



**Metro Roundtable WSRF Grant POGG1 PDAA 202300002021  
Clear Creek Targeted Outreach and Education for High-Priority  
Projects Grant  
Final Report May 4, 2023**

In 2019, a pre-wildfire risk evaluation study was commissioned by the Upper Clear Creek Watershed Association (UCCWA), the City of Golden, and the Standley Lake IGA Cities of Northglenn, Thornton, and Westminster. The study report identified key needs for wildfire risk management in the basin. The Clear Creek Watershed & Forest Health Partnership (CCWFHP) was established to provide implementation stewardship (collaborative coordination and fiscal agency) for the [2021 Upper Clear Creek Pre-Wildfire Planning Study](#). The 2021 Pre-Wildfire Study assessed a limited set of post-wildfire hazards and identified pre-wildfire projects that can mitigate such watershed hazards.

In 2022, the Memorandum of Understanding establishing the [Clear Creek Watershed & Forest Health Partnership](#) was entered into by nine entities that are either in the Clear Creek watershed or depend on the watershed for water resources:

- City of Arvada
- City of Black Hawk
- County of Clear Creek
- Clear Creek Fire Authority
- Town of Empire
- County of Gilpin
- City of Golden
- County of Jefferson
- City of Westminster

The purpose of the partnership is to reduce catastrophic wildfire risk, increase community awareness of fire-safe neighborhood strategies, and support safe and clean water supplies throughout the upper Clear Creek Drainage. Our mission is to engage in collaborative, cross-jurisdictional planning and implementation of wildfire risk mitigation and forest health projects within the Clear Creek Watershed. As our core objectives, we have identified the protection of critical infrastructure, protection of water quality, water supply augmentation, and overall stream health function.

We have taken the organizational step to develop structure and bylaws. A Chair and Vice Chair have been selected for the partnership and bylaws are in place. An agreement with [Coalitions & Collaboratives, Inc.](#) (COCO) is underway with each of the member entities with the intent to

have COCO assist with hiring and organization administration. As of the submission of this report, five CCWFHP members have completed affiliation agreements with COCO.

The Metro Roundtable Water Supply Reserve Fund **Clear Creek Targeted Outreach and Education for High-Priority Projects Grant** update follows.

### **Task 1 – Construct Website**

At the time of contract execution, [clearcreekpartnership.org](http://clearcreekpartnership.org) included content on CCWFHP's background and purpose, pre-wildfire planning in Upper Clear Creek, and a Community Resources page with Partnership meeting minutes and other relevant documents. Since the WSRF contract began, additional content has been added, including:

- An [MOU page](#) featuring logos and names of signatories and the MOU document.
- [Project profile pages](#) for two current and past projects. These profiles feature embedded ArcGIS Online maps to display geospatial information about each project.
  - Silverdale Wildland Forest Management
  - Sawmill Gulch Forest Management
- [Project scope pages](#) for three project areas, using scoping information developed in Task 5 activities.
  - Missouri Creek Stream Restoration
  - Mainstem Clear Creek
  - Town of Empire
- Additional content added to the [Community Resources page](#)

### **Task 2 - Develop & Maintain Stakeholder Registry (attend meetings, develop stakeholder contact system)**

Upon contract execution, consultants began regular attendance at CCWFHP General and Steering Committee meetings. Outreach meetings regularly attended include select Northern Colorado Fireshed Collaborative (NCFC) meetings, Clear Creek County Recreation in the Outdoors Management Plan meetings, Empire Planning Commission meetings, Clear Creek Integrated Watershed Management Plan meetings, Upper Clear Creek Watershed Association meetings, Colorado School of Mines (CSM) Capstone Project meetings, and Environment & Recreation Joint South Platte Basin and Metro Roundtables meetings.

A Stakeholder Registry is developed and is being used as a living document for projects and partner communication. Sheets have been created for the primary CCWFHP membership, including interested parties wishing to participate in regular organization meetings. Missouri Creek project and Bakerville Clear Creek Mainstem stakeholder contact sheets specific to each project have been created. Placeholder sheets have been created for each targeted high-priority project area populated with contact information for landowners at each location. As those projects come online, the spreadsheets will be updated. A partner/grants sheet is also under development to prepare for future grant-writing initiatives.

### **Task 3 - Community Partnerships & Stakeholder Engagement**

The Colorado Department of Transportation (CDOT) SWEEP Bakerville Interchange Project and Floyd Hill Technical Review is underway. These activities are closely aligned with areas of wildfire concern and are being monitored to ensure overlapping interests are identified and addressed.

The USFS in the last two years implemented several forest management projects within the Missouri Creek sub-basin (FM-34 & FM-35). CCWFHP with the CSM senior design program developed stream restoration design in the Missouri Creek sub-basin in 2022, and throughout project development, CCWFHP consistently coordinated with the USFS Clear Creek Ranger District. The Clear Creek Ranger District has decided to develop an additional, larger-scale treatment area north of the Missouri Creek restoration site along Forest Service Road 15. The Partnership intends to support USFS in this mitigation effort based on USFS's needs and requests.

In tandem with the CDOT Floyd Hill project, USFS has conducted prescribed fires in the winter of 2022 in Squaw Pass next to Denver Mountain Parks. In communication with the CDOT Floyd Hill technical review team, relocation of cuts will support mitigation in the Floyd Hill area. Clear Creek Fire Authority is redoing the evacuation route on Floyd Hill, probably to the west, as part of this project.

The Evergreen area organized a Community Mitigation Assistance Team (CMAT) and conducted a SWOT exercise (Strengths/Weaknesses/Opportunities/Threats). This event brought together stakeholders and delivered a story report with objectives and opportunities. The SWOT exercise gave them a structure to proceed in the form of an action plan. One-on-one interviews took place after the event to explore what nearby areas are doing for mitigation. Clear Creek County will be pursuing the CMAT process for the county. CMAT could benefit the entire Clear Creek community and become a centralized hub for information.

A second CSM senior design project concept was submitted to the Colorado School of Mines for consideration on the Silver Valley Road corridor between Bakerville and Silver Plume to explore the viability of low-tech process-based restoration. The project was selected, and this second CSM Capstone project is underway.

### **Task 4 – Develop a communications plan**

A communication plan is unfolding as stakeholders are identified. Over the past 10 months, meetings and phone conversations have taken place with Trout Unlimited, Clear Creek County's Fire Authority, Special Projects, Mapping, Sheriff's, and Planning Departments, Gilpin County's Commissioners and County Manager, Timberline Fire Protection District, Gilpin County CSU Extension Office, City of Black Hawk Fire Department, City of Golden's Environmental Services Department, the Town of Empire's Planning Commission, Colorado Riparian Association, Colorado School of Mines, US Forest Service (USFS), Colorado Department of Transportation

(CDOT), and the Colorado Division of Reclamation, Mining, and Safety (DRMS), Colorado State Forest Service (CSFS). Many of these meetings were followed by field reconnaissance in the three corridors which house the majority of high-priority projects identified in the Upper Clear Creek Watershed Pre-Wildfire Planning study.

### **Task 5 – Create priority Statements of Work**

Original WSRF grant plans included an ESRI StoryMap to share information on the Statements of Work. In Fall 2022, the Partnership determined that an ArcGIS StoryMap project would be more useful as a feature to highlight completed project stories. The decision going forward is to promote the scoping phase of projects on the CCWFHP website projects page, which have been approved and are live on the CCWFHP website. These have been designed to be updated as projects develop.

Key corridors were identified as a high priority in the Pre-Wildfire Planning Study. These three corridors have been the focus of physical site reconnaissance and scope of work development. The three corridors and summaries of their statement of work follow.

- 1. Gilpin County: Missouri Creek Project Corridor** - High-priority pre-wildfire preparedness corridor with opportunities to restore floodplain, reduce sediment from nearby hillslopes, and perform fuel reduction treatments. Dredge the pooling pond and the mine waste piles between the pond and the river. Create lateral stream movement making the stream more sinuous. Replace outlet culverts near the Pickle Gulch Campground. Perform fuel reduction measures.

Through the 2022 Colorado School of Mines Senior Design Challenge program, Colorado School of Mines students conducted preliminary field assessments, water quality, and field data collection and designed a stream channel restoration project on Missouri Creek, a tributary to North Clear Creek in Gilpin County. On December 1, 2022, the team presented their final design report during the CSM senior showcase.

In June 2022, the Colorado Healthy Rivers Fund grant program awarded \$20,000 to support the Missouri Creek Project with 1) final design engineering, 2) permitting investigation, and 3) public outreach to facilitate implementation.

Trout Unlimited and the Colorado Division of Reclamation, Mining, and Safety were identified and engaged as primary project leads. A Design Memo has been drafted based on the CSM Capstone recommendations and has been reviewed by USFS, DRMS, and TU. Based on review feedback, a field visit to determine the next actions has been scheduled for June 21, 2023.

- 2. Clear Creek Mainstem: West of Kearney Gulch to Silver Plume Projects Corridor** - High-priority pre-wildfire preparedness corridor with water quality and flood risk reduction measures identified starting from Stevens Gulch Road bridge to the Town of Silver Plume. Two potential low-impact reservoirs are in the corridor having water decrees.

Field reconnaissance revealed several locations with pinched and degrading channels. Projects address opportunities for low-impact reservoir development, beaver complex expansion, and stream and floodplain restoration activities that provide multiple benefits.

This is the second project the Colorado School of Mines selected for its Capstone program. The main challenge tasked to the CSM engineering team on this project is to assess the viability of expanding beaver complexes on the Clear Creek mainstem as a means of stream restoration and ponding that remains within the allowable flow rate. To evaluate the compatibility of beaver ponds to the individual sites, the team will complete geomorphic scoring, flow modeling, and permitting matrices.

Several visits have taken place to the CSM Capstone project site selected, Bakerville Reservoir No. 1 water decree. A preliminary design report for beaver habitat development has been presented and reviewed. This project will continue through November of 2023.

Clear Creek County has been participating in the concept development of this project. The design concept has been shared with the County's legal consultant for evaluation. The City of Golden funded a Clear Creek Main Stem Desktop Historic Analysis for this scoping effort. The study has revealed a flow rate data gap. A future South Platte Basin Roundtable Water Supply Reserve Fund grant request for installing gages in the area is being considered.

If beaver complexes are not the solution, the team is to propose alternative stream restoration methods that are most fitted to individual sites. The main proposed solution is the addition and expansion of beaver dams to the area, but alternative methods include beaver dam analogs, the addition of unanchored debris, revegetation, and step-pools. The team will use a testing method formulated into a scorecard to assess which method best fits the selected site. This evaluation will include constraints for channel geometry, flow rates, water quality, habitat, and species concerns, permitting requirements, and other stakeholder concerns.

The CSM Capstone project deliverables will inform the next actions in securing funding for an engineering design/build project. The funding source identified for this effort is the Colorado Water Conservation Board Wildfire Ready Watersheds grant program.

3. **West Fork Clear Creek Empire Projects Corridor** - High-priority pre-wildfire preparedness corridor with water quality and flood risk reduction measures identified starting from the community of Berthoud Falls to the Town of Empire. Requires measures to ensure upstream reach does not further degrade. There are opportunities for bank reinforcements with room for a water quality basin upstream from the Guanella Reservoir for sediment control. There are opportunities throughout the corridor for stormwater detention ponds. The Town of Empire is holding public

meetings to plan development on the Ball Placer, which is identified in the Clear Creek County Water Bank of potential reservoirs and included in the South Platte Basin Implementation plan. Several project statements of works in the Highway 40 corridor through the Town of Empire are identified and listed below.

**Ball Placer Beneficial Use Alternative Analysis:** The Town of Empire is considering applying for an Environmental Protection Agency Brownfields Grant to identify alternative reuse options for the Ball Placer, which has a decreed water right of 110-acre feet. A subset of the alternatives is a proposed Ball Placer Reservoir which could function as a fire suppression dip site. Ford Research Group has been hired as Empire's consultant to advance a reservoir alternative analysis. For the reservoir analysis, a Colorado Water Plan grant application is under consideration to conduct a feasibility study to include a firm yield evaluation.

**Lions Creek Engineering Design:** A heavily mine-impacted stretch of floodplain in the Lion Creek Watershed, outside of Empire, Colorado, is the focus of Trout Unlimited stream restoration and wetland design that will reduce the adverse impacts of high levels of hazardous substances, pollutants, or contaminants in mine wastes from the Minnesota Mine that may migrate off-site during floods or high flow events. A Colorado Healthy Rivers Fund grant was awarded for the initial engineering study. The future restoration will be guided by this engineering design that will result in improved habitat, stream function, and water quality in Lion Creek and downstream in Clear Creek below the confluence of Lion Creek.

Trout Unlimited is advancing engineering design and facilitating a comment process in collaboration with USFS and the WaterVation consulting firm. A final 30% design and engineering estimate is expected to be complete in fall 2023 and will be construction ready. Other sources of funding will be required to cover any remaining engineering design costs and construction.

**Old Empire Landfill on North Empire Creek:** A seep below the old Empire Landfill on North Empire Creek suggests pollutants are migrating into North Empire Creek, which meets with Lion Creek and eventually merges into the west fork of Clear Creek. The presence of potential contaminants may migrate off-site during floods and high flow events. This is a potential hazard to the Town of Empire below.

A Colorado Healthy Rivers Fund funded project [Post-416 Fire Aquatic Monitoring & Recommendations](#) completed by the Mountain Studies Institute states in the final report, "...the 416 Fire also illustrated a risk to water quality that is common throughout the West, regions with heritage mining are at greater risk of water

contamination from heavy metals after fire. In regions where historic mining operations scatter the hillsides, often hidden by overgrown forests and vegetation, a wildfire reveals mine tailings that can become a source of heavy metal loading during storm runoff events (Murphy et al. 2020). It is possible that areas with heritage mining are more likely to experience toxic heavy metal loads after a fire, making the ecosystem more vulnerable to post-fire impacts. Additionally, aquatic ecosystems that have abandoned mines in their watershed may be more vulnerable to long-term macroinvertebrate and fish population changes after wildfire.” (P. 11)

A recommended course of action for this site is to construct wetlands as a natural and economical alternative in the treatment of metal-containing water that may have a wetland mitigation banking component. Discussions are underway with Trout Unlimited and the Colorado Division of Reclamation, Mining, and Safety to schedule a site visit to determine next actions.

4. **Data Gaps** - During the course of scoping statements of work, gaps were identified in the Pre-Wildfire Planning Study. A CWCB Wildfire Ready Watersheds grant application is under development to address original study gaps. The study gaps are identified below.

**Hazards Update:** CCWFHP will add debris flow from Colorado Geologic Survey fluvial hazard zone mapping to the existing hazard analysis. In April 2023, the Upper Clear Creek Watershed Association approved a grant of \$2,500 to support a Colorado Geologic Survey sediment debris flow analysis in the upper Clear Creek watershed. CCWFHP will coordinate with UCCWA stakeholders to obtain relevant GIS data. This information will be added to the original study data set and added to the GIS map on the CCWFHP website. This effort supports the development of a Wildfire Ready Watershed Framework Study grant evaluating post-fire susceptibility and to guide the creation of a watershed scale framework for local hazard planning. National/State datasets are in place, but CWCB Fluvial Hazard analysis has not been completed for our Quad.

**Wetland Update:** Acquire high-resolution wetland mapping data from the machine learning mapping project underway and housed at the Colorado Natural Heritage Program on their wetlands assessment and mapping tools.

**Forestry/Wildfire Update:** Obtain and add to map and inventory: Colorado State Forest Service (CSFS) ForestAg database and Colorado Forest Restoration Institute (CFRI) treatment database and wildfire risk and probability data layers. This data will support forest management efforts.

**Data Inventory Spreadsheet:** All existing and collected data will be summarized in a spreadsheet inventory indicating the data name, description, where the data

came from and date, the data format, link to websites where the data can be obtained, asset and hazard data quality, and a summary of the data's intended use. This task will also indicate the quality of both the underlying hazard modeling as specified in the CWCB WRW Wildfire Ready Action Plan specifications.

**Private Landowner Survey Tool:** Using the CCWFHP website platform to engage residents to share information on their needs and issues on private lands for fuels reduction. Potential partners for this effort include Colorado State Forest Service, Upper South Platte Partnership, and LRE Water.

**Flow Data:** Based on scoping on the main stem of Clear Creek and its associated Clear Creek Main Stem Desktop Historic Analysis, it was determined that there is a need for additional flow gages in the watershed. This is an opportunity to partner with the Integrated Watershed Management Plan in progress in the Clear Creek Watershed.

#### **Task 6 – Secure project partners**

An MOU with USFS and the Colorado State Forest Service (CSFS) is targeted for completion in fall 2023. This MOU will make it easier to complete environmental analysis and advance Partner approved projects that intersect with USFS lands. The MOU could streamline activities and improve project timelines. COCO has agreed to guide the USFS MOU process.

A grant application was submitted in April 2023 to the National Forest Foundation for Bipartisan Infrastructure Law funding in the Northern Front Range to obtain a Forestry and Engagement Capacity person for Gilpin and Clear Creek County as a shared resource.

The Partnership is actively engaged in a larger regional group, the Northern Colorado Fireshed Collaborative. A Clear Creek County Commissioner is on the NCFC Steering Committee and the CCWFHP Chair is a part of the NCFC Spatial Planning and Adaptive Management Committee. The Partnership is also working on getting members to sign the NCFC Membership Statement.

CCWFHP is very grateful for this WSRF grant allowing us to perform pre-wildfire development activities in our watershed. We are excited about the forward progress achieved with these WSRF funds and are working to take the next steps.

My kindest regard,



Kerry Major, City of Golden  
CCWFHP Chair





May 30, 2023

Colorado Water Conservation Board  
1313 Sherman Street  
Denver, CO 80203

**RE: Match Letter for the Clear Creek Watershed & Forest Health Partnership Metro Basin Roundtable WSRF Grant POGG1 PDAA 202300002021 - Clear Creek Targeted Outreach and Education for High-Priority Projects**

CWCB WSRF Grant Managers,

Two members of the Clear Creek Watershed & Forest Health Partnership, the City of Golden and the City of Westminster, contributed \$34,000 towards the “Clear Creek Targeted Outreach and Education for High-Priority Projects” project. Westminster transferred half of the match funding (\$17,000) to Golden through an intergovernmental agreement and then Golden managed a professional services contract with LRE Water for \$34,000. In this services agreement, LRE Water committed to a scope of work with the following tasks to support “Clear Creek Targeted Outreach and Education for High Priority Projects”: 1) Project Administration, 2) Grant Application Submittals, 3) Design Organizational Structure, 4) Website Construction, 5) Building Community Partnerships, and 6) Developing Communication Plans and Pathways. LRE Water completed this work throughout 2022. Supporting documentation of the \$34,000 match for the WSRF grant is available upon request.

Sincerely,

Kerry Major, CCWFHP Chair  
Water Quality Lab Manager – City of Golden