

Social Trails in Golden's Parks and Open Spaces

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Introduction

This document analyzes six social trails in Golden's Parks and Open Spaces with respect to their utility and their potential drawbacks and challenges. The purpose is to develop a framework to evaluate social trails and determine an appropriate management action, whether to close a social trail, allow it to remain as is, or to manage it as a City of Golden trail. The scope of this document is limited to those social trails that originate, cross or terminate on City of Golden lands.

Methods of mitigation or rehabilitation are not covered by this document, because there is a substantial body of literature covering that subject published by a variety of individuals and agencies (cf., Riske, 2018, and Schwartz, et al., 2018).

Of the six social trails analyzed here, three were new in 2022 and 2023, while three trails were well-established for at least 20 years. Three of the trails are found in Golden parks while the other three are found in Golden Open Spaces. One trail crosses from Golden Open Space into Jefferson County Open Space.

Social trails, also known as desire paths or informal paths, are paths or trails that are created by people walking or traveling across a landscape in a way that deviates from established or planned routes. These trails are typically not officially designed or maintained by authorities but are formed by the repeated footsteps or use of individuals seeking more direct or convenient routes. The utility of social trails can vary depending on the context and the perspective of different stakeholders. Here are some potential utilities and considerations:

1. **Efficiency and Convenience:** Social trails often emerge because they offer a more direct or convenient route between two points. People create them to save time and effort, avoiding detours or obstacles present on official paths. In this sense, social trails can improve efficiency in movement and navigation. Social trails may also develop from game trails, with people adopting the judgment of wildlife regarding efficiency or convenience.
2. **User Feedback:** Social trails can serve as a form of feedback from users of a space. When people consistently create these paths, it can indicate that the existing infrastructure (such as sidewalks or trails) may not align with user needs or preferences. Observing social trails can help planners and designers understand how to improve the layout of a space.
3. **Novelty:** Social trails can simply provide a different way to go or provide a challenge, such as a mountain bike jump.

4. **Flexibility:** Social trails can adapt to changing conditions or user preferences more quickly than official routes. This adaptability can be valuable in dynamic environments where official paths may not be easily adjusted.
5. **Low Environmental Impact:** Since social trails are often informal and not paved, they may have a smaller environmental footprint compared to formalized trails or roads. They can blend more harmoniously with natural landscapes.

However, it's important to consider potential drawbacks and challenges associated with social trails:

1. **Environmental Impact:** While social trails can have a smaller footprint, they can still lead to environmental degradation, especially in sensitive ecosystems. Unplanned paths can erode soil, damage vegetation, and disrupt wildlife habitats. Social trails can also migrate laterally, as shown below, increasing the environmental impact.
2. **Safety Concerns:** Social trails may not be designed with safety in mind, leading to hazards like steep slopes, unstable terrain, or lack of lighting. This can pose risks to users.
3. **Conflict with Land Management:** In areas managed for conservation or specific land uses, the creation of social trails may conflict with land management goals and regulations.
4. **Lack of Accessibility:** Social trails may not be accessible to people with disabilities, limiting inclusivity.
5. **Legal and Liability Issues:** In some cases, landowners or authorities may consider the creation of social trails as trespassing or unauthorized use of property, potentially leading to legal and liability issues.

In summary, the utility of social trails lies in their ability to provide more efficient and user-driven pathways. However, they must be carefully evaluated within the context of environmental, safety, legal, and management considerations to determine whether they should be officially recognized, modified, or discouraged. Proper planning, monitoring, and maintenance are essential to balance their advantages with potential drawbacks.

Evaluation of Social Trails

Expanding on the list of criteria in the Introduction above, following are the criteria by which the selected social trails were evaluated.

Efficiency and convenience, “Utility”

Utility refers to the issues of whether the trail goes someplace useful, whether it provides a unique path or a redundant path, or whether it significantly shortens the distance to travel.

Does the social trail go someplace useful?

Someplace useful could mean a facility like a shelter, or a waypoint on the way to a destination such as Washington Avenue near Starbucks, etc.

Does the social trail provide a unique path to a destination? Or is it a redundant path?

Unique path means there is no simple alternative. For example, to walk from North Ford Street to Starbucks, 7-11, or Cannonball Creek Brewery on Washington Avenue, a walker would have three alternatives:

1. South on North Ford Street, west on Iowa Street, then north on Washington Avenue,
2. Northwest through Norman D. Park on the Tucker Gulch Trail then south along Highway 93, or
3. Cut across through Schweich Hill.

The third alternative, cutting across Schweich Hill is a good choice.

Does the social trail provide a different experience, slightly different route, or a novelty?

A mountain bike jump, or another challenge. Or simply a different route that may be slightly different length or surface. An example might be Tucker Gulch below the First Street Bridge. Where there is a shortcut trail between the concrete trails, one above the gulch, down to the concrete trail in the gulch.

Does the social trail significantly shorten distance to a destination?

This is a matter of measuring the alternative routes. The question might be: how much of a shortcut is significant?

User feedback

Sometimes trail user behavior, in making their own trails, tells us something about the trails they are not using. Other times it just tells us more about the trail users.

Are there nearby trails and sidewalks that this social trail bypasses?

Flexibility

Are there changing conditions that give rise to this social trail?

Sometimes trails deteriorate and become hard to use. The original trail near Trail 5 may be a good example. Erosion has caused several large vertical steps and a tree has grown across the trail. This may explain why users have abandoned that trail and started a new trail, i.e., Trail 5. Schweich Hill Open Space.

Environmental Impact

Does use of this social trail cause erosion?

Repeated foot or bicycle traffic breaks up vegetation and compacts the soil creating a small trough that concentrates water flow. Over time the center of the trail will erode moving sediment down trail and leaving behind gravel and cobbles that are too large for the water to move.

The sediment may be deposited in a place where it is not desired.

Is this social trail migrating to right and/or left?

When the trails erode in the center, walkers and bikers tend to travel to the right or left to avoid either the lag gravel, or muddy areas.

“Lag gravel” are the stones that remain in the trail after fine soil has eroded away.

One trail that has migrated in one direction is Trail 4, whereas Trail 3 is widening in both directions because of lag gravel in the center of the trail.

Does this social trail establish additional weed habitat?

A social trail that traverses an otherwise densely-vegetated landscape provides habitat for plants that would otherwise not be able to compete with existing vegetation. An example of this would be Trail 4 on Schweich Hill where beating back the smooth brome (*Bromus inermis* Leyss.) by trail users has made habitat for European madwort (*Alyssum simplex* Rudolphi).

Does this social trail cause visual disturbance?

Social trails can be quite visible to users of adjacent trails thus interfering with the experience of walking in a natural area.

Safety Concerns

Is the slope of the social trail steep?

Social trails are not constructed to current trail standards and may travel up and down steep slopes.

A steep slope will also contribute to erosion.

Two trails that are examples of steep slopes are Trails 4 and 6. This may also apply to Trail 5, but erosion may not be evident because of the newness of the trail.

Is there a cross slope?

Not being constructed to current trail standards a social trail may have a steep cross slope. An example would be Trail 3. Magpie Gulch Trail to Parkview Court. Prior to surge pond reconstruction, this trail had no cross slope. However, in regrading the side of the surge

pond the construction company cut into the bank. Users immediately began to use the cut bank, leaving the trail with a cross slope.

Is the footing loose or bouldery?

Soils in Golden have a substantial gravel or cobble component. When the trails erode the gravel and cobbles are left behind. This leaves an very loose and uneven surface. Trail users tend to avoid loose or cobbly surfaces and walk to the side, causing trail migration.

Is there a fall hazard from a wall or cliff?

There are artificial cliffs formed by building a wall at the base of a cut and there are natural cliffs. We have both near social trails in Golden. The question might be: how high represents a fall hazard?

Is soil or gravel spilling onto adjacent concrete trail?

Erosion on a social trail can cause soil and gravel to spill out onto a concrete trail. Loose gravel on a concrete trail represents a slip and fall hazard.

Conflict with land management

Does this social trail significantly fragment natural habitat?

Our natural spaces in Golden are pretty small. A social trail across a natural area fragments the habitat for the small mammals living in the natural areas.

Does this trail cause damage to a restoration area?

Social trails potentially cut across an area previously seeded or under management for restoration. The watercourse at DeLong Park may be an example of this.

Accessibility

Does this social trail limit accessibility to disabled person?

We have an objective of making our parks accessible for disabled persons. So far, we have no similar policy for open space. None of the social trails in this report could be considered accessible.

Legal or Liability Issues

Does this social trail cross private property?

Any time the public crosses private property there is the possibility of liability or trespassing issues.

Several trails in this report cross private property. For example, Trail 3. Magpie Gulch Trail to Parkview Court crosses land of Canyon Point Villas Homeowners Association on an easement to the city for utility and drainage purposes.

Trail 4. Schweich Hill, Over the Top crosses property of Canyon Point LLC, most likely without any arrangement between the city and the private landowner.

Does this social trail cross other public property?

The other potential public landowners in Golden are Jefferson County Open Space, Colorado School of Mines, and Colorado Department of Transportation.

One trail in this report Trail 6. North Table Mountain Trail connects City of Golden property to Jefferson County Open Space property.

Does this social trail expose the landowner to liability issues?

I think this is primarily an issue for private landowners.

Does this trail provide access to private land raising trespassing issues?

I don't think any of the trails in this report raise trespassing issues. The primary example of trespassing issues would be the Lubahn Trail, which until recently provided access to the lands of Bear Creek Development LLC.

Description and Analysis of Selected Social Trails

The selected social trails are identified in the following table and shown in Figure _. Index Map. These trails were selected to illustrate the variety of causes, conditions, and impacts seen in Golden parks and open spaces.

No.	Location	Trail	When Established ¹
1	DeLong Park	Shelter to Sidewalk	2023, does not appear in imagery of 5/22/2023.
2	New Loveland Mine Park	Shortcut Across Natural Area	2022, first appears in imagery between June and October 2022
3		Magpie Gulch Trail to Parkview Court	Before October 1999
4	Schweich Hill	Across Top of Hill	Before October 1999
5		New trail from Washington Avenue to top of hill	2023, not visible in GoogleEarth imagery of 5/22/2023.
6	North Table Mountain	City of Golden North Table Mountain Trail to JCOS North Table Loop	Between October 1999 and December 2002

¹ Dates determined by examining historic GoogleEarth imagery. The October 1999 imagery is the oldest imagery that is useful for this report.

Trail 1. DeLong Park, Shelter to Sidewalk

This social trail leads from the park sidewalk through a watercourse to the sidewalk adjacent to 23rd Street. It is very short and is redundant with a concrete path just a few feet away. There are short steep sections entering and exiting the watercourse.

The trail was established in 2023. It provides useful access to the shelter from the edge of the park, though it is redundant with the concrete sidewalk and bridge just a few feet away. This social trail shortens the path from 23rd Street to the shelter by 34 feet, or 19%.

Walkers, all high school students, have been observed, though the trail is usable by runners and the intrepid mountain biker.

To date no environmental impact has been seen, though the trail crosses an area of vegetation restoration and erosion and weed habitat can be expected. There are no current safety concerns.

The trail is not accessible.

The trail is entirely on city property.



Trail 1. DeLong Park, Shelter to Sidewalk.

Trail 2. New Loveland Mine Park, Shortcut from Sidewalk to Sidewalk

This is a relatively new social trail that goes from the Magpie Gulch Trail sidewalk at the edge of the turf area, across the natural area, and joins the Magpie Gulch Trail near the top of the stairs. The social trail first appears in GoogleEarth imagery between June and October 2022. New trails are common during the COVID-19 pandemic (Primak & Terry, 2021).



Trail 2. North and south ends.

The trail provides utility because it connects the Highway 58 bridge with 5th Street and Rubey Drive. It also provides a shorter route. However, this trail is redundant with the existing concrete of the Magpie Gulch trail. Both junctions with the Magpie Gulch Trail are near social trails connecting to the Canyon Point development.

Walkers and bicyclists have been observed on this trail and it is usable by runners.

Early in its history there was no erosion or migration. After several years, erosion is showing on the lower portion of the trail and the trail is beginning to widen. The adjacent natural area is quite weedy and there is the potential for more weeds to invade the path of this trail, especially if it begins to migrate.

The safety concern is that loosened gravel and soil is spilling out on the concrete of the Magpie Gulch Trail. The loose material on a hard-surface trail creates a slip hazard.

Trail 3. New Loveland Mine Park, Magpie Gulch Trail to Parkview Court

This social trail connects the Magpie Gulch Trail to Parkview Court, making a connection that is not otherwise available. The trail appears in October 1999 GoogleEarth imagery. This trail pre-existed reconstruction of the surge pond (June 2021 to April 2022) and was partially obliterated during construction. It was quickly reestablished when construction was completed.



Walkers, runners, and bicyclists use this trail.

The western 275 feet are on City of Golden land, and the eastern 175 feet are on common area of Canyon Point Villas Homeowners Association. Golden has a drainage and utility easement and an emergency access easement that vary from about 45 feet in width at the west end to 25 feet wide at the east end. Approximately 90 feet at the east end are surfaced with gravel, and the remainder is a natural surface. I do not see anything in the plat, dated December 23, 1994, or covenants that contemplate a public social trail through the HOA common area.

There are two off-shoots of Trail 3, one connects Parkview Court to the turf area of New Loveland Mine Park, and shortcut between the main social trail and the off-shoot.

This trail provides significant utility and is not redundant with another trail.

The photo above, panel A shows the west end of the trail. This is a natural surface trail with a slope down to the concrete of the Magpie Gulch Trail. Some years ago two wooden steps were installed to reduce the amount of soil eroding onto the concrete. One of the steps was destroyed or removed. The other is quite worn, and it is bicycles bypass the step to its left. There is some soil on the edge of the concrete. Loose soil and gravel on top of the hard-surface concrete presents a slip and fall hazard.

Panel B shows the east end of the trail at Parkview Court. The surface here is gravel that was probably placed by the HOA.

The photo below shows a general view and a close-up view of Trail 3 just east of the surge pond. The trail is not particularly steep, but erosion of fine material has left the center with loose gravel and cobbles. Rough ground and difficult footing causes users to move to one side or the others thus widening the trail. In the detail (right) both footprints and bicycle tracks are visible. Logs or wooden steps might reduce the erosion. However, steps are often bypassed by bicycles, leading to further trail widening.



Reconstruction of the surge pond left a porous overflow channel constructed of boulders. However, erosion and deposition from foot traffic has filled in the open boulder channel with fine soil. This negates the value of installing a porous boulder field just outside the surge pond. Also, if the pond ever overflows, the overflowing water will transport and deposit silt downstream.



Trail 4. Schweich Hill Open Space, Old established trail across top of hill

Trail 4 is one of two social trails that cross Schweich Hill from North Ford Street to the small shopping center at the corner of Highway 93 and Washington Avenue. The primary social trail (Trail 4) crosses the parcels east to west across the top of the hill.

Walkers, runners, and bicyclists have been observed on this trail.

The social trail along the southern edge crosses land owned by Villas at Canyon Point LLC, in its eastern portion and then turns northwesterly across City of Golden land. That trail is not discussed here, although it is an alternative that would allow Trail 4 to be closed.

Trail 4 is heavily used by hikers, dog walkers, and by a few mountain bikes. I have even encountered a wedding photography party on top of the hill. The trail is eroding and migrating laterally on the steepest slope at the eastern slope of the hill.

This trail bisects the area of remnant native vegetation on the top of the hill into a 1.7 acre north portion and a 2.3 acre south portion. The opportunities for rerouting this trail away from the native vegetation, while still permitting access to the top of the hill, seem quite limited.

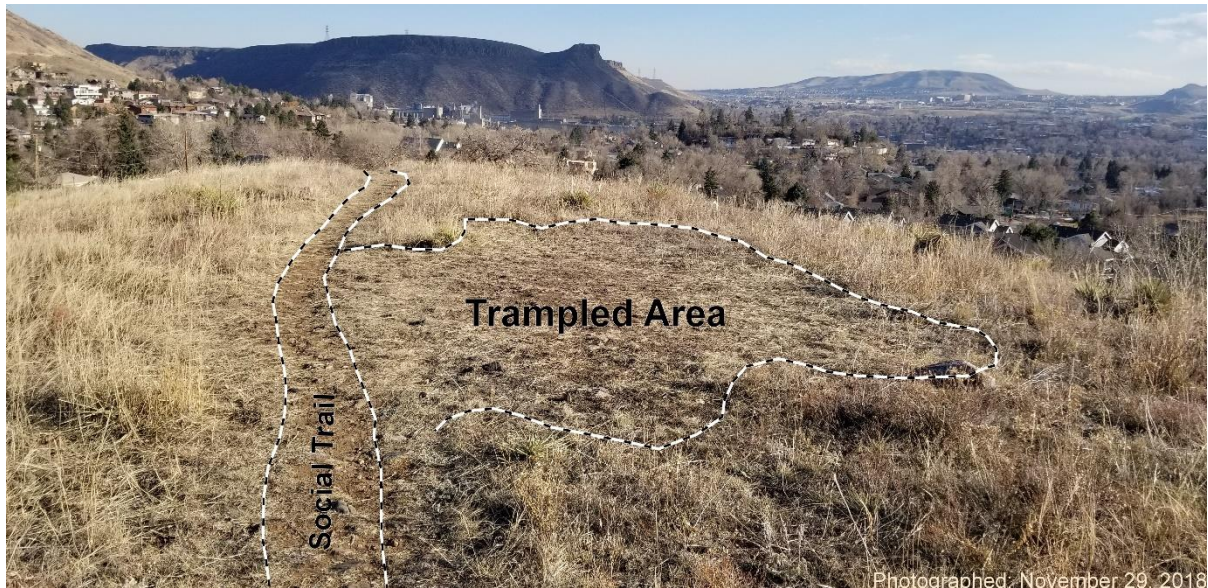


Figure 1. Vegetation trampling by open space users.

The top of the hill is occasionally used for picnics or similar activities as evidenced from a rather large, trampled area seen in 2018. Unfortunately, the trampled area is at the center of the best native vegetation.

There is an access trail at the east edge of the parcels connecting North Ford Street to Jackson Drive and an adjacent alley. The city has a 10-foot-wide easement connecting the open space to North Ford Street. (City of Golden, 2017). In the winter, this trail is quite muddy. The muddy conditions lead to widening of the trail.

The social trail on the western edge crosses two parcels owned by Canyon Point LLC, lessor of space occupied by the 7-Eleven and Cannonball Creek Brewery. This trail has deteriorated and in 2023 was replaced by Trail 5,

There is one social amenity, i.e., a bench near the top of the hill. The bench and associated access trail first appear in 10/7/2012 imagery. The access trail to this bench passes perilously close to several individual plants of Missouri Foxtail Cactus.

Lateral Migration of Social Trails

After six-plus years of observation, some of the social trails are migrating laterally. I think this is because it has become difficult to use the trails in their original location.

On the North Table Loop of Jefferson County Open Space, the trail north of the West Trailhead was migrating laterally because of muddy conditions. This was mitigated with a wooden walkway.

On Golden social trails, two other causes of lateral migration stand out: vegetation and rocky soil conditions. There may be other contributing factors not addressed here

First, in the lower part of the trail, the trampling of the trail inhibited the growth of *Bromus inermis* Leyss. “Smooth Brome.” This left an opportunity for other plants to establish themselves. Some of them are native perennials and others are non-native annuals. *Grindelia squarrosa* (Pursh) Dunal “Curly-Cup Gumweed” is a sticky, gummy native perennial that established itself beside the trail and then grew into the area disturbed by the trail. Avoiding this plant, walkers moved over and widened the trail. When the walkers moved over, they left bare ground that is good habitat for non-native annuals. *Alyssum simplex* L. “European Madwort” and *Chorispora tenella* (Pall.) DC. “Crossflower” are two non-native annuals that quickly filled the exposed portion of the original trail.

Second, on other parts of the hill, the soil contains a substantial portion of gravel with some cobbles as large as 3 inches. As foot traffic wore away finer soils, the large loose gravel remaining is poor footing for walkers. People moved over to walk on an easier footing.

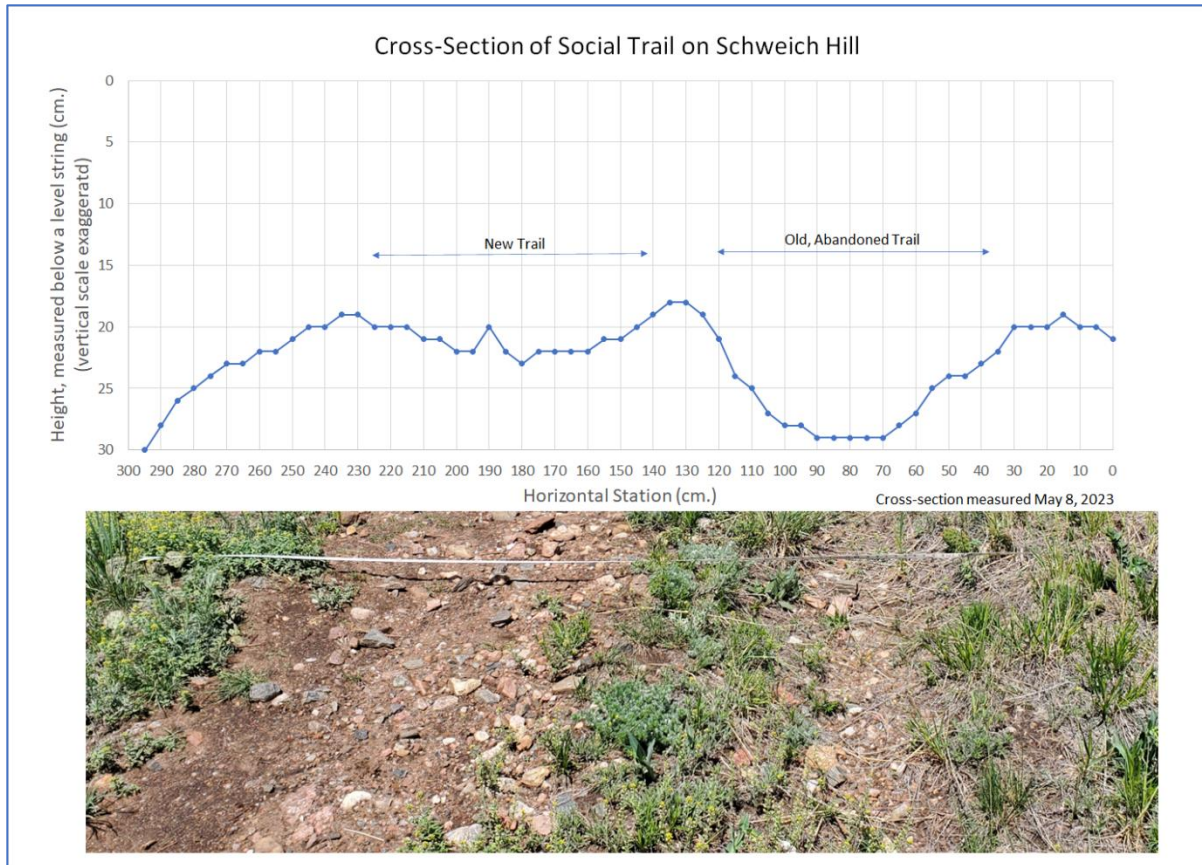
To measure this effect, a cross-section of this section of trail was measured in May 2023. A string was stretched across the trail and leveled. A fiberglass measuring tape was stretched along the string. The distance from the string to the solid surface of the trail was measured at 5 cm. intervals (about 2 inches). Plants and large loose gravel were temporarily moved aside while measuring.

The distance from the string to the trail surface varied from 19 cm. to 29 cm. The old trail was incised about 10 cm. (4 inches) and the new trail was incised about 5 cm (2 inches). The original width of the trail was just under one meter (3 feet). As a result of lateral migration, the trail has become 2.2 meters (7ft 2in) wide, a little more than 4 feet wider than the original trail. The cross-section is shown in Figure 9, below.

While it is understandable the walkers might move over for a path that is easier to walk, the impact of lateral trail migration is additional soil disturbance and trampling of more of the native plants on the hill. Eventually the fine soils on the new path will erode away leaving coarse gravel behind that also becomes difficult to walk on. What happens next? Will the trail move again? Will walkers go back to the old trail?



Figure 2. Lateral migration of social trail #4.



Ultimately the solution to lateral migration of the social trail is to convert the trail to a regular trail that is managed to prevent erosion and migration. This may include building of stairs, and placement of a small-sized gravel to provide a good walking surface. Prevention of erosion may require stairs or water bars. It may also be necessary to re-route the trail with climbing turns to prevent erosion.

Trail 5. Schweich Hill Open Space, New trail from Washington Avenue to top of hill.

This social trail connects the southwest corner of the open space at Washington Avenue, to the primary east-west social trail (Trail 4, above). This trail is new in 2023.

There was previously a social trail further to the west. However, that trail has deteriorated with several steep places resulting from erosion and has become partially blocked by vegetation. As a replacement for the former parallel trail, this trail has utility.

Walkers have been observed; runners and bicyclists are possible.

There is no erosion or migration because the trail is new. The trail is visible from Starbucks across Washington Avenue, but visual disturbance is minimal because the trail is still narrow.

The habitat that is newly fragmented by this trail could be reduced substantially by moving this trail to the west, closer to the boundary of the parcel. The sooner this is done, the less restoration would be required.

The trail may be classified as steep near the top, but otherwise there is no cross slope, loose footing, weed habitat effect, or fall hazard. The former trail to the west has a fall hazard because it is close to the wall around the shopping center.

Trail 5 is entirely on City of Golden property, whereas the old trail to the west is on Canyon Point LLC property.

In the process of relocating this trail, it may be possible to close the social trail on private property behind Cannonball Creek Brewery.

Trail 6. North Table Mountain, City of Golden North Table Mountain Trail to JCOS North Table Loop

Trail 6 connects the City of Golden North Table Mountain Trail, just below the rim of North Table Mountain through the rim to the Jefferson County Open Space North Table Loop and the Golden Cliffs Trail. It is a heavily-used trail that makes a connection not available for some distance to the north or south.

Because Trail 6 traverses steep slopes just below the rim and layers of basalt in the rim itself, this trail is quite steep and includes several rock scrambles.

Walkers are common on this trail; runners usually walk here; but (successful) bicyclists are very unlikely.

Erosion has exposed loose rock in the center of the trail, causing users to widen the trail in search of better footing.

This trail is steep, has significant cross slope in several areas, has loose cobble and boulder footing on soil and solid basalt. Footing can be treacherous. One place requires the user to step up on rock 24-30 inches. Above those steps are potential fall hazards.

This trail splits part of the habitat of the southwest slope of North Table Mountain into two parts of 27 ac. in the north and 47 ac. in the south.

Approximately 1/3 of this trail is on City of Golden land, and 2/3 on Jefferson County Open Space land.

The author uses this trail when leading botanic field trips for the Colorado Native Plant Society. I have seen other large groups of people using the trail.

I have had several conversations with Jefferson County Open Space staff. They are very aware of this trail but note that upgrading it to their trail standards would be very difficult. Although, I can't imagine upgrading this trail to JCOS standards would be any more difficult than it was for the Golden Cliffs Trail.

What, If Anything, Should Be Done About Social Trails?

Generally, if a social trail provides significant utility, and then if environmental impacts and safety concerns can be successfully addressed, then the trail should be added to the city's list of Primitive Trails and maintained. The Parks & Recreation Master Plan accepts incorporation of social trails into city trail network (City of Golden, 2016, p.83).

Summary

Two of the six trails above do not meet the utility criterion and should be closed quickly to minimize habitat damage. The trails that should be closed are:

- Trail 1. DeLong Park, Shelter to Sidewalk
- Trail 2. New Loveland Mine Park, Shortcut from Sidewalk to Sidewalk

Four of the six trails meet the utility criterion. All four trails require some mitigation from environmental impact. A primary issue requiring mitigation is loose cobble footing resulting from erosion, and often leading to lateral migration. The four trails are:




- Trail 3. New Loveland Mine Park, Magpie Gulch Trail to Parkview Court.
- Trail 4. Schweich Hill Open Space, Old established trail across top of hill
- Trail 5. Schweich Hill Open Space, New trail from Washington Avenue to top of hill
- Trail 6. North Table Mountain, City of Golden North Table Mountain Trail to JCOS North Table Loop

Two of the trails could be classified as Transportation Trails rather than Recreation Trails because they exist "... more for utility in getting from one place to another ..." in addition to "... leisure and enjoyment of resources ..." They are:

- Trail 3. New Loveland Mine Park, Magpie Gulch Trail to Parkview Court.
- Trail 4. Schweich Hill Open Space, Old established trail across top of hill

One trail should be moved to reduce habitat fragmentation. It is:

- Trail 5. Schweich Hill Open Space, New trail from Washington Avenue to top of hill

Map Number	1	2	3	4	5	6
Location	DeLong Park	New Loveland Mine Park		Schweich Hill		North Table Mountain
Trail	Shelter to Sidewalk	Shortcut Across Natural Area	Magpie Gulch Trail to Parkview Court	Across Top of Hill	New trail from Washington Avenue to top of hill	City of Golden North Table Mountain Trail to JCOS North Table Loop
Meets Utility Criterion						
Needs Environmental Impact Mitigation						
Move to Reduce Habitat Fragmentation					Should be moved. 	
Crosses Private Property						
Other Gov't Agency						

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