EAGLE CREEK

Alpine County, California

2006 Stream Habitat Survey Report

Prepared By:

Carson Ranger District: Humboldt-Toiyabe National Forest

Introduction

Eagle Creek is located in Alpine County, California. The headwaters of Eagle Creek converge at the base of Reynolds Peak (Elev. 9690 feet), and the stream descends approximately 1.7 miles to an elevation of 7741 feet where it feeds into Raymond Meadows Creek. The entire watershed is located within the Humboldt-Toiyabe National Forest, and the majority of the stream is found in the Mokelumne Wilderness.

Purpose and Need

The 1995 Lahontan Cutthroat Trout Recovery Plan requires that ecosystem management plans be developed for the Truckee and Walker River basins in order to both determine objectives for the future desired conditions of these watersheds, and to create strategies for achieving these objectives. Similar management plans are recommended for the Carson and Humboldt River basins. In 1998 Truckee and Walker River Basin Recovery Implementation Teams were organized to develop strategies for Lahontan cutthroat trout (LCT) restoration and recovery efforts in the Truckee and Walker River basins. In August 2003 both recovery teams completed Short-Term Action Plans for Lahontan Cutthroat Trout Recovery in the Truckee and Walker River Basins. The short-term action plans outline specific tasks to be completed within five years. Many of the short-term tasks identified in the Truckee and Walker River Basin Short-Term Action Plans are similar to one another and are applicable to recovery of LCT in the Carson River basin. The Carson Ranger District adopted some of the short-term tasks identified in the Truckee and Walker River Basin Short-Term Action Plans and began implementing these actions under an informal plan for the Carson River basin. These tasks include: (1) identifying and evaluating fish passage and existing barriers within the Carson River basin, (2) developing a watershed analysis of the physical components of the Carson River basin, and (3) initiating habitat surveys to evaluate potential LCT introduction streams and validating against existing LCT inhabited streams.

The Carson River watershed historically provided an estimated 405 miles of stream habitat (Kling and Mellison 2008) for the native Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*). Populations of these salmonids within the watershed were interactive and interconnected, and therefore these metapopulations likely had high genetic diversity and were capable of long term persistence through adverse conditions.

At present, no self-sustaining populations of genetically pure LCT are known to occupy historic habitat within the Carson River basin and since all of the drainage has been surveyed it is doubtful that any such populations remain to be discovered. The introduction of nonnative trout before the turn of the century is believed to be largely responsible for the extirpation of LCT within the Carson River drainage.

Although naturally occurring Lahontan cutthroat trout populations have been eliminated from the Carson River drainage, small populations have been established in the formerly fishless headwaters of the East Fork Carson River above Carson Falls and in the tributaries Murray Canyon Creek, Golden Canyon Creek, and Poison Flat Creeks above

impassible barriers. Pure populations of LCT also occur in Red Lake, Heenan Lake, Heenan Creek, and possibly in Raymond Meadows Creek. Hybridized populations of LCT occur in Jeff Davis Creek and in Leviathan Creek upstream of Leviathan Mine. The artificially established pure populations of LCT in the East Fork Carson River watershed occupy about 17 miles of stream habitat: approximately 4.2% of the total miles that LCT presumably occupied historically.

The primary causes for the decline of LCT include: 1) reduction and alteration of stream discharge; 2) alteration of stream channels and morphology; 3) degradation of water quality; and 4) introductions of non-native fish species. The Carson River watershed downstream of Carson Falls is primarily inhabited by non-indigenous salmonids which include, but are not limited to: rainbow trout (*Oncorhynchus mykiss*), brook trout (*Salvelinus fontinalis*), and brown trout (*Salmo trutta).* These competitive and aggressive introduced fishes have displaced the endemic Lahontan cutthroat trout.

Long term survival and recovery of LCT within the Carson River watershed will require sustained cooperation and effort from multiple federal and state agencies, including the Forest Service and personnel of the Humboldt-Toiyabe National Forest. Gaining information through immediate action can aid in prioritizing future objectives for the restoration of LCT. The 2006 Carson River watershed surveys are being conducted to gain information about streams in the basin, and furthermore to provide an inventory of potential fish habitat for LCT. The surveys include the tasks of identifying potential fish passage barriers and evaluating physical characteristics that pertain to the success of the native LCT. Should recommendations be made to re-introduce LCT, these surveys can provide baseline information for future management of the fishery. Eagle Creek was surveyed on July 25th, 2006 by Humboldt-Toiyabe National Forest, Carson Ranger District employees Brian Hodge and Harrison Davis.

Materials and Methods

Forest Service personnel surveyed Eagle Creek by hiking the watercourse in a downstream manner. The site numbers were readjusted to list locations in a downstream to upstream order. Interesting and relevant features were documented, photographed, and recorded into a Trimble GPS unit. These features included but were not limited to: road crossings, trail crossings, fish sightings, permanent fish barriers, seasonal fish barriers, tributaries, springs, beaver dams, areas of erosion concern, grazing impacts, dispersed campsites, etc.

Fish passage barriers were noted and categorized into one of four categories: natural-permanent, natural-seasonal, artificial-permanent, and artificial-seasonal. A permanent barrier is categorized as an obstacle, waterfall, or drop in excess of 5ft that would prevent passage of fish year-round (specifically LCT). A stadia rod was used to measure barriers where applicable. Barriers categorized as permanent barriers may actually be seasonal barriers, and some seasonal barriers may actually act as a permanent barrier.

Results

Approximately 1.68 miles of Eagle Creek were surveyed from the intersection with the Pacific Crest Trail down to the confluence with Raymond Meadows Creek (Sites 16-1, respectively). The overall gradient of the surveyed reach is approximately 8.4 percent. Ten documented sites included the presence of fish passage barriers (Sites 1, 2, 3, 4, 5, 6, 7, 8, 12, & 13). In some instances one site number was used to reference several sequential barriers, and in such cases each barrier is denoted by a lowercase heading (a, b, c, etc.) In other instances a barrier is located near another documented feature, and therefore is referenced under that site number. For example, at Site 1 a barrier was located above the survey start point and at Site 2 a barrier was located just below the road-stream crossing. Nine sites included a permanent barrier (Sites 1, 2, 3, 4, 5, 6, 7, 8, & 12). Two seasonal barriers were identified (Sites 7 & 13). One road crossing was located, but the path appears to be open to foot-traffic only at this time (Site 2). The Pacific Crest Trail crosses the stream at the survey end point (Site 16). Three tributaries were identified entering the stream (Sites 11, 14, & 15). In addition, two generic points were recorded where photographs were useful in documenting characteristics of the stream (Sites 9 & 10).

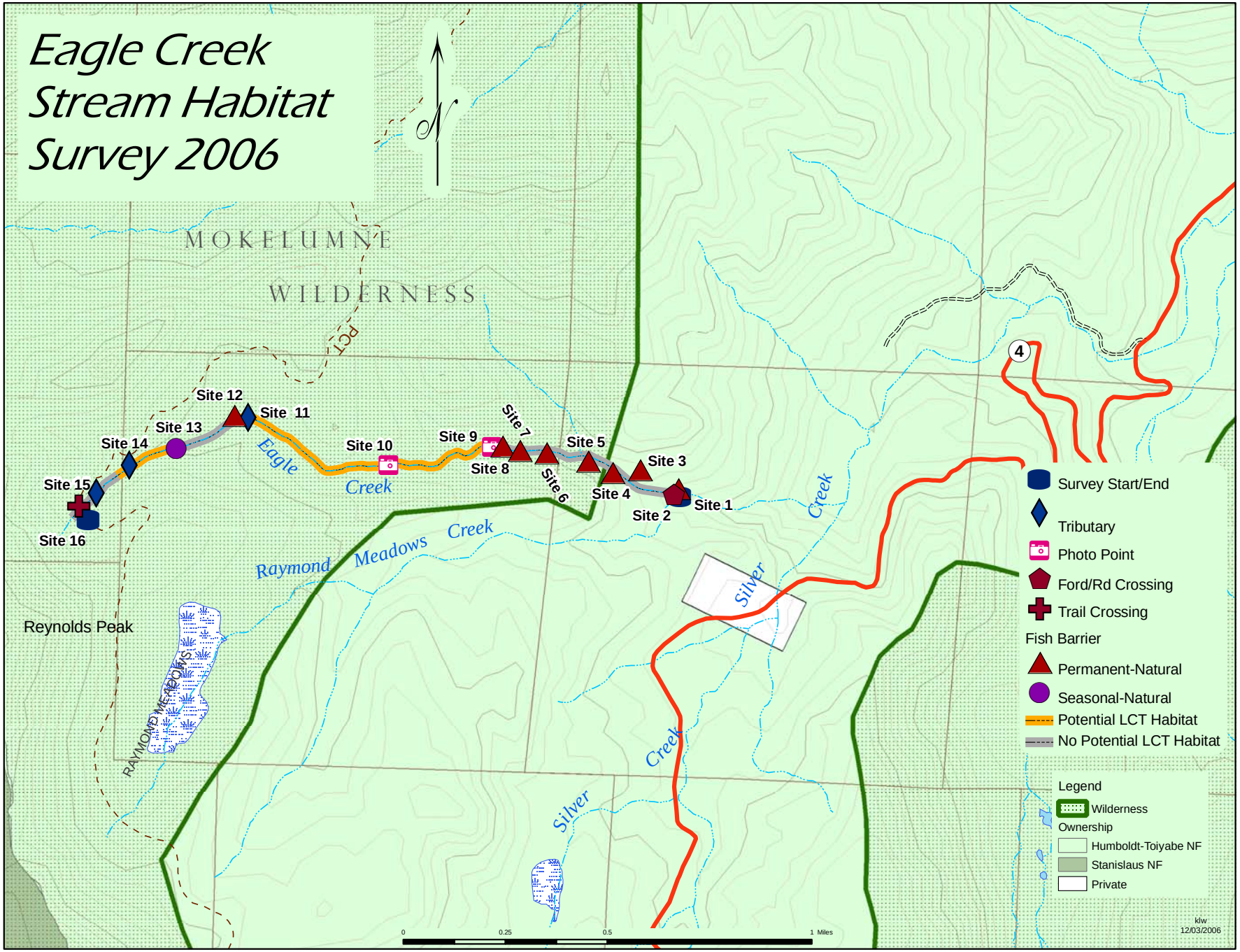
Discussion

Approximately 0.96 miles of Eagle Creek provide potential LCT habitat: a 0.23 mile low gradient section between Sites 13 and 15 and another 0.73 mile segment between Sites 8 & 12. The reach between Sites 8 & 12 contains complex habitat in a mix of riffles, runs, and pools. Between Sites 1-8 the overall gradient is roughly 14.0 percent, and each of those eight sites includes the presence of a barrier with vertical heights ranging from 4.4-20 feet. This reach prohibits upstream movement and lacks sustainable fish habitat. At Site 12 a 6.5 foot bedrock waterfall prevents upstream migration. Above Site 15 the stream is divided into multiple headwater branches, which are largely fed by snowmelt, and individually lack sustainable fish habitat.

No fish were sighted during the survey of Eagle Creek, and the sections of river that provide potential LCT habitat are short and disconnected. The limited quantity of suitable habitat in Eagle Creek is a product of topography and not the product of habitat degradation or human impact.

Recommendations

1. Consider the 0.73 mile section of Eagle Creek between Site 8 and Site 12 and the 0.23 mile section of stream between Site 13 and Site 15 (total 0.96 miles) as potential LCT habitat, and consider Eagle Creek a low candidate for restoration.


Eagle Creek
Stream Habitat
Survey 2006
MOKELUMNE
WILDERNESS
PCT
Site 12
Site 11
Site 13
Site 14
Site 15
Site 16
Site 10
Site 9
Site 8
Site 7
Site 6
Site 5
Site 4
Site 3
Site 2
Site 1
Eagle
Creek
Raymond
Meadows
Creek
Reynolds Peak
RAYMOND MEADOWS
Silver
Creek
Silver
Creek
4
Survey Start/End
Tributary
Photo Point
Ford/Rd Crossing
Trail Crossing
Fish Barrier
Permanent-Natural
Seasonal-Natural
Potential LCT Habitat
No Potential LCT Habitat
Legend
Wilderness
Ownership
Humboldt-Toiyabe NF
Stanislaus NF
Private
0
0.25
0.5
1 Miles
klw
12/03/2006

Site 1: Eagle Creek, Carson Ranger District. Upstream view of confluence, where Eagle Creek (right) feeds into Raymond Meadows Creek (left). This site is located at UTM: N: 4274246 & E: 255619, Elev. 7741 feet (2360m).

Site 1: Eagle Creek, Carson Ranger District. Photo shows a permanent fish barrier just above the confluence. The falls measure 9.0 feet tall, with a max. pool depth of 0.5 feet. This site is located at UTM: N: 4274246 & E: 255619, Elev. 7741 feet (2360m).

Site 2: Eagle Creek, Carson Ranger District. Cross-sectional view of a ford crossing, where Forest Service Road 112 intersects Eagle Creek. The road entry looks suitable for only foot-traffic. This crossing is located at UTM: N: 4274255 & E: 255595, Elev. 7731 feet (2357m).

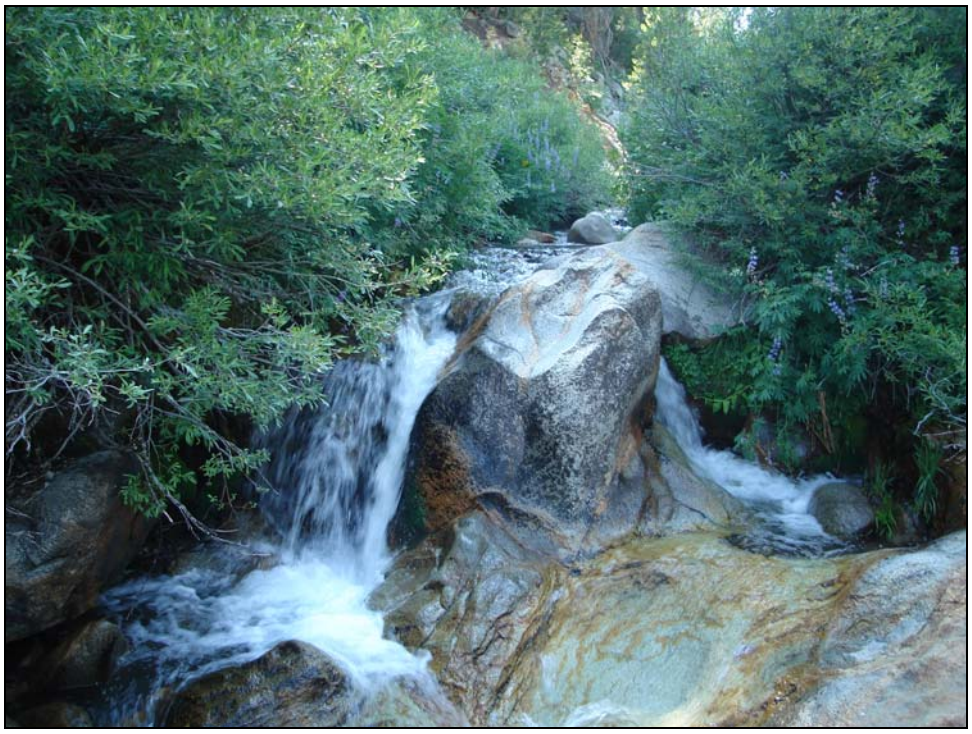
Site 2: Eagle Creek, Carson Ranger District. Photo shows an 8.0 foot fish barrier located directly below the road-stream crossing. This crossing is located at UTM: N: 4274255 & E: 255595, Elev. 7731 feet (2357m).

Site 3: Eagle Creek, Carson Ranger District. Upstream view of a 20.0 foot waterfall that creates a permanent fish passage barrier. This site is located at UTM: N: 4274284 & E: 255455, Elev. 7826 feet (2386m).

Site 4: Eagle Creek, Carson Ranger District. Photo taken from left bank shows a small waterfall measuring 6.0 feet high, with a max. pool depth of 2.0 feet. This site is located at UTM: N: 4274342 & E: 255356.

Site 5a: Eagle Creek, Carson Ranger District. Photo shows one fish barrier in a sequence of multiple seasonal fish barriers. This site is located at UTM: N: 4274386 & E: 255257, Elev. 7892 feet (2406m).

Site 5b: Eagle Creek, Carson Ranger District. Photo shows one fish barrier in a sequence of seasonal fish barriers. This site is located at UTM: N: 4274386 & E: 255257, Elev. 7892 feet (2406m)



Site 5c: Eagle Creek, Carson Ranger District. Photo shows one fish barrier in a sequence of seasonal fish barriers. This site is located at UTM: N: 4274386 & E: 255257, Elev. 7892 feet (2406m).

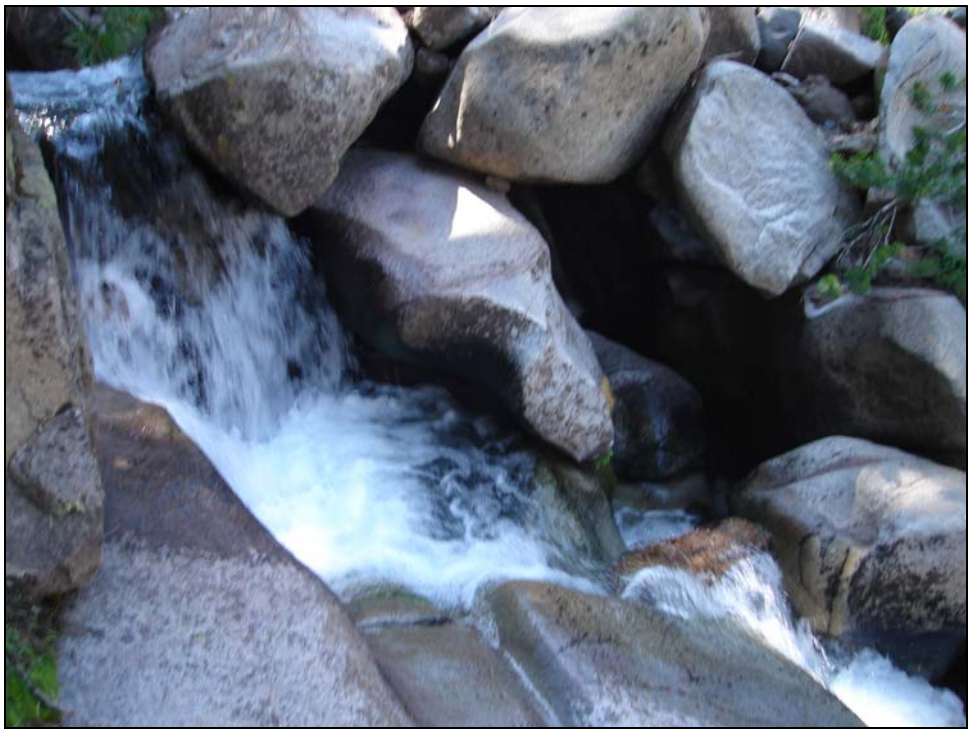
Site 5d: Eagle Creek, Carson Ranger District. Photo shows one fish barrier in a sequence of seasonal fish barriers. The slide measured 8.0 ft in longitudinal distance. This site is located at UTM: N: 4274386 & E: 255257, Elev. 7892 feet (2406m).

Site 5e: Eagle Creek, Carson Ranger District. Photo shows a 5.0 foot barrier (.8 foot max. pool depth) in a sequence of seasonal fish barriers. This site is located at UTM: N: 4274386 & E: 255257, Elev. 7892 feet (2406m).

Site 6: Eagle Creek, Carson Ranger District. A 10.0 foot waterslide with a vertical drop of 4.3 feet creates a fish passage barrier. This site is located at UTM: N: 4274419 & E: 255095, Elev. 7984 feet (2434m).

Site 7a: Eagle Creek, Carson Ranger District. Upstream view of a 5.0 foot drop with a 3.0 foot maximum pool depth. This site is located at UTM: N: 4274430 & E: 254991, Elev. 8023 feet (2446m).

Site 7b: Eagle Creek, Carson Ranger District. Bird's eye view of a seasonal fish barrier measuring 4.4 feet high with a 2.3 foot deep plunge pool. This site is located at UTM: N: 4274430 & E: 254991, Elev. 8023 feet (2446m).



Site 7c: Eagle Creek, Carson Ranger District. Photo shows a side view of one of two consecutive 9.0 foot permanent barriers. The maximum pool depth is approximately 1.5 feet. This site is located at UTM: N: 4274430 & E: 254991, Elev. 8023 feet (2446m).

Site 8: Eagle Creek, Carson Ranger District. Upstream view of a 5.5 foot waterfall, max. pool depth 1.2 feet. This permanent barrier is located at UTM: N: 4274447 & E: 254922, Elev. 8075 feet (2462m)

Site 8: Eagle Creek, Carson Ranger District. Photo shows a 2.7 foot seasonal barrier, located just upstream of the permanent barrier. This barrier is located at UTM: N: 4274447 & E: 254922, Elev. 8075 feet (2462m).

Site 9: Eagle Creek, Carson Ranger District. Photo shows an upstream view of a relatively large pool, measuring 2.1 feet deep. This site is located at UTM: N: 4274444 & E: 254879, Elev. 8095 feet (2468m).

Site 10: Eagle Creek, Carson Ranger District. Upstream photo shows a short section of low gradient stream. The banks are lined with willows and wildflowers. This site is located at UTM: N: 4274374 & E: 254472, Elev. 8200 feet (2500m).

Site 11: Eagle Creek, Carson Ranger District. A small tributary (1-3% contributing flow) enters on river left. This site is located at UTM: N: 4274563 & E: 253918, Elev. 8308 feet (2533m).

Site 12: Eagle Creek, Carson Ranger District. Photo shows a permanent fish barrier measuring 6.5 feet high, with a 1.5 foot max. pool depth. This site is located at UTM: N: 4274568 & E: 253863, Elev. 8331 feet (2540m).

Site 13: Eagle Creek, Carson Ranger District. Photo shows a seasonal barrier where water slides through bedrock. This site is located at UTM N: 4274437 & E: 253635, Elev. 8384 feet (2556m).

Site 14: Eagle Creek, Carson Ranger District. Photo shows an upstream view of a headwater stream entering the creek from river left. This site is located at UTM: N: 4274372 & E: 253451, Elev. 8410 feet (2564m).

Site 15: Eagle Creek, Carson Ranger District. Several headwater streams converge to form the mainstem of Eagle Creek. This site is located at UTM: N: 4274249 & E: 253330, Elev. 8508 feet (2594m).

Site 16: Eagle Creek, Carson Ranger District. Photo shows the PCT crossing a headwater of Eagle Creek. This site, which marks the survey end point, is located at UTM: N: 4274156 & E: 253289, Elev. 8482 feet (2568m).

Site 16: Eagle Creek, Carson Ranger District. Water from Reynold's Peak form the headwaters of Eagle Creek. This site, which marks the survey end point, is located at UTM: N: 4274156 & E: 253289, Elev. 8482 feet (2568m).

Site 16: Eagle Creek, Carson Ranger District. Photo shows water coming down off Reynold's Peak. This site, which marks the survey end point, is located at UTM: N: 4274156 & E: 253289, Elev. 8482 feet (2568m).