5-2017

Mountain Bike Use on the Tahoe Rim Trail: An Analysis of Management Practices in Restricted Use Areas

Christopher M. Binder

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MOUNTAIN BIKE USE ON THE TAHOE RIM TRAIL:
AN ANALYSIS OF MANAGEMENT PRACTICES IN RESTRICTED USE AREAS

by

Christopher M. Binder
February 25, 2017

A capstone report submitted in partial fulfillment of the requirements for the degree of

MASTER OF NATURAL RESOURCES

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UTAH STATE UNIVERSITY
Logan, Utah

2017
ABSTRACT

Mountain Bike Use on the Tahoe Rim Trail:
An Analysis of Management Practices in Restricted Use Areas

By

Christopher M. Binder, Master of Natural Resources
Utah State University, 2017

This project presents research into the historic and contemporary use of mountain bikes in restricted use areas on the Tahoe Rim Trail and examines management approaches to increase compliance with existing regulations and advisories. Data from geomagnetic trail counters is utilized to gain insight into where and when such use occurs, while archival and contemporary sources of information are consulted to establish the context of mountain bike use on the trail. The project concludes with specific, actionable recommendations for trail managers, with information regarding likely outcomes and costs included in the analysis.

(74 pages)
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GLOSSARY OF TERMS AND ACRONYMS

ADT - Average Daily Trips
TRT - Tahoe Rim Trail
TRTA - Tahoe Rim Trail Association
USFS - United States Forest Service
LTBMU - Lake Tahoe Basin Management Unit
LTNSP - Lake Tahoe Nevada State Park
MTB - Mountain Bikes
NDSP - Nevada Division of State Parks
PCT - Pacific Crest Trail
PCTA - Pacific Crest Trail Association
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CHAPTER 1
INTRODUCTION

Problem Statement

Though estimates have been made, the precise extent of recreational use, including mountain bike use, on the Tahoe Rim Trail (TRT) is unknown (USDAFS, 2010; LSC Transportation Consultants, Inc., 2015). This dearth of data extends to restricted access segments of the trail where mountain bikes are expressly prohibited by law or constrained through policy (Repanshek, 2009; LSC Transportation Consultants, Inc., 2015). Though anecdotal and observational evidence suggest that illicit use is prevalent (USDAFS, 2010), the lack of reliable information on the scope of such use stymies efforts by trail managers to effectively address a wide array of potentially significant issues including user conflicts, ecological and trail maintenance issues, economic considerations, and administrative concerns (Chavez, Winter, & Bass, 1993; Holcomb, 2011). In designated wilderness areas, the trespass of mechanical vehicles such as bikes can dilute wilderness solitude and damage other wilderness resources (Hendee & Dawson, 2002).

The Tahoe Rim Trail Association (TRTA), the non-profit organization primarily responsible for managing the trail, performs its duties in partnership with the Lake Tahoe Basin Management Unit (LTBMU) of the United States Forest Service (USFS), and Lake Tahoe Nevada State Park (LTNSP) of the Nevada Division of State Parks (NDSP), the primary landowners through which the trail travels (U. S. Department of Agriculture, Forest Service [USDAFS], 2010). While all three organizations have clear mandates for managing trail use on the TRT (Collins & Brown, 2007; USDAFS, 2010; Nevada Division of State Parks, 2016), none of these groups has gathered the requisite data needed to understand the scope of restricted use area incursions by mountain bikes. Without such data it is not possible to perform the necessary analyses required to determine the effectiveness of current restricted use area management strategies or to develop effective methods to reduce restricted access incursions in the future.

This project utilizes high-accuracy trail traffic counting devices to gather data on mountain bike incursions into restricted use segments of the TRT. Such trail traffic counting devices are widely used by recreation and land managers to estimate trends in use and compliance with regulations (Hendee & Dawson, 2002). This data has been analyzed in order to provide trail managers with an understanding of the extent of mountain bike use in those areas, and is presented in a context that recognizes the historically contentious nature of shared use management on the TRT. In addition, this project evaluates current trail management approaches on the TRT as they relate to
The research presented here seeks to facilitate positive growth within the TRT system in both the effectiveness of trail management and the trail experience for all users.

The target audience for this project consists primarily of trail managers within the TRTA, USFS, and NDSP. This document provides guidance for agency and organization staff and volunteer trail maintainers in making decisions regarding mountain bike use in restricted access areas on the TRT. In addition, this project seeks to be a valuable voice in the ongoing dialogue regarding the management of shared use trails, particularly in light of the continuing growth of mountain biking as a recreational sport on trails that are also managed for equestrian and hiker use. It may be that recommendations found in this document will be pertinent and applicable to the management of similar trails and resources in other locales.

Background Information and Context

The Tahoe Rim Trail is a multi-use recreational loop trail of approximately 165 miles that travels through the Sierra Nevada and Carson mountain ranges, encircling the Tahoe Basin (USDAFS, 2010). Additional connecting trails provide access to the main loop and the entire system consists of approximately 200 miles of maintained trails (Figure 1) (Hauserman, 2012). The concept of the TRT was the brainchild of USFS recreation officer Glenn Hampton in the late 1970s (Easley, 2001; Tahoe Rim Trail Association [TRTA], n.d.). However, the Forest Service alone lacked the resources needed to realize Hampton’s vision, and on November 19, 1981, the Tahoe Rim Trail Fund, Inc. (now known as the Tahoe Rim Trail Association) was formed as a volunteer organization to build, maintain, and manage the trail in partnership with the USFS and NDSP (Hampton, 1990; TRTA, 2007). Following decades of volunteer-driven efforts, the loop was officially completed and opened in its entirety in 2001 (Mullin, 2001; Easley, 2001). Since that date, the TRTA has shifted its focus from completing the loop to upgrading, maintaining, and managing the trail and related facilities (USDAFS, 2010). The TRTA also hosts other programmatic activities including section hikes, thru-hikes, and community education and outreach events (TRTA, 2015).

Almost since the first mile of the trail was built, the issue of mountain bike use on the TRT has been controversial and contentious (Graff, 1989; Tahoe Rim Trail Fund [TRTF] March 1992; Hoefer, 1995). While a majority of the TRT was initially constructed as a trail for hikers and equestrians (Folstadt, 1984) by the mid-1980s the popularity of mountain bike use on the TRT and on other similar mountain trails was growing rapidly and was seen by some as a threat to safety, tranquility, sustainability, and legal indemnity (Graff, 1989; TRTF, 1992). Citing these concerns, in 1985 the Tahoe Rim Trail Fund Board of Directors adopted a resolution recommending all landowners associated with the TRT prohibit bikes on all sections of the trail (TRTF, 1985). While a total ban was never put in place, restricted use areas were established.
THE TAHOE RIM TRAIL SYSTEM

FIGURE 1

LEGEND

- Tahoe Rim Trail System
- National Forest
- Designated Wilderness
- Lake Tahoe NV State Park

CONTEXT MAP

CA
NV
Through the following decades, periods of turmoil, cooperation and consultation between various user groups, the TRTA, and landowners led to the management system currently in place. While tensions have certainly eased since the 1980s and 1990s, the issue of restricted access area incursions by mountain bikes remains problematic for trail managers.

**Goals & Objectives**

There are three goals for this project. The first goal is to document the amount of restricted use cycling that takes place on specific segments of the TRT. The objectives of this goal are to:

- Design and execute a plan for the accurate collection of mountain bike use data in restricted use areas utilizing trail traffic counters
- Analyze the resulting data to understand when and where restricted use access is taking place and to identify any emerging patterns

The second goal is to research the historic and contemporary context of mountain bike use management on the TRT by the TRTA, USFS, and NDSP. The objectives of this goal are to:

- Analyze primary source material to document the issue from the conception of the TRT through to the present
- Review contemporary sources of information available to trail users that reflect current laws and policies to varying degrees

The third goal is to synthesize the information obtained by the prior two goals in order to provide recommendations for future management decisions in restricted use areas. The objective of this goal is to:

- Produce specific and actionable recommendations for landowners and trail managers of the TRT regarding the significant issues that arise from mountain bike use in prohibited and restricted use areas, including user conflicts, ecological and trail maintenance issues, economic considerations, and administrative concerns
CHAPTER 2

METHODS

This project meets its goals and objectives through three principal methods. First, accurate and reliable data on mountain bike use in restricted use areas was gathered through the placement of trail traffic counters in strategic locations. Second, research into the historic and contemporary context of mountain bike use management in restricted use areas on the TRT was undertaken. Third, the collected data and research was analyzed and reviewed in order to produce concrete recommendations for future management decisions.

Description of Study Sites

Data on mountain bike incursions in restricted use areas was collected on select portions of the TRT. As a whole, restricted use areas on the TRT consist of the following segments:

- Bikes are prohibited on the TRT where it is co-located with the Pacific Crest Trail (PCT), from the southern PCT/TRT trail junction in Meiss Meadows to the northern PCT/TRT junction at Twin Peaks
- Bikes are prohibited in the Mt. Rose Wilderness, and on the so-called ‘East Route’ of the TRT from the eastern border of the Mt. Rose Wilderness to the Mt. Rose Summit Trailhead (the ‘West Route’ following USFS Road 051 is open to bikes)
- A trail advisory states that bikes are allowed on the TRT only on even-numbered calendar days between Tahoe Meadows and Tunnel Creek Road.
- Bikes are prohibited from Hobart Road to Spooner Summit
- Bikes are prohibited on some short side trails in the TRT system, such as the interpretive loop trail at Tahoe Meadows and parts of Christopher’s Loop

All other segments of the TRT are open to mountain bike use without restriction (Figure 2). Such restrictions as a management tool is referred to as zoning and is a common practice, particularly in high-use recreation areas (Hammitt, Cole, & Monz, 2015).

This project does not study the restricted use segments where the TRT is co-located with the PCT. While the TRTA has primary responsibility for trail maintenance in that section, all management decisions fall primarily to the Pacific Crest Trail Association and its partners (“Partnership Agreement Between PCTA and TRTA”, 2016). Therefore, it is not appropriate to include this segment of the trail in research which is specifically focused on trail managed primarily by the TRTA and its partners.
This project also excludes from study those side trails that are closed to mountain bikes. Aside from being too numerous to be included in a study of this scope, these trails are uniformly short and therefore constitute a less-pressing management concern than those trail segments that make up the main loop of the TRT.

Information on mountain bike incursions in the other three restricted use areas, Mt. Rose Wilderness, Tahoe Meadows to Tunnel Creek, and Hobart Road to Spooner North was gathered. Data collection was accomplished by placing TRAFx brand Generation III magnetic mountain bike counters under the trail tread near both ends of each segment. Thus one trail counter was installed at each of the following locations (Figure 3):

- In the Mt. Rose Wilderness, approximately 200 feet from the western boundary
- In the Mt. Rose Wilderness, approximately 200 feet from the eastern boundary
- In the Tahoe Meadows section, approximately ½ mile south from the Ophir Creek Trailhead
- Approximately 200 feet north of Tunnel Creek Road
- Approximately 200 feet south of Hobart Road
- Approximately 200 feet north of Spooner Summit

All counters were installed by the author except for the counter south of Ophir Creek which was installed by a TRTA volunteer trail maintainer. All counters were installed according to the manufacturer’s recommendations. The counters were buried 6-8 inches deep in a location in which the tread is 6.6 feet wide or narrower, and the tread was restored following installation so that the location of the counter was not be detectable to trail users. All counters were installed approximately 200 feet past the location where the restricted use areas begin with the exception of the Ophir Creek counter. Due to trail widths in excess of the manufacturer’s recommendations on the lower portions of the trail in this location, the counter was installed ½ mile from the trailhead where the trail was sufficiently narrow. (See Appendix A for counter installation details).

Data was collected for a total of 87 days at each location. Installations occurred before 8 AM on July 18, 2016. This date corresponds roughly to the beginning of the season in which all locations were snow-free and potentially traversable by mountain bikers not wishing to ride over snow. The counters remained in place through midnight on October 12, 2016. The retrieval date was immediately in advance of the first significant snowstorm of the year and the trail remained partially covered with snow in some of the study areas after that date.

Due to extensive battery life and proven reliability, disruption of the counters for the sake of assessing their performance was be reduced to a single occurrence during the data collection period when the Ophir Creek counter was evaluated on July 27 between 11 and 12 AM. The data from that period has been discarded as the counter made false counts during the unearthing and reburial of the device.
TRAIL COUNTER LOCATIONS

FIGURE 3

LEGEND

- Trail Counters
- No Bicycle Restrictions
- Bicycles Prohibited
- Bicycle Advisory

- National Forest
- Designated Wilderness
- Lake Tahoe NV State Park

CONTEXT MAP

0 1.25 2.5 Miles
Data Analysis Techniques

Developing recreation use estimates is critical for making informed management decisions (Watson, Cole, Turner & Reynolds, 2000). Gathering such data through the use of magnetometers for traffic counting of vehicles and bicycles is standard practice in the fields of transportation and recreation management research (Muhar, Arnberger & Brandenberg, 2002; Rauhala, Erkkonen & Isalo, 2002). Geomagnetic units such as those used in this project operate by detecting a change in the normal magnetic field of the earth caused by a “ferrous metal object” as well as non-ferrous materials such as aluminum, carbon fiber, and titanium (Texas A&M Transportation Institute, 2013). Test calibrations have shown that the primary limitation of geomagnetic counters is that they tend to undercount when multiple users pass in tight groups (Bergman & Cohen, 2016).

The data produced in this project is a record of the counts of mountain bikes that passed over each counter in any given hour during the study period. Each count records the passage of a single bicycle in either direction and is defined as a trip. Because a trail user may pass the same counter only once (if travelling from point to point without returning), twice (such as on an out-and-back trip) or multiple times (if returning on multiple days or if lost) counting use through trips rather than actual users is more accurate.

To determine the Average Daily Trips (ADT) for each counter, the total number of trips was divided by the number of days in the study (87). To understand larger temporal trends in the data, it was sorted by day of the week (for locations with advisories restricting use) and by even/odd days of the month (for locations with regulations prohibiting use). To understand more specific temporal trends, data for locations with regulations prohibiting use was sorted into general daylight hours (7AM to 7PM) and general darkness hours (7PM to 7AM). The percent compliance of each location with advisories restricting use was calculated by dividing the number of trips on advisable days with the total number of trips.

Historic and Contemporary Context

A thorough knowledge of the historic and contemporary context of restricting mountain bike use on the TRT is essential for understanding the evolution of the issue and the origins of current restricted access management practices. The primary source for the required research material was the TRTA archives, which include official documents, correspondence, publications, photographs, and media clippings relating to the trail from the organization’s birth to the present. Of particular use were the records relating to the inter-organizational Mountain Bike Task Forces that were active from the late-1980s to the mid-1990s.

Contemporary resources that are primary sources of trail information for recreationalists were also consulted to determine what information is accessible to trail users in their decision-making
processes. The resources analyzed are those produced and distributed by the organizations responsible for the management of the trail. The following resources were reviewed:

- TRTA segment brochure and map, Brockway Summit to Mt. Rose Trailhead
- TRTA segment brochure and map, Tahoe Meadows to Spooner Summit
- NDSP brochure and map, Spooner Backcountry, Lake Tahoe Nevada State Park
- USFS brochure and map, hiking trails North and East Lake Tahoe

These resources are included in Appendices C, D, and E.

In addition, signage that is visible to trail users approaching the study locations was analyzed to understand the role it plays in current management practices. All signage was located by GPS and photographed at the time the counters were installed and no signage was modified during the course of the study.
CHAPTER 3

RESULTS

The results of the field study indicate that incursions into prohibited use and restricted use advisory areas are occurring at each location studied, though the amount and timing of such use is variable.

Mountain Bike Incursions in Prohibited Use Areas

The study areas where mountain bike use is prohibited are within the Mount Rose Wilderness and between Hobart Road and Spooner Summit. The counter at Spooner Summit North recorded the highest number of incursions, followed by Mount Rose Wilderness East, Mount Rose Wilderness West, and Hobart Road South (Table 1).

TABLE 1
Mountain Bike Incursions in Prohibited Use Areas

<table>
<thead>
<tr>
<th>Location</th>
<th>Number of Incursions</th>
<th>Average Daily Trips (ADT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount Rose Wilderness West</td>
<td>555</td>
<td>6.4</td>
</tr>
<tr>
<td>Mount Rose Wilderness East</td>
<td>905</td>
<td>10.4</td>
</tr>
<tr>
<td>Hobart Road South</td>
<td>512</td>
<td>5.9</td>
</tr>
<tr>
<td>Spooner Summit North</td>
<td>1024</td>
<td>11.8</td>
</tr>
</tbody>
</table>

The eastern border of the Mount Rose Wilderness saw nearly twice the number of incursions as the western border, suggesting that many riders are either going out-and-back from the Relay Peak area or are leaving the wilderness through a non-TRT system trail. There were exactly double the riders at Spooner Summit compared with Hobart Road, suggesting that low numbers of riders travel that entire section. Instead, the data suggest that many riders go out-and-back from Spooner Summit North, or that significant numbers of riders use the TRT as part of a loop that may include the North Canyon Trail, and/or the forest road from Spooner Lake to Marlette Campground.

Table 2 summarizes the temporal trends of mountain bike incursions into restricted access areas. Data was sorted by day of the week and by whether the counts occurred in daylight hours (7AM to 7PM) or darkness (7PM to 7AM). Sorting data by day of the week can give some estimate of
whether the riders are locals (who tend to avoid the crowds on the weekends and ride during the week) or visitors (who tend to visit on weekends). Sorting data by time of day can give some estimate as to whether the incursions are meant to be clandestine. Anecdotal reports indicate that some users who knowingly trespass do so at night to avoid detection. Knowing who is riding at these locations and having some insight as to why they are doing so should contribute critical knowledge about how to reduce incursions.

TABLE 2
Temporal Trends of Mountain Bike Incursions in Prohibited Use Areas

<table>
<thead>
<tr>
<th>Location</th>
<th>Percent of Traffic on Each Day of the Week</th>
<th>Percent of Traffic Each Time of Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Su</td>
<td>Mo</td>
</tr>
<tr>
<td>Mount Rose Wilderness West</td>
<td>16.9</td>
<td>11.4</td>
</tr>
<tr>
<td>Mount Rose Wilderness East</td>
<td>12.1</td>
<td>10.1</td>
</tr>
<tr>
<td>Hobart Road South</td>
<td>26.4</td>
<td>8.0</td>
</tr>
<tr>
<td>Spooner Summit North</td>
<td>20.3</td>
<td>10.5</td>
</tr>
</tbody>
</table>

The data suggest that visitors from outside the area may be responsible for a larger percentage of the incursions at Spooner Summit and Hobart Road. 57.1% of incursions south of Hobart Road are on the weekends while 41.7% from Spooner Summit are. Both of these numbers are higher than the 40.0% of incursions into Mount Rose Wilderness from the west and 34.8% from the east that occur on weekends.

Initial data also seem to indicate that more incursions happen during hours of darkness on the Hobart to Spooner section than in the Wilderness. However, when the data are analyzed by how much traffic occurs during hours of darkness on the weekends compared to the weekdays (Table 3) three of the four sites show marked differences. Both of the Wilderness locations show at least twice as many incursions occur on the weekdays while the Hobart Road location shows twice as many occur on the weekends. The data seem to support the conclusion that local traffic plays a
larger role in trespassing into the Wilderness area than it does in accessing the Hobart to Spooner trail.

TABLE 3
Percent of Mountain Bike Incursions in Prohibited Use Areas During Hours of Darkness on Weekends and Weekdays

<table>
<thead>
<tr>
<th>Location</th>
<th>Percent of Traffic During Hours of Darkness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weekends</td>
</tr>
<tr>
<td>Mount Rose Wilderness West</td>
<td>2.1</td>
</tr>
<tr>
<td>Mount Rose Wilderness East</td>
<td>1.7</td>
</tr>
<tr>
<td>Hobart Road South</td>
<td>9.4</td>
</tr>
<tr>
<td>Spooner Summit North</td>
<td>6.1</td>
</tr>
</tbody>
</table>

The illegal use of the TRT by bicycles seems to be more prevalent at the eastern border of the Mount Rose Wilderness and heading north from Spooner Summit. Neither the Mount Rose Wilderness nor the Hobart Road to Spooner Summit section of the TRT seem to be ridden primarily as entire sections. Instead, riders appear to be going out-and-back or using other trails to create loops or alternative rides that begin or end off the TRT. Visitors are probably responsible for a larger percentage of the incursions at Spooner Summit and Hobart Road while locals are likely responsible for a larger percentage of the incursions into the Mount Rose Wilderness.

Mountain Bike Traffic in Restricted Use Advisory Areas

The study area where mountain bike use is restricted to even days by advisory is between Ophir Creek Trailhead and Tunnel Creek Road. Both of these counters saw much higher ADT counts both on even and odd days than those counters in the prohibited use areas over the same time period, suggesting that more mountain bikers are aware of and respect the use restrictions in place at Mount Rose Wilderness and the Hobart Road to Spooner Summit sections than do for the Ophir Creek to Tunnel Creek Road Section.

Table 4 summarizes the use and ADT for the counters at Ophir Creek South and Tunnel Creek Road North for even and odd calendar days. The counter at Ophir Creek South saw markedly higher use than the counter at Tunnel Creek Road North, particularly on days when the advisory suggests mountain bikes not use the trail.
TABLE 4
Mountain Bike Traffic in Restricted Use Advisory Areas

<table>
<thead>
<tr>
<th>Location</th>
<th>Use on Even Days</th>
<th>Even Day ADT</th>
<th>Use on Odd Days</th>
<th>Odd Day ADT</th>
<th>Percent Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ophir Creek South</td>
<td>6220</td>
<td>144.7</td>
<td>1468</td>
<td>33.4</td>
<td>80.9</td>
</tr>
<tr>
<td>Tunnel Creek Road North</td>
<td>4467</td>
<td>103.9</td>
<td>611</td>
<td>13.9</td>
<td>88.0</td>
</tr>
</tbody>
</table>

The percentage of mountain bike compliance with the even/odd restricted access advisory is also summarized in Table 4. Ophir Creek South saw a lower compliance rate than did Tunnel Creek Road North and higher overall incursions numbers. Anecdotal evidence suggests that this section of trail is most commonly ridden downhill, from Tahoe Meadows to Tunnel Creek Road. At least one shuttle company provides transportation for riding in this direction and does so exclusively on even days. However, Ophir Creek saw about a third more mountain bike traffic than Tunnel Creek Road did, which suggests that a significant number of bikers are making out-and-back trips, or trips that utilize unofficial trails to reach an alternate destination (there are no official trail intersections between the counters though at least one informal trail intersects the TRT near Diamond Peak), instead of riding the section through from end to end. Since the Ophir Creek South counter also recorded a lower compliance rate than the one at Tunnel Creek Road North, the data may indicate that riders who make out-and-back trips or utilize unofficial trails are less concerned with abiding by the restricted access advisory.

Table 5 summarizes temporal trends in restricted use advisory areas during times when mountain bikes are advised not to use the trail, including data on weekday and weekend use trends and data on use during daytime and darkness hours. The data suggest that locals may be responsible for a slightly larger percentage of the incursions at Ophir Creek South than at Tunnel Creek Road North: only 38.8% of incursions at Ophir Creek South occurred on the weekend. Tunnel Creek Road North saw the same percentage of weekend incursions as Spooner Summit North: 41.7%. Ophir Creek South saw the least percentage of incursions in hours of darkness of any site surveyed, while Tunnel Creek Road North saw a slightly higher percentage of nighttime incursions than both Wilderness counters, but lower percentages than Hobart Road South and Spooner Summit North.
TABLE 5
*Temporal Trends of Mountain Bike Incursions in Restricted Use Advisory Areas During Days When Mountain Bike Use is Not Advised*

<table>
<thead>
<tr>
<th>Location</th>
<th>Percent of Traffic on Each Day of the Week</th>
<th>Percent of Traffic Each Time of Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Su</td>
<td>Mo</td>
</tr>
<tr>
<td>Ophir Creek South</td>
<td>20.2</td>
<td>13.6</td>
</tr>
<tr>
<td>Tunnel Creek Road North</td>
<td>17.5</td>
<td>8.8</td>
</tr>
</tbody>
</table>

The data indicate that a higher percentage of odd day traffic happens during hours of darkness at Tunnel Creek Road than at Ophir Creek. While Ophir Creek saw the same use patterns after dark on both weekdays and weekends, Tunnel Creek Road saw markedly more use during the week (Table 6). This may suggest that local users are responsible for a larger share of the odd day traffic at Tunnel Creek compared to Ophir Creek.

TABLE 6
*Percent of Mountain Bike Incursions in Restricted Use Advisory Areas During Hours of Darkness on Weekends and Weekdays When Mountain Bike Use is Not Advised*

<table>
<thead>
<tr>
<th>Location</th>
<th>Percent of Traffic During Hours of Darkness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Weekends</td>
</tr>
<tr>
<td>Ophir Creek South</td>
<td>0.7</td>
</tr>
<tr>
<td>Tunnel Creek Road North</td>
<td>0.3</td>
</tr>
</tbody>
</table>

The Ophir Creek to Tunnel Creek Road section of the TRT is much more popular with mountain bikers than any of the prohibited use areas studied. Ophir Creek South saw much higher use on both even and odd days of the month than Tunnel Creek Road, and likely sees a higher percentage of bikers who are riding the trail on odd days during daylight hours despite the advisory. A greater percentage of the riders on odd days at Tunnel Creek North are likely to be locals who ride when they are least likely to encounter other users: at night during the week.
Commercial mountain bikes first became available in the United States in the early 1980s, just as the movement to build the Tahoe Rim Trail was turning vision into reality. While mountain biking was growing in popularity, conflicts were also arising: in 1983 Boulder, Colorado banned mountain bikes from all trails and fire roads and in 1984 the USFS banned bikes from all designated wilderness areas (Hasenauer, 2007). Construction on the TRT began in 1984 and almost immediately mountain bikers began riding on completed sections. In 1985 the Board of Directors of the Tahoe Rim Trail Fund officially recognized the growing popularity of “the mountain bike sport” and expressed concern with “safety hazards, environmental impacts and liability concerns” (TRTF, October 1992). Not being a landowner, the Tahoe Rim Trail Fund lacked the authority to dictate use on any section of the trail. Instead, the Board adopted a resolution on October 25, 1985 to recommend to land managers such as the LTBMU and the NDSP that mountain bikes be completely banned from the trail. The resolution states:

WHEREAS the Tahoe Rim Trails Committee and volunteer trail builders have noted environmental impacts caused by mountain bikes,
AND WHEREAS the Tahoe Rim Trail’s number one priority is to plan, construct and maintain a low impact trail,
AND WHEREAS mountain bikes do not stay on the trail for whatever reason, which causes a rut,
AND WHEREAS the concerns of private property owners and our negotiations with them will be easier if mountain bikes are restricted from the trail,
AND WHEREAS many volunteers who have shown their dedication to the Tahoe Rim Trail project are being discouraged by the adverse effects caused by mountain bikes,
THEREFORE BE IT RESOLVED THAT MOUNTAIN BIKES BE PROHIBITED ON THE TAHOE RIM TRAIL (TRTF, 1985)

The NDSP agreed to ban mountain bikes from trails (though not roads) within LTNSP but the LTMBU took a more cautious approach, waiting to hear a blanket ruling from headquarters in Washington, D.C. regarding mountain bikes on non-wilderness trails (TRTF, October 1992). Such direction was not immediately forthcoming, and in the interim the default status quo was maintained. This meant that mountain bikes could ride all non-wilderness USFS trails as part of the agency’s multiple-use mandate.

The late 1980s proved to be a time of conflict and turmoil between mountain bikers and other trail users on the Tahoe Rim Trail. No official use statistics were collected and it is unknown how many mountain bikers on the TRT disregarded the regulations banning them from LTNSP, the Pacific Crest Trail and designated wilderness areas. Many hikers, equestrians, and members of the TRTF who were active on the trail and in the trail construction process continued to voice concerns over mountain bike use on trails in general and on the TRT specifically. At least one
president and numerous board members of the TRTF stood strong behind the 1985 resolution, citing the possibility of “danger, destruction and possible death” as “inevitable” if the total ban were not put into effect (Graff, 1989). Additional concerns over liability were also raised. One trail volunteer excoriated Board members for even considering that mountain bikes had a place on the TRT, opining the “inescapable fact” that “millions of dollars” in damages could be levied against individual Board members who voted to rewrite the 1985 resolution (Tisher, 1989).

In order to bring some form of objective reality to bear to what was clearly an emotional hot-button issue, the TRTF and LTBMU organized a task force, known as the Ad Hoc Committee, to study whether or not mountain bikes should be allowed on the TRT on non-wilderness land owned by the USFS (TRTF, October 1992). Comprised of volunteers and USFS staff, the task force was a collaboration between hikers, equestrians and mountain bikers that worked for over two years at resolving the thorny issue, studying myriad facets of concern including the physical environment, user safety, and liability (TRTF, October 1992). The recommendation reached by the task force in March of 1992 was to institute a two year pilot program that used considerations of trail grades, soil stability and alternate routes for return to prohibit mountain bikes from some trail sections but open others to either unrestricted or one-way use. The task force also recommended posting speed limits, installing rubber water bars (that could not erode), and developing educational programs, trail maintenance programs, and monitoring that would be driven by local mountain bike groups (TRTF, October 1992).

That same month the Trails Committee of the Tahoe Rim Trail Fund, responsible for overseeing the construction and management of the trail but ultimately responsible to the Board of Directors, adopted the task force recommendation for a two year trial period and a withdrawal from the 1985 resolution (TRTF, March 1992). The TRTF Board deliberated in April and in May of 1992, considering whether to follow the example of the Trails Committee and adopt the task force recommendations. These meetings were attended by members of the mountain bike community who vociferously opposed the recommendations and “demanded” full access to the TRT without restrictions (TRTF, October 1992). Other meetings held by the USFS were similarly attended, and at one point a representative from the Tahoe Area Mountain Biking Association [TAMBA] claimed that her organization could not deliver on the educational, maintenance, or monitoring requirements stipulated by the task force as they were already over committed (TRTF, October 1992). In early June of 1992, a letter arrived for the TRTF Board from the “Father of the Rim Trail”, Glen Hampton, who had since retired to the East Coast. The letter expressed Hampton’s “anger” over the idea that the USFS would allow bikes on the TRT, and that he “did not foresee” the use of mountain bikes on the TRT when he was planning the trail (Hampton, 1992). Hampton felt that the “experience of beauty, diversity and solitude” would be “shattered for all time with the addition of trail bikes” (Hampton, 1992). A few weeks after receiving the letter, in a vote held June 28, 1992, the Board voted nine in favor, three against (with one abstention) to officially recommend that all mountain bikes be prohibited on the TRT and that the USFS be actively lobbied to enact such a ban (TRTF, October 1992).
The USFS did not acquiesce. Rather, the effort was made by the LTBMU to formulate a Mountain Bike Management Program which would address the evolving “character of recreation” in the Tahoe Basin while clearly (and defensibly) outlining the decision of the agency to provide the public with multi-use trails, including sections of the TRT (Lake Tahoe Basin Management Unit [LTBMU], 1993). Some aspects of the task force recommendations were included in the USFS Mountain Bike Management Program, including signage upgrades and monitoring. The Plan set regulation to encourage mountain bikers to use “unsurfaced roads where available” and left trails in those areas open only to hikers and equestrians (Karkula, 1993). An example of this strategy is the TRT section between Spooner Summit and Kingsbury Grade where the Genoa Road is available. In locations where single track trails were the only means of backcountry travel available those trails would be open to mountain bikes. Ultimately about 21 miles of the TRT was officially opened to mountain bikes through implementation of the Plan (Coverdale, 1993).

The LTMBU implemented the Mountain Bike Management Program on June 16, 1993, to the consternation of leadership within the newly renamed Tahoe Rim Trail Association. The President of the TRTA contended that there was little opportunity for public discussion or review, that the TRTA position letter regarding the Plan was ignored, and that the LTBMU should “prohibit any mountain bike use of any segment of the Tahoe Rim Trail until further study and the development of real programs aimed at providing for the safety and quiet enjoyment of hikers and equestrians” were enacted (Maupin, 1994). Further, the TRTA was “willing to participate in discussions and the gathering of data and the search for methodologies which would permit the safe and harmonious combinations of the three uses at some locations” (Maupin, 1994). While initially opposed to implementing the findings of the ad hoc mountain bike task force, it would appear that the TRTA had decided that being involved in such a committee would offer the group more say in regulating mountain bike use in partnership with the USFS than issuing across the board bike prohibition recommendations. Another Mountain Bike Task Force was assembled to attempt to influence management decisions regarding bike access (Graff, 1995).

With the wind at their backs following the release of the 1993 Mountain Bike Management Plan, TAMBA and other mountain bike advocates intensified their lobbying efforts to open the TRT in LTNSP to riding. In 1995, they succeeded in convincing the Park to conditionally permit mountain bike use from the Hobart Road/Marlette Road junction to Tunnel Creek Road (Perock, July 1995). This section of trail has remained open to bikes ever since. As support for their decision, NDSP cited the recent USFS Mountain Bike Management Plan, the fact that TAMBA helped to build some of the trail in that section, and that TAMBA signed a memorandum of understanding to agree to maintenance and assisting with regulation advocacy (Perock, August 1995). Shortly thereafter, the even/odd restricted use advisory between Tahoe Meadows and Tunnel Creek Road was put into effect (Champion, 2013) to “preserve solitude and for hikers and equestrians to be able to experience unimpeded opportunities on this section of the TRT”
Such a designation was the brainchild of a local mountain bike advocate, business owner, and trail volunteer who had seen such designations work well to reduce user conflicts in Colorado (LTNSP, 2016). This advisory remains in effect. At this time the Task Force also recommended continuing to prohibit mountain bikes from the TRT between Hobart Road and Spooner Summit (Champion, 2013), primarily due to poor sight lines and concerns over equestrian conflicts. That recommendation was enacted and despite efforts by TAMBA and other mountain bike advocacy groups remains policy to the present time.

The trail from Mt. Rose Summit to the eastern Mount Rose Wilderness boundary was constructed as a hiker only trail in the late 2000s and early 2010s (USDAFS, 2010). It has remained prohibited to mountain bikes and equestrians since its official opening due to high use levels, an alternate route provided by forest roads, and its inevitable entrance to designated wilderness.

Ultimately, the entire TRT has been designated as open to mountain bikes outside of designated wilderness, the sections co-located with the PCT, some side trails and short sections of prohibition and advisory on the northeast quadrant of the loop.

**Analysis of Maps and Brochures**

Brochures and maps produced by the agencies and organizations that manage the trail are one of the primary sources that trail users can consult to understand rules and regulations. Because the agencies and organizations have more control over the content of these materials than those produced privately they should be more easy to modify. Similarly, signs at trailheads and other trail entry points are also produced and maintained by management agencies and organizations and, among other ends, serve to educate trail users on permissible activities. Analyzing these sources of information to the public can help determine if rules and regulations are being conveyed clearly.

**TRTA Segment Brochures and Maps**

The TRTA produces segment brochures with maps that cover the entire TRT. The two segment brochures that cover the trail in the study areas are the Brockway Summit to Mt. Rose Trailhead brochure and map and the Tahoe Meadows to Spooner Summit brochure and map (see Appendix B). These brochures are available for download to a computer or mobile device on the TRTA website and are printed and stocked at the TRTA office, the relevant trailheads, and at other locations likely to be frequented by trail users, such as the Lake Tahoe Visitor Center.

The Brockway Summit to Mt. Rose Trailhead brochure contains text related to mountain bike use under two headings: “Multiple Use Trail” and “Mt. Bikers and Equestrians”. Neither section of text clearly indicates which sections of the trail are prohibited for mountain bikes and some of the text is misleading. While the text states that “Hikers only [are allowed] on the single track
trail past Galena Waterfall” since trail traffic moves in both directions it is unclear which
direction is “past”. The point is moot, however, as mountain bikes are prohibited on the trail that
passes Galena Waterfall at any point. The next sentence advises that “mountain bikers must use
the connector trail… which is the equestrian and bike route to Mt. [sic] Rose Wilderness boundary”. While technically true, this direction is misleading to anyone who is not already
familiar with regulations prohibiting mountain bikes from designated wilderness areas. There is
no indication that mountain bikes would be expected to stop at the wilderness boundary, just that
the connector trail leads to the Mount Rose Wilderness. This point is clarified further on when
the text clearly states “Biking not allowed within Mt. [sic] Rose Wilderness” but it is possible
that mountain bikers, having already read the section pertaining to “Multiple Use” would not
bother to continue to read the remaining text.

The Tahoe Meadows to Spooner Summit brochure contains text related to mountain bike use
under two sections as well: “Multiple Use Trail” and “Biking”. The former section states simply
“The TRT hosts bikers, equestrians and hikers. Please yield accordingly”. This statement is
misleading as it makes no mention of the sections on this part of the trail that are under a
mountain bike use advisory or of the section on which all mountain bike traffic is prohibited. The
“Biking” section of text does a better job of relating the rules but fails to make any distinction
between the advisory and the prohibitions. Instead, the verb “allowed” is used for both, which
makes it seem like all areas are managed under the same policy, which is incorrect. Neither
brochure presents text that is clear, accurate, and concise.

The maps accompanying both segment brochures contain a wealth of information, including
information on prohibitions and advisories related to mountain bike use. However, the maps are
printed both digitally and on paper using a single-tone that makes it difficult to distinguish
between line types, particularly where the TRT crosses through the Mount Rose Wilderness or
close to other trails or roads. In addition, there is a lack of consistency in the use of text boxes to
make important regulations related to mountain bike use stand out, and the small, thin font used
to display those regulations is difficult to pick out from the contour lines behind it. The lines
used to delineate where the regulations are valid are imprecise and misleading, particularly on
the section only open to hikers between the Mt. Rose Trailhead and the Mount Rose Wilderness
boundary. Additional confusion arises in the Brockway Summit to Mt. Rose Trailhead map from
the use of the same icon to indicate both the location of trailheads and permitted travel by foot,
particularly since only one use of the symbol is indicated in the legend. As in the text, no attempt
is made to distinguish between advisories and prohibitions. While the maps do convey some of
the required information for mountain bikers to understand when and where they can and cannot
travel on the TRT, the maps are not visually clear, completely accurate, or easily understood at a
glance.
The Nevada Division of State Parks (NDSP) and the Lake Tahoe National Scenic Byway (LTNSP) produce a brochure and map for users of the Spooner Backcountry area through which the TRT passes (see Appendix C). This information is available for download to a computer or mobile device on the LTNSP website and is available in print form at LTNSP, other state parks in the area, and at other locations where trail users are likely to frequent such as the Lake Tahoe Visitor Center.

The brochure features a picture of a mountain biker and the text mentions that bikes are available for rent at Spooner Lake (this is incorrect, the concessionaire no longer operates at Spooner Lake but the brochure has not been revised to reflect this) but makes no mention of mountain bike use regulations. Under the map, a text box titled “Trails For Everyone” does mention the advisory and prohibitions for mountain bikes on the TRT and even presents a reason for the advisory, stating that the even/odd day advisory is meant to “…alleviate congestion…”.

The trail map is remarkable cluttered and difficult to read. While a key is provided, it is not a graphic key but simply text, which makes it hard to use to locate the TRT amongst the many other roads and trails. Depicting the TRT in green while using a USGS Topo Map that has a primarily green background adds to the difficulties. In addition, the North Canyon Trail, which is not a TRT system trail, is labelled as being so. While the advisory and prohibitions regarding mountain bikes on the TRT in this section are presented, the overall clutter of text boxes that are all identical in appearance makes it difficult to find such information easily. Trail users who are not aware that regulations may be in place are likely to overlook the relevant text. In addition, the map does not give a visual indication of where the advisory and prohibitions begin and end on the trail other than with text that in most case is only loosely associated with the feature it describes. For those unfamiliar with the area it could be difficult to parse out where the regulations begin and end.

While the text and the map provided for trail users by NDSP do accurately represent mountain bike advisories and prohibitions, the information is not readily accessible or easily understood, particularly to those who are unfamiliar with the area.

United States Forest Service Brochures and Maps

The Lake Tahoe Basin Management Unit (LTBMU) of the USFS produces a brochure and map for hiking trail users in the northern and eastern regions of the Tahoe Basin (see Appendix D). This information is available for download to a computer or mobile device on the LTBMU website and is available in print form at LTBMU visitor centers. The LTBMU does not publish a brochure or map specifically for mountain bike users.

The introductory text for the brochure states that “Hikers, mountain bikes and horses are allowed on most trails, however, mountain bikes and horses are not allowed on the Mt. Rose and Tahoe Meadows trails.” This text is confusing and misleading. The Mt. Rose trail could be considered
to be the trail that leads from Mt. Rose Summit to the peak of Mt. Rose. While this trail is closed to bikes and equestrians, the trail beyond the cutoff to Mt. Rose is also closed to bikes and equestrians but is not mentioned. Further, the fact that the trail is closed in the Mount Rose Wilderness to bikes is not mentioned. There is no mention anywhere in the brochure of the route up to Relay Peak that also begins at Mt. Rose Summit and is open to mountain bikes and equestrians. Similarly, it is not clear what trails are meant by “Tahoe Meadows trails”. Certainly some trails accessed from the Tahoe Meadows trailhead are not open to bikes or horses, but that is not true for majority of the trail mileage in the area. The TRT at Tahoe Meadows is open to horses without restriction and has an advisory for mountain bikes.

The brochure describes three trail segments in more detail that are relevant to this study. In the Mt. Rose Summit section of the text, it is clearly stated that “Mountain bikes and horses are NOT permitted on this trail.” However, no mention is made in that section or in the Brockway Summit to Martis Peak section that the nearby Mount Rose Wilderness is also closed to bikes despite the proximity of the wilderness area and the fact that the TRT from both directions inextricably leads to the wilderness boundary. The text describing the trail north from Spooner Summit makes no mention of the fact that mountain bikes are not permitted.

The map that accompanies the text is only meant to orient users to the locations of trailheads, and does not detail the trails or any regulations or prohibitions pertaining to their use.

The text and the map provided for trail users by the LTBMU do not accurately represent mountain bike advisories and prohibitions either in written or graphic form.

Analysis of Signage

Trail signs are installed by trail managers to educate and orient users. Signage at trailheads and at boundaries between management areas is particularly useful for conveying important information regarding permitted uses, advisories, and other pertinent details about what users can expect (and what is expected of them) on the trails ahead. A complete inventory of trail signage regarding the study sites can be found in Appendix E.

Mount Rose Wilderness Signage

A signage inventory for the Mount Rose area can be found in Figure 4. The nearest access point to the trail that leads into Mount Rose Wilderness from the west is from Martis Peak Lookout Road. This informal trailhead has no signage regarding use prohibitions in the nearby wilderness, nor does it provide information on the distance of trail to the wilderness boundary. The only use-related sign prohibits motorized use. There are no additional signs between the trailhead and the wilderness boundary that refer to use aside from a single carsonite post that again prohibits motorized use. Upon reaching the wilderness boundary, a prominent metal sign greets trail users.
This sign clearly indicates that the trail is entering the Mount Rose Wilderness and that bikes are prohibited.

The trailhead at Mt. Rose Summit clearly indicates that bikes are not allowed on the trail from the summit to Galena Waterfall, Mt. Rose, and beyond into the Mount Rose Wilderness. The eastern boundary of the Mount Rose Wilderness is immediately adjacent to the junction between the alternate route for equestrians and mountain bikes near the top of Relay Peak. At this point there is another prominent metal sign identical to the sign on the western boundary. In addition, there is another post with two signs, one clearly indicating that bikes are prohibited in the wilderness area and another that outlines which uses are permitted on the trails that meet at the junction. In addition, a more traditional wooden wilderness boundary sign is also present. However, about 50 feet past the wilderness boundary a contradictory and confusing sign is posted in a tree alongside the trail that indicates bikes are allowed. In its original form this sign likely had a diagonal red line striking through the bike symbol to indicate that bikes are prohibited. However, at this south-facing, high altitude location the red line may have been erased by ultraviolet light.

While signage leading to the western border of the Mount Rose Wilderness could be improved to notify trail users of the upcoming wilderness area and its regulations, the signs at Mt. Rose Summit trailhead and at both wilderness boundaries are unambiguous about the bike prohibition with the exception of the sign suspected of suffering from sun damage.

**Ophir Creek South to Tunnel Creek Road North Signage**

A signage inventory for the Ophir Creek to Tunnel Creek Road area can be found in Figure 5. Signage on the trail near the informal Ophir Creek trailhead unambiguously states that there is a mountain bike advisory on the upcoming section of the TRT. It also provides users with the length of the trail that is under advisory and provides the beginning and ending locations of the advisory. There is text that provides the rationale for the advisory. The only ambiguity is that users could interpret the sign as prohibiting mountain bike use on odd days rather than only advising it. A few hundred yards further on at the Ophir Creek Trail/TRT junction, further signage reinforces that there is an advisory for mountain bikes “to ride on **EVEN** days only”.

At the southern end of the mountain bike advisory trail segment at Tunnel Creek Road the same unambiguous signs notify users of the advisory. Although this location is some distance from the nearest vehicle access for recreationalists, it is also at a four-way junction where the other three trails are open to mountain bikes and within a short distance of a number of other junctions with other trails open to bikes. There is no need for trail users on bikes to turn around such as required at the wilderness boundaries; they have access to a number of alternative trails.

Signage at both ends of the mountain bike advisory section of the TRT is consistent and clear. While more of an effort could have been made to indicate for those users that are unfamiliar with
LEGEND

- Trail Counters
- No Bicycle Restrictions
- Bicycles Prohibited
- Bicycle Advisory

- National Forest
- Designated Wilderness
- Lake Tahoe
- NV State Park

CONCEPT MAP

0 0.45 0.9 Miles
such terminology that the even day use recommendation is not a prohibition on odd day use, all
signs clearly state it is an advisory.

**Hobart Road South to Spooner Summit North Signage**

A signage inventory for the Hobart Road to Spooner Summit area can be found in Figure 6. Recreationalists cannot access the Hobart Road junction in a vehicle, but similar to the Tunnel Creek Road junction, several trails intersect here and all but the TRT heading south are open to bicycles. Two signs greet trail users heading south on the TRT at this junction. The first does not indicate prohibited uses but does indicate the distance to prominent destination (Snow Valley Peak) and to the next trailhead (Spoonер Summit). 50 feet beyond, another sign indicates that horse and foot traffic are the only permissible uses, thus excluding both motorized and mountain bike users (though motorized recreationalists are prohibited throughout this section of LTNSP).

Alongside a sign noting distances to possible destination points and another explaining camping regulations, the Spooner Summit North trailhead presents users with three separate signs regarding mountain bike use regulations. First is a sign identical to that found at Hobart Road South indicating that only horse and foot traffic are permitted. Second, a sign with a mountain bike and a red diagonal line striking through it indicates no bikes are permitted. Third, a hundred feet or so beyond the start of the trail, a sign indicates that horses and hikers only are permitted, with graphics showing that both mountain and dirt bikes are not allowed.

While users must travel a short distance on the trail from Hobart Road to learn that bikes are not permitted, the signs at both ends of the section are unambiguous.
CHAPTER 4
CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The purpose of this project is to identify how many people are entering restricted use areas of the TRT on mountain bikes and how trail managers can adopt policies and practices to reduce such traffic. This traffic reduction would likely result in improvements in significant management areas including user conflicts, ecological and trail maintenance issues, economic considerations, and administrative concerns. To determine the best management practices, it is essential to gain an understanding of who these trail users are because different management strategies will likely be effective in reaching different user groups (Hammitt, Cole & Monz, 2015). Understanding the historical context of multiple-use trail management also provides lessons in what approaches may be most likely to have success in the current situation. Utilizing a combination of both direct and indirect management approaches is likely to yield the best results (Hammitt, Cole & Monz, 2015).

Based on the data collected, visitors are likely responsible for most of the mountain bike incursions into prohibited use areas of the trail as well as most odd-day traffic in the restricted use advisory section. Visitors are less likely to be aware of local regulations, and therefore may not be knowingly breaking the rules. This presents an opportunity to educate visiting riders directly, both before they arrive at the trail through brochures and maps, and at the trailhead and on the trail through signage.

However, some mountain bikers in prohibited use areas are likely locals who know the rules and choose to break them. These riders are likely more prevalent in the Mount Rose Wilderness. Such users also likely constitute a larger portion of the riders using the trail north of Tunnel Creek Road on odd days. Modifying brochures, maps and signs are not likely to dissuade these users from entering prohibited or restricted use advisory areas on mountain bikes. Instead, management approaches such as providing alternate routes, building community alliances, or increasing the presence of agency and community patrols may be more effective in achieving user compliance with management policies.
**Recommendations**

Recommendations including direct and indirect management actions are detailed below. Table 7 provides a matrix that outlines these recommendations, including information on target audiences and the expected effectiveness of each approach in addressing those issues identified as being significantly affected by mountain bike use in prohibited or restricted use advisory areas.

**Improve and Maintain Signage**

The most incursions on prohibited use areas occur at the eastern border of the Mount Rose Wilderness and heading north from Spooner Summit. Both of these locations already have clear and comprehensive signage in a greater abundance than at Mount Rose West and Hobart Road South, which saw fewer incursions. Based on the data, it does not appear that increased signage alone would be effective in deterring prohibited use incursions. However, all efforts should be made to ensure that existing signage is accurate and as effective as possible. Therefore, the sign at Mount Rose east indicating that bikes are allowed should be removed or replaced with a sign indicating that bikes are prohibited. In addition, a sign immediately adjacent to the Hobart Road junction indicating that bikes are prohibited from that point to Spooner Summit is warranted.

Existing signage for trail users entering the restricted use advisory area is clear and prominent and should be maintained. Additional language that incorporates the voluntary nature of the advisory should be considered for future iterations of the signage.

Signage is likely to be effective only with visitors to the area that do not already know the rules (Park et al., 2008). Additional signage is not likely to have a great effect on user conflicts since existing signage is already clear. Ecological and trail maintenance issues will not be addressed in any significant way by signage. Economically, small signage upgrades are relatively minor and consist only of the cost of the signs and minimal volunteer and/or staff time for installation and monitoring. Administratively, signage does not constitute a significant burden as it is already part of the management plan. The TRTA already manages signage throughout the trail through the use of grant funding, volunteers, and staff.
### TABLE 7

**Recommendations to Improve Prohibition and Advisory Compliance**

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Target Audience</th>
<th>Predicted Effect on Significant Issues Related to Mountain Bike Use in Restricted Areas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Reducing User Conflict</td>
</tr>
<tr>
<td>Improve &amp; Maintain Signage</td>
<td>Visitors</td>
<td>Minimal</td>
</tr>
<tr>
<td>Update Maps &amp; Brochures</td>
<td>Visitors</td>
<td>Moderate</td>
</tr>
<tr>
<td>Build New Trail to MTB Standards</td>
<td>All</td>
<td>Moderate</td>
</tr>
<tr>
<td>Rebuild Existing Trail to MTB Standards</td>
<td>All</td>
<td>Moderate</td>
</tr>
<tr>
<td>Hold Mountain Biking Clinics</td>
<td>All, Especially Locals</td>
<td>Significant</td>
</tr>
<tr>
<td>Sponsor Guided Rides</td>
<td>All, Especially Locals</td>
<td>Significant</td>
</tr>
<tr>
<td>Increase Visibility of Authorities and Community Patrols</td>
<td>All, Especially Locals</td>
<td>Significant</td>
</tr>
<tr>
<td>Eliminate the Dead Ends at Mount Rose Wilderness</td>
<td>All, Especially Locals</td>
<td>Minimal</td>
</tr>
<tr>
<td>Eliminate Prohibition from Spooner Summit North to Spooner Lake Trail</td>
<td>All, Especially Locals</td>
<td>Minimal</td>
</tr>
<tr>
<td>Recommendation</td>
<td>Target Audience</td>
<td>Predicted Effect on Significant Issues Related to Mountain Bike Use in Restricted Areas</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>User Conflict</td>
</tr>
<tr>
<td>Construct Additional Odd-Day MTB Options</td>
<td>All</td>
<td>Significant</td>
</tr>
<tr>
<td>Support MTB Trail Construction Efforts Off the TRT</td>
<td>All</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

**Update Maps and Brochures**

Brochures and maps should be updated so that they are easy to read, accurate, and concise in relating use prohibitions and advisories, particularly for mountain bikers. The TRTA maps and brochures should have a single section in their text for addressing regulation, and the syntax should be clear, detailed, and concise. Information on why regulations are in place should be included. Since printing the maps in multiple colors is likely to be prohibitively expensive, the single-tone maps should be upgraded to enhance clarity. Consideration should be made for making multi-colored maps available digitally. All text should be paired with opaque text boxes, and there should be more substantial differences between line types and different line types should be used to delineate where different uses are allowed. Contour lines should be de-emphasized and partially transparent. Icon use should be expanded to differentiate between trailheads and hiker-only trail sections, and a clear difference should be made between the advisory area and the prohibited areas.

The NDSP map should be overhauled. Inaccuracies noted in the previous chapter should be corrected and text boxes should be minimized and diversified to present regulations in a more easily understood manner. Different line weights, colors, and line types should be utilized to identify areas of prohibition and advisory, as well as to differentiate more clearly between roads and trails.

The USFS brochure should be more specific when it notes where mountain bike use prohibitions and advisories are in place. Specific mention of Mount Rose Wilderness and the mountain bike prohibition there should be made. While the accompanying map is very simplified, it could easily include additional regulatory information that would help users in both locating trailheads and understanding what uses are allowed from each trailhead.
Upgrading the maps and brochures is likely to be effective in educating and influencing visitors who are not already familiar with the trail system. Upgraded maps may have a moderate effect on reducing user conflict since mountain bikers will be more familiar with local regulations. Ecological and trail maintenance issues are not likely to be much affected. Since the agencies and organizations are already paying to print and/or distribute the maps and brochures, upgrading them should not have a huge economic cost, though there will be moderate administrative costs in effecting the upgrades. Agencies could potentially offset a large portion of these costs by requesting that the TRTA assist with paying for and/or completing the upgrades, covering the costs with grant funding and/or volunteer assistance.

**Build and Rebuild Trail Sections to Mountain Bike Standards**

Restricted use areas of the TRT are often subject to rerouting that can range from minor sections of only a few yards to significant reroutes of several hundred yards or more. In addition, trail connections, spurs to vistas, and other new trail construction is an ongoing process. When planning and enacting such construction, best practices should be followed to ensure that new trail meets standards for mountain bike use, even in locations where such use is prohibited. In this way, even if regulations are ignored there will be a minimal impact on the integrity of the trail and the surrounding areas.

In addition, sections of trail in all areas can be modified to improve the multiple-use trail experience. Since the TRT was not originally designed and constructed for mountain bike use, many sections of the trail lack long sight lines or the necessary design features to mitigate mountain bike speed. By modifying the existing trail to include longer sight lines, increased tortuosity, and enhanced tread rugosity all trail users will be able to see each other coming from a further distance and mountain bike riders will need to restrict their speed to adjust to the more technical nature of the trail.

Both building new trail and rebuilding old trail to mountain bike standards will affect all users and is likely to have a moderate effect on reducing user conflicts. Primarily, these techniques will reduce trail maintenance issues and negative ecological impacts. However, whereas building new trail to mountain bike standards will have a minimal effect economically or administratively (the trails would be built anyway and incorporating the standards should not create any significant additional burdens) the process of rebuilding old sections of trail that would otherwise just be maintained to a hiker and equestrian standard would be a significant burden.

**Hold Mountain Biking Clinics and Sponsor Guided Rides**

While neither the LTBMU nor the LTNSP have the resources or mandate to offer interpretive or educational services in the form of guided outings on the TRT the TRTA has both. Currently, the TRTA offers numerous opportunities for both Association members and the general public to engage with the trail and surrounding natural communities in the form of guided hikes, educational sessions (such as “How to Hike the TRT”), and youth backcountry camps. Drawing
on its experience in providing such experiences at no or very low cost, the TRTA could choose to offer similar programs for mountain bikers. While such programs would not directly affect bike use in restricted areas, it would likely have several positive outcomes that could indirectly affect such use. First, executing such programs with a focus on responsible trail use would help to educate young and emerging riders on the reasons behind use restrictions and the value in respecting them. These riders may, in turn, influence others in the mountain bike community. Second, such programs would demonstrate to the mountain biking community that the TRTA and other trail managers are not, as a rule, opposed to bike use on the TRT, a common perception given the thorny history of mountain bike use on the trail. Once such a barrier is broken down, it may be more likely that mountain bikers would respect trail management regulations and advisories.

Though such programs would be open to the general public, with current TRTA programs as a model it can be expected that most participants would be locals. The programs would not be likely to have much effect on trail maintenance or ecological issues, but could have a significant impact on reducing user conflict over time. Such programs would require grant funding, significant staff time for planning and logistics, and significant volunteer input to run. However, proven models are already in place for very similar hiking programs and could be adopted for mountain bike programs.

Increase Visibility of Authorities and Community Patrols

The presence of law enforcement and community patrols is likely to be an effective way to reduce restricted use incursions. Federal authorities (ie. USFS rangers) could utilize the counter data presented in this report to pinpoint times when trespass by mountain bike riders into the Mount Rose Wilderness would be most likely. Tickets could be issued to individuals who break the law, particularly locals who know the rules and choose to ignore them, and social media and other communication tools could spread the message that previously unpatrolled areas are now being visited by law enforcement. It would not require a large amount of USFS staff time to create an environment where trespassing into a designated wilderness carried a real risk of being fined. State Park rangers could perform similar actions on LTNSP land between Spooner Summit and Hobart Road. However, such enforcements would not be appropriate in the use advisory area. Instead, mountain bike patrols consisting of volunteers could work the trail between Tahoe Meadows and Tunnel Creek Road. Such a program is already in existence, but has a minimal presence and does not specifically target education of odd-day cyclists. In addition to educating mountain bikers who choose to ride during unadvised days, the presence of slow-moving, uniformed, respectful cyclists on odd-days, cyclists who dismount and yield to other users at each encounter, may have a positive effect on the perception of mountain bikes within the hiking and equestrian communities. An additional benefit to the presence of both authorities and community patrols may be that trail users who see figures of authority in their midst may be less likely to feel the need to enforce prohibitions or advisories on their own. This may reduce rare but serious occasions of aggressive behavior between users.
The target users for such enforcement programs would primarily be locals. Such programs have the potential to significantly reduce user conflicts and at a modest economical and administrative cost. Groups like TAMBA and the TRTA could apply for grant funding to help offset the costs of agency personnel and could completely cover the costs of volunteer patrols. Administration of volunteer patrols would need minimal agency input. Little ecological or trail maintenance effect would likely result from this program.

Eliminate the Dead Ends at Mount Rose Wilderness

The trail system does not currently provide mountain bikers with loop options from the borders of the Mount Rose Wilderness. Riders approaching from the east can ride all the way to the border, where regulations require them to turn around and return the way they came. Riders from the west can utilize the alternate TRT (a forest road) to reach the wilderness boundary, but have no legal option except to turn around on the same trail. When people have no options other than to return the way they came or press on against regulations, they will be more likely to press on than if they had an alternative route. Such routes could be constructed to provide mountain bikers with legal options for continuing a ride without having to travel on the same trail they already rode on.

Such new trails would benefit all mountain bike users, as well as other trail users who are looking for alternatives to out-and-back routes. Local trail users would particularly benefit as they have the most to gain from increasing the diversity of trail experience in the area. Benefits to user conflicts and ecological and trail maintenance issues would likely be minimal. The cost to building significant mileage of new trail, both in economic terms and administrative burdens, would be high. Extensive environmental compliance documentation, trail design and layout, and physical trail construction would need to be undertaken.

Eliminate Prohibition from Spooner Summit North to Spooner Lake Trail

Trail users arriving at the Spooner Summit North trailhead are immediately confronted with signs that indicate mountain bikes are prohibited on the trail ahead. However, approximately 100 yards from the trailhead a connecting trail creates a link from the TRT to the Spooner Lake Trail. The Spooner Lake Trail and the connector are open to hikers, bikers and equestrians (equestrians are allowed on the connector and the north side of the loop only). By clearly signing that the TRT is open to bikes from Spooner Summit north to the Spooner Lake Connector Trail (and beyond on LTNSP trails), mountain bikers would be able to use the Spooner North trailhead without breaking LTNSP regulations. They would also have an option to comply with regulations and still be able to ride should they arrive at the trailhead without knowing that bikes are not allowed on that section of the TRT. The Spooner North trailhead is free of charge for all users. At the nearby Spooner Lake trailhead users are charged a parking fee. Allowing mountain bikers to utilize the free trailhead if they wish would be more fair and would likely help riders, particularly locals, appreciate that trail managers are doing everything in their power to treat them with respect. In addition, there is currently no parking at the Spooner North trailhead for
equestrians. While future upgrades planned for the trailhead would provide trailer parking and
equestrian facilities, equestrians currently utilize an unofficial pullout east of the trailhead and
join the TRT through an unofficial trail that connects from the pullout north of the Spooner Lake
Connector. Therefore, the bike/equestrian conflicts that are a large part of the reason that bikes
are not allowed north of Spooner Summit would still be avoided.

All mountain bikers would benefit from this rule change, particularly local users who could
enjoy access to the Spooner backcountry without paying parking fees. There would not be
significant costs to the change, as the trail already exists, is extremely short, and is not on terrain
that would require trail upgrades to accommodate mountain bikes. Some signage changes at
minimal cost would be required.

*Construct Additional Odd-Day Mountain Bike Options*

Constructing trails that are open to mountain bikes and connect to the TRT near the Ophir Creek
trailhead would provide mountain bikers with alternative options for recreating in the area on
odd days. Mountain bikers who are unaware of the even day use advisory for bikes, or are
unaware of the high use of the trail by hikers which has led to the advisory, arrive at either end of
the use advisory section on odd days with no options except to try to find a different trailhead or
to bike on a trail where their presence is unadvisable (the Ophir Creek Trail is also accessible
from the Ophir Creek trailhead but is not recommended for mountain bikes at any time due to its
poor condition). Some trails that could meet this recommendation are already under
consideration, though at least one, the Incline Flume Trail, would need additional planning and
compliance documentation to be completed to construct a connector trail to the TRT. Providing a
way for riders to remain in compliance with advisories on odd days would likely improve
compliance levels.

Since much of the anecdotal user conflict stems from mountain bike use of the advisory section
of the TRT on odd days, providing alternative trails to reduce the demand for that section of the
TRT among mountain bikers should significantly reduce mountain bike numbers on odd days
and thus reduce user conflicts. The ecological and trail maintenance effects to the existing
advisory section of trail would not likely see much change since that area is already highly used
by bikes on even days. As in other recommendations, the economic and administrative burden of
constructing new trails is significant.

*Support Mountain Bike Trail Construction Efforts Off the TRT*

The construction of additional trails open to mountain bike use in the Tahoe Basin and
surrounding region could help to alleviate some of the visitor use burden on the TRT by
providing alternative recreation opportunities. Additional trails can spread users out over more
mileage and reduce the pressure on existing trails, especially trails where use is restricted and
already providing motivation not to recreate in that location. If mountain bikers are presented
with enough good options of places to ride they will not be as likely to visit areas that are restricted.

TRT managers do not have to actively plan or build these additional trails. By advocating for and assisting other groups interested in building these trails, TRT managers are likely to see indirect benefits accrue to the TRT. There is little cost to providing such support but much to gain in reducing user conflicts and increasing compliance with existing regulations and advisories.

**Data Limitations**

This project was undertaken with the goal of providing accurate information on mountain bike use in restricted areas on the TRT. While data collection was accomplished following rigorous standards, there are nonetheless some limitations to the data assembled and utilized herein. First, while the trail counters used in this study are widely regarded as among the most accurate and efficient means of gathering use data on trails, they are not infallible. While some data points are likely inaccurate, the overall trends and ‘big picture’ results are dependable.

Another limitation to the data collection was the limited timeframe. Collecting data for longer within a given year and over multiple years would provide a more robust picture of mountain bike use in restricted areas. Due to the logistical difficulties of collecting such data, a single season time frame was utilized.

**Further Research**

This project produced actionable recommendations for trail managers for reducing incursions by mountain bikes where they are prohibited by law or constrained by policy. Continuing research should be done to verify the data collected for this project by comparing it to similar data from future years. In addition, future data collection may establish trends that are useful for modifying and fine-tuning management decisions.

Additional data collection on mountain bike traffic on other sections of the TRT system is also warranted. By working closely with the PCTA and other stakeholders, counters should be installed to gather data on bike use on the PCT/TRT co-aligned trail. Other short side trails that were not within the scope of this project but that also have bike use restrictions should be studied as well.

The recommendations that are the result of this project should be discussed by the various managers of the TRT system to develop plans for their implementation based on their feasibility and likely effects. As a group, TRT managers have considerable resources at their disposal and
should decide together where to spend their efforts to improve this aspect of the management of the trail.
REFERENCES


Karkula, K. (October 5, 1993). [Form letter responding to public comments about mountain biking the Spooner-Kingsbury area]. Tahoe Rim Trail Association Archives (History: Task Force on Mountain Bikes), Tahoe Rim Trail Association Office, South Lake Tahoe, CA.


Partnership agreement between PCTA and TRTA. (2016). Tahoe Rim Trail Association Archives (Partnership Agreements), Tahoe Rim Trail Association Office, South Lake Tahoe, CA.


APPENDICES
Appendix A. Trail Counter Installation Details

Locations selected for counter installation were approximately 200 feet past the location where the restricted use area began (with the exception of the Ophir Creek counter which was further from the border due to excessive trail widths) and ideally showed evidence of recent bike use. All installations took place where the tread width was 6.6 feet wide or narrower and all counters were buried 6-8 inches deep.

Mount Rose West

Evidence of recent bike activity near the counter installation point at Mount Rose West.
Tread width at the counter installation point at Mount Rose West.

The tread after installing the counter at Mount Rose West.
The counter in situ (left) and retrieving the undisturbed counter (right) at Mount Rose West.

Mount Rose East

Tread width at the counter installation point at Mount Rose East.
The counter installation location before installation (left) and in situ (right) at Mount Rose East.

The Mount Rose East counter in situ and undisturbed before retrieval.
Excessive trail widths at Ophir Creek (left) necessitated putting the counter further from the trailhead than at other locations. Trail width at Ophir Creek counter installation point (right).

The Ophir Creek counter in situ and undisturbed before retrieval.
Retrieving the undisturbed counter at Ophir Creek.

Tunnel Creek

The counter installation location before installation (left) and tread width (right) at Tunnel Creek.
The counter in situ at Tunnel Creek.

Hobart Road

Evidence of recent bike activity near the counter installation point at Hobart Road.
The tread width at Hobart Road installation point.

The counter at Hobart Road being placed in the tread at a depth of 6-8”.
The counter in situ at Hobart Road.

Retrieving the undisturbed counter at Hobart Road.
Evidence of recent bike activity near the counter installation point at Spooner Summit.

The tread width at Spooner Summit installation point.
The counter site at Spooner Summit after installation.

The counter site at Spooner Summit prior to retrieval.
Appendix B. TRTA Segment Brochures and Maps
BROCKWAY SUMMIT TO MT. ROSE TRAILHEAD
20.2 MILES

Highlights
☑ Tremendous panoramic views
☑ Highest point on the TRT - Relay Peak

Trailheads
Brockway Summit East: Turn east off Hwy 247 onto dirt road (USFS 16N56) 0.5 mi. south of summit. Limited parking. No facilities.
Alternate Access: Many trails and fire roads cross the TRT near Brockway Summit. Consult a map for details.

Trail Info
Signage: The trail is marked at intervals with light blue, triangular TRT logo signs.

Distances:
Brockway to Martis Peak access trail 43 mi.
Brockway to Mt. Rose Wilderness 76 mi.
Mt. Rose trailhead to Mt. Rose access trail 24 mi.
Mt. Rose trailhead to Mt. Rose Wilderness 52 mi.
Mt. Rose trailhead to Relay Peak 56 mi.

Best Season: Late July to mid-October

Elevation:
Brockway Summit Trailhead: 7,009’
Mt. Rose Trailhead: 8,900’
Relay Peak: 10,336’

Water Sources: Limited supplies. Water sources include Gray Lake, Mud Lake (seasonal), and Frog Pond. All water found on the trail must be treated before drinking.

Multiple Use Trail: Hikers only on the single-track trail past Galena Waterfall. From the trailhead parking lot, equestrians and mountain bikers must use connector trail that leads to USFS Road 17N85, which is the equestrian and bike route to the Mt. Rose Wilderness boundary.

Camping: Camping is allowed within 300’ of the trail and 200’ away from a water source. A developed seasonal campground is located across the road from the Mt. Rose trailhead.

Fire: USFS permit required for camp stove as fire regulations allow. Fire danger can be extreme and fires, camp stoves and smoking may be prohibited. Check trailhead kiosks or call the USFS (530-543-2600) for current regulations.

Terrain: Eastern half of trail on steep side slopes with several switchbacks.

Mt. Bikers & Equestrians: Biking not allowed within Mt. Rose Wilderness. Equestrians and sock allowed on entire section with restrictions east of Relay Peak (see above and map on reverse).

Leave-No-Trace: The TRTA supports and encourages LNT practices while on the trail.
1. Plan Ahead and Prepare
2. Travel and Camp on Durables Surfaces
3. Dispose of Waste Properly
4. Leave What You Find
5. Minimize Campfire Impacts
6. Respect Wildlife
7. Be Considerate of Other Visitors

Caution: Be prepared for sudden weather changes and be sure to carry a complete TRT or Tahoe Basin map. The map on reverse side is limited.
Tahoe Meadows To Spooner Summit
23.1 Miles

**Highlights**
- Christopher's Loop (most photographed spot on TRT)
- Marlette Lake View

**Trailheads**
- **Tahoe Meadows:** On east side of Hwy 431 0.25 mi. south of summit. Trailer parking available. Vault toilets. Access to Interpretive Loop Trail (ADA).
- **Spooner Summit North:** On north side of Hwy 50 just west of the summit. Limited parking. No facilities.

**Alternate Access:** Tunnel Creek Rd., off of Hwy 28 1.0 mi. south of Incline Village. Very limited roadside parking, no facilities. Steep 3 mi. climb to meet TRT 9 mi. south of Tahoe Meadows.

**Trail Info**
- **Signage:** The trail is marked at intervals with light blue, triangular TRT logo signs.

**Distances:**
- Tahoe Meadows to Tunnel Creek/Flume 92 mi.
- Tahoe Meadows to Christopher's Loop 116 mi.
- Tahoe Meadows to Hobart Junction 143 mi.
- Spooner to North Canyon Campground 42 mi.
- Spooner to Snow Valley Peak Access Trail 59 mi.
- Spooner to Hobart Junction 88 mi.
- Spooner to Marlette Peak Campground 93 mi.

**Best Season:** Mid-June to mid-October

**Elevation:**
- Tahoe Meadows 8,740’
- Marlette Lake 7,823’
- Marlette Peak Campground 8,200’
- Highest Vista 9,000’
- Spooner Summit 7,160’
- Spooner Lake 6,980’

**Water Sources:** Available from Ophir Creek, Marlette Lake, Spooner Lake, Twin Lakes (seasonal), and a pump at Marlette Peak Campground. Water found on the trail must be treated.

**Multiple Use Trail:** The TRT hosts bikers, equestrians and hikers. Please yield accordingly.

**Camping:** In Lake Tahoe Nevada State Park camping is restricted to campgrounds at:
1. Marlette Peak, 13 mi. S of Tahoe Meadows
2. North Canyon, 4.2 mi. N of Spooner, then 1.4 mi. W on signed connector trail.
Outside of LTNSP, camp within 300’ of the trail and 200’ from water. Seasonal, developed USFS campground located near Tahoe Meadows trailhead.

**Fire:** USFS permit required for camp stove as fire regulations allow. Fires only allowed in designated campfire rings in LTNSP. Fire danger can be extreme and fires, camp stoves and smoking may be prohibited. Check trailhead kiosks or call the USFS (530-543-2600) for current regulations.

**Biking:** Bikes allowed between Tahoe Meadows and Tunnel Creek on even numbered days. Bikes allowed every day from Tunnel Creek to North Canyon-Hobart Rd. No bikes allowed between North Canyon-Hobart Rd. and Spooner Summit.

**Equestrian:** Horseback riding and stock allowed on this entire section of the TRT. Consult TRTA website for more details.

**Leave-No-Trace:** The TRTA supports and encourages LNT practices while on the trail.
1. Plan Ahead and Prepare
2. Travel and Camp on Durable Surfaces
3. Dispose of Waste Properly
4. Leave What You Find
5. Minimize Campfire Impacts
6. Respect Wildlife
7. Be Considerate of Other Visitors

**Caution:** Be prepared for sudden weather changes and be sure to carry a complete TRT or Tahoe Basin map. The map on reverse side is limited.

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**Tahoe Meadows To Spooner Summit**

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**Tahoe Rim Trail Association**

Please fill out this form and send it to the address below.

**Annual Membership Levels**
- $50 Small Business
- $45 Family
- $20 Limited Income
- $100 Individual/Family/Business*
- $250 Trail Supporter
- $350 Individual
- $450 Trail Supporter
- $475 Trail Guardian (Endowment): $1,000
- $2,000 Trail Champion
- $5,000 Peak Member
- $10,000 Summit Member

* Includes short sleeve “T-shirt
  Includes fleece vest

**Name:**

**Mailing Address:**
City: State: Zip:

**Daytime Phone Email address**

**Method of Payment**
- Check payable to Tahoe Rim Trail Association
- Visa
- MasterCard
- American Express
- Discover

**Billing Address (if different from above):**
City: State: Zip:

**Credit Card #: Exp Date**

The Tahoe Rim Trail Association is a non-profit 501(c)(3) organization and all contributions are tax deductible.

The mission of the Tahoe Rim Trail Association is to maintain and enhance the Tahoe Rim Trail system, promote and inspire stewardship and accessibility to the beauty of the Lake Tahoe Region.

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Funded by El Dorado County's Cultural & Community Development Program
Appendix C. NDSP Brochure and Map
CAMPING
Camping is allowed at no charge in three developed campgrounds—Marlette Peak, Hobart and North Canyon. Each campground has a toilet and four or five camp sites with picnic tables, fire rings and bear resistant food and trash storage boxes. While camping, store food and trash in these boxes. When you depart, remove all food and trash from the boxes so they are available for use by other campers. Dispersed camping is not allowed around Marlette Lake or anywhere else within park boundaries.

FISHING
Fishing is a favorite backcountry activity. A Nevada fishing license is required. At Spooner Lake, the limit is five and bait is allowed. The Marlette Lake season runs July 15 through September 30 and is catch-and-release only. Use only artificial lures and single barbless hooks in this catch-and-release lake. The Hobart Reservoir season runs May 1 through September 30. The limit is five, and only one may be longer than 14 inches. Only artificial lures and single barbless hooks are allowed. Report violators to the Nevada Department of Wildlife at (800) 992–3030.

HUNTING
Hunters enjoy the backcountry in accordance with Nevada Department of Wildlife regulations and State Parks’ administrative authority. Please call the park for a map of permitted hunting areas.

PACK IT IN–PACK IT OUT
Trash is not collected in the backcountry. Please pack out all trash.

VOLUNTEER OPPORTUNITIES
Backcountry volunteer opportunities are available. Contact the park office at (775) 831–0494 or the Tahoe Rim Trail Association at (775) 298-4485.

SPOONER SUMMIT BIKE RENTALS AND CABINS
Located at Spooner Lake, Aramark at Tahoe rents mountain bikes, operates a shuttle service and offers two beautiful backcountry cabin rentals. The cabins are available year-around. The Spooner Lodge provides a full service bike repair shop, parts and accessories, packaged food and drinks and a variety of recreational goods. Call (775) 749-1120 or visit www.zephyrcove.com for more information.

MOTOR VEHICLES
The backcountry is managed as a non-motorized area to preserve the area’s ecological and recreational attributes. Only motorized vehicles displaying official agency designations or a State Parks motorized vehicle permit are allowed in the backcountry. Please report violators by calling (775) 831–0494.

ENVIRONMENTAL IMPROVEMENT
Pardon our Dust
Occasionally you will encounter State Parks, fire, wildlife and other official vehicles in the backcountry on water system, ecological restoration and park business. Nevada’s Tahoe Resource Team implements environmental improvement projects in the park in response to a 1997 presidential forum promoting the protection and improvement of Lake Tahoe’s water quality and outstanding environmental resources. These projects are designed to improve water quality, control erosion, enhance wildlife habitat, restore forest health and improve recreation opportunities. Environmental projects mean that there may be vehicle traffic, chainsaw and tree chipper noise, trail crews and construction. Please excuse any inconvenience.

MORE THAN RECREATION
The backcountry is more than a recreational playground and an ecological resource. It is also the site of the Marlette Water System—the water provider for Virginia City, Gold Hill, Silver City and parts of Carson City.

Developed in the last half of the 1800s to furnish the timber and water required by the gold and silver mines in Virginia City and Gold Hill, the system is comprised of Marlette Lake, Hobart Reservoir and an intricate system of flumes and pipelines. The Marlette Flume and another flume from the north entered a 4,000 foot tunnel that emptied on the east side of the Carson Range and joined the Inverted Siphon, the key pipeline of the Comstock era. This high pressure pipeline brought water to a reservoir near Virginia City. It could deliver up to 10 million gallons a day. This pipeline is still in use.
TRAILS FOR EVERYONE

The main access into the backcountry toward Marlette Lake is North Canyon Road, a five mile route. A parallel trail for hikers and equestrians begins about a mile in and reaches Marlette Lake at its southern end. A peaceful, quiet 2.1 mile trail encircles Spooner Lake and offers excellent nature study opportunities.

The famous and historic 4.4 mile Marlette Flume Trail is accessed from the west end of Marlette Lake or from the steeper Tunnel Creek Road. 13 miles of the 165 mile Tahoe Rim Trail (TRT) wind in and out of the park. The TRT is closed to bikes from Spooner Summit to Hobart Road. A US Forest Service advisory asks mountain bikers to use the Mt Rose to Tunnel Creek section of TRT only on even days to alleviate congestion.

Many loop opportunities exist in the backcountry and a series of historical roads add to these possibilities. Please consult the map and check with park staff for suggestions and information regarding park projects and special event schedules.
Appendix D. USFS Brochures and Maps
The information below describes several trails located in the north and east shore of Lake Tahoe Basin. Brief descriptions and an orientation map to the trailheads are included. A topographic map and compass are recommended. Forest maps are helpful and are available for purchase from our office.

Weather conditions can change rapidly. Be prepared with the proper clothing and equipment. Always carry extra water. Hikers, mountain bikes and horses are allowed on most trails, however, mountain bikes and horses are not allowed on the Mt. Rose and Tahoe Meadows trails.

Remember, trails are enjoyed by many different types of users. Please show respect and courtesy.

1. Mt. Rose Summit: The highest peak on the north shore of Lake Tahoe Basin (10,778’), this strenuous 5.2 each way hike offers excellent views of the lake, the city of Reno and the surrounding area. Take Hwy 431 from Incline Village to Mt. Rose summit. Look for the Tahoe Rim Trail (TRT) sign, park on the north side of the road. Hike through sub-alpine terrain, past a waterfall and spring wildflowers. Caution; the last 2 miles to the summit is steep and can be very windy and cold. Remember to bring water and layer clothing for warmth! Mountain bikes and horses are NOT permitted on this trail.

2. Tahoe Meadows Loop Trail: This easy 1.2 mile loop trail is wheelchair accessible and ideal for families with small children! Self guided interpretive signs guide you by wildflowers, granite slabs and picturesque sub alpine terrain. Follow directions from previous hike, park on the south side of the road at Tahoe Meadows. This is also a great hike to pack a picnic lunch and enjoy the beautiful scenery with Lake Tahoe to the south and Slide Mountain to the east! Mountain bikes and horses are NOT allowed on this trail.

3. Brockway Summit to Martis Peak: This moderate to strenuous hike along the Tahoe Rim Trail (TRT) will reward you with exceptional panoramic views. Hike through sub-alpine forest of red fir, western white pine, hemlock, and junipers to exposed volcanic slopes. Take Hwy 267 from Kings Beach 2.7 miles, look for the TRT sign. Park near forest road 16N56. Follow the dirt road up the hill 100 yards to the trailhead sign. After hiking 4 miles you will see dramatic views of Lake Tahoe and peaks to the south. At 4.3 miles you will reach a dirt road. If you go left on the dirt road for .2 miles you will reach Martis Peak Rd. (paved) Walk .7 miles up the paved road to Martis Peak lookout. Or, continue along the TRT by following the dirt road right .25 miles. The trail will continue 300 yards off the road to the left (north). Continue along the Tahoe Rim Trail 7.6 miles from the trailhead to the Mt Rose Wilderness Boundary and Mt Baldy. Two small lakes can be accessed by taking the .5 side trail to shallow Mud and Gray Lakes.

4. Stateline Lookup: Once a fire lookout, this moderate uphill .5 mile each way hike will reward you with a spectacular birdseye view of Lake Tahoe. There are several side trails to explore, a granite patio and benches to take in the view. From Highway 28 in Crystal Bay (California/Nevada border), Turn on Reservoir Drive, just east of the Tahoe Biltmore Casino. Turn right on Lakeshore Ave. Park adjacent to the forest service gate. (Note; do not block gate.) Parking is very limited!

Lake Tahoe Basin Management Unit website: www.fs.fed.us/r5/ltbmu

February 2009
5. Prey Meadows-Skunk Harbor: Moderate 1.5 miles each way. Snow free in early spring, this is a great walk through a mixed conifer forest with filtered views of Lake Tahoe along the way. Look for the remains of an old railroad grade along the way, built in the 1870’s as part of the network to supply timber to Virginia City. When you reach a fork in the road, you have two options. The left fork leads to Prey Meadows which is blanketed with many varieties of wildflowers in the spring. The right fork leads you to Skunk Harbor, a small picturesque cove which offers great swimming and sunbathing in the summer. Take Hwy 28 south from Incline Village 7 miles. Look for a green forest service gate on the right. Parking is very limited. Do Not block gate! (Additional parking just north of the gate is also available.)

6. Tahoe Rim Trail North (Spooner): This moderate 5 mile each way trail provides wonderful views of the Carson Valley as well as glimpses of Lake Tahoe along a Jeffrey pine forested trail. For a longer and more strenuous hike, follow the steep downhill road to the Flume Trail, then north to Marlette Lake. (Note: watch for mountain bikes along the popular Flume Trail!) Take Hwy 50 east to Spooner Summit, look for the Tahoe Rim Trail (TRT) sign, park on the north side of the road. Remember to take extra water on this ridge top hike, as it is can get hot and dry during summer months.

7. Tahoe Rim Trail South (Genoa): This moderate 4 mile each way hike takes you through aspen stands, pine and fir forests. Great views of the Carson Valley as well as glimpses of Lake Tahoe can be seen along this trail. For a more strenuous hike, try the climb up to climb Duane Bliss Peak (8,658’), South Camp Peak (8,866’), or Genoa Peak (9,150’) by traversing cross country. (Note: mountain bikes and horses may share these routes. Carry extra water as this trail has little water sources.)

Questions? Contact the Forest Service at:

Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150
(530) 543-2694 (Voice)
(530) 541-4036 (Hearing Impaired)

www.fs.fed.us/r5/ltbmu

Dogs on Trails

Dogs are allowed on most Forest Service trails. Pet owners please follow these guidelines:

Keep your pet under control and on a six foot leash.

Control excessive barking and don’t allow your pet to chase or harass wildlife.

Clean up after your dog, please pack it out! Don’t forget the doggie bags.

Check your pet’s paws often, rocky terrain can cause cuts.
Appendix E. Trail Signage Inventory

Mount Rose West

Signs at the nearest trailhead to Mount Rose West.
Detail of regulatory sign (no motorized use) at trailhead nearest to Mount Rose West.

Additional regulatory signage (no motorized use) below Mount Rose West.
Sign at entrance to Mount Rose West.

Mount Rose East

Regulatory signs at the closest trailhead to Mount RoseEast (Mt. Rose Summit).
Regulatory signs at the entrance to Mount Rose East.

Regulatory sign at entrance to Mount Rose East.
Sign reiterating the boundary of Mount Rose East.

Incorrect signage at Mount Rose East.
Ophir Creek

Advisory notification sign at Ophir Creek.

Second advisory notification sign at Ophir Creek.
Tunnel Creek

Advisory notification sign at Tunnel Creek.

Hobart Road

Initial signage at Hobart Road with no regulatory information.
Regulatory information near Hobart Road.

Spooner Summit

Regulatory sign at Spooner Summit.
Regulatory signage at Spooner Summit.

Regulatory signage at Spooner Summit.