



## Trout Unlimited – 2022 Hardrock AML Reclamation Award Program Application Cover Sheet

**Project Title:** Atlas Mill Reclamation Project

1. **Nomination Category:** Remediation of Contamination Impacting the Environment or Human Health
2. **Applicants and Project Participants:**
  - Jason Willis, P.E. – Trout Unlimited Inc. - 128 East 1<sup>st</sup> Street, Suite 203, Salida, CO 81201 - C: 719-221-0411 – [jason.willis@tu.org](mailto:jason.willis@tu.org)
  - Joe Middleton – Middleton Environmental Law LLC, 1355 S. Mesa Ct., Superior, CO 80027 – C: 720-638-2021 – [jmiddleton@middletonenvirolaw.com](mailto:jmiddleton@middletonenvirolaw.com)
  - Curtis Cross, P.E. – U.S. Forest Service – Grand Mesa, Uncompahgre and Gunnison National Forests, 2250 South Main Street, Delta, CO 81416. C: 970-874-6667 – [curtis.cross@usda.gov](mailto:curtis.cross@usda.gov)
  - Marty McComb – U.S. EPA – C: 720-413-9190 – [mccomb.martin@epa.gov](mailto:mccomb.martin@epa.gov)
  - Brian Briggs and Todd Jesse – Ouray Silver Mines Inc. – 242 7<sup>th</sup> Ave, Ouray CO 81427. C: 720-469-7557 – [tjesse@ouraysilvermines.com](mailto:tjesse@ouraysilvermines.com)
  - John Reams – President of Ream Construction Co. – PO BOX 106, Naturita, CO 81422 – 970-865-2886 - [john@reams-construction.com](mailto:john@reams-construction.com)
3. **Project Start:** September 2018  
**Project Completion Date:** December 14, 2020  
**Construction Costs:** \$174,281.85  
**Total costs associated with project -** \$392,380.60  
It should be noted that this project was undertaken in connection with the settlement of an enforcement action taken by the Colorado Department of Public Health and Environment for violations of environmental laws and regulations. These settlement funds were put into a Supplemental Environmental Project (SEP) that Trout Unlimited managed as a third party.
4. **Responsible Partners:** Trout Unlimited Inc. (TU), The U.S. Forest Service (USFS), Environmental Protection Agency (EPA), Ouray Silver Mines Inc., and Reams Construction Company.
5. **Date Submitted:** Friday June, 10<sup>th</sup>, 2022

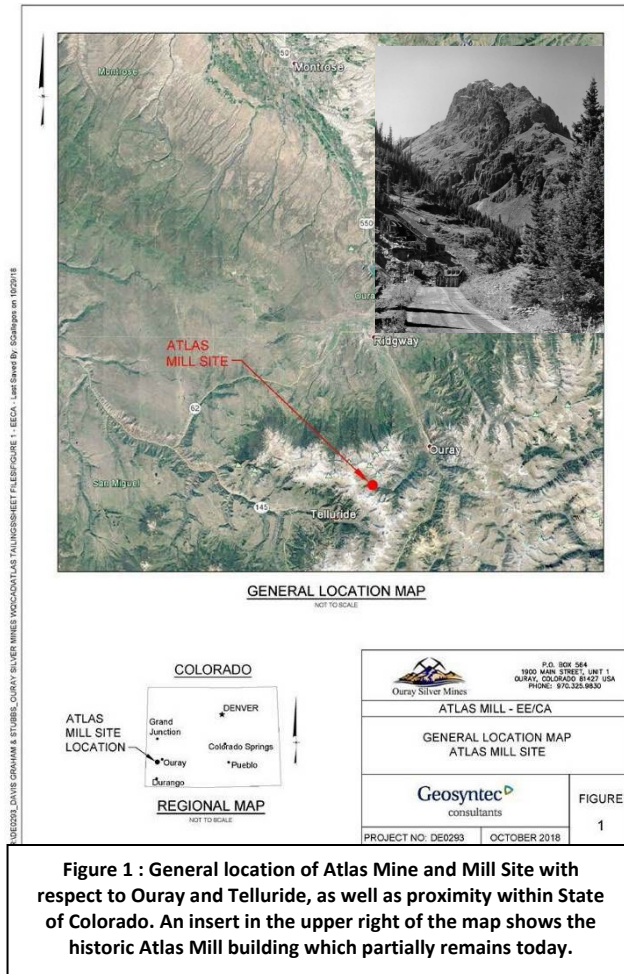
## Atlas Mill Reclamation Project - Narrative Summary

BY: Jason Willis, P.E. – CO AML Program Manager – Trout Unlimited

### Project Background:

Mining operations in the Uncompahgre watershed began in 1874 near Poughkeepsie Gulch and increased in 1875 with the influx of miners moving into the region down the Uncompahgre River and Bear Creek drainages to the Ouray area. That year discoveries were made in what is presently called “Box Canyon.” These discoveries included the Fisherman and Trout lodes and the Mineral Farm Mine located near the confluence of Canyon Creek and the Uncompahgre River. Additional discoveries in 1875 included finds in both Imogene and Yankee Boy basins near the top of the Canyon Creek watershed along with discoveries at the Camp Bird Mine in 1896 in the Sneffels District. A gold rush to the Ouray area ensued the following spring and facilitated the surveying and incorporation of the town of Ouray on September 2, 1876. Initially, the richest discoveries were made in the Sneffels District, located immediately southwest of the Camp Bird mine. The Sneffels District included the mines situated in the Imogene, Governor, and Yankee Boy Basins inclusive of all mining activities in and around the town of Sneffels. The principal ore bearing deposits were discovered in the Sneffels District between 1875 and 1881, which aligned with the establishment of the Atlas Mine in 1876. Situated at the foot of Sidney Basin near Ouray, CO and almost equidistant between Ouray and Telluride was the Atlas Mine/Mill (Figure 1).

Instead of carrying the ore to Silverton for processing, the Atlas Mine transported its ore via an aerial tram to the Atlas Mill approximately 500 vertical feet below the mine opening (Figure 1-insert). During this time (1875-1891) production caused the town of Sneffels to pop up adjacent to the mill site housing almost 2,000 people. Although the original mining claim was established in 1876, most of the ore processing likely occurred in the early 1900s. The Atlas Mill site still has remnants of the historic mill structure on the hillside, an adjacent pile of coarse-grained waste rock. Part of the Mill and adjacent waste rock are eligible for the National Historic Register. However, prior to reclamation, 4.2 acres of contaminated mine wastes were present on-site and outside of the historical eligibility area. This area of yellow and grey mine wastes made up approximately 48% of the 8.8 acre site footprint, which was largely devoid of vegetation and partially within the active floodplain of Sneffels Creek. Of the approximate 8.8-acre footprint, 5.08 acres was USFS property and 3.71 acres was on patented claims owned by Ouray Silver Mines Incorporated (OSMI) making this a mixed ownership project.



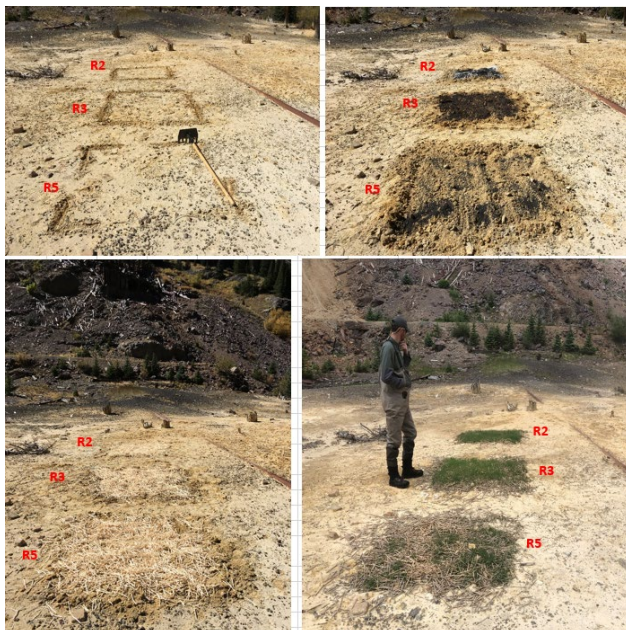
**Figure 1 : General location of Atlas Mine and Mill Site with respect to Ouray and Telluride, as well as proximity within State of Colorado. An insert in the upper right of the map shows the historic Atlas Mill building which partially remains today.**

### **History of Project Development:**

Through numerous discussions between project partners between 2015 and 2018, and given the mixed ownership of the site, it was determined that a non-time critical removal action under CERCLA would be the best course of action to outline and complete reclamation actions. Therefore, OSMI and Geosyntec Consultants began writing an Engineering Evaluation and Cost Analysis (EE/CA) for the site in anticipation of working with USFS on the project. During this process, OSMI reached a final agreement with the state to settle a 2016 notice of violation (NOV), which included a monetary penalty. Instead of paying the penalty to the State general fund, OSMI agreed to direct the penalty to a Supplemental Environmental Project (SEP) at the suggestion of CDPHE. The SEP program is a state-wide program that allows penalties to be used to fund community-based projects that have an environmental benefit. This would mean that environmental cleanup could occur at a site in the watershed and provide benefit to that surrounding ecosystem, rather than a general fund payment. The Atlas Mill Project is an example of the first time CDPHE has allowed 100% of the fine amount to be put towards a reclamation project as part of a SEP. This was mainly due to the large amount of matching funds committed by project partners. During the initial phases of the SEP process, Trout Unlimited Inc. (TU) was selected as the 3<sup>rd</sup> party recipient of the SEP funds to ensure management and implementation of the project.

### **Field Test Plot Installations and Bidding Process:**

Of the five removal action alternatives identified in the EE/CA, Alternative 3, which mainly focused on in-situ



**Figure 2: Test plot installation timeline. Upper right documents pre-existing conditions of yellow tailings, upper right shows amendments mixed in, bottom left are final mixed, seeded, and mulched conditions, and bottom right is 1 year post installation.**

phytostabilization of mine tailings/waste, was chosen as the recommended alternative. Completion of the EE/CA and verification of proposed amendment rates through field test plots were part of TU's role in the early stages of the project. Given the drastic differences in chemistry between yellow and grey mine wastes present on site, TU established five-25 square foot test plots in each area on 9/27/18 that incorporated various rates of limestone, compost, fertilizer, biochar, and native seed. Limestone rates were based on acid base accounting values taken from composite soil samples, as well as pH, total sulfur, and SMP lime requirement. Compost, fertilizer, and biochar were applied at standard rates used by TU on similar projects in Colorado. After mixing, seeding, and mulching, TU noted amendment rates on a spreadsheet and revisited the site about one year later to inspect plots, calculate % cover, and document photo points (Figure 2). The test plots and corresponding rates with the most successful vegetation coverage were further extrapolated and used as final amendment quantities in a subsequent request for proposal (RFP) and bid documents. A pre-

bid meeting and RFP process was conducted in October 2019 through a competitive bidding process in which John Reams Construction Co. out of Naturita, CO was the successful bidder. The subsequent contracting process took place over the 2019/20 winter to have Reams Construction ready to begin work in 2020 following Agency approvals.

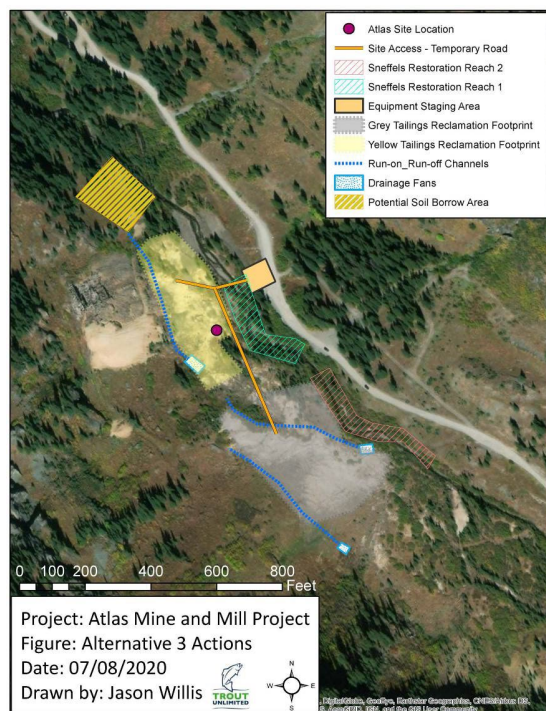
### **ASAOC and Agency Approval Process:**

Taking place concurrently to project planning and EE/CA finalization in January 2020, TU began discussions with USFS about developing an Administrative Settlement Agreement and Order on Consent (ASAOC) with

the USFS as a Good Samaritan. The ASAOC is one of two Good Samaritan tools that allows for completion of clean-up and environmental remediation associated with CERCLA projects. They are standard practice between agencies and potentially responsible parties (PRPs), but are less common between agencies and a Good Samaritan or third party. The ASAOC developed over the course of this SEP agreement was the first of its kind between USFS and a Good Sam, such as TU. This is a major accomplishment in, and of itself for the project and will provide a roadmap for other non-governmental organizations, non-profits, and watershed groups looking to take on AML cleanups in the future.

Work Plan development, which was largely based on the EE/CA, began in February 2020 that would outline steps TU would need to take to complete work at Atlas. Several iterations of this along with beginning drafts of the ASAOC started to circulate between USFS, EPA, DOJ, and TU in May and June 2020. About four months of negotiations took place to fully finalize details of the ASAOC, which was completed and approved by all parties on 9/11/20. Following approval, the AOC was subsequently published to the Federal Register for a 30-day public comment that ended on 10/12/20. Due to the Federal Holiday on 10/12, a notice to proceed with construction activities was issued to TU and Contractor, John Reams Construction on 10/13/20, thus permitting work associated with the ASAOC to begin. Given the uncertainties of the ASAOC process and timeline, TU and project partners can chalk the completion of the ASAOC up as a major win, which ended up being a project within a project.

### Construction Summary:



**Figure 3: Recommended removal action alternative 3 and associated construction phases. Map shows construction staging areas and routes of access, as well as potential borrow source if needed for clean-fill generation. Estimated footprints of yellow and grey tailings areas are 4.168 acres. Swale locations and drainage fans are approximate and depend on final grading established in the field.**

As part of reclamation actions, TU was responsible via the AOC and SEP agreement to carry out the following three Tasks during construction (Figure 3).

1. The first Task involved installation of 1,689 linear feet of run-on/run-off drainage controls with attenuation basins;
2. Task two focused on 200 linear feet of Sneffels Creek restoration and stabilization (Reach 1) and;
3. Task three pertained to reclamation of 4.2 acres of yellow and grey mine waste through grading, consolidation, amending, and revegetation.

Since the construction contract was already in place, work was able to begin immediately following the notice to proceed on October 13<sup>th</sup>, 2020. John Reams Construction was able to complete the project in exactly 3 weeks with oversight and assistance from TU staff along the way. During construction, numerous hurdles had to be overcome during work. An ever-closing weather window at over 10,600 feet brought two snowstorms, while crews also had to figure out how to stagger each Task while reclaiming their way out of a constricted site.

During construction, work immediately began on the run-on controls for the yellow and grey tailings areas (Figure 4).



**Figure 4: Conditions at grey tailings preconstruction showing toe of slope (left) and after construction (right) showing run-off channel and reclaimed slope, and bottom center 1 year post construction.**

Installing these channels first allowed the contractor to set an upper grade point for each consolidation area. While the channels will provide long-term erosion resistance and conveyance, they also acted as a buffer for any surface flows that might've been generated from a freak storm or snowmelt during the construction phase. Once the run-on channels were established the crew split duties to focus on Sneffels Creek stabilization work and the beginning stages of tailings and waste consolidation.

Task 2 stream work mainly targeted the left bank of Sneffels Creek adjacent to the yellow tailings area where exposed lenses of fluvial tailings were present. This material was removed down to native soil elevations and consolidated into the yellow area (Figure 5). Various depths and volumes of tailings were encountered during bank excavation. The excavator bucket was flipped during this work to minimize the amount of material lost into the creek. TU worked with the contractor on this portion of the project to capture as much contaminated material as possible. This process involved several excavation pits to ensure adequate removal depth was

being maintained throughout the bank. Following excavation and removal of fluvial tailings, the previously over-steepened banks were graded to an accessible bankfull bench throughout the reach. Willow clump transplants were added throughout this graded bank along with hundreds of live cuttings harvested from the site area (Figure 5). Once all Task 2 activities were completed, soil borrow was generated and screened for placement along the edge of the site where additional fluvial tailings were removed. This on-site clean fill acted as an essential buffer between the stream corridor and the consolidated yellow tailings area. Approximately 20-30 willow clumps were transplanted throughout the Sneffels Creek riparian area and edge of the yellow tailings area further protecting against future overbank events.



**Figure 5: Before (left) and after (center) photos looking upstream at Sneffels Creek reach adjacent to Atlas Mill. A cut-bank with exposed fluvial tailings can be seen in the Before photo. These contaminated materials were removed and consolidated with the yellow tailings. The remaining streambanks were graded and willows were installed along bankfull elevation to provide erosion resistance during periods of high flow. The far right photo shows “after” conditions and green-up during high flow the following season.**

As previously stated, the bulk of the work fell to Task 3, which focused on the 4.2 acres of in-situ mine reclamation that involved excavation, grading, and consolidation of contaminated mine wastes up out of the 100-year floodplain. Following completion of Task 2 and after a late-October snowstorm, full attention was placed on Task 3 actions to ensure the project was completed before winter. By grading and consolidating wastes throughout the project, well-defined footprints were already in place to spread and incorporate specific amounts of amendments. This process involved first spreading lime and limestone into graded surfaces to depths of 18-24 inches followed by slight incorporation (<6 inches) of fertilizers and compost. Once the graded tailings/wastes were fully amended available slash was tracked into surfaces followed by seed, straw, and woodstraw (Figure 6).





Figure 6: Before conditions (upper left) showing 4.2 acres of yellow and grey barren areas with visible test plots. During construction photo (upper right) showing a partially reclaimed grey area and a graded and consolidated yellow area. After conditions (bottom left) photo showing fully graded, consolidated, and mulched site with constructed drainage controls, and 1-year post construction (bottom right).

Task 3 actions will ideally help to establish long-term native vegetation across a previously barren site, thus reducing the likelihood of contaminated material migrating off-site during future storm events. The last parts of the project involved completing the final segment of the run-off channel at the toe of the gray tailings area and final revegetation of the gray area adjacent to the staging zone. On November 3<sup>rd</sup>, 2020, TU staff conducted a final site walk through with USFS, OSMI, and Reams Construction to ensure all project deliverables were met. This marked the successful completion of SEP construction activities at the Atlas Mill. Plans are currently in the works to develop interpretive signage that will allow recreational users to learn about the rich mining history at the site while also maintaining a safe distance from reclaimed features.

#### **Project Budget Summary and Challenges:**

The total project budget with matching funds was \$392,380.60, while the SEP budget was \$198,701 with final costs broken up into \$17,632.27 towards project management, \$18,063.73 towards indirect, \$17,773.75 in consultant fees, and \$145,231.25 towards construction. Matching funds from OSMI and TU were used to make up the remaining construction balance that totaled \$174,821.85, which included a change order to accommodate field requests from USFS and EPA. With regards to matching funds, the OSMI in-kind contribution towards the project totaled \$173,679.60 exceeding their original estimate by \$18,679.60. While not initially included in the project budget, TU also provided over \$20,000 in cash match to help cover outside counsel fees during the ASAOC process, project management time, travel costs, and construction. As the assigned third party during the project, TU felt a responsibility to help complete this complex project. Our matching sources of funding included contributions from Tiffany & Co. Foundation, Freeport McMoRan, Newmont Mining, and private donors. This project was an incredible example of pulling resources, stakeholders, and partners from the local, State, and Federal levels.

Not only did TU run into ASAOC and legal challenges throughout, but also battled a global COVID-19 pandemic and a government shutdown over the life of the project. Both factors had significant effects on the SEP timeline with the government shutdown likely creating the need for an extension of the SEP in 2019. The effects of the pandemic should not be overlooked when referencing the timeline of this project. State issued orders banning non-essential travel and work were imposed by the Governor during the early stages of March and April with uncertainties following throughout the 2020 summer season. The USFS had also initially delegated approval of all related construction work during the 2020 season to Forest Supervisors. Approval of work like this project at one point depended on the decision of GMUG Forest Supervisor. While this never became an issue, approvals were uncertain for most of the months leading up to the project. TU is fortunate to have a good group of agency and private partners that are dedicated to getting work done on the ground. Without their continued support through a shutdown, pandemic, and legal framework this project would have never become a reality.