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Balarat Outdoor Education Center 2022 Abandoned Mine Reclamation Funding Request

Project Overview and Site Description

Trout Unlimited's 2022 Balarat Outdoor Education Abandoned Mine Lands Project seeks to support safe access to educational sites, to improve environmental conditions at three abandoned mine sites on Balarat Outdoor Education Center lands and to enhance the environmental resiliency on these lands. Funding support from the St. Vrain and Left Hand Water Conservancy District (the District) will be utilized towards improving water quality, maintaining healthy creeks and educating the next generation of water users.

The Balarat Outdoor Education Center (the Center) is a 750-acre, Denver Public School District owned facility that is located above the town of Jamestown, Colorado. The Center currently serves as a unique outdoor education facility whose staff provide educational and recreational programs for students of Denver Public Schools ranging from third grade through high school. Balarat Outdoor Education Center's lands have been impacted by wildfire, flooding and legacy mining.

The Overland Fire of 2003 burned just over 3,500 acres of land on, and surrounding, the Center's property in Jamestown. While the wildfire was relatively short-lived, the loss of vegetation associated with it can still be seen on the Center's property today. A decade later, the Jamestown area was heavily impacted by the 2013 Front Range Flood that brought historic flooding and severe property damage to the Jamestown area. Finally, while this proposal only focuses on three mines, the Duval, Copper Blush and Longfellow mines, the Jamestown area, and the Center's lands, are home to numerous abandoned mine sites. The Jamestown Mining District, originally prospected in 1865, has been a productive source of primarily a gold, fluorspar, lead, silver and a small amount of copper. Jamestown's unique geology, including lead-silver deposits, fluorspar veins and breccia zones, pyritic gold veins, and telluride veins, promoted the development, success and demise of numerous mining operations throughout the area's rich history (Lovering & Goddard, 1950).

The three mines included in this proposal, the Duval, Copper Blush and Longfellow are located on the lower slopes of Golden Age hill (Figure 1). The sites are bracketed by Castle Gulch to the west, Ball Gulch to the north and an unnamed intermittent tributary to the south. Castle and Ball gulches drain to the St. Vrain River and the unnamed tributary south of the sites drains to Little

James Creek. The Copper Blush and Longfellow mines are generally “high and dry” with storm events representing their greatest surface water interaction, but the Duval Mine is located directly on Castle Gulch with its adit draining continuously into the gulch.

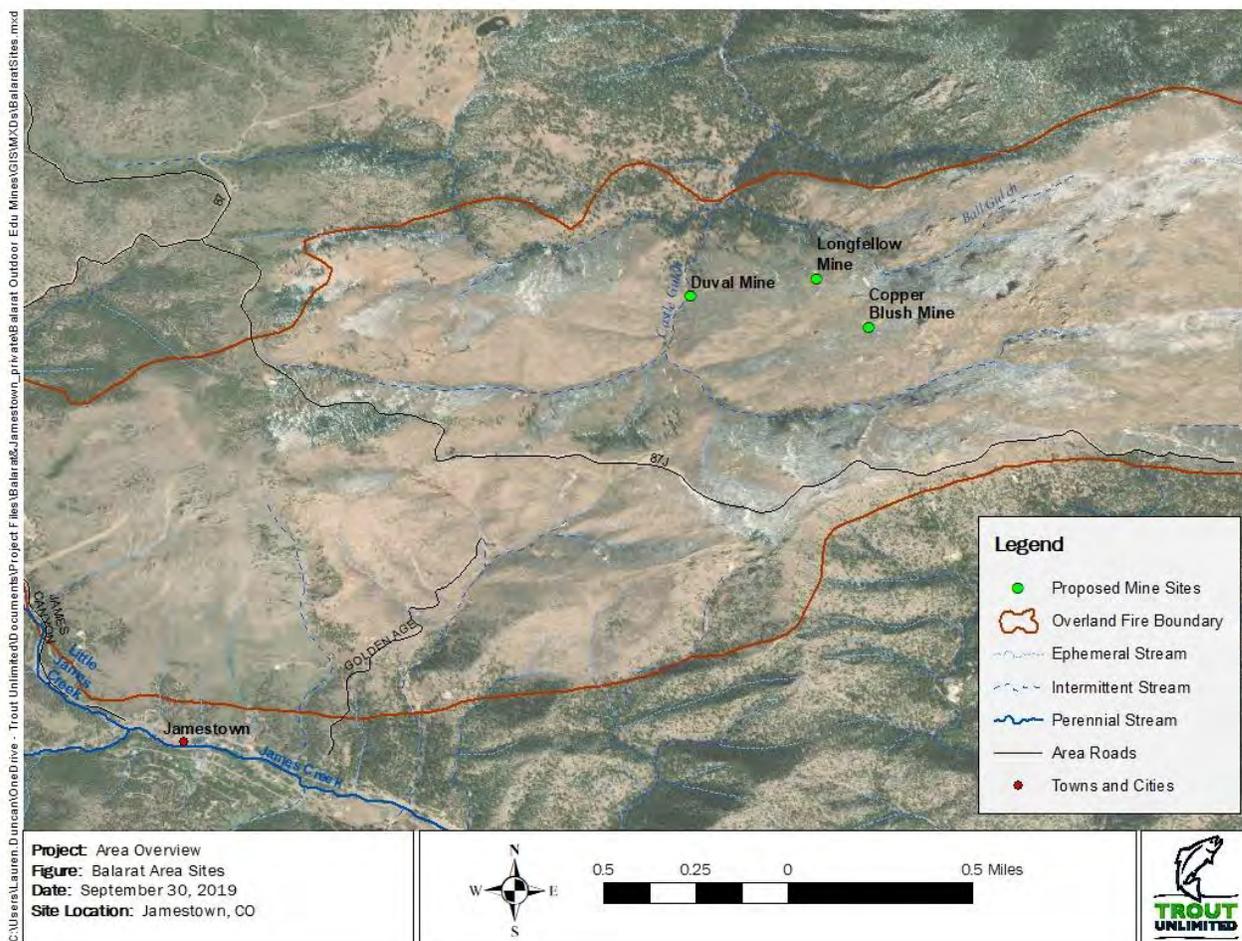


Figure 1. Location of the Duval, Longfellow and Copper Blush Mines above the Town of Jamestown, CO.

The exposed mine waste piles at these three sites have been degraded by time and the fire and flood conditions that have impacted the Jamestown area. To better characterize the mine wastes and surface water quality at these three sites, Trout Unlimited and the US Environmental Protection Agency (EPA) sampled the soils and surface water at these mines in November 2019. Sampling at Longfellow and Copper Blush was focused on documenting metals concentrations present in the waste rock and tailings on these two sites while sampling at the Duval mine included sampling of the waste rock on site as well as surface water quality testing in Castle Gulch and in the adit flow coming from the mine (Figure 2).



Figure 2. Draining adit at the Duval Mine. Adit waters flow across, and infiltrate into, mine wastes before reaching Castle Gulch below.

Results from this sampling effort indicated elevated concentrations of lead and arsenic at all three mine waste piles. Water quality results from the Duval Mine indicated concentrations of aluminum, cadmium, copper and zinc above segment standards in Castle Gulch downstream of the mine, and concentrations of aluminum, cadmium, copper, lead, manganese and zinc above segment standards in the adit flow. These soil and surface water results indicate need for reclamation, stabilization and revegetation at the Duval, Longfellow and Copper Blush mines.

2022 Reclamation Objectives and Support of the Five Point Plan

St. Vrain and Left Hand Water Conservancy District (SVLHWCD) funding will be utilized towards restoration of Castle Gulch's streambanks, educational signage on the three reclaimed mines and post-project water quality sampling. Utilizing SVLHWCD funds in these three ways will meet three of the District's points within the District's Five Point Plan.

Restoration of Castle Gulch's streambanks below the Duval Mine will include grading and stabilization of the mine wastes away from streamflows, revegetation of the banks and stabilization of the confluence of the Duval adit flow and Castle Gulch. This restoration is planned for early summer 2022. This effort will directly support the District's goal of maintaining healthy rivers and creeks through restoration and stabilization of creek channels and floodplains. Further, this restoration will support the District's goal of protecting water quality by removing mine wastes from the floodplain and by reducing the interaction potential between mine wastes and surface flows. These environmental improvements will address sediment and water quality issues in Castle Gulch and downstream in the Saint Vrain.

SVLHWCD funding is also being requested to help create and install innovative site signage at each mine that will allow students to learn about area ecology and mine history. This signage will encourage engagement by the visiting students and support the District's goal of safeguarding and conserving drinking water through connecting the public to their water and reaching a broader audience through innovative forms of media. This signage will be installed in the late summer 2022 after construction on site has been completed.

Finally, SVLHWCD funding is being requested to complete post-project water quality testing in Castle Gulch. The results from this sampling effort will highlight the effectiveness of reclamation at the Duval site and identify any future need for operations and maintenance actions, thereby further supporting the District's goal of protecting water quality. Sampling is planned for field season 2023 to allow the site at least one season to stabilize and begin to revegetate after construction activities. Results from this sampling effort will be publicly available and will be shared with SVLHWCD staff and local stakeholders.

Trout Unlimited's Abandoned Mine Lands Program: Applicant Qualifications & Organizational Capabilities

TU was founded in 1959 in Grayling, Michigan on the banks of the Au Sable River by a group of anglers who successfully sought to change the state's reliance on hatchery production of trout into a program that focused on protecting and restoring fish habitat. From the beginning, TU was guided by the principle that if we "take care of the fish, then the fishing will take care of itself." Today, TU is the nation's largest grassroots coldwater conservation organization with a mission to conserve, protect and restore North America's trout and salmon fisheries and their watersheds. TU works to achieve this mission on a local, state and national level through an extensive volunteer network and dedicated staff.

As a national non-profit with a state-based abandoned mine land (AML) program, TU is well-suited to manage a project of this scope. The TU Colorado AML program has completed 35 on-the-ground reclamation projects over the past nine years in watersheds adversely affected by historic hard-rock mining. By living in the watersheds where we work, TU staff are involved on the local community level. The proposed Balarat Reclamation project is no different; TU staff are in close proximity in nearby Rollinsville, CO. TU has been involved with the Balarat project since its conception in 2018 when TU staff originally met with, and toured the site with, Balarat staff. TU has advocated for, and supported each step of, this project's development. We have been involved in this project from initial communication with Balarat staff, through organizing multiple federal agencies to conduct site sampling in 2019, into finalizing the CERCLA project planning process with the EPA and Balarat staff and now, into securing final project funding. TU has worked with Balarat staff, local stakeholders, the Lefthand Watershed Center, the St. Vrain Anglers, local businesses and Colorado State Roundtables to make this project a reality and ensure its success.

Funding Request

To support the restoration of Castle Gulch's streambanks, educational signage on the three reclaimed mines and post-project water quality sampling, Trout Unlimited is requesting a total of \$4,000.00 from the SVLHWCD. Table 1 summarizes how these funds will be utilized and identifies matching resources. Trout Unlimited is requesting \$2,500.00 from SVLHWCD to supplement

existing construction funds for restoration in Castle Gulch, \$500.00 to support construction and installation of educational signage and \$1,000.00 to pay laboratory fees for post-project water quality sampling. Trout Unlimited will be completing a competitive bid process to determine the best construction contractor for reclamation work at Balarat, but TU has already chosen Lindsey Foy (Lindsey Foy Art, LLC) to complete the on-site signage due to her personal connection with the Balarat team, her work experience in the Peak to Peak region and her personal interest in educational tools. Finally, ACZ Laboratories of Steamboat Springs, CO will complete the laboratory analysis of all samples and will provide sampling bottles for the water quality grab samples. ACZ is an accredited and recognized lab used by other State and Federal agencies. Therefore, results generated through this sampling event can be shared between agencies, stakeholders and other non-profit groups. The costs listed in Table 1 reflect the current price estimates from these chosen partners.

Task	Funds Requested	Funding Details	Task Match Provided by TU	Match Details
Restoration of Castle Gulch	\$2,500.00	Supplemental Funding for Grading, Stabilization and Revegetation in the Castle Gulch Floodplain	\$1,000.00	Cash Match Provided by St. Vrain Anglers, the Local Trout Unlimited Chapter
Educational Signage	\$500.00	Supplemental Funding for Creation and Installation of 3 Educational Signs		
Post-Project Water Quality Sampling in Castle Gulch	\$1,000.00	Upstream and Downstream WQ Samples to Replicate 2019 Sample Sites	\$588.32	In-Kind Match representing one full sample day of TU PM time and 1 volunteer for 8 hours
Total Funding Request	\$4,000.00	Total Match Provided	\$1,588.32	39.70% of total request from SVLHWCD

To support our request from SVLHWCD, Trout Unlimited is committing to providing \$1,588.32 in match. This total includes a \$1,000.00 cash match towards restoration in Castle Gulch and an additional \$588.32 of in-kind matched time for Trout Unlimited's Project Manager and one volunteer to complete the post-project water quality sampling. In addition to the funds being requested from SVLHWCD, Trout Unlimited has also secured project funding from the Metro and South Platte Basin Roundtables, Anglers All (a local fly-fishing shop), the St. Vrain Anglers (the Local Trout Unlimited Chapter), private donors and Freeport McMoRan and Newmont Mining to ensure the success of this project.

Stakeholder Involvement and SVLHWCD Recognition

Numerous stakeholders will be involved throughout the final planning stage and reclamation of the Balarat Outdoor Education Center mine sites. Trout Unlimited will be working with Balarat staff throughout the final planning stages, ensuring that the construction scope of work meets their needs and supports their future usage of the site. Concurrently, Trout Unlimited will be working hand-in-hand with EPA On Scene Coordinators to ensure that all construction best management practices are enacted throughout reclamation and that all construction work is held to the highest standard. Throughout the construction process, Trout Unlimited will be providing periodic reports to the Lefthand Watershed Center and the Town of Jamestown as local stakeholders. Once the educational signs are ready to be developed, Trout Unlimited will be connecting volunteers from the St. Vrain Anglers with Balarat staff and Lindsey Foy, our local artist tasked with creating the signage, to develop content regarding mining history, local ecology and mine reclamation for the Balarat students. These organizations will work together to ensure informative, easily understandable, relatable information and engaging illustrations on the signs that will draw visiting students in and support on-site educational programming. Finally, Trout Unlimited will work with EPA, Balarat staff, St. Vrain Anglers and/or available staff from the Lefthand Watershed Center to complete final post-project water quality sampling. Engaging stakeholders at every stage of the planning, construction and monitoring stages of this project will ensure a collaborative project that will be successful at addressing the needs and opportunities offered by this unique reclamation project.

The St. Vrain and Left Hand Water Conservancy District will be included as a valued project partner in all documentation and public outreach relating to this project. In addition to the required reporting for the South Platte and Metro Basin Roundtables, Trout Unlimited will include SVLHWCD in all additional project reporting project partners including Newmont Mining, Freeport McMoRan, private local donors, Anglers All and St. Vrain Anglers. SVLHWCD's logo will also be included on the educational signage on site. Finally, Trout Unlimited intends to share news of this unique reclamation project with local news outlets and social media outlets like the Mountain Ear and Boulder Daily Camera, the Trout Unlimited member blog (reaching over 300,000 members nationwide) and the Colorado Watershed Assembly's social media platforms. The District will be included as project partner and sponsor in all of these outreach efforts.

References

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