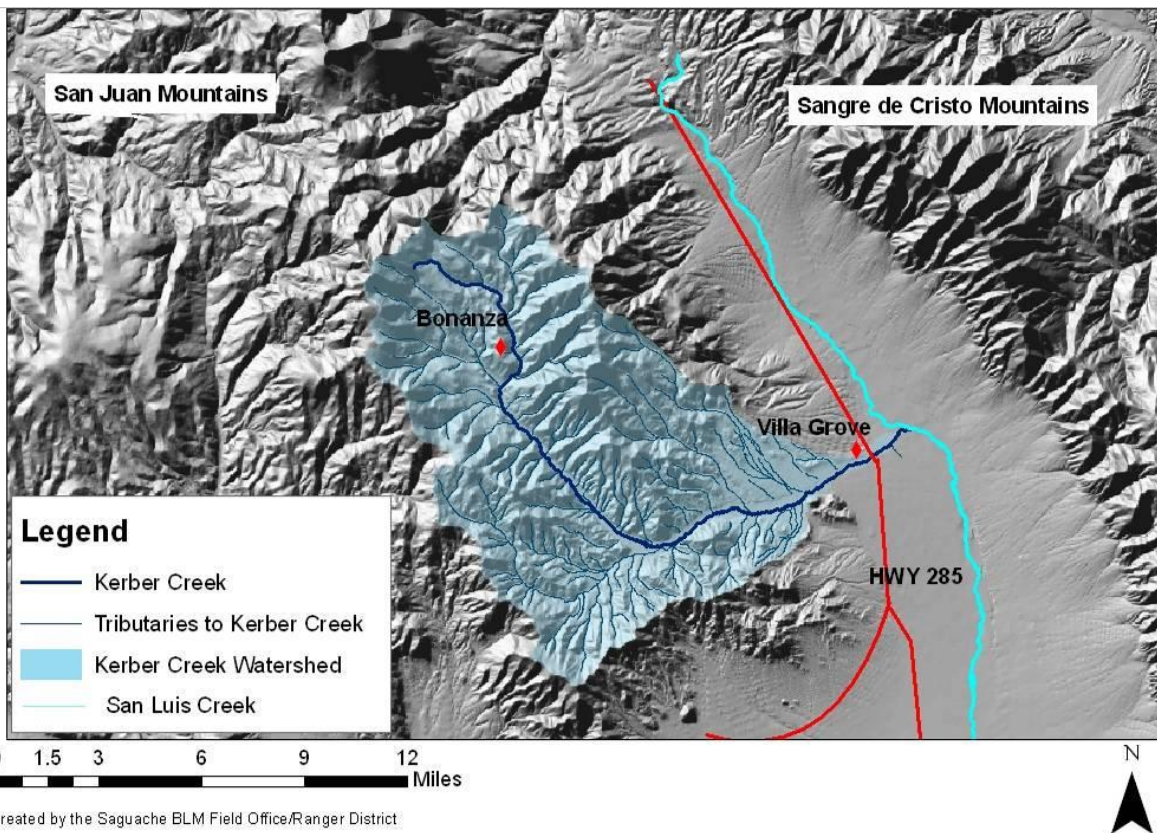


(Disponible en anglais seulement)  
(Disponible solamente en inglés)

## Kerber Creek Restoration Project Trout Unlimited (TU)

### *Project Summary - Part I. Description*

#### Participating organizations and geographic location of the project



KerberCreek\_Watershed-location.pdf

Kerber Creek is a 19-mile-long waterway located in Saguache County in the northeast end of the San Juan Mountains of Colorado in the Rio Grande river basin. Lands within the watershed are owned and managed by the BLM, U.S. Forest Service, and private citizens. The geographic region is considered rural with a few scattered towns in the area close to the project site. The closest town is Villa Grove, with population of 160 residents. The area is of interest to outdoor enthusiasts because of its excellent fishing, hunting and off-road vehicle opportunities.

According to recent census data, Sagauche County is Colorado's second poorest with some unique demographics.

The county has twice the number of Hispanics when compared to Colorado as a whole (40.1% vs. 20.7%); more foreign born persons (13.7% vs. 9.8%), more people that speak languages other than English at home (38.2% vs. 16.6%), fewer high school graduates (73.1% vs. 88.9%), and significantly fewer people with bachelor's degree or higher (19.0% vs. 35.5%).

The Kerber Creek Restoration Project has multiple partners, including TU, the Bonanza Stakeholders Group (consisting of local landowners), OSM/AmeriCorps VISTA, the BLM, U.S. Forest Service, USFWS, NRCS, the Environmental Protection Agency (EPA), the Colorado Division of Reclamation Mining and Safety, the Colorado Water Conservation Board, the Colorado State Forest Service, and local non-profit organizations including the Collegiate Peaks Anglers chapter of TU and Saguache County Sustainable Environment and Economic Developments. With funding from the CEC, BLM, Colorado's Nonpoint Source Program, project partners and additional grants, over \$1.5 million in project work has been accomplished in Kerber Creek and surrounding riparian areas over the past five years. The BLM, USFWS, and U.S. Forest Service have committed long-term to the sustainability of this large restoration project. TU will continue to be involved, provided we have adequate funding to do so. The local TU chapter has committed to helping restore the fishery for years to come.

### **Background or problem statement**

Kerber Creek runs through the Bonanza Mining District and the town of Bonanza where the hardrock mining occurred from the late 1880s to the mid 1970s. During that time, hundreds of thousands of tons of mine waste containing copper, cadmium, and zinc were produced. Multiple dams were built along Kerber Creek to accommodate the large volume of mine tailings being produced. Over the years these tailings dams eroded and failed resulting in impaired water quality, diminished aquatic invertebrate and fishery communities, and sparse stream side and upland vegetation. By the end of the mining boom, nearly 200 acres of mine tailings lay along 19 miles of Kerber Creek. While there are currently no active mines in Bonanza Mining District, mine wastes discharged nearly a century ago still negatively impact the water quality and stream health throughout the watershed.

### **A one-paragraph general description of the project**

The main focus of restoration has been phytostabilization to immobilize metals-laden tailings through the use of vegetation and amendments, such as limestone and organic compost. This work has significantly reduced metal and sediment loading to the creek. In addition to phytostabilization, numerous in-stream structures and bank stabilization measures have been installed in Kerber Creek to help improve stream conditions such as increased sinuosity, improved width-depth ratio, increased macro-invertebrate density, increased fishery density, and increased upland vegetation cover.

### **Brief description of outcomes and follow-up**

TU has used CEC funds to complete work on three project locations KC 16, and KC 20, and the Superior Mill site. There was a total of 18.27 acres of mine wastes treated using phytostabilization techniques. In addition, we accomplished 7,695 feet of stream

improvements, which include the installation of rock structures, bank reshaping, and bank excavation. All project products were documented via photo points, as well as contractor finished totals. Follow-up activities include post-project monitoring and yearly photo point documentation. The mine restoration field coordinator, Jason Willis (TU), can be contacted for additional technical project information.

## ***Project Summary - Part II. Analysis***

### **Successes**

One of the most significant successes of the project is that it was created to sustain the health of the watershed through collaborative restoration projects and community education. Local landowners are the project's most important stakeholders. To meet our educational goals, project partners worked with individual landowners to teach them about proper stream function and range management that focuses on preserving restored acres and improving riparian health. As a result of this project, water quality will be greatly improved, trout populations will increase and overall rangeland health will be much better than it is today. This result is, by far, our biggest success. In addition, federal land management agencies will see improvements to public aquatic and riparian resources. Another success is the commitment of our project volunteers who logged over 3500 hours helping us accomplish our goals.

### **Challenges**

Surprisingly, we did not have as many challenges as we expected for such a large restoration project. This is likely because we worked out a lot of the kinks with Phase 1 which took place between 2008-2010.

Below is a list of the most significant challenges that we dealt with on Phase 2:

- Design and implementation of a cattle crossing was a challenge. TU personnel conducted background research on several variations of cattle crossing designs. TU then worked with the contractor and landowner to implement a crossing that met the needs of everyone. • Coordinating a project of this scale with so many partners is challenging. Scheduling issues and funding constraints have been the primary problem areas, but we are continually progressing our interagency partnerships to achieve as much work as possible.
- Dealing with an expired US Army Corp of Engineers (USACOE) expired 404 permit. The permit, originally held by the BLM, expired before work was slated to begin in August 2013. TU personnel worked with regional USACOE representatives to extend the permit until work was completed. TU is currently working with the landowners of KC16 to submit a new permit for 2014 work.

### **Lessons Learned**

Below is a list of the most important lessons we learned while implementing this project:

- We have learned that a backup monitoring plan is necessary, and can be influenced by extreme weather conditions, such as drought. 2012 was a very dry year and Kerber Creek had a very low flow. Vegetation did not grow back to the level expected and we had to adjust our plan accordingly.

- We have learned to be flexible when it comes to working with federally funded projects. It is always beneficial to have a backup plan in-case a partner agency is unable to finish a project due to funding issues.
- Be adaptable when implementing in-stream structures. A watershed is a diverse ecosystem and can change within a couple miles or 1,000 feet of elevation. We learned that upland structures do not require as much sedge or willow transplanting as lowland structures. Sedge proved essential to provide extra stability to newly installed structures and stream banks during high flow periods.

### **What next?**

The majority of the riparian restoration in the lower Kerber Creek watershed is complete. We plan to monitor changes over the next five years. Water quality remains an issue in the upper watershed, however, so TU will focus on finding a path to cleanup at numerous sites, mainly through fundraising for project implementation. Our primary focus will be working to clean up the Minnie Lynch site, where we have already completed an Environmental Engineering/Cost Analysis (EE/CA) that identifies cleanup plans and cost estimates.

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