

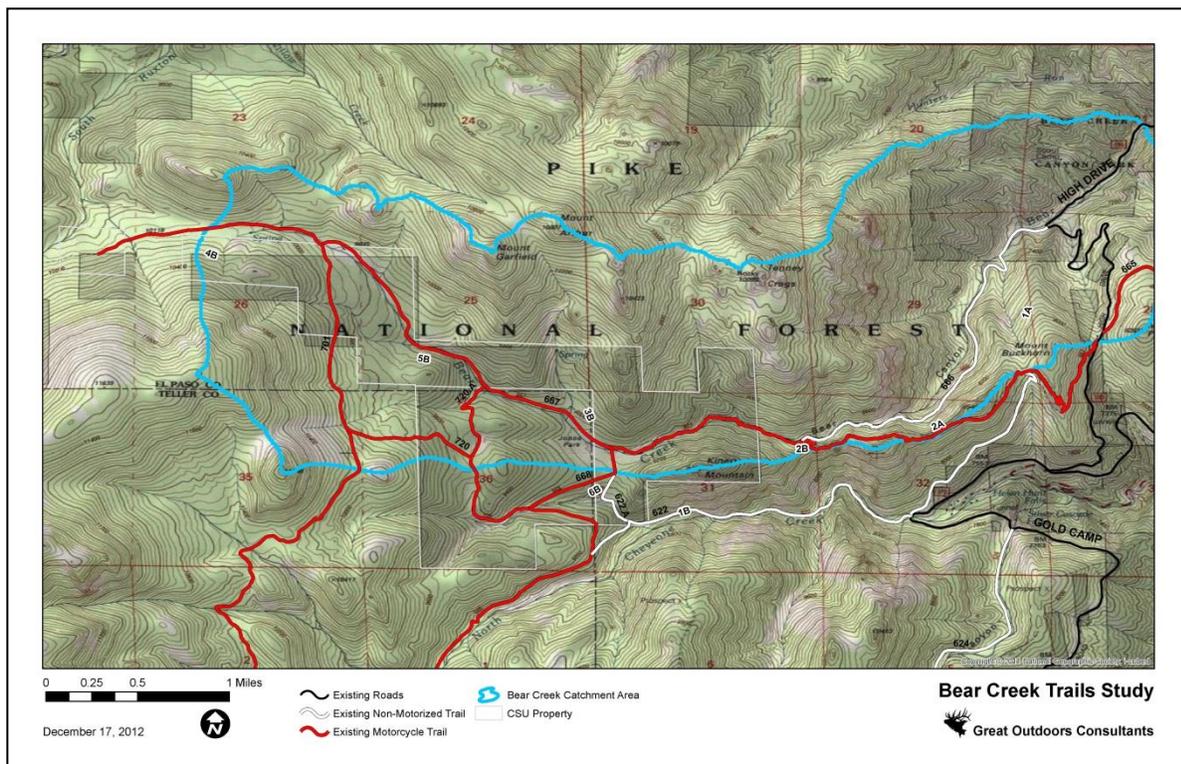
Trail Assessment Report

Trail Options for the Bear Creek Canyon located in

Pikes Peak Ranger District, Pike National Forest and on Colorado Springs Utility Lands

Due to the presence of a unique species of Greenback Cutthroat Trout in Bear Creek, it may be necessary to relocate a portion of the Captain Jacks/ Jones Park (667) and Bear Creek (666) Trails. These existing trails and their associated landscapes were analyzed to determine if there are alternatives routes for these trails that would locate them further from Bear Creek. The primary objective would be to reduce or eliminate sediment loading into Bear Creek that originates from these trails.

Drew Stoll, Outdoor Recreation Planner with Great Outdoors Consultants (GOC), performed this analysis on behalf of the Colorado Motorized Trail Association (CMTRA), the US Forest Service (USFS) and Colorado Springs Utilities (CSU). Drew has completed multiple projects in Pike National Forest related to inventory, analysis, planning and design of hundreds of miles of trails and roads. An initial site visit to the Bear Creek area was completed on October 18 with USFS, CMTRA, Rocky Mountain Field Institute (RMFI) and GOC. GIS analysis of the existing trails, topography and aerial photography was completed on November 28. Potential routes for new trail alignments were preliminarily identified using a detailed lidar digital elevation model (DEM) and aerial photography provided by CSU. The DEM was used to create hillshade and percent slope grids using GIS software. While feasible trail routes can be identified in this manner, some of these routes need to be verified in the field. This is especially important for routes in areas with steep topography (over 50%) and rock outcrops. There may also be other cultural and natural resources that can only be observed on the ground.

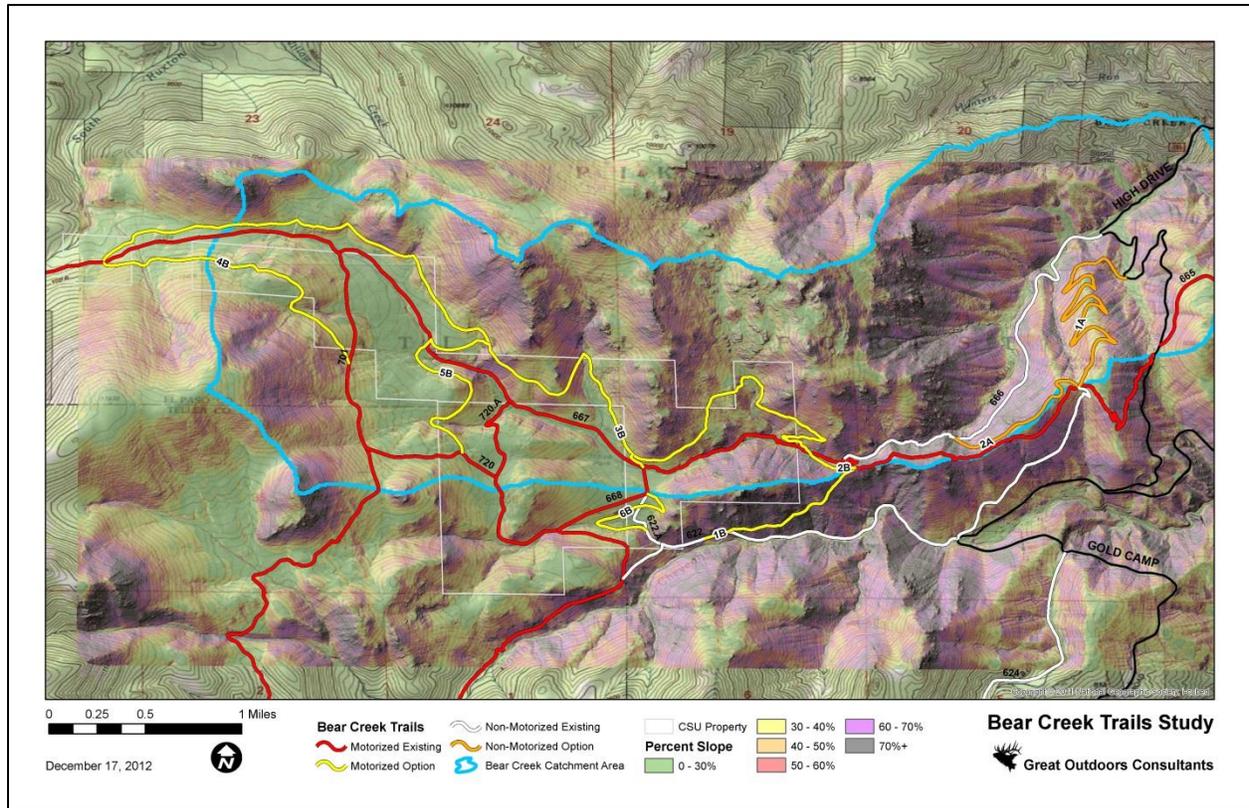


Field assessment of the preliminary trail options was completed from November 29 – Dec 2, 2012. Dirt bikes were used to access the Bear Creek area on existing public trails. Potential trail routes and existing non-motorized trails were reviewed on foot. Mike Kunz, CMTRA member, provided lodging for Drew and assisted in the field on November 29, 30 and December 2. Dennis Heitzman, CMTRA member, accompanied Drew in the field on December 1. It was invaluable to have CMTRA's assistance during field work to benefit from their knowledge of the area and provide any support that may have been needed.



An initial site visit was conducted on October 18 with USFS, CMTRA, RMFI and GOC. The group is on Kineo Mountain Looking west up Bear Creek.

Most trail alignment options were verified in the field to assure there aren't major obstacles such as rock outcrops. During the 4 days of field work, most of the trail alignment options shown on the below map were reviewed on the ground (see the table below). Trail options that are selected for further consideration, will require additional design and analysis to assure that they are sustainable routes. Existing trails were not analyzed in detail to determine their condition or issues. A more thorough analysis of existing trails was completed by RMFI in 2012. Some segments of existing trails are located on steep side-slopes but are stable and sustainable when the trail tread itself is relatively flat (0-5% grade). In a limited number of places, effective retaining walls have been constructed where side slopes are unstable. If trails are constructed on decomposed granite with moderate to steep side-slopes (30-75%), it would be important to cut a full trail bench (about 36 inches) and incorporate multiple rolling dips and grade changes. Where trail grade changes are not possible, water bars should be used but will require more maintenance. Wide trail benches with steep side slopes tend to become narrower as the uphill and downhill edges of the trail bench slough off. The trail bench should also be constructed with a gentle out-slope to allow water to easily drain across the trail. Where trail switch backs are required, the turns should be constructed with appropriate slopes, turning radiuses and drainage.



Bear Creek Trail Options – Trail 666

The existing Bear Creek non-motorized trail (666) from High Drive Road to the upper portions of Bear Creek climbs at a relatively fast rate and is located somewhat close to the creek. There are several locations where sediment from the trail loads into the creek. Locating this trail further up-slope from Bear Creek would allow sediment from the trail to disperse on the hillside and be captured by vegetation. Other than reducing erosion on the existing trail, the only other trail alignment that was identified was to switch-back the trail on the north slope of Buckhorn Mountain and then follow a relatively flat alignment well above the creek. However, to keep this non-motorized trail separate from the 667, the trail alignment would still need to tie into the existing 666 trail before the canyon topography becomes too steep.

Table: Trail segments options described in this report

Trail ID	Type	Field Checked by GOC	Miles
1A	Non-Motorized Option	Yes	2.10
2A	Non-Motorized Option	Yes	0.74
1B	Motorized Option	Yes	0.77
2B	Motorized Option	Yes	0.23
3B	Motorized Option	Eastern half	4.87
4B	Motorized Option	No	1.40
5B	Motorized Option	No	1.19
6B	Motorized Option	Yes	0.65

Trail Option – Segment 1A

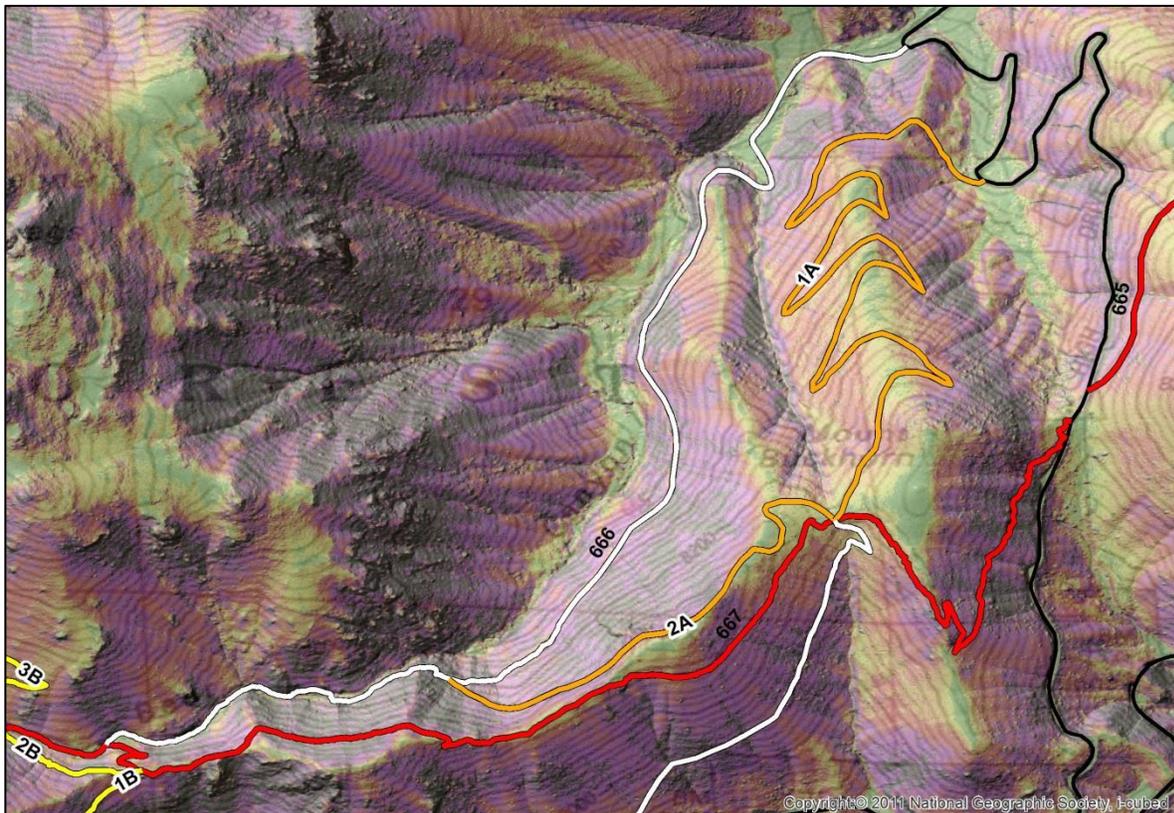
Potential trail segment 1A is located south of the existing Bear Creek Trail (666) and further uphill of the stream. It was necessary to start the trail further south on High Drive to avoid the steep slopes located close to the creek. This trail alignment climbs the north side of Buckhorn Mountain on more gentle slopes at a sustainable rate and provides a new connection to the Buckhorn Trail where it intersects with the 667 trail. This trail alignment is located on a hillside that is heavily forested, but it may be difficult to keep trail users from short-cutting between switch backs.



Erosion and stream crossing example on the existing 666 Trail

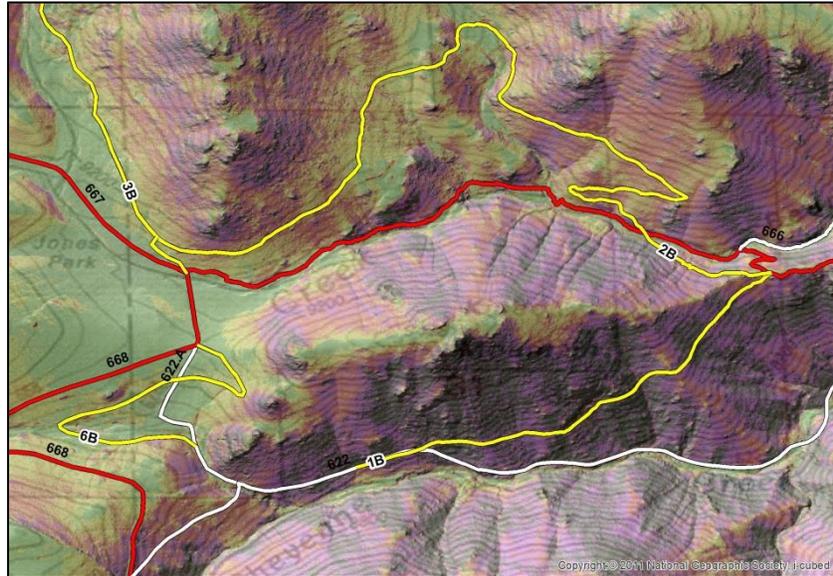
Trail Option – Segment 2A

Potential trail segment 2A is above Bear creek and parallels the 667 trail heading west. This alignment needs to stay relatively flat due to the steep side slopes approaching Bear Creek to the west. There are several rock outcrops close to the top of the slope that the trail alignment would need to travel above. The trail segment ties back into the existing Bear Creek trail where the canyon becomes very steep. The western portion of the existing Bear Creek trail would need to be used and would require improvements to reduce sediment loading in the creek. Alternatively, trail option 2A could be tied into the existing 667 trail, but this would cause more crowding on the trail.



Captain Jacks Trail Options – Trail 667

The existing Captain Jacks trail is located close to Bear Creek and crosses it in multiple locations. There are two general options to locate this trail further from Bear Creek. One option is to detour the trail to the south and into the Cheyenne Creek Canyon. The other option is to cross Bear Creek and relocate the trail north and further uphill from the creek.



Trail Option – Segment 1B

Potential trail segment 1B redirects the 667 trail into the Cheyenne Creek Canyon to the southwest along Kineo Mountain. The trail alignment follows a relatively flat route on very steep side slopes (60-70%). The alignment must pass under a major rock outcrop that extends to the top of Kineo Mountain. This alignment would require a wide bench and possible retaining walls in locations in order to keep the trail stable. This trail could be constructed to be sustainable but it would be difficult to build. The route would need to tie into the existing Seven Falls Trail (622) which is a non-motorized trail. This existing trail would require improvements to better control soil erosion, widen some turns and the trail tread.

Trail Option – Segment 2B

Potential trail segment 2B provides an alternative route from the Kineo Ridge to Bear Creek. This is an alternative to the existing switchbacks that drop down to the creek. The alignment would be relatively flat but would need to be constructed on steep side-slopes (60-70%). This trail segment would establish a new bridge crossing of Bear Creek where it would be relatively easy to climb in and out of the creek channel. It would be important to control water and erosion on either side of the creek to minimize sediment loading in the creek.



South slopes of Kineo Mountain are steep with scree soils.



Bridge across Bear Creek on the existing 667 trail below the switchbacks.

Trail Option – Segment 3B

Potential trail segment 3B climbs uphill from Bear Creek on the more moderate side-slopes located north of the creek. Two switch-backs are needed to climb well above the creek and to start the climb to the higher elevations west of Jones Park. There are several small rock outcrops on the slope north of the creek but these are relatively easy to route around. The route would cross several minor tributary springs that are fed with spring water. Each of these stream crossings (approximately 4) would require a small bridge or culvert and would need to be designed to prevent sediment from entering them.

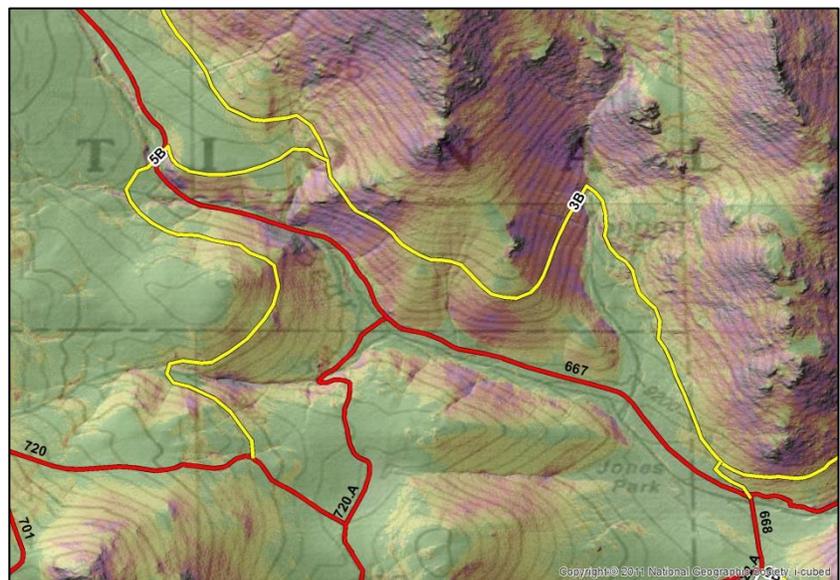


Trail Option – Segment 4B

Potential trail segment 4B would provide a new route for Trail 701 to tie into the 667 trail. This route would also move the 701 trail around a spring and stream that feed into Bear Creek. Hill slopes in this area are moderate and good for trail construction.

Trail Option – Segment 5B

Potential trail segment 5B provides a new trail alignment for the existing trail 720.A and to connect to trail option 3B. The route would be located on moderate side-slopes just west of the existing trail. This alignment would use an existing bridge across Bear Creek.



Trail Option – Segment 6B

Potential trail segment 6B would provide a realigned 662.A trail with a more gradual climb to Jones Park. This segment would need to be motorized if trail option 1B is constructed. A short trail segment would also need to be constructed heading north from Jones Park to connect with the segment 3B. The existing 622.A trail has a very poor alignment and severe erosion. The 662.A trail follows a fall-line straight to Cheyenne Creek. Even if trail option 1B is not

constructed, the 662.A trail should still be redesigned and constructed to make it a sustainable trail and better trail experience. This trail option can be seen on the same map as trail option 1B.

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The existing 662.A trail has severe erosion because the trail follows the fall-line of the slope.



South slope of Kineo Mountain has scree soils and boulders.