Trail Management & Watershed Condition Improvement

Caldwell Lakes Trail Reconstruction and Realignment

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Acknowledgements

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A special thanks goes to the staff of the Shasta McCloud Management Unit including Chris Kane and Dennis Glass for being my trail crew leaders and for mentoring me along the way. I would also like to thank Rebecca Cooper for overseeing my project and exposing me to the many fields within the Forest Service.

Executive Summary

My internship was based in the Shasta – McCloud Ranger district in the Shasta – Trinity National Forest. The majority of my project was spent doing trail work to gain a better understanding of what is done for watershed on trails. By using my current and past experience building and maintaining trails, I learned about how water moves across a terrain, and I was able to use that knowledge to reroute a trail alignment to Caldwell Lakes. Accompanied by a hydrologist and other trail crew members, a new trail was flagged to Forest Service trail standards regarding grade, size, etc. The new alignment I flagged out will possibly be dug out to a trail when a California Conservation Crew arrives August 30, 2017.

Project Objectives

Since I am a seasoned trail worker, I was put onto a trail crew with two other Forest Service employees. I have done trail work in the Klamath National Forest during the summer of 2016 and I regularly do trail work with my local mountain bike association, many times on public lands. Considering my skills in trail maintenance and watershed, I was put forth on a project to build a causeway and restore a heavily used area on Mount Shasta called Panther Meadows. This project was almost immediately shut down due to the large amount of snow Mount Shasta got during the winter, which made the meadow inaccessible for the majority of my internship.

Since my project is heavily focused on watershed and trails, my supervisor, Rebecca Cooper, gave me a new project to reroute and flag a designated National Forest system trail leading to Caldwell Lakes. This was my first time flagging a trail alignment and it was interesting to connect trail maintenance and trail building. The experience I have gained building and maintaining trails through the WRI program, and with the Forest Service, has given me the skills and confidence to build sustainable trails for all user groups and sometimes even specific user groups (mountain bikes). The more I do

projects and work relating to natural resources like this one, the more I wish to earn a degree that deals with managing our public areas. The exposure I have gotten from volunteering and from the WRI internship program has certainly helped me figure out what kind of career I would like to work towards. For these reasons, I have chosen a major in Forest Protection and Management with an emphasis in Recreation.

The Caldwell Lakes project has been an ongoing project for the Shasta – McCloud Management Unit since September 2014, according to the Parks Eddy Environmental Assessment. An old Forest Service road going up to Caldwell Lakes was decommissioned due to a large amount of erosion going into Parks Creek, which parallels the old road mentioned. A new trail was established parallel of the old road for foot traffic and mountain bikes 2 years ago to continue access to Caldwell Lakes. The new trail that has been built reaches a point where it is at an unsustainable grade and has become an annual creek bed during the spring (Figure 1). This stretch of rutted trail is approximately 1/4 of a mile long until it reaches a meadow and crosses a stream. At this point the trail traverses across a different hill and is in much better shape than the trail below it.

Project Approach

The main priority of this project involved decommissioning the old motor vehicle road, and establishing a non-motorized vehicle, and non-equestrian trail up to Caldwell Lakes in order to restore hydrologic connectivity to the Parks Creek watershed. The 1/4 mile of rutted trail is to be rerouted due to a large amount of erosion coming down the trail (Figure 2). The trail is being heavily eroded because the trail is not outsloped and does not have water bars to get the water off the trail, forming the cusped trail seen in Figure 1. By paying careful attention to watershed in the area, I was able to flag a route that I thought would be more sustainable for the trail, and might be more enjoyable to walk because of a less steep grade. I used a clinometer while flagging to ensure that a majority of the trail was no greater than an 8% grade, which is the U.S Forest Service standard, though in some areas it was necessary for the grade to be steeper (i.e 10-12%) to keep the trail from being too long and meandering from its goal, Caldwell Lakes. While flagging the trail, stretched out “climbing turns” were incorporated instead of tight switchbacks to stop hikers from crossing switchbacks and to help mountain bikers while on the trail. One switchback at the beginning of the reroute is planned to be cut out and replaced

with a straight running I was also able to walk the reroute with the assistance of the district hydrologist, Steve Bachmann. During our survey together, Steve gave me information about the amount of snowpack and water the area receives during the winter and spring. Things that I never would have thought of, especially after doing so much trail work in southern California. After assessing that a slow flowing 8 to 10 feet snow field is usually in the area, I got a much better outlook on how the water might move across the terrain which led to some changes in my initial reroute. Figure 3 shows a picture of an area that was analyzed to have slow flowing water, but a lot of it. Using rocks and vegetation as an advantage was key in rerouting the trail since there is such a high amount of snowfall in the area. During my visit with the hydrologist I also learned about decommissioning the old trail to help restore hydrologic connectivity with Parks Creek and what is involved in that process regarding water quality, turbidity, etc.

Project Outcomes

The flagging that is in place may be used in the following weeks when a California Conservation Corp. crew comes to construct the trail. After a total of 3 visits to my flagging area, each time with a different person bringing a different perspective, I feel pretty confident that the reroute may be used for the completion of the Caldwell Lakes project. I do wish I could have gone to the reroute section with the district engineer, Steve Naser, to get his perspective on the new reroute since he is the one usually involved in building new trails.

During the course of my internship, I also saw how important it is to know what recreation user groups are using a trail. Different user groups require different things from the trail to have an enjoyable experience on the trail. When maintaining a trail, this really comes into display when cleaning a switchback or cleaning up a waterbar for a horse rather than just a hiker.

Conclusion

The Parks Creek Watershed is a 24 square mile area that is a big priority in recreation and in rural agriculture as well. The lower watershed area is home to a large amount of farm and grazing land which depend on reservoir water that comes from the Parks Creek watershed. By limiting the amount of Off Highway Vehicle (OHV) use, and by creating sustainable trails, this watershed will continue to support large recreating user groups, and agricultural needs for the public. In order to preserve such an area, a more sustainable trail should be outlined (like the one flagged) to restore hydrologic connectivity to the watershed. Trails going down a fall line should be mitigated, and if they are necessary, water diversion features such as rolling dips and water bars should be put accordingly.

While walking up the current trail, I noticed there were not many water bars or grade dips on the trail to deal with water in the first place. The new alignment of the lower section of the trail made in 2014 also has some hydrologic problems due to a lining of rocks that has been done on the trail. In some areas, the rocks lining the trail are the direct cause of the problem. The rocks are holding water inside the trail and not allowing it to get pushed to the

out slope. The rock trail made also makes it difficult to maintain tread in the area due to a cusp that has been made from water running down the trail. A few things I noticed that were working really well in terms of watershed, were rock dams and causeways that were built along the trail (Figure 4 & 5). These rock causeways and dams seemed to work well in an area that has a lot of snowfall and water. This project built on the skills I already know and took them to a more technical level that involves stewardship and management.

Appendices

Sources: Parks Eddy Watershed Restoration – Environmental Assessment – Mt.

Shasta Ranger District, Shasta – Trinity National Forest

Approximate route of new reroute in orange and current trail in red (NOT GPS'D)

Pink 'X' is for blowout on trail

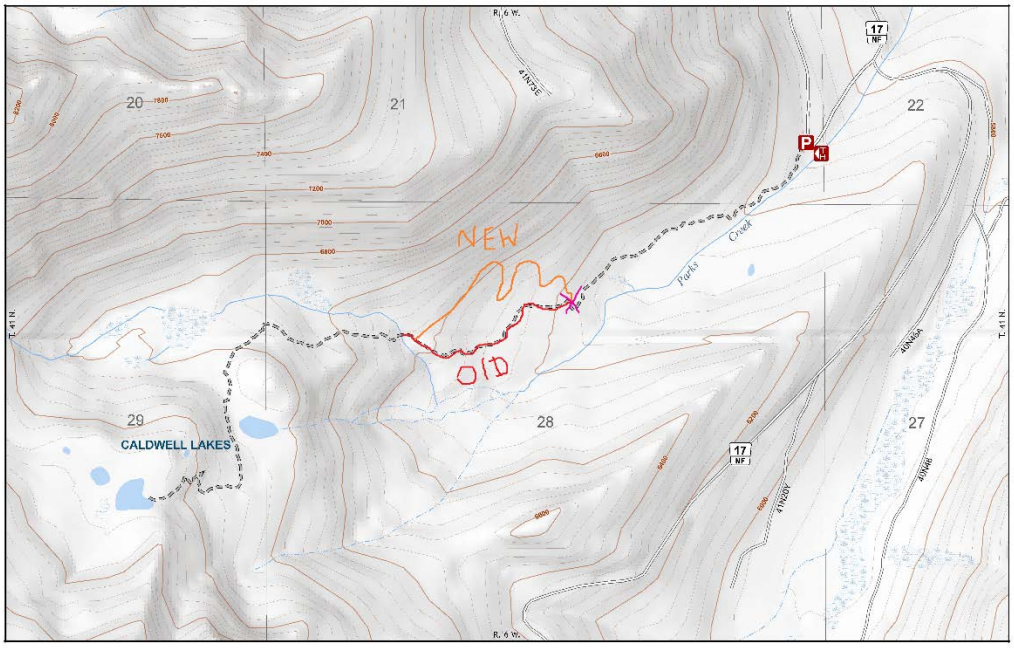

Figure 1

Figure 2

Figure 3

Figure 4

Figure 5

Field Notes – Caldwell Lakes Project

First Visit

- Old road destroyed to have new trail parallel to old road
- Old motor vehicle road pushed dirt/erosion into Parks Creek
- 2 year old trail
- Parks Creek Watershed
- Past Glass Dam – Rutted trail

Second Visit

- No notes, flagged all day

Third Visit (With Hydrologist)

- Decommission current trail by forcing water out of trail
- Separated switchbacks
- Slow flowing snowfield, 8-10 feet of snow
- Rocky, granitic terrain
- Old trail lined with rocks holds water and creates ruts
- Rock causeway should be incorporated to hold soil in large blowout spot (marked with pink 'X' on map)
- Trail is to the right of flagging going uphill