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## PROJECT DESCRIPTIONS

### **Project: Columbine Creek Rio Grande Cutthroat Trout Restoration; Aquatic**

**Objective:** The objective of this project is to reestablish native Rio Grande cutthroat trout (RGCT) to the lowest reach of Columbine Creek by removing brown trout in this reach of Columbine Creek; and to offer further protection to the existing population of RGCT in the upper reaches of Columbine Creek.

**Description:** This project involves enhancing Rio Grande cutthroat trout habitat on Columbine Creek by constructing a fish passage barrier on the lowest reach of the creek and removing brown trout that compete against Rio Grande cutthroat trout. Currently, non-native brown trout dominate the fishery in lower Columbine Creek. A natural barrier exists on Columbine Creek about 1.75 miles above the project location that has isolated and preserved a core population of Rio Grande cutthroat trout over the past century. This is one of the few core populations of Rio Grand cutthroat trout, and is 98% pure (Eric Fry, New Mexico Department of Game and Fish, personal communication).

Electrofishing will be used to remove non-native species in Columbine Creek and is expected to be reasonably effective, as long as the sites are selected carefully and long-term maintenance is adequately funded. The effectiveness of electrofishing in the removal of non-native species depends on factors including the species being removed, the complexity of the habitat, and the timing and frequency of the treatments.

**Benefits:** The benefits of this project are to expand the amount of habitat in Columbine Creek suitable for cutthroat trout and to provide a secure buffer for existing population of cutthroat trout in upper Columbine Creek. Short-term impacts during construction and implementation may include noise and air pollution from machinery and equipment, temporary increases in sedimentation and turbidity of the water quality, and limited public access during construction.

**Spatial Extent of Project:** The project is expected to reestablish native Rio Grande cutthroat trout in an approximately 0.5 mile reach of Columbine Creek upstream of the road culvert.

**Time Frame:** Rio Grande cutthroat trout populations should be established within two years of the removal of brown trout and the stocking of Rio Grande cutthroat trout in the stream.

**Probability of Success:** The probability of success of this project is high. Similar fish barriers in the area have been successful. Removal of brown trout from the lower reach will allow cutthroat trout from above the natural barrier to naturally colonize the lower reach. This area will also be available for stocking of cutthroat trout by New Mexico Department of Game and Fish, if they choose to do so. Previous fish population monitoring efforts have noted the presence of cutthroat trout in the lower reach, so the likelihood of reestablishing a cutthroat trout population in this area is high. This project also will provide additional protection for the existing population of cutthroat trout in the upper reach of Columbine Creek.

**Performance Criteria and Monitoring:** Success for this project will be measured through fish monitoring in the fifth, eighth, and eleventh year, in which fisheries biologists will conduct electroshocking and fish counting studies. If found, trout other than Rio Grande cutthroat trout will be removed by electroshocking. The fish barrier will require occasional monitoring to ensure that no structural failure or channel changes that would compromise the integrity of the barrier have occurred. Additionally, the removal of any large woody debris that might hang up on the weir is important to ensure that upstream migration is blocked.