copper Rule effective September 2024, and one change is going to be the most challenging for the City of Golden. The newest rule will require Public Water Systems to locate where lead service lines still exist in the ground. The problem is Golden does not know where these customer owned lines are, and we need your help.

If your house was built between 1879-1937 you may have a lead service line. If you know that your line has been replaced we would appreciate any information you can provide so that we can update our records and reduce the number of sites that need to be investigated.

2020 Water Quality Monitoring Results

The following tables contain the results of all substances that are regulated by State and Federal law that were detected in Golden's water during the 2020 monitoring period. Most of the monitoring performed by Golden's Environmental Services lab results in non-detect levels allowing the City to perform reduced monitoring for substances that pose no risk to our system. Some of those results will show dates that may be more than a year old.

Detected Regulated Substances

Monitored leaving the Water Treatment Plant

For more information, call the Water Quality Lab at 303-384-8181.
Or contact Stephanie Crabtree at 303-384-8184.

Organic/Inorganic	Sample Date	Average	Range Found	MCL	MCLG	No Violations	Common Sources
Barium, ppm	Yearly	0.02	0.02 - 0.02	2	2		Natural erosion
Fluoride, ppm	Yearly	0.43	0.43 - 0.43	4	4		Natural erosion
Nitrate, ppm	Yearly	0.5	0.5 - 0.5	10	10		Fertilizer run-off
*Total Organic Carbon (TOC), ratio *(TOC, reported as a ratio, must remain above 1.0 for optimal water treatment.)*	Monthly - RAA	1.52	1.03 - 2.02	TT	TT		Naturally present in the environment

**Golden uses enhanced treatment to remove the naturally occurring organic compounds that can combine with disinfectants to form disinfection by-products. The ratio of TOC removal measures our compliance with this treatment technique. 47 samples were taken in 2020.*

Radionuclides	Sample Date	Average	Range Found	MCL	MCLG	No Violations	Common Sources
Combined Radium (226 & 228) pCi/L	2020	1.6	1.6 - 1.6	5	n/a		Erosion of natural deposits
Gross Alpha Particles pCi/L	2020	0.2	0.2 - 0.2	15	n/a		Erosion of natural deposits
Combined Uranium pCi/L	2020	<1.0	<1.0 - <1.0	20	n/a		Erosion of natural deposits

Summary of Turbidity Sampled at the Entry Point to the Distribution System					
Contaminant	**Sample Date**	**Level Found**	**TT Requirement**	**TT Violation**	**Typical Sources**
Turbidity *(Measure of the cloudiness of water. It is a good indicator of the effectiveness of our filtration system)*	October	Highest single measurement: 0.268 NTU	Maximum 1 NTU for any single measurement	No	Soil Runoff
Turbidity	December	Lowest monthly percentage of samples meeting TT requirement for our technology: 100%	In any month, at least 95% of samples must be less than 0.3 NTU	No	Soil Runoff

Monitored at consumer taps

Disinfection By-Products	Sample Date	Highest compliance value (LRAA)	Range of compliance values (LRAA)	Range of individual samples	Average of individual samples	MCL	MCLG	No Violations	Common Sources
Total Trihalomethanes, ppb	Quarterly	39.70	34.72 - 39.70	22 - 65.4	37.34	80	n/a		By-product of chlorination
Total Haloacetic Acids, ppb	Quarterly	9.95	7.57 - 9.95	2.5 - 18	8.96	60	n/a		By-product of chlorination

Running Annual Average for THM's must be less than 80 ppb. Running Annual Average for HAA's must be less than 60 ppb.

2020 Water Quality Monitoring Results

Disinfectants Sampled in the Distribution System
TT Requirement: At least 95% of samples per period (month or quarter) must be at least 0.2 ppm **OR**
If sample size is less than 40 no more than 1 sample is below 0.2 ppm. Sample size is 32.
Typical Sources: Water additive used to control microbes

Disinfectant	Sample Date	Highest	Average	Range Found	MCL	MCLG	No Violations	Common Sources
Chlorine (free), ppm	Throughout the year	1.62	1.15	0.62 - 1.62	MRDL 4	MRDLG 4		Drinking water disinfectant

Lead and Copper	Sample Date	Concentration at 90th Percentile	Number of Exceedences at 90th Percentile	AL	No Violations	Common Sources
Lead, ppb	6/3/20 - 8/22/20	0	0	15		Corrosion of household plumbing
Copper, ppm	6/3/20 - 8/22/20	0.02	0	1.3		Corrosion of household plumbing

The City of Golden is now required to monitor for lead and copper at consumer taps once a year. 44 Golden households were sampled in 2020.

Other Monitoring Results and Secondary Contaminants**

Monitored leaving the Water Treatment Plant

**Secondary standards are non-enforceable guidelines for contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor or color) in drinking water.

Substance	Sample Date	Average	Range Found	MCL	SMCL	Common Sources
Alkalinity, ppm	Weekly	41.2	19 - 57	n/a	None	Erosion of natural deposits
Chloride, ppm	Quarterly	43.5	13 - 83.3	n/a	250 ppm	Erosion of natural deposits
Hardness, ppm	Weekly	128	37 - 172	n/a	None	Erosion of natural deposits
Iron, ppm	Monthly	<0.01	<0.005 - <0.01	n/a	0.3 ppm	Erosion of natural deposits
Manganese, ppm	Monthly	0.003	<0.005 - 0.011	n/a	0.05 ppm	Treatment
pH, su	Weekly	8.5	6.6 - 9.2	n/a	6.5 - 8.5 su	Treatment
Potassium, ppm	Quarterly	2.7	1.3 - 3.5	n/a	None	Erosion of natural deposits
Sodium, ppm	Yearly	13.7	13.7 - 13.7	n/a	None	Erosion of natural deposits
Sulfate, ppm	Quarterly	88.1	38.8 - 117	n/a	250 ppm	Erosion of natural deposits
(TDS), ppm	Quarterly	265	115 - 395	n/a	500 ppm	Erosion and storm water runoff
Zinc, ppm	Quarterly	0.06	0.02 - 0.11	n/a	5 ppm	Erosion of natural deposits

If you have any questions, please contact the Water Treatment Plant at 303-384-8187 or online at **www.cityofgolden.net/WTP**.

Glossary of Terms and Definitions

- **Maximum Contaminant Level (MCL) –**
  The highest level of a contaminant allowed in drinking water.
- **Treatment Technique (TT) –**
  A required process intended to reduce the level of a contaminant in drinking water.
- **Health-Based –**
  A violation of either a MCL or TT.
- **Non Health-Based –**
  A violation that is NOT a MCL or TT.
- **Action Level (AL) –**
  The concentration of a contaminant which, if exceeded, triggers treatment and other regulatory requirements.
- **Maximum Residual Disinfectant Level (MRDL) –**
  The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
- **Maximum Contaminant Level Goal (MCLG) –**
  The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.
- **Maximum Residual Disinfectant Level Goal (MRDLG) –**
  The level of a drinking water disinfectant, below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Violation –**
  Failure to meet a Colorado Primary Drinking Water Regulation.
- **Formal Enforcement Action –**
  Escalated action taken by the State (due to the risk to public health, or number or severity of violations) to bring a non-compliant water system back into compliance.
- **Variance and Exemptions (V/E) –**
  Department permission not to meet a MCL or treatment technique under certain conditions.
- **Gross Alpha –**
  Gross Alpha particle activity compliance value. It includes radium-226, but excludes radon 222, and uranium.
- **Picocuries per liter (pCi/L) –**
  Measure of the radioactivity in water.
- **Nephelometric Turbidity Unit (NTU) –**
  Measure of the clarity or cloudiness of water. Turbidity in excess of 5 NTU is just noticeable to the typical person.
- **Compliance Value –**
  Single or calculated value used to determine if regulatory contaminant level (e.g. MCL) is met. Examples of calculated values are the 90th Percentile, Running Annual Average (RAA) and Locational Running Annual Average (LRAA).
- **Average (x-bar) –**
  Typical value.
- **Range (R) –**
  Lowest value to the highest value.
- **Sample Size (n) –**
  Number or count of values (i.e. number of water samples collected).
- **Parts per million = Milligrams per liter (ppm = mg/L) –**
  One part per million corresponds to one minute in two years or a single penny in $10,000.
- **Parts per billion = Micrograms per liter (ppb = ug/L) –**
  One part per billion corresponds to one minute in 2,000 years, or a single penny in $10,000,000.
- **Level 1 Assessment -**
  A study of the water system to identify potential problems and determine (if possible) why total coliform bacteria have been found in our water system.
- **Level 2 Assessment -**
  A very detailed study of the water system to identify potential problems and determine (if possible) why Ecoli MCL violation has occured and/or why total coliform bacteria have been found in our water system on multiple occasions.
- **Not Applicable (N/A) –**
  Does not apply or not available.

In order to ensure that tap water is safe to drink, the Colorado Department of Public Health and Environment (CDPHE) prescribes regulations that limit the amount of certain contaminants in the treated water provided by public water systems such as Golden's. The Food and Drug Administration (FDA) sets similar limits for contaminants in bottled water that must provide the same protection for consumers. However, the regulations and testing requirements are much less stringent than for tap water.

Golden Works Collaboratively to Address Wildfire Risk and Potential Impacts on Clear Creek

The City of Golden, the Standley Lake Cities (Westminster/Thornton/Northglenn), and the Upper Clear Creek Watershed Association hired an engineering firm in fall 2019 to conduct a wildfire hazard assessment and planning study for the Clear Creek watershed. The study was completed in March 2021 and over the last year and a half, engaged water providers and communities that depend on Clear Creek in pre-fire risk mitigation and post-fire response planning. In addition to assessing the conditions of the watershed and the potential for post-fire debris flows, the study analyzed a suite of project options to manage forests and fuels, restore and improve stream channels, and assess and mitigate the Wildland-Urban Interface (WUI). This process generated a list of prioritized projects stakeholders can implement to increase the Clear Creek watershed's resilience to catastrophic wildfire. Recognizing the need to be proactive against increasing wildfire threats and motivated by the watershed assessment and project list, Golden and our stakeholder partners have established a collaborative organization, the Clear Creek Watershed & Forest Health Partnership. This is a diverse coalition of interested parties including water utilities, businesses, municipal and county governments, state and local land management agencies, environmental groups, and local community members. The Clear Creek Watershed & Forest Health Partnership will work to improve the long-term resilience of communities dependent on Clear Creek by expanding the foundation for collaborative management in the basin, pooling resources, implementing wildfire risk mitigation projects, and developing a partnership response network to help us better respond should a wildfire occur.

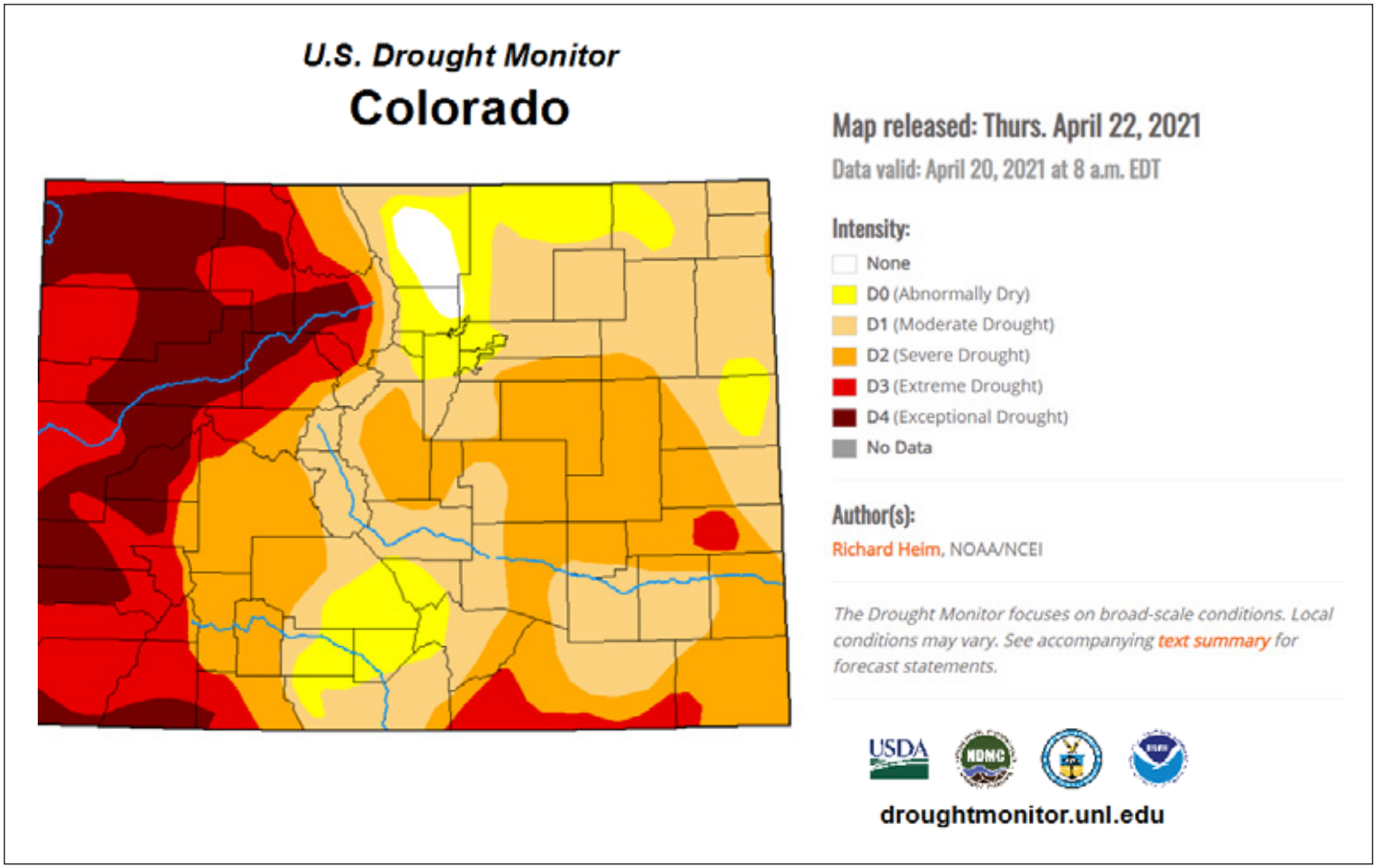
Golden Prepares for Another Drought Year

According to the U.S. Drought monitor, most of Colorado will be in at least a "Severe" drought again this summer. Golden has prepared for this type of situation for years and it is beginning to pay off.

In the summer of 2020 due to a Severe Drought, we had to release water from storage from mid-July through October. Our storage level in Guanella reservoir dropped from "Full and Spilling" on July 14 to 71% of capacity on October 30. We did not need to ask for any restrictions but we did ask that people use water wisely only as needed.

Guanella reservoir will be full again by the end of May, but in preparation for a possibly more severe drought, we will be asking for voluntary out-door restrictions. This step is prudent not only for this summer, but will help us be ready if drought conditions persist or worsen next year or even the year after that.

We can readily go through several years of drought if we simply cut back on outdoor water use during the hottest and driest summer months, so please use water wisely.



Water Conservation – Cycle and Soak

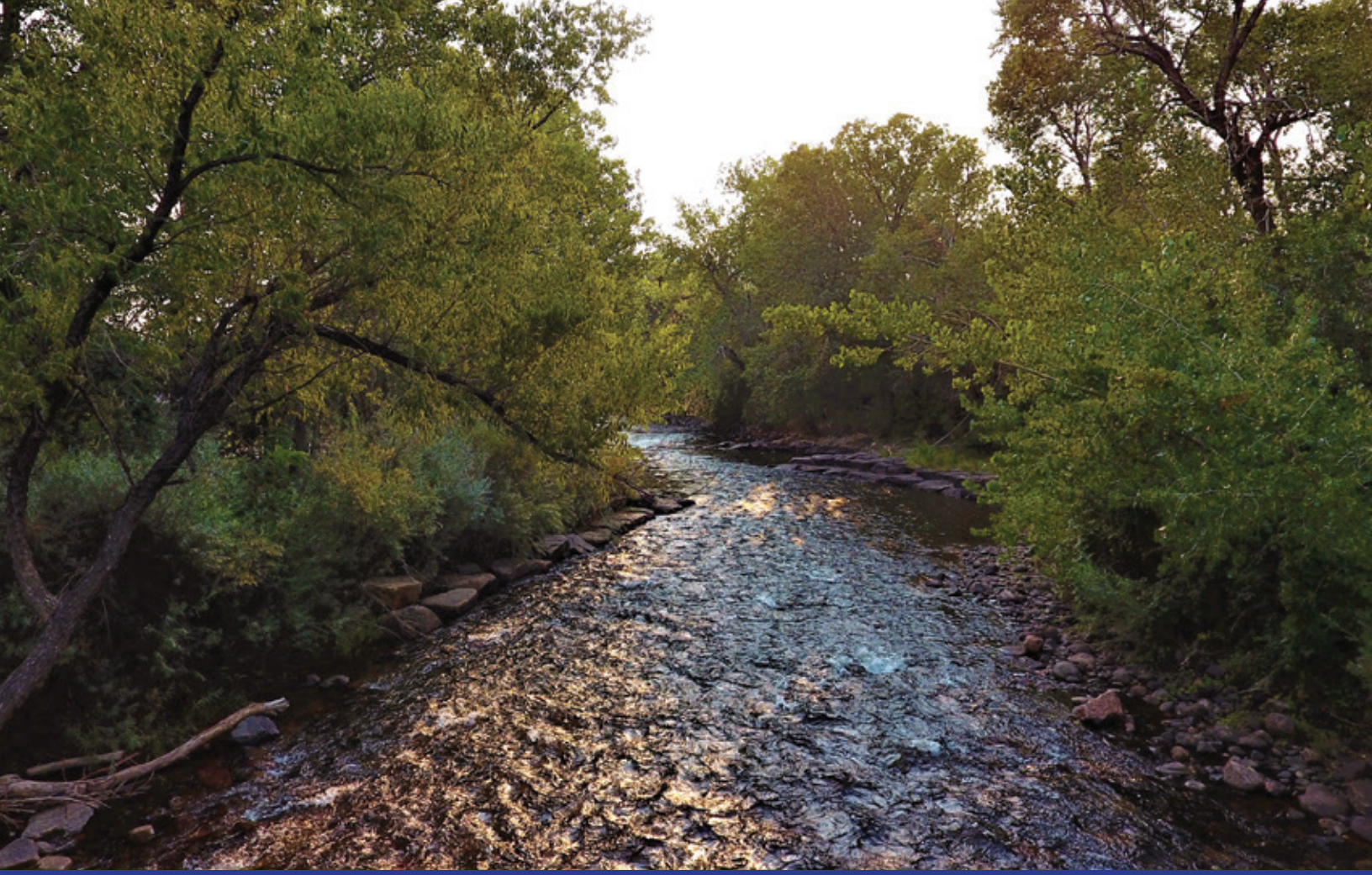
The City of Golden continues its partnership with Resource Central to provide effective water conservation programs, including Slow the Flow, a free sprinkler system consultation for Golden's water customers. One important message resulting from the consultations is that residents with clay soils benefit from using a watering technique called "cycle and soak" to promote infiltration and prevent runoff. Clay soil absorbs water very slowly, but most sprinkler systems apply water very quickly. As a result, sprinklers often apply more water than the soil can absorb and the excess runs off the lawn and down the gutter.

The cycle and soak technique involves watering for several short cycles, separated by enough time for the water to soak in. This practice results in a deep soak, without water lost to runoff. For clay soils, Resource Central recommends dividing the watering time into three shorter cycles with an hour in between each cycle. For example, if your target is to water for 15 minutes, you would water in three cycles, for five minutes each, separated by an hour in between each five minute cycle.

Such cycles are easy to set with most control clocks using the multiple start times function.

Cycling saves a significant amount of water that would otherwise be lost to runoff, particularly for clay soils and sloped areas. It also helps encourage deeper root growth and healthier lawns. Plus, by reducing runoff, it helps protect water quality in Clear Creek.

Be part of the water-saving solution. Water is essential for the life that we love – in addition to basics like drinking water and agriculture, it also fuels our recreation, businesses, and (of course) beer. In a semi-arid state like Colorado, it's particularly important for each of us to play our part, however small, in conserving such a critical resource. A Slow the Flow sprinkler consultation with the City's partner, Resource Central, will help you reduce your water waste by providing a customized watering schedule to help you water your lawn more efficiently. You could save up to 5,000 gallons of water per year while still keeping your lawn healthy, just by adjusting your sprinkler system. Sign up today! Visit https://resourcecentral.org/slowtheflow/sprinklers/ or call 303-999-3824.



For more information, contact:

City of Golden
PUBLIC WORKS DEPARTMENT
ENVIRONMENTAL SERVICES DIVISION

1445 10TH ST. GOLDEN, CO 80401
303-384-8181
www.cityofgolden.net/DrinkingWater

The City of Golden is an active member of the Upper Clear Creek Watershed Association – a management agency dedicated to protecting the water quality in Clear Creek.

INFORMACIÓN IMPORTANTE ACERCA DE LA CALIDAD DEL AGUA

Para recibir la versión en español del Reporte de Calidad de Agua de 2020 de City of Golden, visite cityofgolden.net/media/CalidaddeAgua2020.pdf.