Bear Creek Watershed Restoration Project
2019 Final Project Report
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Dedicated to the conservation and stewardship of public lands in Southern Colorado
I. Bear Creek Watershed Restoration Project Background

The Bear Creek Watershed Restoration Project is an effort of the United States Forest Service (USFS), El Paso County (EPC), and the City of Colorado Springs (COS), with collaboration from various partner groups and agencies, to protect the sole remaining, genetically pure population of greenback cutthroat trout (Oncorhynchus clarkia stomias – Figure 1, below). This population of trout, which is the last of its kind surviving in the wild, inhabits a 4-mile stretch of Bear Creek just west of the City of Colorado Springs on property managed by USFS and EPC. Under the Endangered Species Act (ESA) greenback cutthroat trout are currently listed as threatened.

As a requirement under the National Environmental Policy Act (NEPA), the USFS prepared the Bear Creek Watershed Restoration Environmental Assessment (EA) to detail the proposed action and alternatives to the proposed action as well as the environmental impacts associated with each. After taking into consideration the environmental impacts disclosed in the environmental assessment; comments received from the public, tribes, and other agencies; a review of the forest plans; and a review of the best available scientific information, the USFS released the Bear Creek Watershed Restoration Final Decision and Finding of No Significant Impact (FONSI), which laid out the final decision and established the plan to protect the trout while allowing for appropriate and sustainable recreation within the watershed.

Decommissioning of existing trails that pose sedimentation risk to Bear Creek is a critical objective of the FONSI. In late 2016, EPC contracted with Tapis Associates to complete a trail decommissioning plan for the entire length of the former Trail #667, approximately 4.2 miles. The Former Trail 667 Sediment Reduction and Decommissioning Plan (aka Tapis Plan) was completed in November of 2016 and details long-term closure and restoration techniques to protect aquatic habitat of the greenback cutthroat trout.

The Rocky Mountain Field Institute (RMFI) has been involved in the Bear Creek Watershed Restoration Project since its inception in 2009, helping land managers with consultation, assessment, and active restoration of system and non-system trails in the Watershed. RMFI has also been an active member of the Bear Creek Roundtable, a group comprised of various partners, user groups, and other stakeholders helping guide the planning and implementation processes. Through in-depth discussion, the Bear Creek Roundtable identified the need to approach conservation of trout habitat comprehensively. To be more specific, successful protection of the greenbacks rests largely on creating a coordinated effort that enhances the Bear Creek watershed as a whole. With this holistic approach in mind, RMFI has worked closely with EPC and USFS to ensure continuity in conservation efforts across jurisdictions.

Figure 1. Greenback cutthroat trout (Oncorhynchus clarkia stomia).
II. Trail #667 Decommissioning & Restoration Project

Since 2015, RMFI has held a Supplemental Project Agreement (SPA) with the USFS Pikes Peak Ranger District. This agreement has provided the basis for restoration work in the Bear Creek Watershed. In addition, in 2017 RMFI entered into an agreement with EPC that provided funding for RMFI to carry out the goals of the Jones Park Trail Erosion Control/Decommissioning Project (aka Jones Park Project), a subsidiary of the overall Bear Creek Watershed Restoration Project. RMFI started work on the Jones Park Project in 2017 and continued work on the project using Healthy Rivers Fund grant funds in the summer of 2019.

The overarching goal of the Bear Creek Watershed Restoration Project is to improve the habitat of the greenback cutthroat trout while enhancing the health and function of the Bear Creek Watershed. A secondary goal is to foster sustainable recreation. The primary objective that was established in order to accomplish these goals is the decommissioning of former Trail #667. The objective will be achieved through the multi-year implementation of a variety of proven, science-based techniques including active ecological restoration, streambank restoration, decommissioning of system and non-system trails, and improvement of designated system trails to reduce risks associated with erosion and enhance overall trail sustainability.

The Bear Creek Watershed Restoration Project aims to improve forest health and ecosystem resiliency through the promotion of ecosystem function and through the reintroduction of native plants and trees. The Bear Creek Water Influence Zone (WIZ) has been greatly impacted by the presence of an unsustainable multi-use trail that has turned into a 4.2-mile-long erosional scar. With the active relocation and restoration of the trail, the WIZ will be improved, thereby protecting trout habitat and promoting the regeneration of native plants and grasses, leading to improved watershed health and function.

In 2019 RMFI continued to restore 2.7-miles of the former #667 Trail. Please refer to the watershed map below for a depiction of the Bear Creek project.

![Figure 2. Overview of Bear Creek Watershed.](image-url)
**Project Labor Force & Logistics**

The Bear Creek Project is unique in that it is a restoration project located 5-miles into the backcountry from the closest parking area. The location poses logistical challenges that have considerable impact on the project. Work of this nature can only be completed by hand crews that are equipped to camp and work in the backcountry. RMFI relies on its decades-long history of completing backcountry restoration projects to prepare for the task. To further leverage the labor force, RMFI sub-contracted with the Mile High Youth Corps (MHYC) to help complete project objectives. RMFI has a long history of partnering with MHYC to implement trail improvement and landscape restoration projects, including one eight-day hitch of work in the Watershed during the 2019 field season. The MHYC employs young adults 17 to 24, providing them a chance to earn an income and participate in a variety of crew-based environmental rehabilitation and habitat restoration projects.

RMFI and MHYC started decommissioning work of former Trail #667 in the fall of 2017, continued in summer of 2018 and picked up on the project in late May of 2019. Due to the backcountry location, field crews camped in Jones Park and hiked to work sites in the Watershed. An average of 8 MHYC members were on site for the hitch, along with a minimum of 2 RMFI staff who provided project supervision and coordination with land management agencies. A late-season snow storm forced the project to end prematurely. To make up for the shortened hitch, the RMFI Stewardship Crew, consisting of 5 RMFI Field Instructors, returned to the Watershed for an additional 5 days of work in September.

Before on-the-ground work could begin this season, a full day was required to pack-in necessary camping materials for the work crews. RMFI staff and youth corps members packed-in gear including food, tents, kitchen supplies, rigging equipment for bear hangs, hand tools, and other necessary items. The pack-out in September also took a full day.

**2019 Labor Statistics:**
- 13 days of work
- 477 youth corps hours
- 371 RMFI field staff hours

### III. Work Overview

As previously stated, the primary objective of the Bear Creek Project for 2019 was to continue to decommission Trail #667, a project initiated in 2017. It is important to denote the difference between decommissioning and restoration. In industry terms, decommissioning is often used in conjunction with trail closure. This is the case for the trails in the Bear Creek Watershed as they were closed to public use. However, because of the presence of the fish and the risk of sediment from the severely eroded trail system entering the stream, the project could not stop at decommissioning – active restoration is also necessary. Decommissioning techniques that have been applied in other areas of the Watershed did not necessarily apply here. For instance, decommissioning is often completed by heavy machinery and consists of ripping the trail tread in some cases 6 to 8 inches deep. Had machinery been used in the restoration of Trail #667, the decompacted soils likely would have washed into Bear Creek and greatly impacted the fish habitat. Furthermore, the use of heavy machinery in and around the stream corridor would have posed additional risk to the WIZ.

Therefore, RMFI took a very intentional, place-based approach to decommissioning the trail. In areas where an open trail abutted Trail #667 (such as at the junction with the new Trail #667 at the “top” or west-end of the Watershed), the approach was to make the trail uninviting for users by installing fence, felling trees, and spreading slash. However, as the trail veered away from those areas, and closer to Bear Creek, the approach changed from decommissioning to restoration. The restoration process consisted of felling trees to create in-trail obstacles for persistent users (off-trail travel is prohibited in the Watershed) as well as
creating microclimates by opening the forest canopy for in-trail plant germination, constructing in-trail erosion control structures using felled trees or rock found on-location and spreading a native seed mix (propagated at a USFS seed facility using stock from native grasses and shrubs from the Watershed). RMFI also oversaw the emptying of sandbags that have been staged in the Watershed for up to 7 years.

**Erosion Control Structures**

As mentioned above, the project focus changed from decommissioning to more intensive restoration in areas where Trail #667 was actively contributing sediment to Bear Creek. In many areas on the trail, the profile becomes steep and incised, in turn creating a channel for water flow and sediment transport. Almost the entirety of the trail is incised, ranging from a few inches to more than 5-feet in some areas. In an ideal scenario, these areas would either be disconnected from the riparian corridor or brought back up to grade. Unfortunately, this is an impossible task given the amount of time and resources available for the project. Therefore, the approach was to slow the flow of water by adding surface roughness through slash and the installation of check dams.

As part of the restoration approach, 26 check dams (CDs) were installed. The purpose of the CDs is to reduce water’s erosive force, stabilize loose soil, and ensure planted seed would not wash away. These erosion control structures will reduce the amount of sediment entering Bear Creek by keeping water and particulate materials held in suspension on the trail by creating a solid barrier on the critical edge.

In areas where the trail has a low-angle slope, lacks significant incision, and is a fair distance from the creek, work crews scattered slash to visually blend the trail corridor into the surrounding landscape. Slash materials were placed perpendicular or at 45-degree angles to the trail to reduce concentration of on-trail water flow. Near trail junctions, the deadfall was placed densely to make travel difficult for determined users.

**Sandbags**

Since the start of this project in 2009, RMFI has built structures meant to retain sediment from entering Bear Creek and impacting trout habitat. These structures would fill with sediment and therefore needed to be maintained in order to remain operable. Sediment was cleaned out from the structures and shoveled into sandbags. More than 2,000 sandbags were filled over the last 10 years. The sandbags were becoming severely weathered and were in jeopardy of falling apart completely, in turn depositing the sediment back into the trail corridor. Therefore, the sediment was deposited along the forest floor at distances no less than 50-yards from Bear Creek. A total of 203 sandbags were emptied in the Watershed in 2019. All sandbags in the Watershed have been emptied.

**IV. Project Summary**

**Accomplishments**

In all, RMFI spent a total of 13 workdays on the project in 2019. The following is a breakdown of the work accomplished on the project:

**2019 Work Statistics**

- 2.7 miles of trail decommissioned / restored
- 23 check dams constructed
- 203 sandbags emptied

**Education**

Education is one of the major tenets of RMFI. Therefore, it was important that this project include a focus on education in addition to the work objectives. As mentioned previously, RMFI sub-contracted with the MHYC, a non-profit organization whose mission is to provide young adults with professional development
opportunities through meaningful service projects and educational experiences. Over the 8 workdays with MHYC, RMFI field instructors provided opportunities for natural resource skills development, outdoor leadership, and environmental education lessons. RMFI staff offered place-based lectures that included content about the biological significance of the trout and the NEPA process as well as historical events that occurred in the Bear Creek Watershed. Additionally, RMFI field instructors taught MHYC members backcountry camping skills such as rigging bear high-lines, knot-tying, and Leave No Trace principles.

V. Future of the Bear Creek Watershed Restoration Project

As RMFI has insisted for years, the Bear Creek Watershed Restoration Project is an ongoing effort with no real conclusion. Restoration is a long-term process, and RMFI is committed to ensuring the restoration efforts are a success. In addition to the Healthy Rivers Fund grant, RMFI received funding from Patagonia and El Paso County to support 2019 work objectives. While specific plans are not yet finalized, RMFI plans to again submit a grant request to the Colorado Healthy Rivers Fund to support restoration efforts on both EPC and USFS lands in 2020. In addition, RMFI has submitted another grant to Patagonia and the organization is in discussions with land managers about dedicating funds to the project next year. RMFI looks forward to working with land managers to determine the priority projects for those grant funds.

In addition to fundraising and continued implementation, RMFI will continue to complete effectiveness monitoring in the Watershed to determine if project performance goals and desired conditions are achieved. The effectiveness monitoring protocol includes the following routine evaluations: geo-referenced photopoints (before and after), periodic site visits with land management agency project staff to make observations of vegetative re-growth and sediment capture, and detailed quantitative data collection to document the statistics included in this report.

RMFI will be involved in the Jones Park Master Plan process, which is underway as of late November 2018. The process will comprehensively outline existing conditions, assess community needs, and recommend enhanced conservation efforts and new recreation opportunities for Jones Park for the next 7-10 years. EPC officials anticipate the Master Plan will be completed by early 2020. RMFI will continue to search for additional grant opportunities to support ongoing restoration efforts.

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Trail Restoration

Figure 3, above: Images of in-trail rock check dam structures. RMFI constructed 10 of these structures in the Watershed in 2019.
Figure 4, above: Before and after images of in-trail timber check dams. RMFI constructed 13 of these structures in the Watershed in 2019.
Sandbags

Figure 5, above: Example of sandbag pile that has been in the Watershed since 2011. RMFI disposed of all sandbags in 2019.