3.0 Environmental Consequences

3.0 ENVIRONMENTAL CONSEQUENCES
3.1 INTRODUCTION

Chapter 3 of this Final EA provides the affected environment (existing conditions) associated with the Proposed Action and the alternatives as they are described in Chapter 2. Chapter 3 is organized by environmental issue area as follows:

3.2	Recreation
3.3	Transportation
3.4	Air Quality
3.5	Noise
3.6	Biological Resources
3.7	Cultural Resources
3.8	Visual Resources
3.9	Cumulative Effects

Detailed technical analyses were prepared for some of the environmental issue areas. The relevant technical information supporting the documentation is provided in appendices to this document. The appendices include:

Appendix A	Traffic Impact Analysis
Appendix B	Air Quality Technical Worksheets
Appendix C	Noise Technical Study
Appendix D	Floral And Faunal Compendia; Sensitive Plant Species Table
Appendix E	Heritage Resources Letter
Appendix F	Preliminary Geotechnical Investigation
Appendix G	Ecosign Study
Appendix H	Visual Resources Assessment

Under the National Environmental Policy Act (NEPA), the term significant takes into account both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole, the affected region, the affected interests, and the locality. In the case of a site-specific action, significance depends upon the effects in the locale. Both short- and long-term effects are relevant. Intensity refers to the severity of the impact. In determining intensity, the following factors are considered: 1) impacts that may be both beneficial and adverse; 2) the degree to which the action affects public health and safety; 3) unique geographic characteristics, such as proximity to cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas; 4) the degree to which

the effects on the quality of the human environment are likely to be highly controversial; 5) the degree to which the effects on the quality of the human environment are highly uncertain or involve unique or unknown risks; the degree to which the action may establish precedent; 6) whether the action is related to other actions with individually insignificant but cumulatively significant impacts; 7) the degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register or may cause loss or destruction of significant scientific, cultural, or historical resources; 8) the degree to which the action may adversely affect an endangered or threatened species or habitat; and 9) whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

3.0 ENVIRONMENTAL CONSEQUENCES
3.2 RECREATION

INTRODUCTION

This section addresses the impacts on recreation as a result of construction and operation of the Proposed Action and Alternatives. The analysis also addresses the consistency of the Proposed Action and Alternatives with respect to the United States Department of Agriculture Forest Service (Forest Service) policies and the *Town of Mammoth Lakes 2007 General Plan Update*. The recreation analysis focuses on whether the Proposed Action and Alternatives would provide recreational benefits.

3.2.1 REGULATORY FRAMEWORK

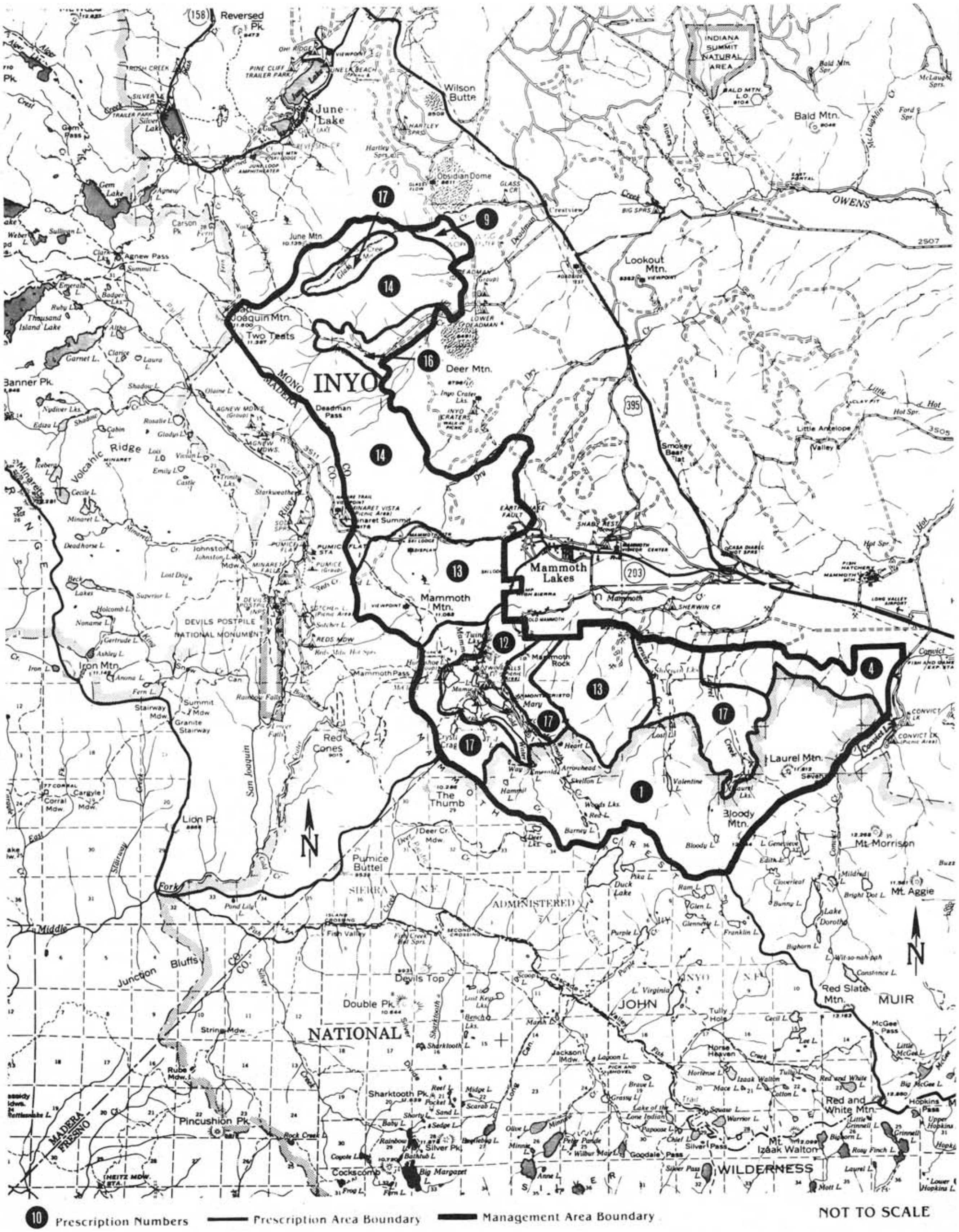
a. Federal Level

(1) Forest Service

The Ski Back Trail site is an area contained within the Mammoth Mountain Ski Area (MMSA) Forest Service permit boundary and within the Rural Recreational Opportunity Spectrum (ROS) class of the Mammoth Escarpment Management Area, as illustrated in Figure 5 on page 40. The Rural ROS class has a recreation management emphasis to maintain and manage existing downhill ski areas for public use. The ROS class setting is described as, "accessible by conventional road and substantially modified with structures or other cultural modifications. Users would experience much interaction with others; there would be little opportunity for isolation." Applicable policies include the following:

- Permit further expansion of areas already developed for alpine skiing. Expansion may include runs, lifts, base areas, and access to a degree that is often not compatible with other resource management options. (INF LRMP 1988, Rx #13, p.138)

- Utilize existing developed facilities, roads, and trails for both summer and winter recreation activities, whenever possible, before developing new ones for exclusive seasonal use. (INF LRMP 1988, Rx #13, p.78)



N

Not to scale

Source: Sierra Nevada Forest Plan.

PCR

Figure 5
Mammoth Mountain Escarpment Areas

b. Local Level

As previously described in Section 1.0, Introduction/Purpose and Need, of this Final EA, the Town of Mammoth Lakes (Town) and MMSA have a close relationship due to their physical land connection and economic dependency. As such, despite the fact that the Proposed Action does not require approval by the Town, it is necessary to ensure that the Proposed Action is consistent with the relevant Town's plans and policies.

(1) Town of Mammoth Lakes 2007 General Plan Update

The *Town of Mammoth Lakes 2007 General Plan* (*General Plan Update*) includes the Parks, Open Space, and Recreation Element in order to "create an attractive quality of life and contribute to public health by encouraging physical activity and an appreciation of nature." Goals and policies applicable to the Proposed Action and Alternatives include the following:

- Parks, open space, and recreation create an attractive quality of life and contribute to public health by encouraging physical activity and an appreciation of nature. We emphasize a variety of outdoor winter and summer activities.

  P.3.A. Policy: Ensure public routes for access to public lands are provided in all developments adjacent to National Forest lands.

  P.3.B. Policy: Coordinate with multiple organizations, agencies and jurisdictions to plan, steward, interpret, promote and sustain trails, public access and outdoor recreation amenities in the Mammoth Lakes region.

  P.4. Goal: Provide and encourage a wide variety of outdoor and indoor recreation readily accessible to residents and visitors of all ages.

  P.4.A. Policy: Expand recreational opportunities by proactively developing partnerships with public agencies and private entities.

  P.4.B. Policy: Provide an affordable and wide range of year-round recreational opportunities to foster a healthy community for residents and visitors. Activities include but are not limited to:

  - downhill skiing & snowboarding
  - cross-country skiing
  - back-country skiing & snowboarding
  - snowshoeing
  - sledding

- dog sledding
- ice skating
- snowmobiling
- sleigh rides
- tennis
- swimming
- soccer
- racquetball
- snow play
- skateboarding
- day & backcountry hiking
- walking
- interpretive trails & signage
- climbing
- touring
- street & mountain biking
- camping
- fishing
- fall-color viewing
- birding
- health & fitness
- off-highway vehicles
- equestrian activities
- BMX

3.2.2 AFFECTED ENVIRONMENT

As previously described, the proposed Ski Back Trail area is located within the MMSA Forest Service permit boundary. This area also includes two existing beginner/intermediate mountain bike trails (Uptown and Downtown) for summer use but does not have a developed downhill ski trail for winter recreation use.

a. Winter

MMSA services approximately 13,500 skiers on typical winter Saturdays and approximately 19,000 skiers on peak holidays. Skiers access MMSA through four primary base facilities referred to as portals which include Eagle Lodge, Canyon Lodge, Main Lodge, and The Village. Each portal is designed and located to balance the entrance of skiers onto MMSA, as well as provide amenities including beginner and intermediate skiable terrain for recreational enjoyment. The Village portal is the newest portal and services an existing 3,200 visitors and is planned to serve 6,400 visitors at buildout.[12] Of the remaining hotel units to be developed in The Village, the Hillside and the second phase of 8050 are under construction; the One Hotel is

[12] *The planning document for the development of the Village area is The North Village Specific Plan adopted by the Town of Mammoth Lakes Town Council in 2000. This document details the number of hotel/bed and commercial units and associated occupancies at build out to be 6,400 visitors. Not all visitors who vacation in the mountains are skiers. The standard calculation for visitors who will ski is 1:1.7 according to Ecosign Mountain Resort Planners Ltd. 2007.*

scheduled to break ground in the spring of 2008; and the Mammoth Crossings Hotel complex and the Marriot Hotel are currently seeking final tract map approval from the Town of Mammoth Lakes. Buildout of the area is estimated to be completed by 2010. Buildout of The Village also includes completion of the second leg of the Village Gondola, which will allow skiers originating at The Village to continue up the mountain rather than unload at Canyon Lodge.

(1) Trail Capacity at Village Portal

As displayed in Table 3 on page 44, unlike the Canyon Lodge portal, The Village portal and its corresponding Village Gondola have no existing down-slope trail capacity.

(2) Village Gondola Down-Load Capacity

The Village Gondola currently provides direct access to the Canyon Lodge from The Village and serves visitors within a walking distance of a one-quarter mile radius, as well as riders arriving via bus or drop-off to the Village Transfer Station, as described in Section 2.0, Proposed Action and Alternatives, of this Final EA. There are approximately 3,200 peak day skiers that currently originate out of The Village portal. The one-way operating capacity of the Village Gondola is approximately 2,200 skiers per hour based on an observed car capacity of 10 to 12 skiers.[13] During typical winter Saturday afternoons and peak holidays, there is a high demand for return trips on the Village Gondola to The Village.

The Village Gondola adequately up-loads skiers over the two hour period of time between 8:00 A.M. and 10:00 A.M. with minimal delays. However, it does not have the capacity to down-load the same number of skiers in the one hour period of 3:30 P.M. to 4:30 P.M. at the end of the day, which is a typical condition in the ski industry. Given personal habits and the time it takes to get equipment gathered, tickets bought, and parties organized, skiers have a tendency to start their ski day over a two hour period but once out on the slopes want to maximize their experience by skiing as long as possible. As shown in Table 4 on page 44 the lack of down-load capacity for the Village Gondola results in up to 700 skiers waiting in line up to 20 minutes on peak Saturdays. These wait times are projected to increase as the buildout of The Village is actualized (est. 2010). The potential demand for the Village Gondola on peak days is projected to be approximately 6,400 skiers per hour which will result in skiers waiting in lines of over an hour and half to down-load at the end of the day.

[13] *The maximum capacity of the Village Gondola is 15 skiers per car, though the maximum capacity has not been achieved in practice. The speed of the Village Gondola is approximately 20 feet per second with a one-way trip taking approximately 4 minutes 15 seconds.*

Table 3

Canyon Lodge and Village Portal Chair Capacity vs. Trail Capacity

Chair	Chair Capacity*	Trail Capacity*
Chair 7	700	425
Chair 8	660	1,060
Chair 16	1,460	972
Chair 17	1,160	715
Chair 22	960	1,255
Poma	550	0[a]
Heimo's Platter	360	0 [a]
Canyon Carpet	100	0 [a]
Canyon Carpet West	100	0 [a]
Total	**6,050**	**4,427**
Village Gondola	**2,200**	**0**

[a] *The beginner platters and carpets are counted in the slope capacity for the chair lifts.*

[b] *The second leg of the Village Gondola will be able to disperse intermediate/advanced skiers farther up on the mountain rather than unloading at Canyon Lodge.*

* *Chair & Trail Capacity is based on Skier Carrying Capacity (SCC). The measurement in Mammoth Mountain Ski Area's Draft Master Development plan 64pp as the number of skiers that a given ski area or chair catchment area can comfortably support, or those that may be accommodated at one time. A ski area or chair catchment area's SCC is a function of vertical transport feet demand per skier, vertical transport feet supplied per hour, difficulty of terrain, and scope of support.*

Source: Ecosign Mountain Resort Planners Ltd., 2007 Draft Update of MMSA Master Development Plan (2007).

Table 4

Peak End of Day Village Gondola Queue

Year	Gondola Demand	Approximate Wait Time	Approximate Skiers in Queue
2004 Peak Saturday	2,550 skiers	10 minutes	350 skiers[a]
Existing Peak Saturday	2,900 skiers	20 minutes	700 skiers[a]
Future Peak Saturday	6,400 skiers	115 minutes	4200 skiers

[a] *Number of people observed in the queue by MMSA employees in the 2004 ski season.*

Source: LSA Associates, Inc., June 2007.

b. Summer

As noted above, Uptown and Downtown mountain bike trails currently start at the northwest corner of Forest Trail and Minaret Road, within the area of the proposed Ski Back Trail. These mountain bike trails are used to access the Main Lodge during the summer. They are beginner/intermediate single track trails that meander through the existing natural forest terrain for approximately three miles. These two trails are a part of the MMSA Bike Park trail

system and MMSA maintains the trails. They are open to the public without fee east of the MMSA garage facility.

3.2.3 ENVIRONMENTAL CONSEQUENCES

a. Methodology

(1) Construction Phase

Construction of the Proposed Action and/or Alternatives will have no impact on winter recreational facilities as none currently exist on this site. Construction of the Proposed Action and/or Alternatives could have short-term impacts on summer recreational facilities since they would only occur during the summer months. Therefore, impacts will be assessed in regards to whether construction activities would significantly impact the existing mountain bike trails.

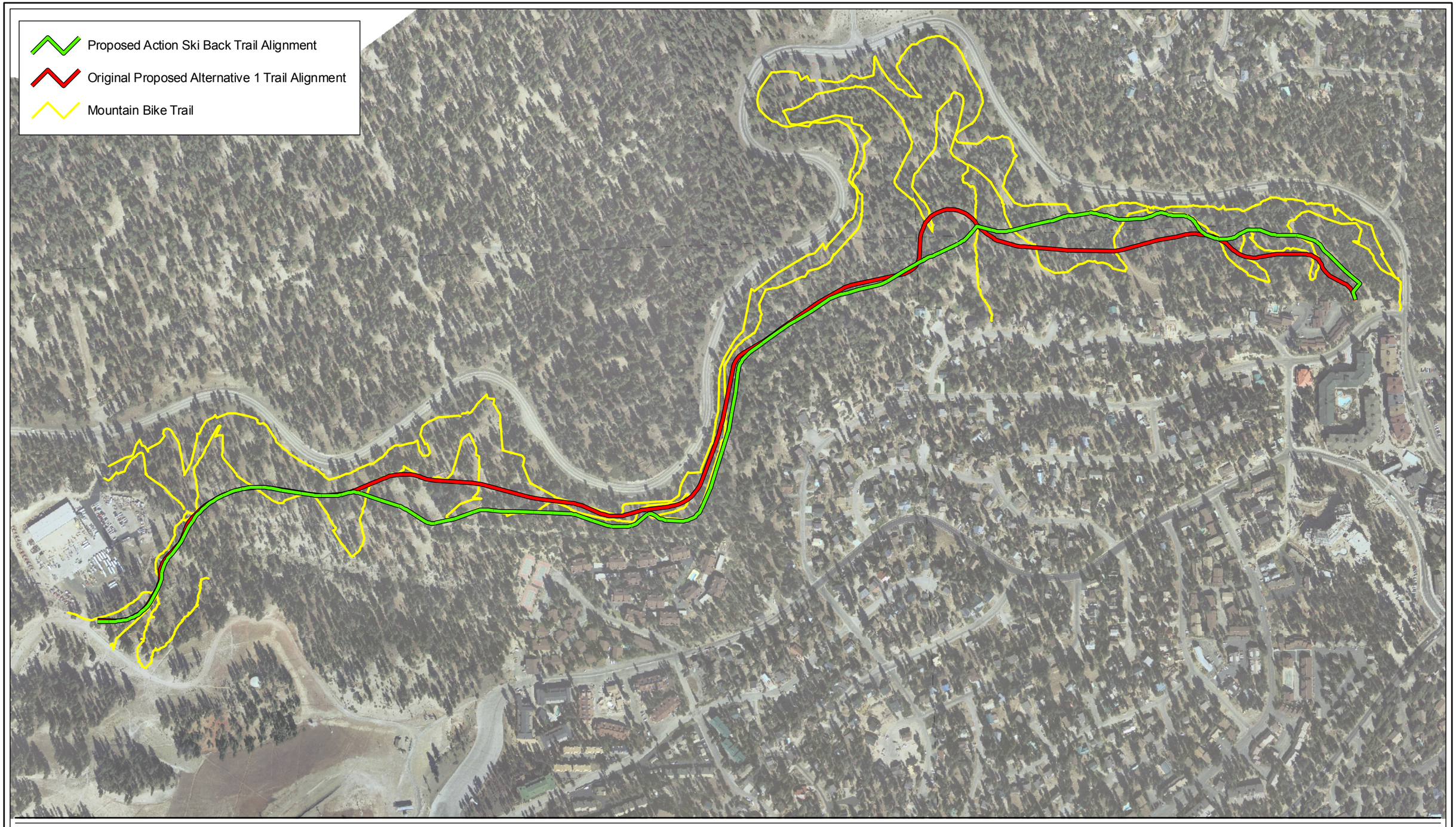
(2) Operational Phase

Winter operational recreation impacts are assessed using a maximum demand potential of skiers using the Village portal at build-out to access the mountain compared to the existing conditions in order to determine if the Proposed Action and/or Alternatives would provide additional down-slope capacity alleviating wait time at the Village Gondola and be able to provide a new recreational experience to skiers originating at The Village portal. Operational impacts were also analyzed for summer recreational facilities in regards to utilization of the proposed Ski Back Trail by mountain bikers.

b. Environmental Consequences of the Proposed Action

(1) Construction Impacts

Construction of the Proposed Action is expected to start in the spring of 2008 and would take approximately six months to complete and would be operational for the 2008/2009 winter season. The Uptown and Downtown mountain bike trails are used to access the Main Lodge and are within the proposed Ski Back Trail alignment area. The proposed Ski Back Trail would intersect the mountain bike trails a total of 25 times and would overlap the mountain bike trails for approximately 2,800 feet of the total 7,800 feet; refer to Figure 6 on page 46 for an illustration of where the Proposed Action would intersect the mountain bike trails. Therefore, construction of the proposed Ski Back Trail would require the closure of the mountain bike trails during the weekdays but open to riders on the weekends. Access to the Town and Village would remain available on the weekdays through Canyon Lodge via Shotgun and Paper Route and Big



Source: Triad Holmes, Inc., 2007.

Figure 6
Impacts to MMSA Mountain Bike Trail

Mammoth Mountain Ski Back Trail

Ring bike trails. The closure of the mountain bike trails for the summer during weekday construction would provide a safe construction environment while minimizing the risk to the public. The Proposed Action Ski Back Trail alignment is configured and would utilize slope retention techniques to minimize the impacts to the existing mountain bike trails by more closely keeping to the natural terrain with minimal cut and fill and tree removal. In addition, in response to public comments, cut and fill on side-hill portions of the proposed Ski Back Trail would be balanced with the goal to safely retain trees. In addition, Mitigation Measure 3.2-1 would ensure that the mountain bike trails would be fully restored after construction. Restoration of the mountain bike trails would ensure the balance of uses for both winter and summer guests by providing the best possible experience in both settings, which is consistent with the *General Plan Update* and the *MMSA Master Development Plan*. The closure and re-routing of the mountain bike trails would be a short-term impact. Construction of the proposed Ski Back Trail would not result in adverse effects to summer recreational facilities.

(2) Operational Impacts

(a) Winter

As previously described, there is no down-slope ski trail capacity at The Village portal and skier return demand for the Village Gondola at the end of the day exceeds down-load capacity. It was observed in 2004 that the lack of down-load capacity resulted in up to 700 skiers in the queue on peak Saturdays waiting in line approximately 20 minutes. The cumulative conditions at build out (est. 2010) will result in the potential demand for the Village Gondola on peak days to be approximately 6,400 skiers per hour which will require skiers to wait in lines of over an hour and a half to down-load at the end of the day. Refer to Table 5 on page 48, which identifies the approximately wait time for skiers downloading on the gondola under existing and buildout conditions.

The Proposed Action adds down-slope capacity to The Village portal and provides an alternative to waiting in line to down-load on the Village Gondola and the Canyon Lodge Gondola and public transit to the lodges. It is estimated that skiers staying in accommodations within a one-quarter mile radius of a skier base facility will ski/walk to their accommodations, if available and conditions are favorable. The maximum slope capacity for the proposed Ski Back Trail alignment is 2,400 skiers per hour, but taking into account the design characteristics of the trail, it is estimated to serve 900 to 1,200 skiers per hour.

Given the following analyses, it can be concluded that the proposed Ski Back Trail has an existing peak day demand of approximately 1,400 skiers per hour and future demand on peak days of approximately 2,800 skiers per hour. As the maximum carrying capacity of the trail is estimated to be 1,200 skiers per hour, the Ski Back Trail will function as an important part of the mountains ability to alleviate the excess demand of Village Gondola but would not fully alleviate all of the demand on peak days at buildout.

Table 5

Peak End of Day Village Gondola Queue With and Without Ski Back Trail

Gondola Peak Day	Gondola Demand	Approximate Wait Time	Approximate Skiers in Queue[a]
Existing Peak Saturday	3,200 skiers	27 minutes	1,000 skiers
Buildout Peak Saturday	6,400 skiers	115 minutes	4,200 skiers
Existing Peak Saturday with SBT	2,000 skiers*	0 minutes	0 skiers
Buildout Peak Saturday with SBT	5,200 skiers*	80 minutes	3,000 skiers

* *The comfortable carrying capacity of the Ski Back Trail is 1,200 skiers per hour.*

[a] *Subtracted 2,200 to get the approximate number of skiers in the queue.*

Source: Demand calculated off of existing and future buildout of accommodations in the North Village Specific Plan and the additional accommodations with a one quarter mile radius of the Village Gondola.

Ski Back Trail Demand Analysis:

1. The Village Gondola down-load capacity is 2,200 people per hour. Given the trail use characteristic assumptions, 60 percent are skiers and 85 percent of the skiers are intermediate level and above, approximately 1,120 of the Village Gondola riders per hour would be able to use the proposed Ski Back Trail.

2. Diversion of riders from the Village Gondola down-load line peak day for existing and future buildout conditions.

    a. There are approximately 2,800 existing potential skiers within a one-quarter mile radius of the Village Gondola and approximately 400 skiers using the Village Transit Station and/or are dropped-off at The Village. Given the trail use characteristic assumptions, approximately 1,400 of these 3,200 skiers may desire to use the proposed Ski Back Trail per hour rather than waiting in line, however the maximum comfortable carrying capacity of the trail is constant at 1,200 skiers per hour.[14] Therefore, development of the proposed Ski Back

[14] *Existing Village core portal lodging facilities accommodate 3,200 visitors. In addition, there are 820 visitor accommodations outside of the Village core but within walking distance (one-quarter mile) of the Village Gondola, which totals 4,020 existing potential visitors who can access the Village Gondola. Industry standard assumes that 70 percent of visitors staying within a one-quarter mile radius of a base portal facility are recreational skiers, which equals approximately 2,800 potential skiers who would use the Village Gondola to access the Mountain plus an additional 400 arriving from the transit connection or drop off. Given the trail use characteristic assumptions, 60 percent skiers of which 85 percent are intermediate level and above, approximately 1,400 of the 3,200 skiers could desire use of the proposed Ski Back Trail per hour.*

Trail would reduce the existing demand on the Village Gondola to 2,000 skiers per hour rather than 3,200 and would therefore, be able to download with minimal wait in line.

b. Future buildout of The Village core portal facilities will accommodate 6,400 potential skiers. Given the trail use characteristics, approximately 2,800 of these 6,400 skiers may desire use of the proposed Ski Back Trail per hour however, the maximum comfortable carrying capacity of the trail is constant at 1,200 skiers per hour.[15] Therefore, development of the proposed Ski Back Trail would reduce future demand on the Village Gondola to 5,200 skiers per hour rather than 6,400 and would reduce the number of skiers waiting in line to approximately 3,000, with a wait of approximately 80 minutes rather than 115 minutes.

The Proposed Action has the potential to partially alleviate the existing and future excess demand for the down loading of the Village Gondola by approximately 1,200 skiers per hour while also providing down-slope capacity for The Village which would improve the recreational experience of visitors. The Proposed Action would also provide additional winter recreational facilities that would be consistent with the *General Plan Update* and the *MMSA Master Development Plan* and the *North Village Specific Plan* by having a pedestrian/skiable alternative, balancing the use and attractiveness of each of MMSA's portals, and enhancing the recreational experience of visitors. The Proposed Action would not result in adverse effects to winter recreational facilities.

(b) Summer

Implementation of the Proposed Action would not result in operational impacts to the existing mountain bike trails as the Proposed Action would develop a skiing trail that would only be utilized during the winter ski season when the mountain bike trails would be inaccessible. However, it should be noted that since the proposed Ski Back Trail would traverse the mountain bike trails, that during the summer, mountain bikers may utilize the proposed Ski Back Trail as opposed to the mountain bike trails. Therefore, Mitigation Measure 3.2-2 is included in order to ensure protection of the proposed Ski Back Trail and limit the use of the proposed Ski Back Trail

[15] *Future build-out of The Village core portal facilities will accommodate 6,400 visitors. In addition, there will be approximately 1,000 visitor accommodations outside of the Village core but within a walking distance of a one-quarter mile radius at buildout, which total approximately 7,400 future potential skiers who can access the Village Gondola. Industry standard assumes that 70 percent of visitors staying within a one-quarter mile radius of a base portal facility are recreational skiers plus an additional 400 arriving from the transit connection or drop offs totaling approximately 6,400 potential skiers. Given the trail characteristic assumptions, 60 percent skiers of which 85 percent are intermediate level and above, approximately 2,800 of the 6,400 skiers associated with the future buildout of The Village, could desire use of the proposed Ski Back Trail per hour.*

by mountain bikers. Implementation of the recommended mitigation measure would ensure there would be no adverse impacts to summer recreational facilities.

(3) Mitigation Measures

Mitigation Measure 3.2-1: The project applicant shall restore the conditions of the Uptown and Downtown mountain bike trails, as established prior to any construction activities. Restoration shall include, but not be limited to, re-grading of the mountain bike trail alignment and the provision of adequate improvements including drainage and vegetation.

Mitigation Measure 3.2-2: The project applicant shall provide barriers consistent with the natural terrain during the summer along all sections in which the proposed Ski Back Trail intersects the mountain bike trails, in order to limit mountain bikers traversing the proposed Ski Back Trail.

c. Environmental Consequences of Alternative 1 – Original Alignment Proposal

(1) Construction Impacts

Construction of Alternative 1 would impact portions of the Uptown and Downtown mountain bike trails. Specifically, the Original Alignment Proposal would overlap the mountain bike trails for approximately 4,280 feet of the approximately 7,700 foot Original Alignment Proposal and would cross the mountain bike trails a total of 29 times; refer to Figure 6 for an illustration of where Alternative 1 would intersect the mountain bike trails. However, the re-routing of the mountain bike trails during the weekdays for the summer during construction would provide a safe construction environment while minimizing the risk to the public. It should also be noted that the mountain bike trails would be open on the weekends. Finally, Mitigation Measure 3.2-1 would ensure that the mountain bike trails would be fully restored after construction. Restoration of the mountain bike trails would ensure the balance of uses for both winter and summer guests by providing the best possible experience in both settings, which would also be consistent with the *General Plan Update* and the *MMSA Master Development Plan*. Construction impacts to the mountain bike trails would be short-term and therefore, construction of Alternative 1 would not result in adverse effects to summer recreational facilities.

(2) Operational Impacts

(a) Winter

As previously described, there is no down-slope capacity at The Village portal and skier return demand for the Village Gondola at the end of the day exceeds down-load capacity. The

lack of down-load capacity results in up to 700 skiers in the queue on peak Saturdays waiting in line approximately 20 minutes and the cumulative conditions at build out (est. 2010) will result in the potential demand for the Village Gondola on peak days to be approximately 6,400 skiers per hour which will require skiers to wait in lines of over an hour and half to down-load at the end of the day.

Similar to the Proposed Action, Alternative 1 would add additional down-slope capacity to skiers in The Village portal as well as provide an alternative to waiting in line to down-load the Village Gondola or the Canyon and Main Lodge transit system on busy days. Specifically, approximately 1,120 of the Village Gondola riders would be able to comfortably ski on the Ski Back Trail per hour. In addition, under existing conditions, approximately 1,400 skiers would be likely to choose sliding down the proposed Ski Back Trail rather than waiting in line for the Village Gondola and under buildout conditions, up to 2,800 skiers would be likely to choose the proposed Ski Back Trail. However, the trail characteristics are the same as the proposed alignment and would comfortable carry 1,200 skiers per hour. Alternative 1 would be consistent with the *General Plan Update* and the *MMSA Master Development Plan.* Alternative 1 would not result in adverse effects to winter recreational facilities.

(b) Summer

Implementation of Alternative 1 would not result in operational impacts to the existing mountain bike trails as Alternative 1 would develop a skiing trail that would only be utilized during the winter ski season when the mountain bike trails would be inaccessible. However, it should be noted that since the proposed Ski Back Trail would traverse the mountain bike trails, that during the summer, mountain bikers may utilize the Ski Back Trail as opposed to the mountain bike trails. Therefore, Mitigation Measure 3.2-2 is included in order to ensure protection of the proposed Ski Back Trail and limit the use of the proposed Ski Back Trail by mountain bikers. Implementation of the recommended mitigation measure would ensure there would be no adverse effects to summer recreational facilities.

d. Environmental Consequences of Alternative 2 – Transit Emphasis Alternative

(1) Construction Impacts

Under Alternative 2, the proposed Ski Back Trail would not be constructed. Instead, there would be an increased emphasis on transit provisions focused on returning skiers to The Village. There would not be any construction activities or adverse effects to the mountain bike trails for the Transit Emphasis Alternative.

(2) Operational Impacts

(a) Winter

Alternative 2 would not develop the proposed Ski Back Trail. As such, it would not alleviate the excess demand for the down-load of the Village Gondola and the Canyon Lodge Gondola and public transit to the lodges, or provide down-slope capacity for The Village. Alternative 2 would not provide additional winter recreational facilities and would not be consistent with the *MMSA Master Development Plan* and the *North Village Specific Plan*. Therefore, Alternative 2 would result in adverse effects to winter recreational facilities due to the fact that it would not alleviate demand for the down loading of the village gondola nor provide any additional recreational opportunities, and would result in down loading queues of approximately two hours on peak days.

(b) Summer

Alternative 2 would not develop the proposed Ski Back Trail and therefore, would not require development of barriers prohibiting mountain bike riders traversing the proposed Ski Back Trail. Therefore, there would be no adverse effects to summer recreational facilities with implementation of Alternative 2.

e. Environmental Consequences of Alternative 3 – No Action Alternative

(1) Construction Impacts

Under Alternative 3, the proposed Ski Back Trail would not be constructed. Therefore, there would not be any construction activities or adverse effects for the No Action Alternative.

(2) Operational Impacts

(a) Winter

Alternative 3 would not develop the proposed Ski Back Trail. As such, it would not alleviate the existing and future excess demand for the down-load of the Village Gondola nor provide additional down-slope capacity for The Village. Alternative 3 would not provide additional winter recreational facilities and would not be consistent with the *General Plan Update*, *MMSA Master Development Plan*, or the *North Village Specific Plan*. Therefore, Alternative 3 would result in adverse effects to winter recreational facilities due to the fact that it would not alleviate demand for the down loading of the Village Gondola nor provide any

additional recreational opportunities, and would result in down loading queues of approximately two hours on peak days.

(b) Summer

Alternative 3 would not develop the proposed Ski Back Trail and therefore, would not require development of barriers prohibiting mountain bike riders traversing the proposed Ski Back Trail. Therefore, there would be no adverse effects to summer recreational facilities with implementation of Alternative 3.

f. Conformity with Applicable Plans and Policies

The Proposed Action and Alternative 1 would develop an alpine skiing trail within the Forest Service rural ROS class of the Mammoth Escarpment Management Area. Therefore, it would include expansion of areas already developed for alpine skiing. The proposed Ski Back Trail would be designed to provide for user safety and to harmonize with the natural environment by minimizing impacts to the natural terrain and by maintaining existing Timber stands to the extent possible. In addition, as described in Section 3.8, Visual Resources, the Proposed Action and Alternative 1 would have a Scenic Class that reflects the general goals of the INFLRMP maintaining Partial Retention, and even perhaps Retention, so that the existing visual character of the proposed Ski Back Trail area would not change. As described in Section 3.6, Biological Resources, the Proposed Action and Alternative 1 would not develop the proposed Ski Back Trail in which the integrity of major mule deer staging areas would be compromised during the spring and fall migration and would not disturb northern goshawk nest sites. All construction activities associated with the Proposed Action and Alternative 1 would be required to comply with Rule 1403 of the South Coast Air Quality Management District (SCAQMD) in order to ensure that dust abatement procedures during construction and other activities do not generate significant dust. In addition, construction activities would also utilize existing developed facilities, including roads and trails for access to the proposed Ski Back Trail. Construction of the proposed Ski Back Trail would also ensure slope stabilization with the provision of providing five to six walls where slopes would need to be stabilized consistent with the ski slopes. Finally, after construction of the proposed Ski Back Trail is completed, all temporary access corridors would be re-vegetated with native materials and plants. Therefore, the Proposed Action and Alternative 1 would be consistent with the applicable policies of the INFLRMP, and therefore, also consistent with the *General Plan Update*, *MMSA Master Development Plan*, and the *North Village Specific Plan*.

Alternative 2 would not involve any construction activities and instead would provide four additional bus trips during the peak hours. Therefore, this Alternative would not have to comply with any of the construction policies and would not conflict with any of the visual

policies of the INFLRMP. In addition, this Alternative would consider a mass transit option to personal vehicle trips from the Main Lodge and associated parking areas to The Village during the peak hour. However, this Alternative would not permit further expansion of areas already developed for alpine skiing. Regardless, Alternative 2 would be consistent with the applicable policies of the INFLRMP, but would not be consistent with the *General Plan Update, or the MMSA Master Development Plan,* or the *North Village Specific Plan*.

The No Action Alternative would not develop an alpine ski trail to help alleviate the existing and future excess demand for the down-load of the Village Gondola, or provide down-slope capacity for The Village. Therefore, Alternative 3 would not provide additional winter recreational facilities and would not be consistent with the policies of the INFLRMP, the *General Plan Update, MMSA Master Plan,* or the *North Village Specific Plan*.

INTRODUCTION

This section analyzes the potential use of the proposed Ski Back Trail in the context of the physical design and both the existing and future vehicular, transit, gondola passenger, and down-slope capacity characteristics. This analysis also reviews the project's consistency with the *Town of Mammoth Lakes 2007 General Plan Update* goals and policies. This analysis is based on data provided in the *Ski Back Trail Transportation Analysis, Mammoth Mountain Ski Back Trail*, conducted by LSA Associates, Inc. updated June 2007. This technical report is available in Appendix A of this Final EA.

3.3.1 REGULATORY FRAMEWORK

As previously described in Section 1.0, Introduction/Purpose and Need, of this Final EA, the Town of Mammoth Lakes (Town) and the Mammoth Mountain Ski Area (MMSA) have a close relationship due to their physical land connection and economic dependency. As such, despite the fact that the Proposed Action does not require approval by the Town, it is necessary to ensure that the Proposed Action is consistent with the relevant Town's plans and policies.

a. Town of Mammoth Lakes 2007 General Plan Update

The *Town of Mammoth Lakes 2007 General Plan Update (General Plan Update)*, includes updated goals, objectives, policies, and implementation measures that have been designed to support the Town's Vision Statement, which states:

> *The community of Mammoth Lakes is committed to providing the very highest quality of life for our residents and the highest quality of experience for our visitors.*
>
> *To achieve this vision, Mammoth Lakes places a high value on…*
>
> *7. Offering a variety of transportation options that emphasize connectivity, convenience, and alternatives to use of personal vehicles with a strong pedestrian emphasis.*

The *General Plan Update* establishes level of service standards for the Town's roadways. Level of service (LOS) is defined as a qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. A LOS definition is generally described through speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety. Six levels of service are defined for each type of roadway and are given designations from A to F. LOS A represents the best operation condition and LOS F is the worst. According to Policy 1.7, a LOS D or better must be established or maintained on a typical winter Saturday peak-hour for signalized intersections and for primary through movements for un-signalized intersections along arterial and collector roads. This standard is expressly not applied to absolute peak conditions, as it would result in the construction of roadway improvements that are warranted only with a limited number of days per year and that would unduly impact pedestrian and visual conditions.

There are many goals, policies, and implementation measures from the *General Plan Update* that have been identified and are applicable to the proposed Ski Back Trail, including the following:

M.3. GOAL: Emphasize feet first, public transportation second, and car last in planning the community transportation system while still meeting Level of Service standards.

M.3.A. Policy: Maintain a LOS D or better on the Peak Design Day at intersections along arterial and collector roads.

M.3.B. Policy: Reduce automobile trips by promoting and facilitating:

- Walking
- Bicycling
- Local and regional transit
- Innovative parking management
- Gondolas and trams
- Employer-based trips reduction programs
- Alternate work schedules
- Telecommuting
- Ride-share programs
- Cross-country skiing and snowshoeing

M.3.C. Policy: Reduce automobile trips by promoting land use and transportation strategies such as: implementation of compact pedestrian-oriented development; clustered and infill development; mixed uses and neighborhood-serving commercial mixed use centers.

M.3.D. Policy: Encourage visitors to leave vehicles at their lodging by developing pedestrian, bicycle, transit and parking management strategies.

M.4. GOAL: Encourage feet first by providing a linked year-round recreational and commuter trail system that is safe and comprehensive.

M.4.B. Policy: Provide a high quality pedestrian system linked throughout the community with year-round access.

M.4.C. Policy: Design streets, sidewalks and trails to ensure public safety such as:

- Adequate dimensions and separation
- Glare-free lighting at intersections
- Directional and informational signage
- Trash receptacles
- Benches
- Shuttle shelters
- Protecting roadway crossings
- Landscaping
- Groomed community trails
- Snow removed from sidewalks

M.4.F. Policy: Improve pedestrian safety along State Route 203 by working with Caltrans to incorporate techniques such as sidewalks, highway grade changes or rerouting, and pedestrian crossings.

3.3.2 AFFECTED ENVIRONMENT

Transportation and traffic flow in the Town and specifically in the area of The Village are dependent on the capacity of the MMSA and the alternative forms of transportation that affect the mountain's capacity, specifically, the Village Gondola, public transportation, and pedestrian/ski alternatives.

a. Auto Traffic

As described in Section 2.0, Proposed Action and Alternatives, MMSA currently accommodates approximately 13,500 skiers/snowboarders on a typical winter Saturday. A typical winter Saturday is established as the "design day" for purposes of traffic planning, capacity analysis, and LOS standard adopted by the Town. Peak days consist of 10 to 12 days per year in which approximately 19,000 skiers/snowboarders frequent the area during Christmas holidays, Martin Luther King Day, and President's Day Weekend. A typical Saturday would be approximately 70 percent of the attendance from a peak Saturday.[16]

Currently, the LOS at the intersection of Minaret Road/Main Street is LOS C. LOS C represents a V/C ratio between 0.71 and 0.80.[17] However, during peak holiday conditions, the LOS at the intersection is LOS D, which represents a V/C ratio between 0.81 and 0.90. During these peak days, traffic conditions are unstable, which result in congested stop-and-go conditions on Minaret Road from the Main Street intersection, northerly through the Forest Trail Road intersection and up to the Earthquake Fault, particularly for southbound traffic. The LOS at the intersection of Minaret Road and Forest Trail Road is currently LOS F for east and westbound traffic compounded by the back-up from Minaret Road and Main Street. Figure 7 on page 59 presents the existing traffic conditions along the affected roads. In addition, the public parking for The Village is on the east side of Minaret Road causing pedestrian-auto conflicts. In an effort to reduce the congestion caused by pedestrians, the Town has recently developed a marked crossing at Berner Street with pedestrian-actuated flashing beacons to control and group pedestrians crossing Minaret Road. Based on the buildout 2024 traffic analysis in the Environmental Impact Report for the *General Plan Update*, these intersections, when mitigated, will be LOS D with protected turn-lanes at Minaret Road and Main Street and LOS B with a roundabout at Minaret Road and Forest Trail Road.[18] In other words, even with successful traffic mitigations, the future design day conditions will equal today's peak day conditions at the intersection of Minaret Road and Main Street.

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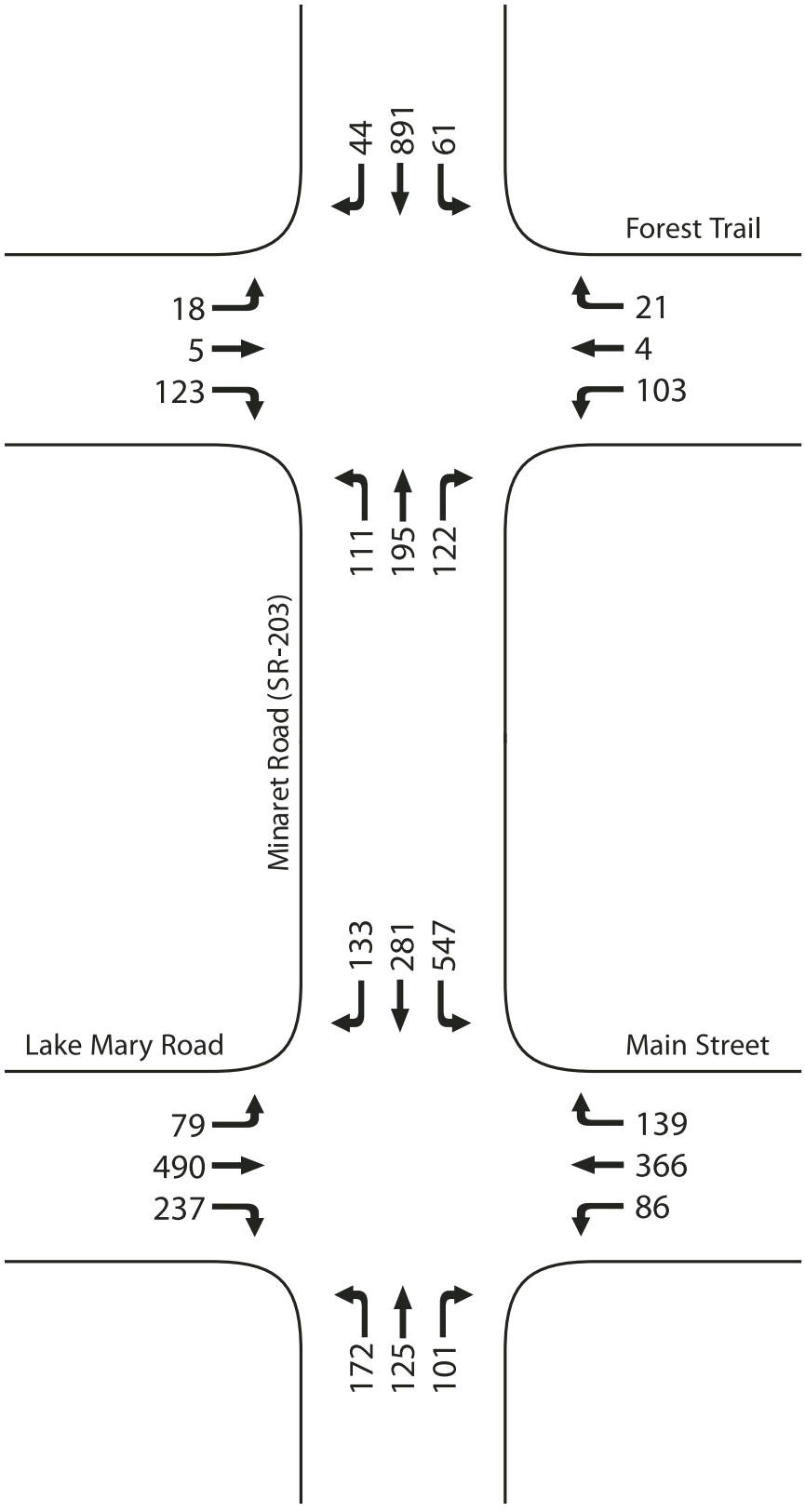
[16] *Town of Mammoth Lakes, Final Program Environmental Impact Report Town of Mammoth Lakes 2005 General Plan Update, May 2007.*

[17] *A V/C ratio is defined as the volume of cars in relation to the available capacity for the roadway and is measured on a scale from 0 to 1.00.*

[18] *Town of Mammoth Lakes, Final Program Environmental Impact Report Town of Mammoth Lakes 2005 General Plan Update, May 2007.*



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No scale

Figure 7
Existing Traffic Conditions
Typical Winter Saturday Afternoon

Source: LSA Associates, Inc., July 2007.

b. Public Transit

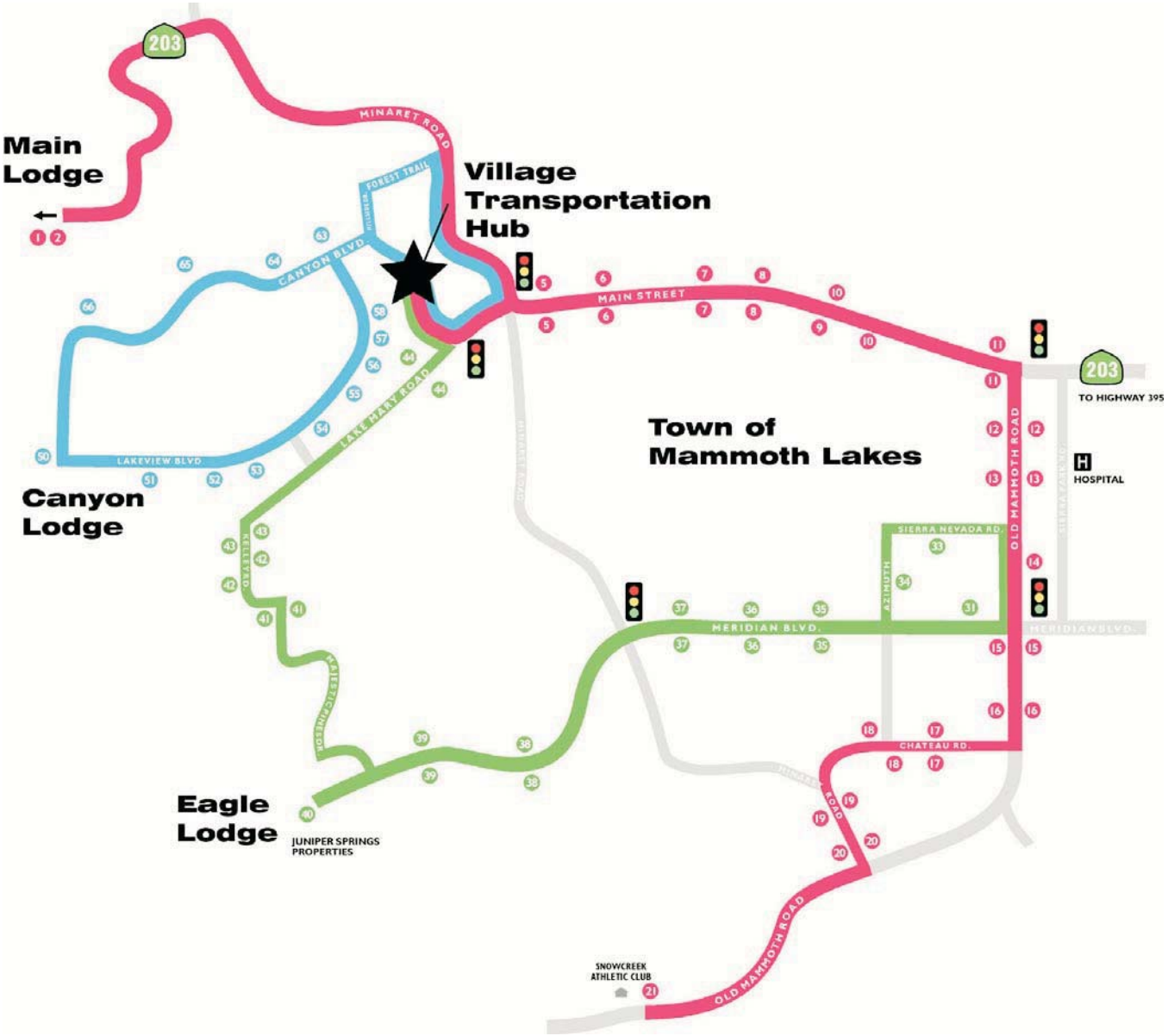
The Mammoth Area Shuttle is a free winter transit system operated by MMSA. The shuttle is comprised of five separate but linked lines and serves approximately 65 stops. As shown in Figure 8 on page 61, the five routes serve the four mountain portals of the Main Lodge, Canyon Lodge, Eagle Lodge, and The Village. The Village transfer point connects all of the bus routes (Blue, Red, Orange, and Yellow) with the exception of the Green line, which connects Eagle Lodge to Old Mammoth Road via Meridian Boulevard.

The Red Line, which serves the Main Lodge, The Village, Main Street, and Old Mammoth Road out to the Snowcreek Athletic Club, predominantly affects the traffic demand on Minaret Road. During peak times, 12 buses with a maximum capacity of 60 passengers serve the route with approximately 10 minutes between each bus pick-up/drop-off. During peak afternoon conditions, the buses operate at a full capacity of 45 seated and 15 standing when leaving the Main Lodge. At these capacities, approximately 360 skiers per hour can be transported from the Main Lodge.

The Blue Line currently serves Canyon Lodge and the Village with a 15-minute loop. It is currently served by four buses (with a bus capacity of approximately 45-60 riders), which results in about a seven minute headway or approximately eight trips per hour or 360-480 passengers an hour. On typical winter Saturdays there may be 45-50 people waiting in line for the bus at one time. Adding two additional buses to the Blue Line could transport additional 130-240 passengers an hour; however traffic congestion on peak days would remain a hindrance to the movement of people via bus.

It has been observed by MMSA Transportation Staff at the Main Lodge, that on a typical winter Saturday with good weather conditions, up to approximately 300 skiers wait in line for buses between 3:30 P.M. and 4:30 P.M. On a peak Saturday with good weather conditions up to approximately 400 skiers wait in line.[19] As stated above, on peak days MMSA operates its entire fleet at full capacity to accommodate this peak transit demand to the best of its ability. However, MMSA is limited by the flow of traffic as Minaret Road is the only road servicing the three-mile stretch from the Main Lodge to the Town of Mammoth Lakes. In addition, MMSA operates up to seven parking shuttles along Minaret Road from the Main Lodge to the Chairs 4/20 parking area to pick-up skiers parked along the side of Minaret Road and take them to and from the Main Lodge.

[19] *Per communications with Paul Weden, MMSA-Senior Transportation Supervisor with LSA Associates, March 4, 2005.*



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N

No scale

Figure 8
Mammoth Area Shuttle Routes

Source: LSA Associates, Inc., July 2007.

c. Village Gondola

The Village Gondola currently provides direct access to the Canyon Lodge from The Village and serves visitors within a walking distance of a quarter-mile, as well as riders arriving via bus to the Village Transfer Station, as noted above.[20] Based on existing bed-base calculations, there are approximately 3,200 peak day skiers that currently originate out of The Village portal. The speed of the Village Gondola is approximately 20 feet per second with a one-way trip taking approximately 4 minutes 15 seconds. The one-way operating capacity of the Village Gondola is approximately 2,200 skiers per hour based on an observed car capacity of 10 to 12 skiers. The maximum capacity of the Village Gondola is 15 skiers per car, though the maximum capacity has not been achieved in practice. During the typical winter Saturday afternoons and peak holidays, there is a high demand for return trips on the Village Gondola to The Village. This is due to the typical ski industry peak up-load, down-load capacity scenario. The Village Gondola adequately up-loads skiers over the two hour period of time between 8:00 A.M. and 10:00 A.M. with minimal delays. However, it does not have the capacity to down-load skiers in the one hour period of 3:30 P.M. to 4:30 P.M.[21] As shown in Table 6 on page 63, it has been observed that the lack of down-load capacity results in skiers waiting in line for 10 minutes on typical Saturdays and 20 minutes on peak Saturdays. As these existing waits are actual observations by MMSA, it can be assumed that the additional demand of the 3,400 skiers originating at The Village portal is overflow from the transit connection station. In addition, The Village is approximately 50 percent built out and the additional transient style units are expected to come on-line within the next three to five years, doubling the demand for the Village Gondola.

d. Pedestrian/ Ski Trail Alternatives (Down-Slope Capacity)

Unlike the Main Lodge, Canyon Lodge, and Eagle Lodge ski portals, The Village portal does not have a direct pedestrian/ski access alternative. Therefore, there is no existing down-slope capacity for skiers based out of The Village. It is estimated that skiers staying in accommodations within one-quarter mile radius of a skier base facility will use this alternative and ski/walk to their accommodations, if available and conditions are favorable.[22] It is a goal of the MMSA Master Plan to balance the attractiveness of each of its portals in order to disperse impacts and enhance the recreational experience. Having a pedestrian/skiable alternative is also an identified goal in the *North Village Specific Plan.*

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[20] *Per communications with LSA Associates regarding industry standard (assumes that any visitors located within a quarter-mile will walk) July 26, 2007.*

[21] *Ecosign, 1997 MMSA Master Development Plan (standard skier up-slope/down-slope capacity paradigm), 1997.*

[22] *Per communications with LSA Associates regarding industry standard (assumes that any visitors located within a quarter-mile will walk) July 26, 2007.*

Table 6

Observed End of Day Village Gondola Queue

Total Skiers	Gondola Capacity	Approximate Wait Time	Approximate Skiers in Queue [a]
Typical Saturday 13,500 skiers	2,200 skiers	10 minutes	350 skiers
Peak Saturday 19,000 skiers	2,200 skiers	20 minutes	700 skiers

[a] *Number of people observed in the queue by MMSA employees in the 2004 ski season.*

Source: LSA Associates, Inc., June 2007.

3.3.3 ENVIRONMENTAL CONSEQUENCES

a. Methodology

(1) Construction

Construction traffic, including workers travel, and the delivery of construction materials could potentially affect existing traffic in the Town. Construction traffic impacts are analyzed based on the anticipated number of worker and construction trips to and from the site.

(2) Operation

To assess operational traffic impacts to the project vicinity, the use of the transit shuttle bus and gondola was compared to the possible reduction of vehicular trips. In order to assess the conservative worst-case scenario for potential skier demand, the physical characteristics of the proposed Ski Back Trail were evaluated for its attractiveness to skiers. Trail attractiveness for the conservative worst-case analysis consists of three main components: (1) physical characteristics; (2) relative travel time; and (3) skier origination.

b. Environmental Consequences of the Proposed Action

(1) Construction Impacts

Construction of the Proposed Action is expected to start in the spring of 2008 and would take approximately six months to complete in which the Ski Back Trail would be in operation for the 2008/2009 winter season. Construction traffic would consist of the construction workers' commute and the single transport of construction equipment and materials on-site at the beginning of construction and off-site at the conclusion of construction. All construction

equipment would be located on-site for the duration of the phase of construction in which it would be used. Construction equipment would include a total of 25 pieces of equipment, including: one large bulldozer, one large excavator, one mid-sized excavator, one or two roller vibrating compactors, one excavator, three off-road haulers, two truck and trailers, six pickup trucks, one water truck, one microdrill rig, one stump grinder, two large size loaders, one to two backhoes, and one compressor.[23] Assuming that the 25 pieces of equipment would be utilized for the five different stages of construction of the Ski Back Trail, at most there would be four pieces of equipment transferred to the site at a time.[24] In addition, it should be noted that the majority of the construction required for the Ski Back Trail would utilize existing MMSA operations staff that already commute to the MMSA everyday, and therefore, would not result in an increase in worker trips, except for construction of the retaining walls. However, in order to provide a conservative worst-case analysis, it is assumed that each piece of equipment would result in 1.25 worker trips per day, for a total of five worker trips per day. Regardless, construction-related impacts would be short-term and traffic generated by the construction crew would be small compared to the existing traffic volumes on Minaret Road and other affected streets. Therefore, there would be no adverse construction impacts and no mitigation measures would be required.

(2) Operational Impacts

Based on the existing conditions of peak day wait times as noted above for both the Main Lodge transit system and the Village Gondola, there is a need for additional end-of-day mobility capacity. The Proposed Action would add additional down-slope capacity via a Ski Back Trail, which would alleviate some of the existing excess demand and provide a pedestrian/ski alternative. However, in order to determine the conservative worst-case scenario of skiers that would utilize the Ski Back Trail and thus, the potential decrease demand in trips from The Village or Main Lodge, the Ski Back Trail must be evaluated for its attractiveness to skiers. As previously described, trail attractiveness consists of three main components: (1) physical characteristics; (2) relative travel time; and (3) skier origination.

In relation to physical characteristics, the trail attractiveness study performed by LSA Associates assumes that an ideal grade of eight to nine percent would ensure continued skier movement in any snow conditions and a seven percent grade would ensure continued movement on most days. A typical ski trail with eight to nine percent grades and a width of 25 feet would have a capacity of approximately 2,400 persons per hour.[25] In order to achieve as little impact as possible to the existing natural terrain, tree retention, visual impacts, and minimize impacts to the

[23] *Per written correspondence with MMSA Project Team and Construction Manager, March 21, 2007.*

[24] *Ibid.*

[25] *Per letter report from Dave Felius, Ecosign Mountain Resort Planners, September 10, 2004.*

existing mountain bike trails, the proposed Ski Back Trail includes alternating sections that are steeper and flatter. Although this allows users to pick up speed on the steeper sections and allows them to glide through the following flatter sections, these characteristics limit the proposed capacity of the trail to approximately 900 to 1,200 persons per hour due to the fact that this design is unlikely to be attractive to beginner skiers and beginner/intermediate snowboarders.

As far as relative travel time, skiers utilizing the Ski Back Trail would come from either The Village through Canyon Lodge, as they do today via the Village Gondola or from the Main Lodge in lieu of personal auto trip entirely and/or originating their Red Line transit trip at The Village rather than the Main Lodge. The amount of time it would take to ski the entire length of the 1.5-mile Ski Back Trail would be approximately 10 minutes at an average of 10 miles per hour (mph). However, if starting at the Canyon Lodge as the starting point, the time required to ride either Chair 7 or 17 to gain access to the Ski Back Trail would be an additional six to eight minutes. Similarly, if starting at the Main Lodge, the time associated with riding the Panorama Gondola and skiing down to the trail head would add approximately 20 minutes. Thus, the total time from Canyon Lodge or Main Lodge/Ski Back Trial would require approximately 26 to 28 minutes respectively, to arrive at The Village. As such, from a pure time standpoint and relative to the mode of transport at each portal, the Ski Back Trail would be faster than waiting in line for the bus at the Main Lodge and would take approximately the same amount of time as the Village Gondola on a typical day and is faster on a peak day.

However, in relation to a comparison of skier origination, the relative attractiveness of the trail for skiers from the Main Lodge would be less since they are not originating at The Village. Furthermore, those skiers diverted from the existing Red Line transit and/or from private auto trips at the Main Lodge, would need to perceive that the benefit of avoiding sitting in traffic on Minaret Road is significant enough to improve their overall experience. Specifically, The Village transit connection station would be utilized to get them to their destinations throughout town. For these reasons, it is assumed that it is more likely that more users of the Ski Back Trail would be diverted from the Village Gondola than from the Main Lodge transit system.

In order to relate the trail's attractiveness from these two portals to its ability to reduce congestion by meeting the need for the diversion of excess demand from the Village Gondola and Main Lodge transit system, it was estimated as a conservative worst-case scenario that a minimum of 10 percent of skiers going to The Village from the Canyon Lodge may be attracted to the Ski Back Trail and a minimum of five percent of the skiers from the Main Lodge. In contrast to the recreation analysis, this transportation analysis specifically utilizes the projected worst-case scenario for the estimated daily demand and for the purpose of traffic congestion reduction for the Ski Back Trail on Highway 203. As a result, the projected worst-case scenario estimated minimum daily demand for the purposes of traffic congestion reduction for the Ski

Back Trail would be approximately 250 to 350 skiers on existing design day and peak day and approximately 350 to 500 at build-out, as illustrated in Table 7 and Table 8 on page 67 and 68, respectively.

However, it is also concluded that the Ski Back Trail is unlikely to have an effect on the potential to alleviate congestion from Minaret Road due to the latent demand for transit. Any of the potential 250 to 500 Ski Back Trail users estimated above would not equate to trip reduction due to the fact that there is existing latent demand for the transit and auto trip by those people who would prefer to end their day between 3:30 P.M. and 4:30 P.M., but due to traffic conditions leave before or after. This is a common scenario found in commuter traffic communities such as Southern California. On the other hand, the Ski Back Trail does have the potential to alleviate existing peak demand on the Village Gondola and as future demand increases through planned development in The Village, the Ski Back Trail has enough capacity to continue to allow an alternative to waiting in line.

In conclusion, the Ski Back Trail would not provide relief to traffic congestion on southbound Minaret Road towards The Village but would provide an alternative to waiting in line for public transit and would provide relief to existing and future demand for the Village Gondola. As there would be no adverse operational impacts in regards to the Proposed Action, no mitigation measures are required.

(3) Mitigation Measures

Construction impacts would be short-term and no mitigation measures would be required. There would be no adverse operational impacts and no mitigation measures would be required.

c. Environmental Consequences of Alternative 1 – Original Alignment Proposal

(1) Construction Impacts

The Original Alignment Proposal Alternative would be similar to the Proposed Action with the exception that this alternative would be less consistent with the flow of the existing natural terrain requiring substantially more cut and fill along the proposed alignment, a greater amount of tree removal, would be more visible from the surrounding uses, and cause a greater amount of impacts to the existing mountain bike trails. However, under the Original Alignment Proposal Alternative, construction impacts would be similar to the Proposed Action. Construction equipment would include a total of 25 pieces of equipment, of which approximately four pieces would be utilized per phase of construction. Construction traffic would consist of the construction workers' commute and the single transport of construction equipment, materials on-

Table 7

Existing Conditions –
Projected Minimum Daily Ski Back Trail Demand[f]

	Main Lodge		Village		Total	
	Typical Day [a]	**Peak Day**	**Typical Day**	**Peak Day**	**Typical Day**	**Peak Day**
Total Skiers/Snowboarders[b]	5,100	7,300	2,240	3,200	7,340	10,500
Skiers Only[c]	3,060	4,380	1,344	1,920	4,404	6,300
Intermediate Skill Level and Above [d]	2,601	3,723	1,142	1,632	3,743	5,355
Estimated Minimum Ski Back Trail Demand [e]	130	186	114	163	244	349

[a] *Typical Saturday is 70 percent of peak Saturday.*
[b] *MMSA Master, Plan, Table II.27 and Table VI.6.*
[c] *Skiers are 60 percent of total skiers/snowboarders.*
[d] *Intermediate skill level and above are 85 percent of skiers–MMSA Master Plan, pages II-26–27.*
[e] *Five percent of Main Lodge potential and 10 percent of Village potential.*
[f] *Projected minimum daily demand is a conservative estimate of ski back trail demand for the purpose of analyzing the minimum impacts to traffic congestion reduction in the context of the transportation analysis.*

Source: LSA Associates, Inc., June 2007.

site at the beginning of construction and off-site at the conclusion of construction.[26] All construction equipment would be located on-site for the duration of the individual construction phases. There would be no adverse construction-related impacts since they would be short-term and traffic generated by the construction crew would be small compared to the existing traffic volumes on Minaret Road and other affected streets and no mitigation measures would be required.

(2) Operational Impacts

Similar to the Proposed Action, the projected worst-case scenario estimated minimum daily demand for the purposes of traffic congestion reduction for the Ski Back Trail of approximately 250 to 350 skiers on existing design day and peak day and 350 to 500 at build-out would not provide relief to traffic congestion on southbound Minaret Road towards The Village. This is due to the latent transit demand but would provide an alternative to waiting in line for public transit and would provide relief to existing and future demand for the Village Gondola. As such, there would be no adverse operational impacts. No mitigation measures are required.

[26] *As previously described, construction of the Ski Back Trail would utilize primarily existing MMSA workers, except for construction of the retaining walls. However, this analysis was conservative and assumed a worst-case scenario of requiring1.25 trips per the four pieces of construction equipment utilized per day, resulting in a total of five worker trips per day.*

Table 8

Cumulative (Buildout) Conditions –
Projected Minimum Daily Ski Back Trail Demand[f]

	Main Lodge		Village		Total	
	Typical Day [a]	Peak Day	Typical Day	Peak Day	Typical Day	Peak Day
Total Skiers/Snowboarders	5,100	7,300	4,480	6,400	9,580	13,700
Skiers Only [b]	3,060	4,380	2,688	3,840	5,748	8,220
Intermediate Skill Level and Above [c]	2,601	3,723	2,285	3,264	4,886	6,987
Estimated Minimum Ski Back Trail Demand [d]	130	186	229	326	359	512

[a] *Assumed 2.5 skiers/car Mammoth Mountain Master Plan, Table II.20, page II-58.*
[b] *Typical Saturday is 70 percent of peak Saturday.*
[c] *MMSA Master, Plan, Table II.27 and Table VI.6.*
[d] *Skiers are 60 percent of total skiers/snowboarders.*
[e] *Intermediate skill level and above are 85 percent of skiers–MMSA Master Plan, pages II-26 and II-27.*
[f] *Projected minimum daily demand is a conservative estimate of Ski Back Trail demand for the purpose of analyzing the minimum impacts to traffic congestion reduction in the context of the transportation analysis.*

Source: LSA Associates, Inc., June 2007.

d. Environmental Consequences of Alternative 2 – Transit Emphasis Alternative

(1) Construction Impacts

The Transit Emphasis Alternative does not include the construction of the Ski Back Trail. Instead an increased emphasis would be on transit provisions focused on returning skiers from the Main Lodge, Chair 2/10, and Chair 4/20 to The Village, and other destinations in Town. As the Ski Back Trail would not be developed, no construction-related impacts would occur and no mitigation measures are required.

(2) Operational Impacts

The increased transit emphasis is roughly equivalent to the projected worst-case scenario estimated minimum daily demand for the purposes of traffic congestion reduction for the Ski Back Trail. This would require four additional buses in the peak hour running only from Main Lodge to The Village. These buses would have a capacity of 240 skiers, which represents approximately 10 percent of the total skiers coming down via private auto from Main Lodge and associated parking areas in the peak afternoon hour. If all transit increases come from private vehicles, a reduction of approximately 96 vehicle trips in the peak hour would occur, again equivalent to approximately 10 percent of the total vehicular traffic in the peak hour.

However, this level of traffic reduction would not likely occur as the demand for additional transit would primarily come from latent transit demand of other transit riders riding before or after the peak hour. Latent transit demands would include transit riders that desire to ride the bus between 3:30 P.M. and 5:00 P.M. but because the buses are all full they either go on an earlier bus or wait in line for a later bus. If more buses are added between the times of 4:00 P.M. and 5:00 P.M., the line of transit riders is reduced, but no change in traffic congestion occurs.

In order to divert vehicular traffic into the transit mode, it would be necessary to develop another strategy to physically limit the number of vehicles accessing Main Lodge and associated roadway parking areas. Even with reduced parking the congestion levels would not necessarily be reduced by the volumes noted. It is more likely that a combination of volume reduction and the duration of congestion would be reduced. In order to accomplish the objectives of this alternative, a reduction of 250 parking spaces would be recommended due to the fact that the potentially available 96 vehicle trips and the four additional buses would be filled with latent peak transit demand. Furthermore, the transit emphasis option would not provide relief for the existing and future demand for the Village Gondola. There would be no adverse impacts and no mitigation measures are required.

e. Environmental Consequences of Alternative 3 – No Action Alternative

(1) Construction Impacts

The No Action Alternative would reflect a continuation of existing conditions without changes, additions, or upgrades. Since there would be no development under the No Action Alternative, there would be no construction-related traffic impacts and no mitigation measures are required.

(2) Operational Impacts

Under the No Action Alternative, the proposed Ski Back Trail would not be constructed. As stated above, the roundabout at Minaret Road/Forest Trail intersection is expected to be constructed in 2008, and congestion at the intersection would be improved. Traffic conditions along Minaret Road are influenced and potentially improved by the increased attractiveness of Canyon Lodge and Eagle Base relative to Main Lodge. Existing traffic conditions for a typical winter Saturday are projected to operate consistent with adopted Town standards for LOS D. However, peak conditions will continue to exceed Town standards, resulting in unstable traffic congested conditions. Cumulative effects of the No Project Alternative are similar to the proposed build-out, which as previously described, even with mitigation, the intersection of Minaret Road and Main Street will operate on design day at LOS D. There would be no adverse operational impacts and no mitigation measures would be required.

f. Conformity with Applicable Plans and Policies

The Proposed Action, the Original Alignment Proposal Alternative, and the Transit Emphasis Alternative would be consistent with the *General Plan Update* goal to minimize the use of motor vehicles in an effort to support a pedestrian friendly community. With the development of the Proposed Action or the Original Alignment Proposal Alternative, vehicular traffic congestion on southbound Minaret Road would be similar to existing conditions, the demand for the transit shuttle and the Village Gondola would be relieved and a feet-first alternative from the Main and Canyon Lodges to The Village would be available. Under the Transit Emphasis Alternative more buses would be added between the times of 4:00 P.M. and 5:00 P.M., and although the line of transit riders is reduced, no change in traffic congestion occurs. Although the traffic congestion would still be similar to the existing conditions, the Transit Emphasis Alternative would be consistent with the *General Plan Update's* goal in the effort to support a pedestrian friendly community. Furthermore, the Proposed Action and Alternatives would not negatively affect the LOS at the intersection of Minaret Road/Main Street/Lake Mary Road as the LOS would still be at LOS C during typical conditions and LOS D during peak conditions.

3.0 ENVIRONMENTAL CONSEQUENCES
3.4 AIR QUALITY

INTRODUCTION

This section addresses the air emissions generated by the construction and operation of the Proposed Action. The analysis also addresses the consistency of the Proposed Action and alternatives with respect to the air quality policies set forth by the Great Basin Unified Air Pollution Control District (GBUAPCD) and Mono County. The air quality analysis focuses on whether the Proposed Action and/or alternatives would cause an exceedance of an ambient air quality standard.

Great Basin Valleys Air Basin

The State of California is divided into multiple air basins, which are grouped into geographic areas with similar topographical and meteorological conditions. Mono County is located in the Great Basin Valleys Air Basin (GVAB), which also encompasses Alpine and Inyo Counties. The area is defined by the Sierra Nevada mountain range to the west, the White, Inyo, and Coso ranges to the east, Mono Lake to the north, and Little Lake to the south.

Climate

The Town of Mammoth Lakes (Town) is located in the eastern Sierra Nevada Mountains, within Mono County, California. Mono County's climate is characterized by large fluctuations in diurnal temperatures, clear skies, excellent visibility, and relatively hot summers. The Ski Back Trail alignment would be located at an elevation of 8,620 feet above mean sea level (amsl) at the top of the trail and 8,080 feet amsl at the base of the trail. This area receives an average of 24 inches of rainfall and 212.5 inches of snowfall per year. Typically, the majority of precipitation occurs between November and March as recorded at the Mammoth Lakes Ranger Station Climate Monitoring Station (Monitoring Station). The average minimum temperature is approximately 29 degrees Fahrenheit (°F) and the average maximum temperature is approximately 57°F. Table 9 on page 72 provides the recorded summary data from the Monitoring Station. The Monitoring Station is located within five miles of the site. Data from this Monitoring Station are considered to be representative of the Proposed Action area because of the proximity and similarity in elevation (6,800 feet amsl).

Spring is the windiest season with fast-moving northerly weather fronts. Due to the increased elevation of the Town relative to some of the lower lying area in the GVAB, winds are

Table 9

Local Average Temperatures and Precipitation

Month	Temperature (°F)		Precipitation (inches)	
	Maximum	Minimum	Total	Snow
January	40.3	16.6	4.88	45.4
February	39.5	15.8	4.06	44.9
March	44.9	20.6	2.62	33.3
April	48.6	24.3	1.65	18.4
May	60.4	33.0	1.32	4.2
June	70.0	40.0	0.55	0.7
July	77.9	46.0	0.53	0.0
August	77.0	44.6	0.35	0.0
September	70.5	37.2	0.42	0.0
October	60.6	28.1	1.17	7.6
November	47.8	21.3	2.31	15.2
December	41.7	15.7	4.05	42.9
Annual (Average/Total)	56.6	28.6	23.90	212.5

[a] *Period of record is from December 1, 1993 to December 31, 2006.*

Source: Western Regional Climate Center www.wrcc.dri.edu accessed April 2007.

primarily light and variable. Occasionally a westerly "zephyr" wind blows beginning in the early afternoon until the early evening during the summer months. The mean annual wind speed in the Town is less than 11 miles per hour (mph). Mean annual wind speeds measured just outside of Town, at elevations of 8,900 feet amsl and 7,800 feet amsl, average 21.7 mph and 11.5 mph, respectively.

Wind patterns in the San Joaquin Valley region continually transport air into the GBVAB. Daily wind patterns blow air through the warmer valleys and up the western side of the Sierras. The transported air cools at night and falls down the eastern slopes of the mountains. This pattern occurs throughout the year and is the source of transported air pollutants including ozone.

3.4.1 REGULATORY FRAMEWORK

Criteria air pollutants are defined as those for which the Federal governments have established ambient air quality standards, or criteria, for outdoor concentrations in order to protect public health. The area is subject to air quality regulations developed and implemented at the Federal, State, and local levels. At the Federal level, the United States Environmental

Protection Agency (U.S. EPA) is responsible for implementation of the Federal Clean Air Act (CAA). Some portions of the CAA (e.g., certain mobile sources and other requirements) are implemented directly by the U.S. EPA. Other portions of the CAA (e.g., stationary source requirements) are implemented by State and local agencies. Plans, policies, and regulations that are relevant to the Proposed Action are discussed below.

a. Federal Level

The CAA establishes Federal air quality standards, known as National Ambient Air Quality Standards (NAAQS) and specifies future dates for achieving compliance. The CAA also mandates that the State submit and implement a State Implementation Plan (SIP) for areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards would be met.

The Clean Air Act Amendments (CAAA) of 1990 identifies specific emission reduction goals for areas not meeting the NAAQS. These amendments require both a demonstration of reasonable further progress toward attainment and an incorporation of additional sanctions for failure to attain or to meet interim milestones. The most relevant sections of the CAA include Title I (Nonattainment Provisions) and Title II (Mobile Source Provisions).

Title I of the CAA identifies attainment, nonattainment, and unclassifiable areas with regard to the criteria pollutants and sets deadlines for all areas to reach attainment for the following criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), fine particulates ($PM_{2.5}$), carbon monoxide (CO), and lead (Pb). The NAAQS were amended in July 1997, to include the eight-hour O_3 standard and a NAAQS for $PM_{2.5}$. Table 10 on page 74 shows the NAAQS currently in effect for each criteria pollutant.

Title II of the CAA contains a number of provisions with regard to mobile sources, including requirements for reformulated gasoline, new tailpipe emissions standards for cars and trucks, nitrogen oxides standards for heavy-duty vehicles, and a program for cleaner fleet vehicles. Identification and regulation of hazardous air pollutants (HAPs) are addressed in Title III. Under Title V, conditions for operating permits are specified.

In 1978, the U.S. EPA published final regulations implementing the Prevention of Significant Deterioration (PSD) Program. This program, contained under part C of the CAA, requires major stationary sources to formally demonstrate that operations of a new or modified source would not cause an exceedance of applicable NAAQS. A major source is defined as emitting 250 tons per year (tpy) of any criteria or precursor pollutant for which the GVAB is in attainment.[27] In July 1997, the U.S. EPA promulgated amendments to the NAAQS for O_3 and

[27] *United States Environmental Protection Agency, www.EPA.gov, website accessed July 2007.*

Table 10

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a]		Federal Standards [b]		
		Concentration [c]	Method [d]	Primary [c,e]	Secondary [c,f]	Method [g]
Ozone $O^{3)}$	one-hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—[j]	Same as Primary Standard	Ultraviolet Photometry
	eight-hour	0.070 ppm (137 µg/m^3)		0.08 ppm (157 µg/m^3) [h]		
Respirable Particulate Matter (PM_{10})	24-hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—[j]		
Fine Particulate Matter ($PM_{2.5}$)	24-hour	No Separate State Standard		35[j] µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	15 µg/m^3		
Carbon Monoxide (CO)	eight-hour	9.0 ppm (10mg/m^3)	Non-Dispersive Infrared Photometry NDIR)	9 ppm (10 mg/m^3)	None	Non-Dispersive Infrared Photometry (NDIR)
	one-hour	20 ppm (23 mg/m^3)		35 ppm (40 mg/m^3)		
	eight-hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	—
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	—	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m^3)	Same as Primary Standard	Gas Phase Chemiluminescence
	one-hour	0.25 ppm (470 µg/m^3)		—		
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m^3)	—	Spectrophotometry (Pararosaniline Method)
	24-hour	0.04 ppm (105 µg/m^3)		0.14 ppm (365 µg/m^3)	—	
	three-hour	—		—	0.5 ppm (1300 µg/m^3)	
	one-hour	0.25 ppm (655 µg/m^3)		—	—	—
Lead (Pb)	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	—
	Calendar Quarter	—		1.5 µg/m^3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
Visibility Reducing Particles	eight-hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		**No Federal Standards**		
Sulfates (SO_4)	24-hour	25 µg/m^3	Ion Chromatography			

Table 10 (Continued)

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [a]		Federal Standards [b]		
		Concentration [c]	Method [d]	Primary [c,e]	Secondary [c,f]	Method [g]
Hydrogen Sulfide	one-hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride [i]	24-hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

[a] *California standards for O_3, CO (except Lake Tahoe), SO_2 (one- and 24-hour), NO_2, PM_{10}, $PM_{2.5}$, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.*

[b] *National standards (other than O_3, PM_{10} and $PM_{2.5}$, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The O_3standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current Federal policies.*

[c] *Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.*

[d] *Any equivalent procedure which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.*

[e] *National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.*

[f] *National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.*

[g] *Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA..*

[h] *New Federal eight-hour O_3 and $PM_{2.5}$ standards were promulgated by U.S. EPA on July 18,1997. Contact U.S. EPA for further clarification and current Federal policies.*

[i] *The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.*

[j] *This table includes updated PM_{10}, $PM_{2.5}$, and O_3 standards that were adopted in September of 2006.*

Source: California Air Resources Board, November 10, 2006

particulate matter (PM_{10}). U.S. EPA set the new O_3 NAAQS at 0.08 parts per million (ppm) daily maximum eight-hour average. Under the new eight-hour standard, an area is in nonattainment whenever the average of the annual fourth highest daily maximum eight-hour O_3 concentration exceeds 0.08 ppm. U.S. EPA also established a new NAAQS for $PM_{2.5}$ and revised the NAAQS for PM_{10}. As of October 2006, the Federal annual PM_{10} standard has been revoked and the Federal 24-hour $PM_{2.5}$ standard was changed from 65 ug/m^3 to 35 ug/m^3.

The CAAA of 1990 also required the U.S. EPA to develop rules to ensure that Federal actions in Federal non-attainment areas do not jeopardize attainment plans designed and

implemented at the State or local level. In 1993, the U.S. EPA promulgated the final General Conformity Rule (GCR), which mandates that Federal agencies determine and document conformity with the applicable SIP, known locally as the Air Quality Management Plan (AQMP). In an area with an approved SIP, conformity can be demonstrated in one of four ways:

- By showing that the emission increases caused by an action are included in the SIP;
- By demonstrating that the State agrees to include the emission increases in the SIP;
- Through offsets; and
- Through mitigation.

Projects which result in total emissions increase below *de minimis* levels are not subject to a conformity determination under the GCR because it is unlikely that an increase in emissions below these levels would threaten a basin's attainment plans. For example, the *de minimis* level for projects located in areas designated as moderate non-attainment of the PM_{10} NAAQS, is 100 tpy.

b. State Level

In 1988, the State legislature adopted the California Clean Air Act (CCAA), which established a Statewide air pollution control program. The CCAA requires all areas of the State to achieve and maintain the California Ambient Air Quality Standards (CAAQS) by the earliest practical date. The CAAQS incorporate additional standards for most of the criteria pollutants and has set standards for other pollutants recognized by the State. In general, CAAQS are more stringent than corresponding NAAQS. Table 10 also lists the current CAAQS.

(1) Toxic Air Contaminants

The U.S. EPA regulates emissions of the 189 designated HAPs under Federal Title III of the CAA. The California Air Resources Board (CARB) regulates additional hazardous pollutants, designated as Toxic Air Contaminants (TACs), including those with predicted carcinogenic and non-carcinogenic health-effects. The Air Toxics Hot Spots Information and Assessment Act (AB 2588) requires inventories and public notices for facilities that emit TACs above established thresholds.

The CARB has created 35 local air agencies throughout California, responsible for promulgating and enforcing rules and regulations governing most stationary sources of emissions. Each air district not in attainment of a NAAQS must develop an AQMP. The AQMP

must demonstrate the effectiveness of proposed measures to bring the air basin into attainment of the standard by the applicable deadline. The local regulations are discussed in detail below.

(2) Greenhouse Gasses

Greenhouse gasses (GHGs) are those compounds in the Earth's atmosphere which play a critical role in determining the Earth's surface temperature. Specifically, these gasses allow high-frequency solar radiation to enter the Earth's atmosphere, but retain the low frequency energy which is radiated back from the Earth to space, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Increased concentrations of GHGs in the Earth's atmosphere are thought to be linked to worldwide rising surface temperatures, melting icebergs and snowpack, rising sea levels, and the increasing frequency and magnitude of severe weather.

GHGs include carbon dioxide (CO_2), methane (CH_4), O_3, water vapor, nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Carbon dioxide is the most abundant GHG. Other GHGs are less abundant, but have higher global warming potential than CO_2. Thus, emissions of other GHGs are frequently expressed in the equivalent mass of CO_2, denoted as CO_2E. GHGs are the result of anthropomorphic and human activities. Forest fires, decomposition, industrial processes, landfills, and consumption of fossil fuels for power generation, transportation, heating, and cooking are the primary sources of GHG emissions. According to the California Energy Commission (CEC), emissions from fossil fuel consumption represent approximately 81 percent of all GHG emissions and transportation creates 41 percent of all GHG emissions in the United States.[28]

The understanding of the fundamental processes responsible for global climate change has improved over the past decade and predictive capabilities are advancing. However, there remain significant scientific uncertainties, for example, in predictions of local effects of climate change, occurrence of extreme weather events, effects of aerosols, changes in clouds, shifts in the intensity and distribution of precipitation, and changes in oceanic circulation. Due to the complexity of the Earth climate system, the uncertainty in its description and in the prediction of changes may never be completely eliminated. Because of these uncertainties, there continues to be significant debate over the extent to which increased concentrations of GHGs have caused or will cause climate change and over the appropriate actions to limit and/or respond to climate change.

[28] *California Energy Commission, Inventory of California Greenhouse Gas Emissions and Sinks: 1990-2004, December 2006.*

In response to growing scientific and political concern with global climate change, California has recently adopted a series of laws to reduce emissions of GHGs to the atmosphere from commercial and private activities within the State. In September 2002, Governor Gray Davis signed Assembly Bill (AB) 1493, requiring the development and adoption of regulations to achieve "the maximum feasible reduction of greenhouse gases" emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the State. In September 2006, Governor Arnold Schwarzenegger signed the California Global Warming Solutions Act of 2006, also known as AB32 into law. AB32 commits the State to achieving 1990 levels of GHGs by 2020. To achieve this goal, AB32 mandates that CARB establish a quantified emissions cap, institute a schedule to meet the cap, implement regulations to reduce Statewide GHG emissions from stationary sources, and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved. Senate Bill (SB) 1368, a companion bill to AB32, requires the California Public Utilities Commission (PUC) and CEC to establish GHG emission performance standards for the generation of electricity. These standards will also apply to power that is generated outside of California and imported into the State.

c. Regional Level

The GBUAPCD has promulgated numerous rules and regulations governing the construction and operation of new or modified sources of air pollutant emissions within the GVAB.[29] The following provides a discussion of the applicable GBUAPCD rules.

The AQMP for the Town (adopted by the Town Council and GBUAPCD Board of Directors in November and December 1990) established that Mammoth Lakes is susceptible to air pollution episodes during the winter ski season. This condition is due to the increased use of both mobile sources and stationary sources including wood burning stoves and fireplaces. The resulting action taken by the GBUAPCD was the implementation of air quality control regulations to curtail PM_{10} emissions. Additionally, the Town has implemented numerous guidelines that govern the design of developments. The following are rules enforced by the GBUAPCD as well as municipal code sections specific to the Town.

GBUAPCD Rule 200-A and 200-B: Permits Required

Before any individual builds or operates anything which may cause the issuance of air contaminants or the use of which may eliminate, reduce or control the issuance of air contaminants, such person must obtain a written authority to construct and permit to operate from an Air Pollution Control Officer.

[29] *Great Basin Unified Air Pollution Control District, www.GBUAPCD.org, website accessed July 2007.*

GBUAPCD Rule 209-A: Standards for Authority to Construction

Under Rule 209-A, new stationary sources with air emissions above applicable thresholds must be constructed with Best Available Control Technologies (BACT).

GBUAPCD Rule 216-A: New Source Review Requirements for Determining Impact on Air Quality Secondary Sources

Rule 216-A states a person shall not initiate, modify, construct or operate any secondary sources that will cause the emission of any air pollutant without first obtaining a permit. A secondary source is defined by the GBUAPCD as any structure, building, facility, equipment, installation, or operation which is located on one or more bordering properties within the GBUAPCD and which is owned, operated, or under shared entitlement to use by the same person.

GBUAPCD Rules 401 and 402: Fugitive Dust and Nuisance

Rule 401 requires that airborne particles remain on the site they originate from under normal wind conditions. Proper mitigation techniques approved by the GBUAPCD must be implemented to ensure that fugitive dust is contained. This does not apply to dust emissions discharged through a stack or other point source.

Rule 402 states that any air discharge that may cause injury or detriment, nuisance or annoyance, or damage to any public property or considerable number of people is regulated. This rule discusses all the health and safety issues that may interfere with public and private areas surrounding the site.

GBUAPCD Rule 431: Town of Mammoth Lakes Municipal Code Section 8.30.110.

Road Dust Reduction Measures

Both the GBUAPCD and the Town's AQMP discuss the following rules on PM reduction control measures.

Rule 431 and Section 8.30.110: Requirements include vacuum street sweeping of volcanic cinders, requires vehicle miles traveled (VMT) reduction measures for new developments, and limits peak VMT in the Town to 106,600 VMT.

GBUAPCD Toxic Risk Assessment Policy

The GBUAPCD regulates new toxic air emission sources under a new source assessment policy. The policy requires that all new stationary sources emitting TACs must apply for a

permit. Once the application is received, the GBUAPCD performs a screening risk assessment based on the following: If an individual is exposed to a lifetime carcinogenic risk of greater than one in one million, then the permit will be granted; if exposed to a risk between one and 10 in one million, then mitigation measures must be implemented before the permit is granted; if exposed to a risk greater than 10 in one million the permit will not be granted.

d. Local Level

As previously described in Section 1.0, Introduction/Purpose and Need, of this Final EA, the Town and the Mammoth Mountain Ski Area (MMSA) have a close relationship due to their physical land connection and economic dependency. As such, despite the fact that the Proposed Action does not require approval by the Town, it is necessary to ensure that the Proposed Action is consistent with the relevant Town's plans and policies.

(1) Town of Mammoth Lakes 2007 General Plan Update

The *Town of Mammoth Lakes 2007 General Plan Update* (*General Plan Update*) is designed to promote the public health, safety and general welfare of the community. The *General Plan Update* is a comprehensive, long term and an internally consistent document that sets forth goals and policies for the Town to follow when making decisions concerning the community's future and includes policies regarding air quality in the Resource Management Element. Policies applicable to the Proposed Action include the following:

R.10. **GOAL:** Protect health of community residents by assuring that the town of Mammoth Lakes remains in compliance with or improves compliance with air quality standards.

R.10.C. Policy: Support strategies for development that reduce projected total vehicle miles traveled including, but are not limited to:

- circulation system improvements
- mass transit facilities
- private shuttles
- design and location of facilities to encourage pedestrian circulation

R.10.D. Policy: Mitigate impacts on air quality resulting from development through design, participation in Town air pollution reduction programs, and/or other measures that assure compliance with adopted air quality standards.

R.10.E. Policy: Reduce air pollutants during construction through implementation of Best Management Practices (BMPs).

R.10.F. Policy: Develop an efficient transportation system to reduce CO2 emissions and air pollutants.

Resolution Endorsing the U.S. Mayors Climate Protection Agreement

In June of 2005, the U.S. Conference of Mayors (USCM) unanimously endorsed the "U.S. Mayors Climate Protection Agreement." Mayors and councils that sign on to the agreement are making a commitment to reduce GHG emissions in their own cities and communities to seven percent below 1990 levels by 2012 through actions like increasing energy efficiency, reducing vehicles miles traveled, maintaining healthy urban forests, reducing sprawl, and promoting use of clean, renewable energy resources.

The Town adopted Resolution 07-05 on February 7, 2007, endorsing the U.S. Mayors Climate Protection Agreement. The Town must strive to achieve meaningful GHG reductions by taking such actions as:

- Preparing an inventory of GHG emissions, setting reduction targets, creating an action plan;
- Adopting and enforcing land-use policies that reduce sprawl;
- Promoting transportation options;
- Increasing the use of clean, alternative energy;
- Improving the energy efficiency of Town facilities;
- Purchasing only Energy Star equipment for Town use;
- Promoting and practicing sustainable building practices;
- Improving the fuel efficiency of the Town vehicle fleet;
- Evaluating improvements in water and wastewater delivery and recovery;
- Increasing recycling rates;
- Maintaining and promoting urban forests; and
- Educating the public.

To this goal, the Town has established various policies regarding economic development, efficient land use pattern, workforce housing, transportation, alternative energy, and energy efficiency measures to reduce the consumption of fossil fuels and the resultant GHG emissions. In addition to the implementation measures listed above, the Town has adopted policies

including the Urban Growth Boundary, the in-town workforce housing program, and construction of overhead lifts into the community to demonstrate a commitment to meaningful reductions of GHG emissions.

3.4.2 AFFECTED ENVIRONMENT

The Proposed Action site is a currently undeveloped area contained within the MMSA.[30] Existing sources of air pollutants in the vicinity consist primarily of vehicular trips associated with accessing ski lifts at Canyon Lodge, Main Lodge, and The Village, off-road equipment (snow blowers, generators, recreational vehicles, etc.), fuel (wood, natural gas, pellets) burning in residences and visitor accommodations, and the consumption of consumer goods.

As previously described, under the provisions of the CAA, the U.S. EPA is required to classify each air pollution control district as attainment or nonattainment status determined by the Federal standards. The CARB has similar responsibilities related to the State standards. Areas that violate Federal or State ambient air quality standards are referred to as nonattainment areas for the respective pollutants.

As shown in Table 11 on page 83, Mono County is classified as attainment for all CAAQS, except O_3 and PM_{10}, and all NAAQS except PM_{10}. However, there is no O_3 implementation plan for attainment in Mono County, nor is one required as outlined in the *2001 CARB Ozone Transport Review*.[31] Under State law, the CARB determines the contribution of transported pollution as overwhelming, significant, inconsequential, or some combination of the three. The *2001 CARB Ozone Transport Review* states that, "Transport from the central portion of the (San Joaquin) Valley is responsible for ozone violations in Mammoth Lakes" and that the resulting impacts on the Town's air quality were classified as "overwhelming."

a. Local Area Conditions

The GBUAPCD operates several air quality monitoring stations within the GBVAB. One air quality monitoring station is located within the Town. Air quality monitoring is performed by the GBUAPCD at the corner of Minaret Road and Old Mammoth Road.[32] A

[30] *However, it should be noted that the proposed Ski Back Trail is surrounded by development including Minaret Road to the north, a residential community (Mammoth Slopes) to the south, and extensive recreational uses surrounding the trail alignment.*

[31] *California Air Resources Board, 2001 CARB Ozone Transport Review, Austin, J. and Gouze, S., April 2001, page 45.*

[32] *The site is equipped with a state of the art continuous-reading Tapered Element Oscillating Microbalance PM_{10} monitor. Additionally, the GBUAPCD continues to use a co-located Partisol PM_{10} monitor operated every third day to demonstrate compliance with the ambient standards. Ozone and CO concentrations were monitored in the past, but these monitoring programs have been discontinued.*

Table 11

Mono County Area Designation

Pollutant	California Status	National Status
Ozone (O_3) (one-hour standard)	Non-Attainment	N/A[a]
Ozone (O_3) (eight-hour standard	Non-Attainment	Attainment
$PM_{2.5}$	Unclassified	Attainment
PM_{10} (24-hour standard)	Non-Attainment	Non-Attainment[b]
PM_{10} (annual standard)	Non-Attainment	N/A[c]
CO	Attainment	Attainment
NO_2	Attainment	Attainment
SO_2	Attainment	Attainment
SO_4	Attainment	Attainment
Lead	Attainment	Attainment
H_2S	Attainment	Attainment
Visibility Reducing Particles	Unclassified	Unclassified

[a] *The NAAQS for one-hr ozone was revoked on June 15, 2005 for all areas except Early Action Compact (EAC) areas.*

[b] *PM_{10} nonattainment does not represent all of Mono County, only a subset including Mammoth Lakes: http://www.arb.ca.gov/desig/adm/fed_pm10_desig.pdf*

[c] *The NAAQS for annual PM_{10} was revoked on September 21, 2006*

Source: CARB 2007

summary of the air quality data from 2000 to 2005 for the Monitoring Station is provided in Table 12 on page 84.

Discussions of each pollutant, including emission sources, historical ambient levels recorded at the Monitoring Station, and recent trends in ambient conditions, are presented below.

(1) Carbon Monoxide

CO is a colorless and odorless gas. Motor vehicles are the primary source of CO in the GBVAB. CARB and the U.S. EPA classify Mono County in attainment of the CO standards. CO monitoring in the Town was discontinued in 2002. The State one-hour standard for CO is 20.0 ppm, while the Federal standard is 35 ppm. The maximum one-hour concentration per calendar year has fluctuated at the Monitoring Station from 4.2 ppm in 2000 to 15.4 ppm in 2001. Both the State and Federal eight-hour standard for CO is 9.0 ppm. CO concentrations, as recorded at the Monitoring Station, have not exceeded the State or National standards since 1991.

Table 12

Mono County Air Quality Levels

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Year	Maximum Concentration	Days Above State/Federal Standard[a]
CO	One-Hour	20 ppm	35 ppm	2000	4.2[b]	0/0
				2001	15.4	0/0
				2002	--[c]	-/-
				2003	--[c]	-/-
				2004	--[c]	-/-
				2005	--[c]	-/-
	Eight-Hour	9 ppm	9 ppm	2000	2.5[b]	0/0
				2001	2.5	0/0
				2002	--[c]	-/-
				2003	--[c]	-/-
				2004	--[c]	-/-
				2005	--[c]	-/-
O_3	One-Hour	0.09 ppm	0.12 ppm	2000	--[b]	-/-
				2001	0.10[b]	4/0
				2002	0.07[b]	0/0
				2003	--[c]	-/-
				2004	--[c]	-/-
				2005	--[c]	-/-
	Eight-Hour	No State Standard has been promulgated	0.08 ppm	2000	--[b]	-/-
				2001	0.09	-/2
				2002	0.07	-/0
				2003	--[c]	-/-
				2004	--[c]	-/-
				2005	--[c]	-/-
PM_{10}	24-hour	50 mg/m^3	150 mg/m^3	2000	70[d]	2/0
				2001	134	4/0
				2002	129[b]	4/0
				2003	62	1/0
				2004	73	3/0
				2005	70	6/0
	Annual[e]	20 mg/m^3	50 mg/m^3	2000	27[b,d]	1/0
				2001	26	1/0
				2002	30[b]	1/0
				2003	--[b]	-/-
				2004	19.6	0/0
				2005	19.5	0/0

Table 12 (Continued)

Mono County Air Quality Levels

Pollutant	Averaging Time	California Standard	Federal Primary Standard	Year	Maximum Concentration	Days Above State/Federal Standard[a]
$PM_{2.5}$	24-hour[e]	No separate State Standard	65 mg/m^3	2000	31[b]	-/0
				2001	41[b]	-/0
				2002	--[b]	-/-
				2003	34	-/0
				2004	27	-/0
				2005	27[b]	-/0
	Annual	12 mg/m^3	15 mg/m^3	2000	18.0[b]	-/-
				2001	10.3[b]	-/-
				2002	--[b]	-/-
				2003	--[b]	-/-
				2004	--[b]	-/-
				2005	--[b]	-/-

[a] *The number of days above the standard is not necessarily the number of violations of the standard for the year. Data from CARB (http://www.arb.ca.gov/adam/welcome.html) unless otherwise noted.*

[b] *Years with incomplete data.*

[c] *Mono County stopped monitoring for CO and Ozone in 2002. Data not available*

[d] *2002 Values posted from USEPA (http://www.epa.gov/air/data/).*

[e] *In September 2006, the Federal 24-hr $PM_{2.5}$ standard was changed from 65 $\mu g/m^3$ to 35 $\mu g/m^3$, and the Federal annual PM_{10} standard was revoked. The data representing days above standard applies to the old standards.*

Source: PCR Services Corporation, 2007

(2) Ozone

Ozone is categorized as a photochemical oxidant. Oxidants are formed when nitrogen oxides, hydrocarbons, related compounds called volatile organic compounds (VOCs) and reactive organic compounds (ROCs) interact in the presence of ultraviolet sunlight.

In 2001 CARB published an O_3 transport review, which discussed the movement of O_3 among the various air basins contained within the State. CARB is responsible for classifying the contribution of transported O_3 in a given area based on the level of significance. CARB's research has proven that seasonal and diurnal variations in weather patterns play an important role in determining the fate of O_3, especially in the San Joaquin Valley Air Basin.[33]

[33.] *California Air Resources Board, 2001 CARB Ozone Transport Review, Austin, J. and Gouze, S., April 2001.*

The San Joaquin Valley Air Basin is the primary source for transported O_3 entering the Town. Precursor pollutants, NO_x and VOCs, emitted in the San Joaquin Valley react in the presence of sunlight, creating O_3. Recirculating air patterns and warmer temperatures, which are frequently experienced in the San Joaquin Valley, increase the photochemical production of O_3. As previously described above, diurnal wind patterns carry O_3 eastward to the crest of the Sierras during the day. As the air cools, O_3 flows down the eastern slopes into Mammoth Lakes, which accounts for the O_3 violations occurring late at night and in the early morning. Nearly all of the O_3 responsible for the violations in Mammoth Lakes has been transported from the west. This process is intensified in the summer months when photochemistry significantly increases production of O_3 in the San Joaquin Valley.

The maximum one-hour O_3 concentration recorded at the Monitoring Station during the 2000 to 2005 period was 0.1 ppm, which was recorded in 2001. During the reported period, the California standard of 0.09 ppm was exceeded four times in 2001; the Federal standard of 0.12 ppm was not exceeded during this time. The maximum eight-hour O_3 concentration was 0.09 ppm, which was recorded in 2001. During the same period, the Federal standard of 0.08 ppm was exceeded two times in 2001.

(3) Particulate Matter

PM_{10} arises from sources such as road dust, diesel soot, combustion products, construction operations, and dust storms. The maximum recorded concentration during 2000 to 2005 at the Monitoring Station was 134 micrograms per cubic meter ($\mu g/m^3$), recorded in 2001. During this time period, the California standard was exceeded between two and six times (three percent to 10 percent of the time) annually, with the highest number of exceedances in 2005 and the lowest number of exceedances recorded in 2000.[34] PM_{10} is monitored every six days in accordance with a national schedule and therefore, PM_{10} exceedances are based on the number of sampling days. Mono County is designated non-attainment for PM_{10} under both National and State designations. As required under the CAA, the GBUAPCD developed the Mammoth Lakes AQMP to demonstrate the effectiveness of various control strategies in achieving and maintaining the 24-hour PM_{10} NAAQS. The adopted control measures are contained in GBUAPCD Rule 431 and the Town Municipal Code Section 8.30.110, as listed above.

As of June 5, 2003, the State annual PM_{10} standard is 20 $\mu g/m^3$, which is based on the geometric mean of the monitored one-hour values. This is a reduction from the previous State annual standard of 30 $\mu g/m^3$. The Federal standard is 50 $\mu g/m^3$ based an average of the one-hour concentrations. The State standard has been exceeded in the years 2000, 2001, and 2002. There have been no exceedances of the Federal annual standard during this monitoring period. The

[34] *California Air Resources Board, http://www.arb.ca.gov/aaqm/partic.htm, website accessed July 2007.*

U.S. EPA revised the NAAQS for $PM_{10.}$ As of October 2006, the Federal annual PM_{10} standard has been revoked.

(4) Fine Particulate Matter

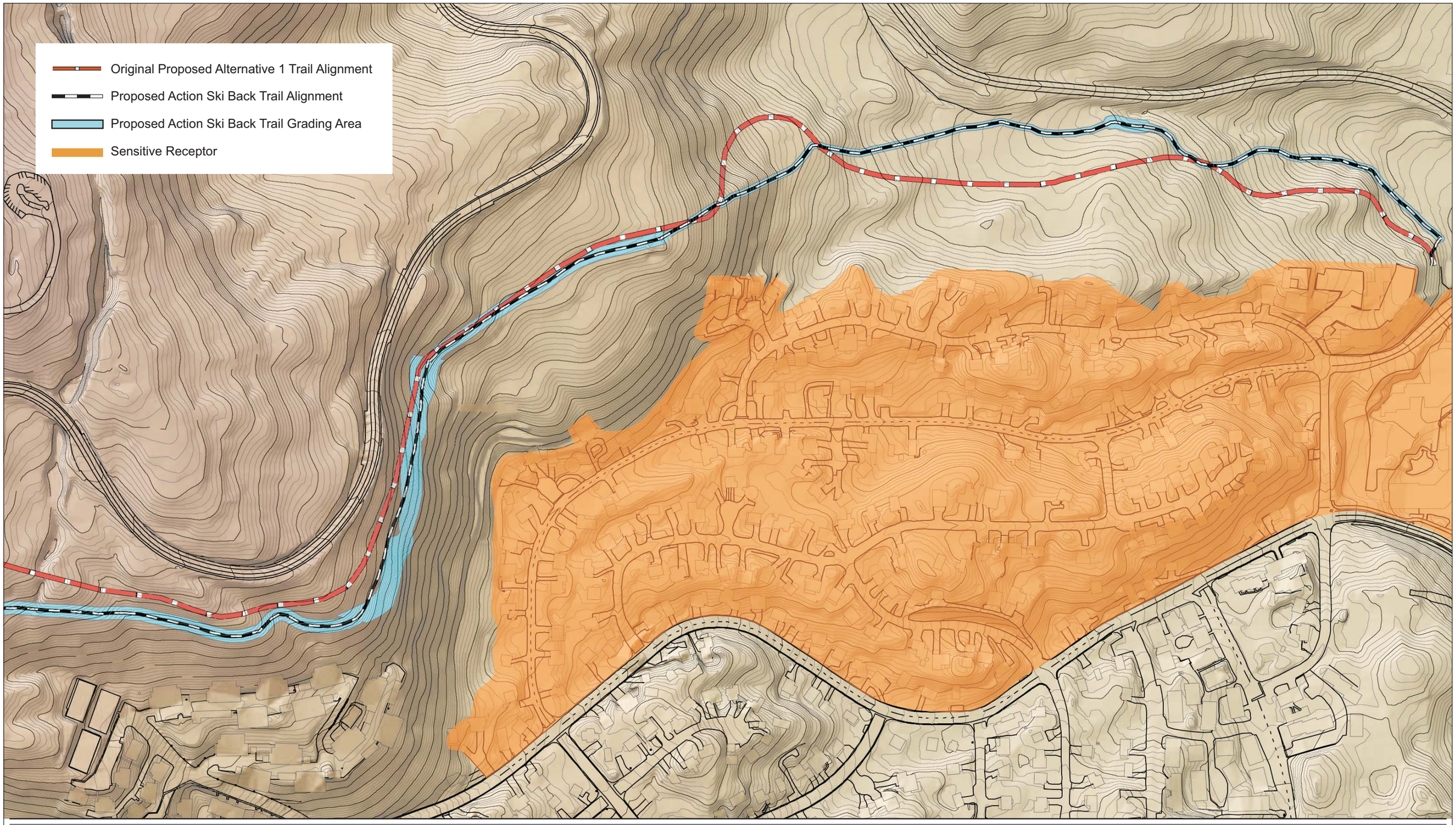
$PM_{2.5}$ is primarily a result of combustion. Combustion products emitted into the atmosphere as well as those particles that are formed in the atmosphere from gaseous pollutants are $PM_{2.5}$ precursors. As a result of atmospheric chemistry (secondary formation) the primary particles from combustion eventually form $PM_{2.5}$. Generally, $PM_{2.5}$ poses a greater health risk than larger particulates. This is due to the more toxic chemical composition of smaller particles and their ability to deposit deep into the human lung, which results in more absorption into the blood stream and an increased risk of associated health affects. In addition to health impacts, these particles can reside in the atmosphere for long periods of time and are the main contributors to reduced visibility and regional haze.

The State established a 24-hour $PM_{2.5}$ standard in 2003, coincident with the Federal standard of 65 $\mu g/m^3$. However, while the State standard is not to be exceeded, the Federal standard's criteria allows for some exceedances as long as the three year average of the annual 98^{th} percentile concentration distributions at each monitoring site meets the standard. As of October 2006, the Federal 24-hour $PM_{2.5}$ standard was changed from 65 ug/m^3 to 35 ug/m^3.

The GBUAPCD began monitoring for $PM_{2.5}$ in 2000. With monitoring data through 2004, no exceedance of the State standard has been reported. The State $PM_{2.5}$ annual standard is 12 $\mu g/m^3$ (not to be exceeded); while the Federal standard is 15 $\mu g/m^3$ (averaged over three years). No full year of data collected from the monitoring station in the Town violates the State standard. U.S. EPA issued official designations for the $PM_{2.5}$ standard in December 2004 and made modifications in April 2005. Mono County is designated as unclassifiable/attainment.

b. Sensitive Receptors

Sensitive populations are more susceptible to the effects of air pollution than the general population. Sensitive populations that are in close proximity to localized sources of toxics and CO are of particular concern and are termed sensitive receptors. Land uses considered to be sensitive receptors with regard to air quality include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. The closest sensitive receptors include the Mammoth Slopes residential development located approximately 450 feet to the south of, and at a lower elevation relative to the proposed Ski Back Trail alignment as shown in Figure 9 on page 88.



PCR

N

0 200 400 Feet

Source: Triad/Holmes Associates, June 28, 2004.

Figure 9
Closest Sensitive Receptor Locations

3.4.3 ENVIRONMENTAL CONSEQUENCES

a. Methodology

The evaluation of potential impacts on local and regional air quality that may result from construction and long-term operations are based on the following methodological approach.

(1) Construction

Construction activities would generate air pollutant emissions from the following activities: the commute of workers; fuel combustion by on-site construction equipment; and dust generating activities from soil disturbance.[35] Emission levels from construction activities would vary based on the type of equipment, duration of use, operation schedules, and number of construction workers.[36] Construction emissions were estimated using the URBEMIS2002 emissions inventory model which incorporates calculation formulas and emissions factors prescribed by the CARB, various local air quality management districts, and the U.S. EPA AP-42.

(2) Operational

Operation of the Proposed Action would result in an increase in snow grooming activities and a potential change in vehicle usage patterns.[37] Pollutant emissions resulting from on- and off-road vehicles are calculated using appropriate models. Specifically, operational emissions were calculated using the URBEMIS2002 emissions inventory model, which multiplies an estimate of daily VMT by applicable EMFAC2002 emission factors. Emissions predicted under existing conditions are calculated using 2006 estimates of VMT, while emissions resulting from the Proposed Action are calculated using the 2009 predicted VMT. To account for the differing seasonal visitation patterns and emission factors, the model was run separately for summer and winter seasons, then compiled into one table to encompass yearly emissions.

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[35] *It should be noted that the Proposed Action does not incorporate any soil or debris hauling as a result of clearing or grading activities, all materials would be maintained and reused onsite.*

[36] *It should be noted that the majority of the construction workers required for construction of the Ski Back Trail would be existing MMSA maintenance employees and therefore, would not generate additional worker trips. Additional construction workers would only be required for construction of the retaining walls. However, in order to provide a worst-case analysis, it was assumed that each piece of equipment would generate 1.25 worker trips per day, for a total of five workers trips per day.*

[37] *It should be noted that the Proposed Action would not result in a change in energy usage rates nor would it result in the operation of new stationary sources.*

Off-road mobile source emissions from snow grooming activities were calculated using emission factors from the CARB OFFROAD2007 model, based on engine size and predicted usage rates. The emission factors were corrected to account for the use of bio-diesel in MMSA equipment. Details of criteria pollutant emission calculations from snow grooming are presented in Appendix B.[38]

(3) TAC Impacts (Construction and Operations)

Potential TAC impacts are evaluated by conducting a screening-level analysis followed by a more detailed analysis (i.e., dispersion modeling), if needed. The screening-level analysis consists of reviewing the Proposed Action and Alternatives to identify any new or modified TAC emissions sources. If it is determined that the Proposed Action and/or Alternatives would introduce a potentially significant new source or modify an existing TAC emissions source, then downwind sensitive receptor locations are identified and site-specific dispersion modeling is conducted to determine impacts.

(4) Greenhouse Gas Emissions (Operations)

Emission factors for GHG are available from EMFAC2007 and the OFFROAD2007 models. These factors are multiplied by the usage rates (i.e. miles per year or hours per year) to obtain annual emissions of the various GHGs. The annual emissions are then converted to CO_2E by applying the CO_2E ratio available in the *California Climate Action Registry General Reporting Protocol* and can be found in Appendix B of this EA.

b. Environmental Consequences of the Proposed Action

(1) Construction Impacts

Construction of the Proposed Action is expected to start in the spring of 2008 and would take approximately six months to complete, so that the Ski Back Trail would be operational for the 2008/2009 winter season. Construction-related emissions include on-site and off-site emissions. On-site construction emissions are associated with a variety of activities including earthwork activities such as grading and minor excavation and exhaust emissions from diesel and gasoline-powered construction equipment such as bulldozers and excavators. Off-site emissions

[38] *Snow Grooming emissions were generated using the CARB OFFROAD2007 model and can be accessed at www.arb.ca.gov/msei/msei.htm. See Appendix B for details.*

would mainly result from travel by workers commuting to and from the site.[39] Construction emissions can vary substantially from day to day, depending on the level of activity, the specific type of operation, and, for dust, the prevailing weather conditions. The assessment of construction air quality impacts considers each of these potential sources.

Emissions were calculated for all phases of construction and the results are presented in Table 13 on page 92. Detailed discussions for each pollutant are provided below.

(a) Ozone Precursor Emissions

Emissions of VOCs and NO_x result from the combustion of fossil fuels in on- and off-road vehicles and construction equipment. The air quality of the site and surrounding area is currently classified as non-attainment of the State standard for O_3, but is in attainment of the NAAQS. As discussed previously, CARB has determined that local O_3 violations are the result of pollutant transport from the San Joaquin Valley. Ozone levels should improve in the GBVAB when substantial mitigation measures are more fully implemented in upwind air basins.

Once created and transported, ground level O_3 would dissipate both spatially and temporally as winds disperse the pollutant. It is unlikely that O_3 precursor pollutants emitted within the Town would contribute toward local ground level O_3 levels. Local conditions as described in the *Introduction* are much less conducive for the formation of photochemical O_3. Cold windy conditions experienced on the eastern slopes of the Sierras quickly transport any precursor pollutants out of the area before they can impact the ambient environment. During calm mornings, the prevailing cold temperatures are not favorable to the formation of O_3. As discussed in Section 3.3.2, *Affected Environment*, O_3 exceedances in Mono County are attributable to upwind sources. As shown in Table 13, the incremental increase in VOC emissions resulting from construction would be one tpy, less than the standards adopted by the Town.

Ambient levels of NO_x in the GVAB are below the applicable CAAQS and NAAQS. The maximum annual emissions of NO_x predicted to be generated as a result of construction activities is estimated to be approximately three tpy, below the significance criteria threshold of 250 tpy. Therefore, emissions are not likely to contribute to a violation of applicable NO_x standards. As such, there would be no adverse effect regarding both VOC and NO_x as O_3 precursors and as primary pollutants.

[39] *As previously described, construction of the Ski Back Trail would utilize primarily existing MMSA workers, except for construction of the retaining walls. However, this analysis was conservative and assumed a worst-case scenario of requiring five worker trips per day.*

Table 13

Proposed Action Construction Emissions
(Tons Per Year)

Construction Phase	VOC	NO_x	SO_2	CO	PM_{10}	$PM_{2.5}$
Site Preparation (six months)	1.0	3.0	< 0.1	4.0	8.0	2.0
Total	1.0	3.0	< 0.1	4.0	8.0	2.0
Significance Threshold	250	250	250	250	100	250
Over (Under)	(249)	(247)	(250)	(246)	(92)	(248)
Adverse Affect?	**No**	**No**	**No**	**No**	**No**	**No**

Note: Numbers may not add up exactly due to rounding.

[a] *Construction emissions calculated using URBEMIS2002 v. 8.7.*

Source: PCR Services Corporation, 2007.

(b) Sulfur Dioxide Emissions

As shown in Table 13, the emissions of SO_x calculated from construction activities are fairly negligible. It should be noted that sulfur levels in liquid fossil fuels are regulated under California law. As of June 2006, sulfur levels in diesel fuel are now limited to 15 ppm as opposed to the previous regulation of 500 ppm. URBEMIS2002 applies the outdated State controls for fuel sulfur levels, which suggests that actual emission of SO_x would be lower than the data shown in Table 13. Maximum SO_x emissions of less than 0.1 tpy is below the Town's standard of 250 tpy and are unlikely to threaten regional ambient air quality. Based on this data, there would be no adverse effect regarding SO_x emissions.

(c) Carbon Monoxide Emissions

CO is the result of incomplete combustion of fossil fuels. Circumstances that lead to increased CO emissions are cold wintertime conditions and idling engines. The emissions shown on Table 13 represent emissions produced by equipment directly involved in the construction of the Proposed Action and commuting construction workers.[40] The incremental increase in emissions resulting from construction activities is estimated to be approximately four tpy, below the Town's standard of 250 tpy. These emission levels are unlikely to threaten ambient air quality in the surrounding areas. Therefore, there would be no adverse effect regarding projected CO emissions as a result of construction activities.

[40] *As previously described, construction of the Ski Back Trail would utilize primarily existing MMSA workers, except for construction of the retaining walls. However, this analysis was conservative and assumed a worst-case scenario of requiring five worker trips per day.*

(d) Particulate Matter Emissions

Particulate matter emissions are generated during ground-disturbing activities such as clearing, excavating, blasting, grading, trenching, and hauling on paved and unpaved surfaces. In addition, fugitive dust emissions are generated by wind blowing over disturbed surface areas. Emission values vary depending on soil moisture, silt content, wind speed, and other factors. Particulate matter emissions also would result from the combustion of fossil fuels, such as diesel in construction equipment and on-road vehicles, and brake and tire wear from on-road mobile sources. As previously described, the Proposed Action would not incorporate any soil or debris hauling as a result of clearing or grading activities and all materials would be maintained and reused on-site. Therefore, as shown in Table 13, the emissions of PM_{10} from construction would be approximately 92 tpy below the applicable Town's standard of 100 tpy. Therefore, the Proposed Action would not result in an adverse effect regarding PM_{10} emissions during construction.

(e) Fine Particulate Matter Emissions

Similar to PM_{10}, $PM_{2.5}$ emissions result from similar activities, but at different rates. Published research has established that $PM_{2.5}$ constitutes 21 percent of PM_{10} from earth moving activities, 89 percent of PM_{10} from the combustion of fossil fuels, and 99 percent of the PM_{10} from tire and brake wear. As shown in Table 13, the emissions of $PM_{2.5}$ from construction would be approximately 248 tpy below the Town's standard of 250 tpy. Therefore, the Proposed Action would not result in an adverse effect regarding $PM_{2.5}$ emissions during construction.

(f) Toxic Air Contaminants

The greatest potential for TAC emissions during construction would result from diesel particulate emissions associated with heavy equipment operated during grading and excavation activities. Health effects from carcinogenic air toxics are usually described in terms of individual cancer risk. "Individual Cancer Risk" is the increased likelihood that a person exposed to concentrations of TACs over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. Since the duration of construction would be less than two years, the Proposed Action would not result in a long-term (i.e., 70 years) or substantial increase in TAC emissions or an increase in the corresponding individual cancer risk. Therefore, there would be no adverse effect regarding TAC impacts during construction.

(g) Odor

Potential sources of odors related to construction of the Proposed Action include odors from diesel-powered construction equipment. Due to the temporary nature of construction

activities and distance to the nearest off-site receptors, there would be no adverse effect regarding odors.

(h) Greenhouse Gas Emissions

Because there exist no qualitative or quantitative significance criteria related to potential impacts from the temporary incremental increase in GHG emissions associated with construction, emissions were not quantified from these activities.

(2) Operational Impacts

Operational impacts include all daily activities that may generate pollutant emissions. Due to the nature of the Proposed Action, operational emissions result primarily from maintenance of the Ski Back Trail during the winter season. Maintenance activities that would contribute to regional emissions include snow grooming activities. It should be noted that while maintenance activities associated with the Ski Back Trail would also include snow making, MMSA utilizes electric snow making guns, which do not emit air emissions. Therefore, snow making is not included in the air quality analysis. It is predicted that snow grooming equipment would run for approximately two hours per day during the 152 day winter season. Emission reductions resulting from the Proposed Action are primarily from on-road vehicle trips. Vehicular trips are expected to be reduced by a minimum of 26 round-trips during peak winter days. During normal or off-peak winter days, trip reductions are not expected. Net emissions from operation of the Proposed Action are presented in Table 14 on page 95.

(a) Ozone Precursor Emissions

As previously described, there is an overwhelming amount of transported O_3 from the San Joaquin Valley impacting the Town. As a result, the air quality of the Proposed Action site and surrounding area is currently classified as non-attainment of the State standard for O_3, but is in attainment of the NAAQS. The CARB has discussed local O_3 violations as the result of pollutant transport from the San Joaquin Valley in the *2001 Ozone Transport Review*. Ozone levels should improve in the GVAB only when substantial mitigation measures are more fully implemented in upwind air basins.

As shown in Table 14, emissions of NO_x and VOC are predicted to decrease by 24 and eight pounds per year (lbs/yr), respectively, as the result of the Proposed Action. Thus, the Proposed Action results in a net environmental benefit and there would be no adverse effect regarding VOCs and NO_x.

Table 14

Proposed Action Operational Emissions
(Pounds Per Year)

Emission Source	CO	NO_x	$PM_{2.5}$	PM_{10}	VOC	SO_x
On-Road Mobile Source Emissions	(146)	(24)	(40)	(188)	(8)	(< 1)
Off-Road Grooming Emissions	<1	<1	<1	<1	<1	<1
Net Emissions	**(146)**	**(24)**	**(40)**	**(188)**	**(8)**	**(<1)**

Note: Numbers in parentheses indicate reductions.

Source: PCR Services Corporation, 2007.

(b) Sulfur Dioxide Emissions

As shown in Table 14, the Proposed Action would provide a small reduction of SO_2 emissions as compared to existing baseline operations. Based on the net reduction of SO_2 emissions, there would be no adverse effect.

(c) Carbon Monoxide Emissions

Emissions of CO will decrease approximately 146 lbs/yr as compared to existing baseline operations. There would be no adverse effect regarding CO emissions during operation of the Proposed Action.

(d) Particulate Matter Emissions

As mentioned previously, the GBUAPCD has developed a spreadsheet model to characterize localized PM_{10} concentrations in the area based on VMT and other significant stationary sources, such as stove emissions. Particulate matter emissions are generated as a result of re-entrained road dust resulting from vehicle travel on roads after winter weather events. The emissions vary depending on the type of surface and whether the roads are paved or unpaved. The roads in the vicinity of the Proposed Action are paved, and in addition, a regular street sweeping program has been implemented to minimize generation of fugitive dust. Additional particulate matter emissions are generated by brake and tire wear and vehicle exhaust.

Operation of the Proposed Action would not increase wood burning, natural gas consumption, or vehicle usage, but would increase diesel equipment usage for snow grooming. As shown in Table 14, the Proposed Action results in a net reduction of 188 lbs/year of PM_{10} emissions. Thus, the Proposed Action would result in a beneficial impact for PM_{10}.

(e) Fine Particulate Matter Emissions

Similar to PM_{10} emissions, $PM_{2.5}$ emissions during operations would be primarily generated by road dust and off-road fossil-fuel burning equipment. Since the Proposed Action results in a 40 lbs/year net decrease in $PM_{2.5}$ emissions, the Proposed Action would result in a net environmental benefit and there would be no adverse effect regarding $PM_{2.5}$.

(f) Toxic Air Contaminants

Operational air toxics emissions may result from on- and off-road mobile sources. However, implementation of the Proposed Action results in a net reduction of TAC emissions. Therefore, impacts resulting from emissions of TACs would result in a net environmental benefit and there would be no adverse effect regarding TACs.

(g) Odor

Potential sources of odors during operation of the Proposed Action include odors from diesel-powered snow grooming equipment. Due to the limited amount and intermittent nature of snow grooming activities resulting from the Proposed Action, there would be no adverse effect regarding odors.

(h) Greenhouse Gas Emissions

GHG emissions were estimated based on the incremental increase in on- and off-road mobile source usage resulting from the operation of the Proposed Action. Results are presented in Table 15 on page 97. Similar to the calculations for criteria pollutants above, GHG emissions are expected to decrease in comparison to the existing baseline condition. As stated above, there are no numerical thresholds or reduction targets established at the State or local level.

The Proposed Action supports principles of smart growth consistent with the US Mayors Climate Protection Agreement and the Town's *General Plan Update*. As discussed above, the US Mayors Climate Protection Agreement was endorsed by the Town in order to reduce GHG emissions. The Proposed Action is consistent with the following GHG reduction initiatives contained in the US Mayors Climate Protection Agreement:

- Promote transportation options such as trip reduction programs.

The Proposed Action is consistent with the following implementation measures outlined in the *General Plan Update*:

Table 15

Proposed Action Operational Greenhouse Gas Emissions
(metric tons)

Emission Source	CO_2E
On Road Mobile Sources	(4.54)
Grooming	< 0.1
Net Emissions	**(4.54)**

Note: Numbers in parentheses indicate reductions.

Sources: PCR Services Corporation, 2007.

- Promoting land use patterns that reduce the number and length of motor vehicle trips.
- Incorporate measure that reduce VMT, examples including circulation system improvements, mass transit facilities, private shuttles and design plans which encourage pedestrian circulation.

Emitting GHGs into the atmosphere is not itself an adverse environmental effect. Rather, it is the increased accumulation of GHGs in the atmosphere that may result in global climate change. The resultant consequences of that climate change can cause adverse environmental effects. Due to the complex physical, chemical, and atmospheric mechanisms involved in global climate change, it is not possible to predict the specific impact, if any, to global climate change from one project's relatively small contribution of emissions. The Proposed Action, by reducing VMT, promotes principles which are supportive of the Town and State's GHG reduction goals. Because operation of the Ski Back Trail results in a net reduction in GHG emissions, supports the goals of GHG reduction, and implements specific measures to reduce GHG emissions, there would be no adverse effect regarding global climate change resulting in an environmental benefit.

Summary of Conclusions

The Proposed Action would not result in adverse effects for all criteria pollutants during both construction and operations. As discussed previously, local ozone violations are the result of pollutant transport from the San Joaquin Valley. Ozone levels should improve in the GBVAB when substantial mitigation measures are more fully implemented in upwind air basins. With respect to potential TAC and odor impacts, the Proposed Action is not expected to generate substantial TAC or odorous emissions during construction. Since construction impacts are temporary in nature and below the applicable policies and adopted air quality standards, there would be no adverse effect regarding construction emissions. Operational emissions exhibit a net environmental benefit for all criteria, GHG, TAC, and odorous pollutants.

(3) Mitigation Measures

Since there would be no adverse effect regarding construction and operational impacts for air quality with implementation of the Proposed Action, no mitigation measures are required.

c. Environmental Consequences of Alternative 1 – Original Alignment Proposal

(1) Construction Impacts

Construction of Alternative 1 is expected to take six months to complete, with construction beginning in the spring of 2008. Construction would be completed during the off-season and would be operational by the 2008/2009 winter season. Construction-related emissions include on-site and off-site emissions, similar to those discussed under the Proposed Action. Emissions were calculated for all phases of construction of Alternative 1 and the results are presented in Table 16 on page 99. A detailed discussion of each pollutant is provided below.

(a) Ozone Precursor Emissions

As discussed previously, local sources of VOC and NOx are not considered to have a considerable impact on ambient pollutant levels. As shown in Table 16, construction of Alternative 1 would result in VOC and NOx emissions of one and four tpy, respectively. Emissions of VOC and NO_x are below the Town's standard of 250 tpy. Therefore, there would be no adverse effect regarding impacts from construction of Alternative 1.

(b) Sulfur Dioxide Emissions

As shown in Table 16, SO_x emissions due to construction activities are a negligible 0.1 tpy. Because the SO_x emissions are below the Town's standard of 250 tpy, there would be no adverse effect regarding emissions during construction.

(c) Carbon Monoxide Emissions

The emissions shown in Table 16 represent emissions produced by equipment directly involved in the construction of Alternative 1. The incremental increase in CO emissions resulting from construction activities is estimated to be approximately four tpy, which is below the Town's standard of 250 tpy. These emission levels are unlikely to threaten ambient air quality in the surrounding areas. Therefore, there would be no adverse effect regarding projected CO emissions as a result of construction activities.

Table 16

Alternative 1 Construction Emissions
(Tons Per Year)

Construction Phase	VOC	NO_x	SO_2	CO	PM_{10}	$PM_{2.5}$
Site Preparation (six months)	1.0	4.0	< 0.1	4.0	8.0	2.0
Total	1.0	4.0	< 0.1	4.0	8.0	2.0
Significance Threshold	250	250	250	250	100	250
Over (Under)	(249)	(246)	(250)	(246)	(92)	(248)
Adverse Effect?	**No**	**No**	**No**	**No**	**No**	**No**

Note: Numbers may not add up exactly due to rounding.

[a] *Construction emissions calculated using URBEMIS2002 v. 8.7.*

Source: PCR Services Corporation, 2007.

(d) Particulate Matter Emissions

Alternative 1 PM_{10} emissions would be generated during ground disturbing activities. As shown in Table 16, PM_{10} emissions from construction would be approximately eight tpy, which is below the applicable Town standards. Therefore, Alternative 1 would not result in an adverse effect for PM_{10} emissions during construction.

(e) Fine Particulate Matter Emissions

As shown in Table 16, $PM_{2.5}$ emissions from construction would be approximately two tpy, which is below the applicable Town standards. Therefore, Alternative 1 would not result in an adverse effect for $PM_{2.5}$ emissions during construction.

(f) Toxic Air Contaminants

The greatest potential for TAC emissions during construction would be related to diesel particulate emissions associated with heavy equipment operated during grading and excavation activities. Since the duration of construction would be less than two years, Alternative 1 would not result in either a long-term (i.e., 70 years) or substantial source of TAC emissions or corresponding individual cancer risk. Therefore, there would be no adverse effect regarding toxic emission impacts associated with construction of Alternative 1.

(g) Odor

Potential sources of odors related to construction of Alternative 1 include odors from diesel-powered construction equipment. Due to the temporary nature of construction activities and distance to the nearest off-site receptors, there would be no adverse effect regarding odors.

(h) Greenhouse Gas Emissions

Because there exist no qualitative or quantitative significance criteria related to potential impacts from the temporary incremental increase in GHG emissions associated with construction, emissions were not quantified from these activities.

(2) Operational Impacts

Operational impacts include all daily activities that may generate pollutant emissions. Operational emissions result primarily from maintenance of the Ski Back Trail during the winter season. As previously described, MMSA utilizes electric snow making guns, which do not emit air emissions. Therefore, snow making is not included in the air quality analysis. Emission reductions resulting from Alternative 1 are primarily from on-road vehicle trips. Vehicular trips are expected to be reduced by a minimum of 26 round-trips during peak winter days. During normal winter days, trip reductions are not expected. Net emissions from operation of Alternative 1 are presented in Table 17 on page 101.

(a) Ozone Precursor Emissions

Since there is an incremental decrease in NO_x and VOC emissions predicted to occur as the result of Alternative 1, there would be no adverse effect for VOCs and NO_x as ozone precursors and as primary pollutants resulting in a net beneficial environmental impact.

(b) Sulfur Dioxide Emissions

As shown in Table 17, Alternative 1 would provide a reduction of SO_2 emissions as compared to existing baseline conditions. Based on the net reduction of SO_2 emissions, there would be no adverse effect resulting in a net beneficial environmental impact.

(c) Carbon Monoxide Emissions

Operation of Alternative 1 would result in a decrease of 146 lbs/yr after buildout and therefore, there would be no adverse effect for predicted impacts from CO emissions during operations resulting in a net beneficial environmental impact.

(d) Particulate Matter Emissions

Particulate matter emissions generated from Alternative 1 would be primarily the result of road dust and fossil fuel combustion. Since Alternative 1 would result in a net decrease in emissions of PM_{10}, Alternative 1 would result in a net beneficial environmental impact.

Table 17

Alternative 1 Operational Emissions
(Pounds Per Year)

Emission Source	CO	NO_x	$PM_{2.5}$	PM_{10}	VOC	SO_x
Reductions						
On-Road Mobile Source Emissions	(146)	(24)	(40)	(188)	(8)	(< 1)
Off-Road Grooming Emissions	<1	<1	<1	<1	<1	<1
Net Emissions	**(146)**	**(24)**	**(40)**	**(188)**	**(8)**	**(<1)**

Note: Numbers in parentheses indicate reductions.

Source: PCR Services Corporation, 2007.

(e) Fine Particulate Matter Emissions

Since operation of Alternative 1 would reduce emissions of $PM_{2.5}$ by 40 lbs/yr, Alternative 1 would result in a net beneficial environmental impact.

(f) Toxic Air Contaminants

Operation of Alternative 1 results in a net reduction of total emissions from mobile sources as previously discussed. Therefore, there would be no adverse effect regarding emissions of TACs resulting in a beneficial environmental impact.

(g) Odor

Potential sources of odors related to Alternative 1 include odors from diesel-powered snow grooming equipment. Due to the limited amount of snow grooming that would result from Alternative 1, there would be no adverse effect regarding odors.

(h) Greenhouse Gas Emissions

GHG emissions were estimated based on the incremental increase in on- and off-road mobile source usage resulting from the operation of Alternative 1. Results are presented in Table 18 on page 102. Similar to the calculations for criteria pollutants, GHG emissions are expected to decrease as compared to existing baseline conditions. As stated above, there are no numerical thresholds or reduction targets established at the State or local level.

Alternative 1 supports principals of smart growth consistent with the US Mayors Climate Protection Agreement and the *General Plan Update*. As discussed above, the US Mayors

Table 18

Alternative 1 Operational Greenhouse Gas Emissions (metric tons)

Emission Source	CO_2E
On Road Mobile Sources[a]	(4.54)
Grooming	<0.1
Total Increase	**(4.54)**

Note: Numbers in parentheses indicate reductions.

Source: PCR Services Corporation, 2007.

Climate Protection Agreement was endorsed by the Town in order to reduce GHG emissions. Alternative 1 is also consistent with the following GHG reduction initiatives contained in the US Mayors Climate Protection Agreement:

- Promote transportation options such as trip reduction programs.

The Proposed Action is consistent with the following implementation measures outlined in the *General Plan Update*:

- Promoting land use patterns that reduce the number and length of motor vehicle trips.
- Incorporate measures that reduce VMT, examples including circulation system improvements, mass transit facilities, private shuttles and design plans which encourage pedestrian circulation.

Emitting GHGs into the atmosphere is not itself an adverse environmental effect. Rather, it is the increased accumulation of GHGs in the atmosphere that may result in adverse climate change. Alternative 1, by reducing VMT, promotes principals which are supportive of the Town and State's GHG reduction goals. Because operation of the Ski Back Trail results in a net reduction in GHG emissions supports the goals of GHG reduction, and implements specific measures to reduce GHG emissions, there would be no adverse affect on global climate change resulting in a net beneficial impact.

Summary of Conclusions

Based on the impact analyses, Alternative 1 would not result in an adverse effect regarding all criteria pollutants during both construction and operations. With respect to potential TAC and odor impacts, Alternative 1 is not expected to generate any substantial TAC or odorous emissions during construction. Since construction impacts are temporary in nature and below the significance criteria, there would be no adverse effect regarding construction

emissions. Operational emissions exhibit a net environmental benefit for all criteria, GHG, TAC, and odorous pollutants and there would be no adverse effect regarding operational emissions.

d. Environmental Consequences of Alternative 2 – Transit Emphasis Alternative

(1) Construction Impacts

Under Alternative 2, the Ski Back Trail would not be constructed. Instead, there would be an increased emphasis on transit provisions focused on returning skiers to The Village. Therefore, there would not be any construction activities or associated construction impacts for the Transit Emphasis Alternative.

(2) Operational Impacts

Alternative 2 operations include all daily activities that may generate pollutant emissions. Alternative 2 contains limited sources for operational emissions. Alternative 2 would result in an increase in four peak hour bus trips. Predicted net annual emissions in tpy for Alternative 2 are summarized in Table 19 on page 104.

(a) Ozone Precursor Emissions

Alternative 2 would provide less than one tpy increases for all criteria pollutants as compared to existing baseline conditions. Emission of ozone precursors would be less than one percent of the Town's standard of 250 tpy for both NOx and VOCs. Therefore, there would be no adverse effect for both VOC and NO_x as both ozone precursors and as primary pollutants.

(b) Sulfur Dioxide Emissions

As shown in Table 19, Alternative 2 would provide less than one lbs/year increase in SO_2 emissions from combustion sources. Compared to the Town's standard of 250 tpy, SOx emissions are negligible, and therefore, there would be no adverse effect.

(c) Carbon Monoxide Emissions

CO is the result of incomplete combustion of fossil fuels and emissions are greatest in the cold winter months, especially when vehicles are idling and accelerating. The emissions for operation of Alternative 2 would result in an increase of 32 lbs/year and like other criteria

Table 19

Alternative 2 Operational Emissions
(Pounds Per Year)

Emission Source	CO	NO_x	$PM_{2.5}$	PM_{10}	VOC	SO_x
Transit Buses	32	44	7	30	6	<1
Net Emissions	**32**	**44**	**7**	**30**	**(6)**	**<1**

Note: Numbers in parentheses indicate reductions.

Source: PCR Services Corporation, 2007.

pollutants would be well within the Town's standard of 250 tpy. Therefore, there would be no adverse effect for predicted CO emissions during operation of Alternative 2.

(d) Particulate Matter Emissions

Alternative 2 would not contain any wood burning or natural gas fireplaces that could increase airborne levels of PM_{10}. As reported in Table 19, Alternative 2 operations would result in a 30 lbs/year net increase for PM_{10} emissions. As discussed earlier, emissions for PM_{10} are applied to a more conservative Town standard of 100 tpy. Emissions resulting from the operation of Alternative 2 would be less than one percent of the applicable significance threshold and therefore, there would be no adverse effect for PM_{10} emissions.

(e) Fine Particulate Matter ($PM_{2.5}$) Emissions

Operation of Alternative 2 would result in a seven lbs/year net increase for regional $PM_{2.5}$ as reported in Table 19. Therefore, Alternative 2 would not result in an adverse effect for $PM_{2.5}$ emissions.

(f) Toxic Air Contaminants

Operational air toxics result from both mobile and stationary sources. Operation of Alternative 2 does include diesel transit bus additions, but would result in limited emissions resulting from the four daily trips occurring only on peak winter days. Alternative 2 does not include installation of diesel-powered generators or any other stationary sources. Therefore, there would be no adverse effect from emissions of TACs.

(g) Odor

Operation of Alternative 2 is not expected to generate substantial odorous emissions. Therefore, there would be no adverse effect regarding odorous emissions.

(h) Greenhouse Gas Emissions

GHG emissions were estimated based on the incremental increase in on- and off-road mobile sources resulting from the operation of Alternative 2. Results are presented in Table 20 on page 106. GHG emissions are expected to increase by 2.63 tpy as compared to existing baseline conditions. As stated above, there are no numerical standards or reduction targets established at the State or local level.

Alternative 2 supports the following principles of smart growth consistent with the US Mayors Climate Protection Agreement:

- Promoting transportation options,
- Increasing the use of clean, alternative energy, and
- Improving the fuel efficiency of fleet vehicles.

Alternative 2 is consistent with the following implementation measures outlined in the *General Plan Update*:

- Promoting land use patterns that reduce the number and length of motor vehicle trips.
- Incorporate measures that reduce VMT, examples including circulation system improvements, mass transit facilities, private shuttles and design plans which encourage pedestrian circulation.
- Encourage the use of renewable fuels, such as biodiesel, develop a regulatory framework, and create incentives to facilitate the use of renewable fuels.

The transit bus additions during operation of Alternative 2 would utilize 20 percent bio-diesel fuel and as a result, Alternative 2 would support the State's goal of GHG reduction. Therefore, there would be no adverse effect regarding global climate change.

Summary of Conclusions

Based on the operational impact analyses, Alternative 2 would not result in an adverse effect regarding all criteria pollutants. Under Alternative 2 the Ski Back Trail is not constructed,

Table 20

Alternative 2 Operational Greenhouse Gas Emissions (metric tons)

Emission Source	CO_2E
On-Road Mobile Sources [a]	2.63
Total Increase	**2.63**

Note: Numbers in parentheses indicate reductions.

Source: PCR Services Corporation, 2007.

therefore there would be no adverse effect regarding construction. Operational emissions resulting from Alternative 2 exhibit emissions below the Town's standards for all criteria pollutants and as a result, there would be no adverse effect due to operations.

e. Environmental Consequences of Alternative 3 – No Action Alternative

(1) Construction Impacts

Under Alternative 3, the Ski Back Trail would not be constructed. Therefore, there would not be any construction activities or associated construction impacts for the No Action Alternative.

(2) Operational Impacts

Alternative 3 is not expected to generate any additional trips or result in a reduction of trips compared to existing conditions. The total contribution to regional emissions under Alternative 3 would be minimal since no land uses would be added. Localized air quality impacts are determined mainly by the peak hour intersection traffic volumes. Alternative 3 is not expected to increase localized CO or PM_{10} concentrations over existing conditions and there would be no adverse effect.

With respect to potential air toxic impacts, Alternative 3 is not expected to generate any additional air toxics emissions and would therefore not result in an adverse affect. In summary, impacts under Alternative 3 would not increase construction or operational emissions as compared to existing conditions, therefore, there would be no adverse effect to air quality.

f. Conformity with Applicable Plans and Policies

Under the GCR, Federal agencies must demonstrate that actions will not jeopardize local planning agencies' attainment plans. The proposed Ski Back Trail in is an area subject to a federally enforceable PM_{10} AQMP. Due to the severity of the non-attainment, the *de minimis* level is an incremental increase of 100 tpy.

The Proposed Action and Alternative 1 result in short-term increases in PM_{10} emissions during construction; however, these emissions are below the *de minimis* level. Operation of the Proposed Action, Alternative 1, and Alternative 2 result in net decreases and Alternative 3 results in no change of PM_{10} emissions. All actions are therefore below the *de minimis* level and conformity with attainment plans need not be further demonstrated.

3.0 ENVIRONMENTAL CONSEQUENCES
3.5 NOISE

INTRODUCTION

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perceptibility of sound is subjective and the physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "pitch" or "loudness." Pitch is generally an annoyance, while loudness can affect the ability to hear. Sound pressure magnitude is measured and quantified using a logarithmic ratio of pressures, the scale of which gives the level of sound in decibels (dB).

The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate this human frequency-dependent response, the A-weighted filter system is used to adjust measured sound levels. Unlike linear units, decibels are measured on a logarithmic scale representing points on a sharply rising curve. The A-weighted sound level is expressed in dBA. This scale de-emphasizes low frequencies to which human hearing is less sensitive and focuses on mid- to high-range frequencies. A-weighted sound levels measured for various sources, as well as people's responses to these levels, are provided in Figure 10 on page 109.

Due to the physical characteristics of noise transmission and reception, an increase of 10 dBA is normally required to achieve a doubling of loudness, as perceived by the human ear. In addition, a 3-dBA increase is recognizable to most people in the context of the community noise environment. A change in noise level usually would not be detectable unless the new noise source is at least as loud as the ambient conditions.

Objects that obstruct the line-of-sight between a noise source and a receptor reduce the noise level if the receptor is located within the "shadow" of the obstruction, such as behind a sound wall. This type of sound attenuation is known as barrier insertion loss. If a receptor is located behind the wall but has a view of the source (i.e., line-of-sight not fully blocked), some barrier insertion loss would still occur, though to a lesser extent. Conversely, a receptor located on the same side of the wall as a noise source may actually experience an increase in the perceived noise level as the wall reflects noise back to the receptor, thereby compounding the noise.

Time variation in noise exposure is typically expressed in terms of the average energy over time (L_{eq}), or alternatively, as a statistical description of the sound level that is exceeded over some fraction of a period of time (typically conducted over one hour). For example, the L_{50}

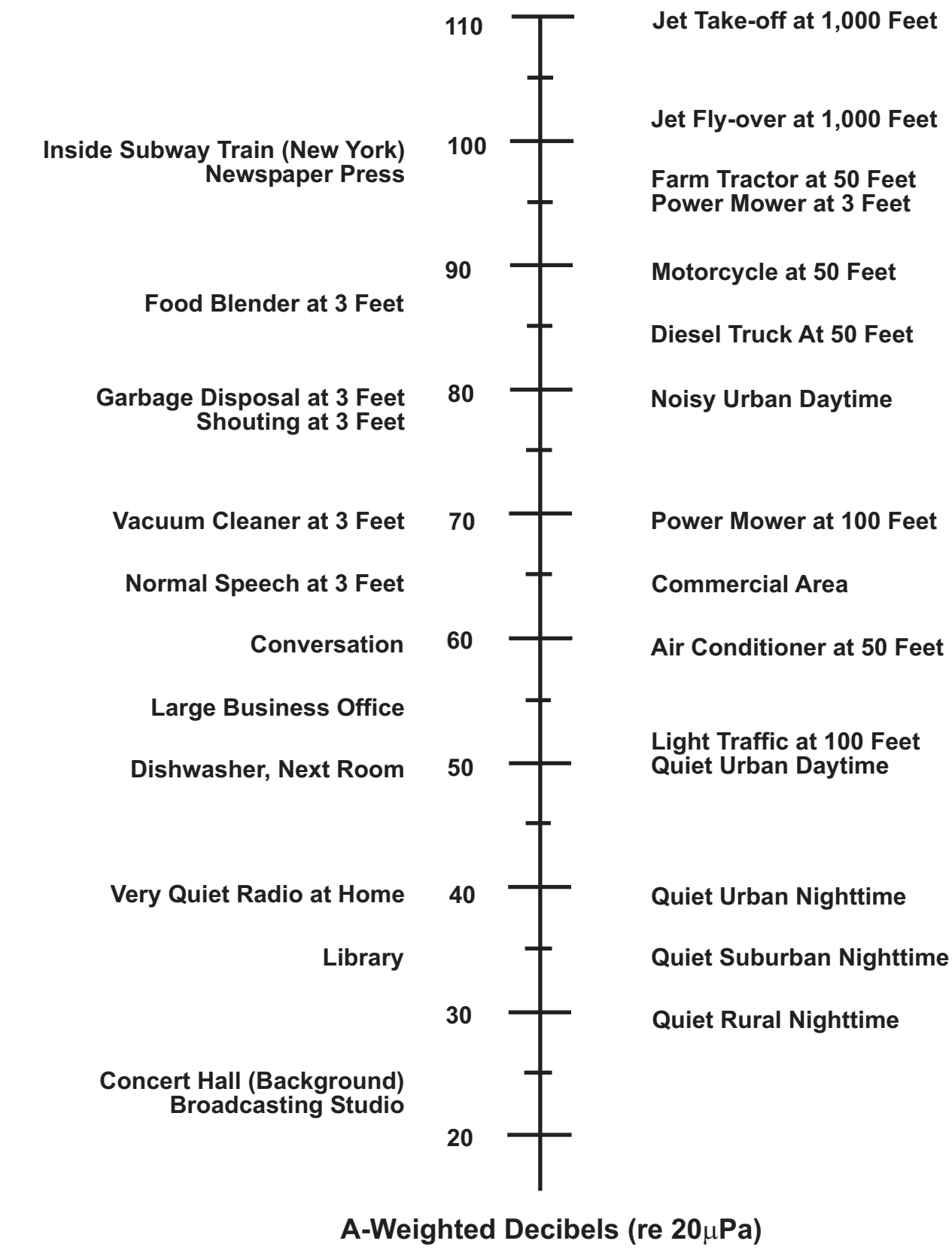

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Figure 10
A-Weighted Sound Levels

Source: Compiled by Hodges & Shutt
from Various Sources, December 1993.

noise level represents the noise level that is exceeded 50 percent of the time. Half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_8 and L_{25} represent the noise levels that are exceeded 8 and 25 percent of the time, respectively, or for 5 and 15 minutes during a 1-hour period, respectively.

Other values typically noted during a noise survey are the L_{min} and L_{max}, which values represent the minimum and maximum noise levels observed during a measurement period, respectively. Maximum and minimum noise levels, as compared to the L_{eq}, are a function of the characteristics of the noise source. As an example, sources such as generators have maximum and minimum noise levels that are similar to L_{eq} since noise levels for steady-state noise sources do not substantially fluctuate. However, as another example, vehicular noise levels along local roadways result in substantially different minimum and maximum noise levels when compared to the L_{eq} since noise levels fluctuate during pass-by events.

Although the A-weighted scale accounts for the range of people's response and therefore, is commonly used to quantify individual event or general community sound levels, the degree of annoyance also depends on several other perceptibility factors. These factors include:

- The ambient (background) sound level;
- The magnitude of sound event with respect to the background noise level;
- The duration of the sound event;
- The number of event occurrences and their repetitiveness; and
- The time of day that the event occurs.

Several methods have been devised to relate noise exposure over time to human response. A commonly used noise metric for this type of study is the Community Noise Equivalent Level (CNEL). The CNEL adds a 5 dBA penalty to noise occurring during evening hours from 7:00 P.M. to 10:00 P.M., and a 10 dBA penalty to sounds occurring between the hours of 10:00 P.M. to 7:00 A.M., to account for the increased sensitivity to noise events that occur during the quiet late evening and nighttime periods. Thus, the CNEL noise metric provides a 24-hour average of A-weighted noise levels at a particular location, with an evening and a nighttime adjustment, which reflects increased sensitivity to noise during these times of the day.

3.5.1 REGULATORY FRAMEWORK

Many government agencies have established noise standards and guidelines to protect people from potential hearing damage and various other adverse physiological and social effects

associated with noise. Discussed below are the standards and guidelines that are applicable to the development of the Ski Back Trail.

a. Federal Level

The United States Environmental Protection Agency (U.S. EPA) has developed guidelines on recommended maximum noise levels to protect public health and welfare.[41] For example, 55 dBA is recommended as the maximum for the annual average L_{dn} in outdoor residential areas and areas where people spend widely varying amounts of time and other places in which quiet is a basis for use. With regard to worker noise exposure, Federal regulations (e.g., 29 CFR Part 1919.120) safeguard the hearing of workers exposed to occupational noise, enforced by the Occupational Safety and Health Administration (OSHA). For example, it is illegal for employees to be exposed to noise levels of 115 dBA for more than 15 minutes during any workday.

b. State Level

The California Department of Health Services (DHS) Office of Noise Control has studied the correlation of noise levels and their effects on various land uses. As a result, the DHS has established four categories for judging the severity of noise intrusion on specified land uses:

- Normally Acceptable: Is generally acceptable with no mitigation necessary.
- Conditionally Acceptable: May require some mitigation, as established through a noise study.
- Normally Unacceptable: Requires substantial mitigation.
- Clearly Unacceptable: Probably cannot be mitigated to a less than significant level.

The DHS has published the *Guidelines for Noise and Land Use Compatibility* (State Guidelines) which recommends guidelines for local governments to use when setting standards for human exposure to noise and preparing noise elements for general plans. The State Guidelines, summarized in Table 21 on page 112 indicate that residential land uses and other noise sensitive receptors generally should be located in areas where outdoor ambient noise levels do not exceed 65 to 70 dBA (CNEL or L_{dn}).

41. *U.S. EPA, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety, March 1974.*

Table 21

Land Use Compatibility for Community Noise Sources

Land Use Category	Noise Range (Ldn or CNEL), dB			
	I[a]	II[b]	III[c]	IV[d]
Passively used open spaces	50	50−55	55−70	70+
Auditoriums, concert halls, amphitheaters	45−50	50−65	65−70	70+
Residential: low density single family, duplex, mobile homes	50−55	55−70	70−75	75+
Residential: multifamily	50−60	60−70	70−75	75+
Transient lodging: motels, hotels	50−60	60−70	70−80	80+
Schools, libraries, churches, hospitals, nursing homes	50−60	60−70	70−80	80+
Actively used open spaces: playgrounds, neighborhood parks	50−67	C	67−73	73+
Golf courses, riding stables, water recreation, cemeteries	50−70	C	70−80	80+
Office buildings, commercial business and professional	50−67	67−75	75+	C
Industrial, manufacturing, utilities, agriculture	50−70	70−75	75+	C

a. *Noise Range I - Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.*

b *Noise Range II - Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, would normally suffice.*

c *Noise Range III - Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.*

d *Noise Range IV - Clearly Unacceptable: New construction or development should generally not be undertaken.*

Source: Office of Noise Control, California Department of Health, 1976.

c. Local Level

As previously described in Section 1.0, Introduction/Purpose and Need, of this Final EA, the Town of Mammoth Lakes (Town) and the Mammoth Mountain Ski Area (MMSA) have a close relationship due to their physical land connection and economic dependency. As such, despite the fact that the Proposed Action does not require approval by the Town, it is necessary to ensure that the Proposed Action is consistent with the relevant Town's plans and policies.

(1) Town of Mammoth Lakes 2007 General Plan Update

As required under Section 65302(f) of the *California Government Code*, each community must prepare and adopt a comprehensive long-range general plan for its physical development containing seven mandatory elements, including a Noise Element. The Noise Element must: (1) identify and appraise noise problems in the community; (2) recognize the State Office of Noise Control guidelines; and (3) analyze and quantify current and projected noise levels. The

applicable *Town of Mammoth Lakes 2007 General Plan Update (General Plan Update)* Noise Element policies include the following:

- Policy 4.2.1 – New development of noise sensitive land uses shall not be permitted in areas exposed to existing or projected future levels of noise from transportation noise sources which exceed 60 dB L_{dn} in outdoor activity areas or 45 dB L_{dn} in interior spaces.

- Policy 4.2.2 - Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed 60 dBA L_{dn} within outdoor activity areas and 45 dBA L_{dn} within interior spaces of existing noise sensitive land uses.

- Policy 4.2.4 - Noise created by new proposed stationary noise sources or existing stationary noise sources which undergo modifications that may increase noise levels shall be mitigated so as not to exceed a daytime noise standard of 50 dBA L_{eq} or 70 dBA L_{max} and a nighttime noise standard of 45 dBA L_{eq} or 65 dBA L_{max}. This is presented in Table 22 on page 114.

To achieve compliance with the policies of the Noise Element, the Noise Element provides implementation measures. The following implementation measures are applicable.

Measure 5.1 The Town shall review new public and private development proposals to determine conformance with the policies of the Noise Element.

Measure 5.2 The Town shall require an acoustical analysis in those cases where a project potentially threatens to expose noise-sensitive land uses to excessive noise levels. The presumption of the noise levels shall be based on the location of new noise-sensitive uses to known noise sources, or staff's professional judgment that a potential for adverse noise impacts exists. Acoustical analyses shall be required early in the review process so that noise mitigation may be included in the project design. For development not subject to environmental review, the requirements for an acoustical analysis shall be implemented prior to the issuance of building permits.

Measure 5.3 The Town shall develop and employ procedures to ensure that noise mitigation measures required pursuant to an acoustical analysis are implemented in the development review and building permit processes.

Table 22

Maximum Allowable Noise Exposure-Stationary Noise Sources [a]

Noise Scale	Daytime (7 A.M. to 10 P.M.)	Nighttime (10 P.M. to 7 A.M.)
Hourly L_{eq}, dB	50	45
Maximum Level, dB	70	65

[a.] *As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of noise barriers or other property line noise mitigation measures.*

Source: Revised Mammoth Lakes Noise Element of the General Plan, 1997.

Measure 5.4 The Town shall develop and employ procedures to monitor compliance with the policies of the Noise Element after completion of projects where noise mitigation measures have been required.

(2) Town of Mammoth Lakes Municipal Code

Chapter 8.16 of the Mammoth Lakes Municipal Code (Town Noise Ordinance) controls unnecessary, excessive, and annoying noise in the Town. However, this chapter does not control noise sources that are preempted by other jurisdictions including in-flight aircraft and motor vehicles operating on public rights-of-way. As outlined in Section 8.16.070 of the Town Noise Ordinance and presented in Table 23 on page 115, the Town has established maximum exterior noise levels based on land use zones. Noise levels in excess of the levels indicated in Table 23 are conditionally permitted, depending on the intensity of the noise and the duration of exposure.[42]

(a) Exterior Noise Levels

The Town Noise Ordinance states that exterior noise levels are not to be exceeded for a cumulative period of more than 30 minutes in any hour. If the existing ambient L_{50} exceeds these levels, then the ambient L_{50} becomes the exterior noise levels. For events shorter than 30 minutes, higher noise limits are used for the exterior noise standards. For example, 5, 10, and 15 dBA are added to the above noise limits for events less than 15, 5, and 1 minute, respectively. An excess of 20 dBA plus the above noise limits (e.g., for suburban one- and two-family

[42.] *Noise levels may not exceed the exterior noise standard for a cumulative period of more than thirty minutes in any hour; or plus five decibels for a combined period of more than fifteen minutes in any hour; or plus ten decibels for a combined period of more than five minutes in any hour; or plus fifteen decibels for a combined period of more than one minute in any hour; or plus twenty decibels for any period of time (maximum noise level).*

Table 23

Town Exterior Noise Standards

Receiving Land Use Category	Time Period	Noise Zone Classification [a] Maximum Noise Levels (dBA) L_{50} Rural Suburban	Suburban	Urban
One- and two-family residential	10:00 P.M.–7:00 A.M.	40	45	50
One- and two-family residential	7:00 A.M.–10:00 P.M.	50	55	60
Multiple-dwelling residential	10:00 P.M.–7:00 A.M.	45	50	55
Multiple-dwelling residential	7:00 A.M.–10:00 P.M.	50	55	60
Limited commercial/some multiple-dwelling	10:00 P.M.–7:00 A.M.	55	-	-
Limited commercial/some multiple-dwelling	7:00 A.M.–10:00 P.M.	60	-	-
Commercial	10:00 P.M.–7:00 A.M.	60	-	-
Commercial	7:00 A.M.–10:00 P.M.	65	-	-
Light industrial	Anytime	70	-	-
Heavy industrial	Anytime	75	-	-

[a] *Levels not to be exceeded by more than 30 minutes in any hour (L_{50}). The classification of different areas of the community in terms of environmental* noise *zones shall be determined by the* noise *control officer, based upon assessment of community* noise *survey data. Additional area classifications should be used as appropriate to reflect both lower and higher existing ambient levels than those shown. Industrial* noise *limits are intended primarily for use at the boundary of industrial zones rather than for* noise *reduction within the zone.*

Source: Town of Mammoth Lakes Noise Ordinance, Chapter 8.16.

residential, 75 dBA L_{max} during the day and 65 dBA L_{max} during the night) may not be exceeded for any period of time.

(b) Interior Noise Levels

For interior noise standards, the Town sets an allowable interior noise level of 45 dBA for the period from 7:00 A.M. to 10:00 P.M. and 35 dBA for the period from 10:00 P.M. to 7:00 A.M. for all multi-family residential uses.[43] For events shorter than five minutes in any hour, the noise standard is increased in 5 dBA increments in each standard. For example, 5 and 10 dBA are added to these noise limits for events less than five minutes (50 dBA during daytime hours and 40 dBA during nighttime hours) and one minute (55 dBA during daytime hours and 45 dBA during nighttime hours), respectively. If the measured ambient noise reflected by the L_{50} exceeds that permissible within any of the interior noise standards, the allowable interior noise

[43] *Noise levels may not exceed the interior noise standard for a cumulative period of more than five minutes in any hour; or plus five decibels for a combined period of more than one minute in any hour; or plus ten decibels for any period of time (maximum noise level).*

level shall be increased in 5 dBA increments in each standard as appropriate to reflect said ambient noise level.

Per Section 8.16.080(A) of the Town Noise Ordinance, although the above interior noise standards have been identified for multi-family residential uses, they are used in this analysis for all residential uses, including single-family dwelling units.

(c) Construction Noise

Section 8.16.090(B)(6) of the Town Noise Ordinance establishes exterior noise standards that regulate construction noise from mobile and stationary equipment for various general zoning classifications. Non-scheduled, intermittent, short-term operations (less than 10 days) of mobile equipment (e.g., backhoes, bulldozers, etc.) standards are provided in Table 24 on page 117. Noise standards for repetitively scheduled and relatively long-term construction operations (periods of 10 days or more) of stationary equipment (e.g., compressors and generators) are also provided in Table 24. Section 15.08.020 of the Town of Mammoth Lakes Municipal Code limits construction noise between 7:00 A.M. and 8:00 P.M., Monday through Saturday. Work hours on Sundays and Town recognized holidays shall be limited to the hours between 9:00 A.M. and 5:00 P.M. and permitted only with the approval of the building official or designee.

3.5.2 AFFECTED ENVIRONMENT

a. Existing Noise Environment

The Ski Back Trail area is located in a suburban area just north of the Town. Traffic on State Highway 203 (SR-203), remote construction activities in the Town, and residents in the community to the south are the major sources of ambient noise in the vicinity.

b. Sensitive Receptors

Sensitive receptors include residences, schools, hospitals, and similar uses that are sensitive to noise. The nearest noise-sensitive receptors are 10 single-family residential units located approximately 200 feet south of the proposed Ski Back Trail alignment. All other noise-sensitive receptors (including additional single-family residential units located further south) are more than 500 feet from the proposed Ski Back Trail alignment.

c. Ambient Noise Levels

The noise environment in the area was characterized by conducting a survey of the area and performing noise measurements on November 12, 2004. The monitoring locations shown on

Table 24

Town Construction Noise Restrictions

Time Period [a]	Single-family Residential	Multi-family Residential	Semi-residential/ Commercial	Business Properties
Mobile Equipment [b]				
Daily, except Sundays and legal holidays: 7:00 A.M. to 8:00 P.M.	75 dBA	80 dBA	85 dBA	-
Daily, 8:00 P.M. to 7:00 A.M. and all day Sundays and legal holidays	60 dBA	64 dBA	70 dBA	-
Daily, including Sunday and legal holidays, all hours	-	-	-	85 dBA L_{50}
Stationary Equipment [c]				
Daily, except Sundays and legal holidays: 7:00 A.M. to 8:00 P.M.	60 dBA	65 dBA	70 dBA	
Daily, 8:00 P.M. to 7:00 A.M. and all day Sundays and legal holidays	50 dBA	55 dBA	60 dBA	
Daily, including Sunday and legal holidays, all hours				85 dBA L_{50}

[a] *The Town requires that all mobile or stationary internal combustion engine-powered equipment or machinery shall be equipped with suitable exhaust and air intake silencers in proper working order.*

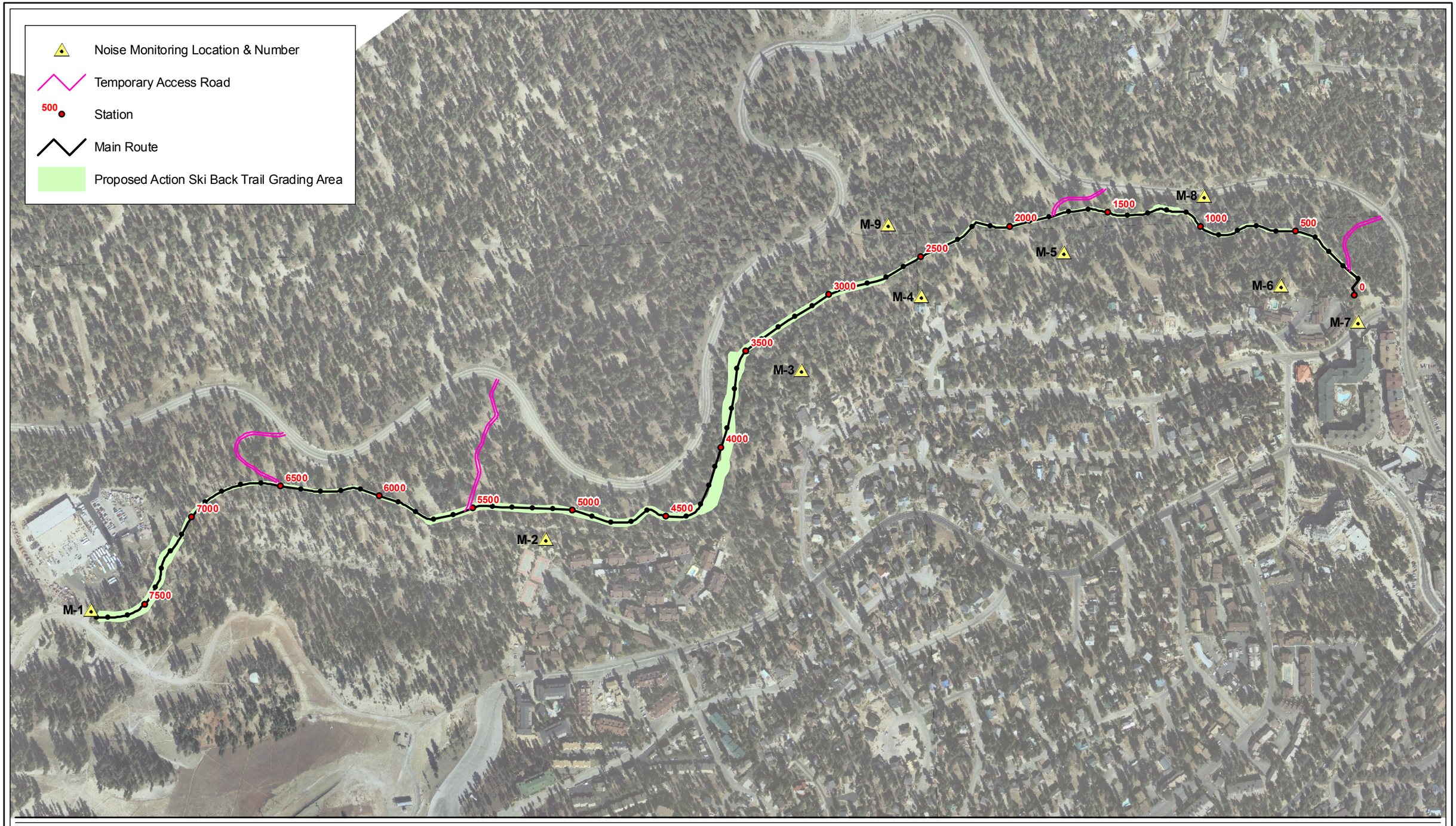
[b] *Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment (e.g. excavator, backhoe, dozer, etc.)*

[c] *Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment (e.g. generators, compressors, etc.)*

Source: Town of Mammoth Lakes Noise Ordinance, Section8.16.090

Figure 11 on page 118 were selected to characterize the general ambient noise level in the area. Table 25 on page 119 lists the noise measurement location and noise sources observed during the noise measurement periods. Table 26 on page 120 lists the ambient noise monitoring results.

Based on Table 25, only the locations (M-7 and M-8) that are immediately adjacent to SR-203 were affected by relatively high traffic noise. For receptor locations that are away from SR-203, traffic noise contributed to the relatively low background noise. Table 26 shows that ambient noise in the area is moderate with the L_{eq} ranging from 43 to 58 dBA. Ambient noise levels are higher in areas where vehicular traffic is closer to the noise monitoring locations. Along the proposed Ski Back Trail alignment, the dominant noise source is traffic on SR-203, with some traffic on other local streets also contributing to the ambient noise. Sporadic construction activity noise, as well as other community noises (children playing and conversation), add to the background noise levels.



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450 0 450 Feet

Source: Triad Holmes, Inc., 2007.

Figure 11
Noise Monitoring Locations

Table 25

Noise Measurement Locations and Noise Sources

Site	Location Description	Noise Sources
M-1	Near start of the Ski Back Trail; Station 78; 400 feet southeast of Maintenance Building	Truck beeping and idling near Maintenance Building; conversation; birds chirping
M-2	Mammoth Ski & Racquet Club; 200 feet south of Station 52; approximately 400 feet from and 30 feet below SR-203	Bus beeping; passing cars; conversation
M-3	Residential area 400 feet south of Station 33; approximately 400 feet east of SR-203	Traffic on SR-203 and local streets; conversation
M-4	Residential area 200 feet south of Station 27; approximately 600 feet from SR-203	Traffic on SR-203 and local streets; conversation
M-5	Near Station 17; approximately 400 feet from SR-203	Traffic on SR-203; conversation
M-6	200 feet south of Station 7; approximately 550 feet from SR-203	Traffic on SR-203; truck/bus passing; children playing nearby; conversation
M-7	On sidewalk near end of Ski Back Trail at the proposed bridge area just north of The Village	Traffic on local streets; construction activities; conversation
M-8	Along SR-203; 200 feet north of Station 10	Traffic on SR-203; conversation
M-9	Approximately 150 feet west of Station 25 and 250 feet from SR-203	Traffic on SR-203; conversation; remote construction activities

Source: LSA Associates, Inc., November2004.

3.5.3 ENVIRONMENTAL CONSEQUENCES

a. Methodology

Evaluation of noise impacts includes the following:

- Determine the noise impacts associated with short-term construction of the proposed project on adjacent noise-sensitive uses;
- Determine the long-term traffic and operational noise impacts on on-site noise-sensitive uses; and
- Determine the required mitigation measures to reduce short-term and long-term noise impacts.

Table 26

Short-Term Ambient Noise Monitoring Results

Site	Date	Duration	L_{eq}	L_{max}	L_{min}
M-1	11/12/04	10 minutes	45	55	40
M-2	11/12/04	10 minutes	47	55	45
M-3	11/12/04	5 minutes	45	59	42
M-4	11/12/04	5 minutes	43	47	42
M-5	11/12/04	10 minutes	45	50	43
M-6	11/12/04	5 minutes	46	60	42
M-7	11/12/04	10 minutes	58	75	52
M-8	11/12/04	5 minutes	52	72	43
M-9	11/12/04	10 minutes	47	58	42

Source: LSA Associates, Inc., November 2004.

(1) Construction Noise

Construction noise impacts are evaluated by determining the noise levels generated by the different types of construction activity, calculating the construction-related noise level at nearby sensitive receptor locations, and comparing these construction-related noise levels to ambient noise levels (i.e., noise levels without construction noise). More specifically, the following steps were undertaken to calculate construction-period noise impacts:

1. Ambient noise levels at surrounding sensitive receptor locations were estimated based on field measurement data;
2. Noise levels for construction equipment were obtained from manufacturers, reported in the available literature, and used by other agencies for similar planning-level analysis;
3. Distances between construction site locations (noise source) and surrounding sensitive receptors were measured;
4. The construction noise level was then calculated for sensitive receptor locations based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance;
5. For each sensitive receptor location, the construction noise level obtained above from Step 4 was added to the ambient noise level described in Step 1 to calculate the construction noise impact in terms of an hourly L_{eq}; and
6. Noise level increases were compared to the construction noise significance thresholds identified below.

(2) Operational Noise

(a) Traffic Noise

The Federal Highway Administration (FHWA) highway traffic noise prediction model (FHWA RD-77-108) was used to evaluate highway traffic-related noise conditions in the vicinity of the Ski Back Trail alignment. This model requires various parameters, including traffic volumes, vehicle mix, vehicle speed, and roadway geometry to compute typical equivalent noise levels during daytime, evening, and nighttime hours. Similar to the noise attenuation through distance divergence and ground absorption for a point source, California Department of Transportation (Caltrans) guidelines recommend a drop-off rate of 4.5 dBA per doubling of the distance (-4.5 dBA/DD) from a line source (i.e., highways or freeways) for a soft ground (e.g., plowed farmland, grass, crops, soft dirt, or scattered bushes and trees). The resultant noise levels are weighted and summed over 24-hour periods to determine the L_{dn} values.

(b) Snow-Making Activities

The range of noise levels from the snow guns utilized for snow-making activities are compared to the measured ambient noise levels included in Table 26. In the event this maximum sound level continues for more than a few minutes, the noise level is measured in comparison with the maximum allowable Noise Exposure at Stationary Noise Sources identified by the Town during winter daytime hours, as shown in Table 22. For noise impacts in sensitive residential areas, the data from U.S. EPA's Protective Noise Levels (U.S. EPA 550/9-79-100, November 1979) is compared to the Town's interior noise standard.

(c) Snow-Grooming Activities

Noise levels generated by these activities are evaluated based on the daytime exterior and interior noise standards set forth in the Town Noise Ordinance and in terms of the maximum noise level (L_{max}).

(d) Skier Pass-By Noise

Noise produced by skiers passing by the surrounding residential uses is based on the average dBA of speech for different vocal efforts under quiet conditions at a distance of three feet in a free field.[44] The peak vocal level at this time was then compared to the baseline conditions defined in the *Handbook of Acoustical Measurements and Noise Control.*

[44] *Harry Levitt and John C. Webster, Handbook of Acoustical Measurements and Noise Control Third Edition, 1991.*

b. Environmental Consequences of the Proposed Action

(1) Construction Impacts

Short-term noise impacts would be associated with excavation, grading, and construction of five retaining walls along the Ski Back Trail alignment during construction. Construction-related short-term noise levels would be higher than existing ambient noise levels in the area today, but would no longer occur once construction is completed.

Two types of short-term noise impacts could occur during the construction. First, construction crew commute and the transport of construction equipment and materials to the site would incrementally increase noise levels on access roads leading to the site.[45] There would be a relatively high single-event noise exposure potential at a maximum level of 87 dBA L_{max} with trucks passing at 50 feet. However, the projected construction traffic would be small when compared to the existing traffic volumes on SR-203 and other affected streets and it's associated longer-term (e.g., hourly or daily) noise level changes would not be measurable. Therefore, there would be no adverse effect regarding short-term construction-related worker commutes and equipment transport noise and no mitigation measures would be required.

The second type of short-term noise impact is related to noise generated during excavation, grading, and construction of the five retaining walls along the trail. Construction is performed in discrete steps, each of which has its own mix of equipment and consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated on the site. Therefore, the noise levels vary as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by the work phase.

Table 27 on page 123 lists maximum noise levels recommended for noise impact assessments for typical construction equipment based on a distance of 50 feet between the equipment and a noise receptor. These levels are based on information provided by the manufacturers, reported in the available literature, and used by other agencies for similar planning-level analysis. Although these noise emission levels represent typical values, there can be wide fluctuations in the noise emissions of similar equipment, particularly if the mufflers or tracks (for tracked vehicles) are defective. Typical maximum noise levels for the equipment

[45] *Construction of the Ski Back Trail would utilize primarily existing MMSA workers, except for construction of the five retaining walls. However, this analysis was conservative and assumed a worst-case scenario of requiring 1.25 trips per the four pieces of construction equipment utilized per day, resulting in a total of five worker trips per day.*

Table 27

Typical Maximum Construction Equipment Noise Levels (L_{max})

Type of Equipment	Range of Maximum Sound Level Measured at 50 feet (dBA)	Suggested Maximum Sound Level for Analysis at 50 feet (dBA)
Pile Drivers, 12,000 to 18,000 ft-lb/blow	81–96	93
Rock Drills	83–99	96
Jackhammers	75–85	82
Pneumatic Tools	78–88	85
Pumps	74–84	80
Scrapers	83–91	87
Haul Trucks	83–94	88
Cranes	79–86	82
Portable Generators	71–87	80
Rollers	75–82	80
Dozers	77–90	85
Tractors	77–82	80
Front-End Loaders	77–90	86
Hydraulic Backhoes	81–90	86
Hydraulic Excavators	81–90	86
Graders	79–89	86
Air Compressors	76–89	86
Trucks	81–87	86

Sources: Bold Beranek, & Newman, Noise Control for Buildings and Manufacturing Plants, 1987;and LSA Associates, Inc., May 2007.

expected to be utilized could range up to 91 dBA at 50 feet during the noisiest construction phases.

The site preparation phase, which includes excavation and grading of the site, tends to generate the highest noise levels, because the noisiest construction equipment is earthmoving equipment. Earthmoving equipment includes excavating machinery such as backfillers, bulldozers, draglines, and front loaders. Earthmoving and compacting equipment includes compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three or four minutes at lower power settings.

Construction of the Ski Back Trail is expected to require the use of one large bulldozer; one large excavator; one mid-sized excavator with a compactor plate and rock hammer; one or two roller vibrating compactors; one excavator that would set the rockery; three off-road haulers;

two truck and trailers; six pickup trucks; one water truck; one microdrill rig (for the soil nail wall); one stump grinder; two large size loaders; one to two backhoes; and one compressor.[46]

Equipment usage would depend on the task at hand and is highly unlikely that more than two pieces of equipment would be used at the same time given the tight terrain. It is anticipated that an excavator and bulldozer or loader would be used simultaneously with one or two trucks swapping out to remove material. It is not expected that the entire length of the Ski Back Trail would be under construction at the same time. In particularly rocky areas, a hammer attachment may be used to break up the rocks. The stump grinder would be used in the last one to two weeks after the use of the heaviest equipment is completed.

Construction along the approximately 7,800 linear foot trail would move linearly on a daily basis, affecting a specific area for a short duration time period rather than over the entire project construction. Construction noise at a given location depends on the magnitude of noise during each construction phase, the duration of the noise, the distance from the construction activities, and the shielding provided by any existing natural or manmade barriers/buildings between the construction site and the receiver. It is anticipated that the use of the equipment would be used less than 10 days in any particular area along the alignment.

Based on the likely construction scenario described above, the worst-case combined noise level during this phase of construction would be 89 dBA L_{max} at a distance of 50 feet from the active construction area. The closest existing residences in the vicinity of the Ski Back Trail are located approximately 200 feet south of the Ski Back Trail alignment or more than 150 feet from the construction areas. Typically, noise attenuation from a point source through distance divergence gets 6 dBA reduction per doubling of the distance (-6 dBA/DD). However, noise attenuation from ground absorption and reflective wave canceling ads to the attenuation associated with geometric spreading.[47] For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees, between the source and the receiver), an excess ground attenuation value of 1.5 dBA per doubling of the distance (-1.5 dBA/DD) is normally assumed. Since the Ski Back Trail area resembles a soft site scenario, total attenuation per doubling of the distance would be 7.5 dBA (-7.5 dBA/DD). At 150 feet, the noise attenuation is 12 dBA compared to the noise level measured at 50 feet from the point source of interest.

There is existing intervening terrain between these homes and the Ski Back Trail alignment. The closest homes are at elevations ranging from 30 to 40 feet lower than the Proposed Action alignment and are blocked by hills and trees. As a rule of thumb, when the

[46] *Per written correspondence with MMSA Project Team and Construction Manager, March 21, 2007.*

[47] *Caltrans, Traffic Noise Analysis Protocol Technical Noise Supplements, October 1998.*

line-of-sight between a receiver and a noise source is blocked, the receiver receives a minimum of 5 dBA noise reduction. Since the existing residences are 30 to 40 feet lower than the Ski Back Trail alignment, construction noise would be blocked by the terrain (edge of the hills). This terrain shielding provides at least 5 dBA in noise reduction. Additional noise attenuation that may be provided by the trees between the residences and the Proposed Action alignment was not factored into the impact analysis. Therefore, these closest residences may be subject to short-term noise reaching 74 dBA L_{max}, generated by on-site construction activities. This range of maximum construction noise would comply with the Town's Noise Ordinance requirements, which state that the maximum construction noise level at the existing residences needs to be reduced to 75 dBA or lower for residences in a single-family residential zone. In addition, compliance with the construction hours specified in the Town Noise Ordinance and implementation of Mitigation Measures 3.5-1 through 3.5-3 would further ensure that there would be no adverse effect regarding potential construction noise.

(2) Operational Impacts

(a) Traffic Noise Impacts

(i) Exterior Noise Levels

Exterior land uses on the north side of the existing single-family residential units located approximately 200 feet south of the proposed Ski Back Trail alignment are currently exposed to traffic noise levels from SR-203 ranging from 62.3 dBA to 66.5 dBA, during a typical winter weekday and Saturday, respectively, as illustrated in Table 28 on page 126. As described in Section 3.3, Transportation, of this Final EA, implementation of the proposed Ski Back Trail would not equate to trip reduction due to the fact that there is existing latent demand for the transit and auto trip by those people who would prefer to end their day between 3:30 P.M. and 4:30 P.M., but due to traffic conditions leave before or after. Therefore, as illustrated in Table 28, the background traffic noise levels along SR-203 would be 62.3 dBA and 66.5 dBA during a typical winter weekday and Saturday, respectively. It should be noted that these noise levels represent the worst-case scenario, which assumes that no shielding is provided between the traffic and the location where the noise contours are drawn. Thus, the proposed Ski Back Trail would have no measurable change on weekday or weekend traffic noise. Finally, the 60 dBA L_{dn} noise contour does not and would not impact any residences along SR-203, which are more than 200 feet away from SR-203. As such, there would be no adverse effect regarding exterior noise from traffic and no mitigation measures would be required.

(ii) Interior Noise Levels

According to the U.S. EPA, standard homes within the cold climate of central and northern California provide at least 17 dBA of exterior to interior noise attenuation with

Table 28

Existing (2004) Background Traffic Noise Levels

Category	ADT	Centerline to 70 dBA L_{dn} (feet)	Centerline to 65 dBA L_{dn} (feet)	Centerline to 60 dBA L_{dn} (feet)	L_{dn} (dBA) 50 Feet from Centerline of Outermost Lane
Existing (2004) SR-203					
Winter weekday	3,895	17[a]	37	80	62.3
Winter Saturday	10,208	32	70	151	66.5

[a] *Traffic noise levels within 50 feet of roadway centerline were calculated manually.*

Source: LSA Associates, Inc., January 2005.

windows open and 27 dBA with windows closed.[48] Therefore, homes exposed to exterior traffic noise levels lower than 58 dBA L_{dn} (58 dBA - 27 dBA = 31 dBA), which as described above, the nearest residential units experience noise levels far below the 60 dBA L_{dn}, would not have their interior noise level exceeding the 45 dBA L_{dn} standard with windows closed. With windows open, homes exposed to exterior traffic noise levels below 58 dBA L_{dn} (58 dBA - 17 dBA = 41 dBA) would also be below the 45 dBA L_{dn} interior noise standard, which would not adversely effect interior noise levels. No mitigation measures would be required.

(b) Snow-Making Activities

(i) Exterior Noise Levels

Noise from snow-making activities would be from the 10 snow guns used to make artificial snow along the ski trail, as depicted on Figure 12 on page 127. Snow-making generally takes place between the months of November and December and varies during the times of day dependent upon ambient temperatures around 32 degrees Fahrenheit.[49] It is estimated that snow-making activities would occur for a total of 60 hours during the entire ski season.[50]

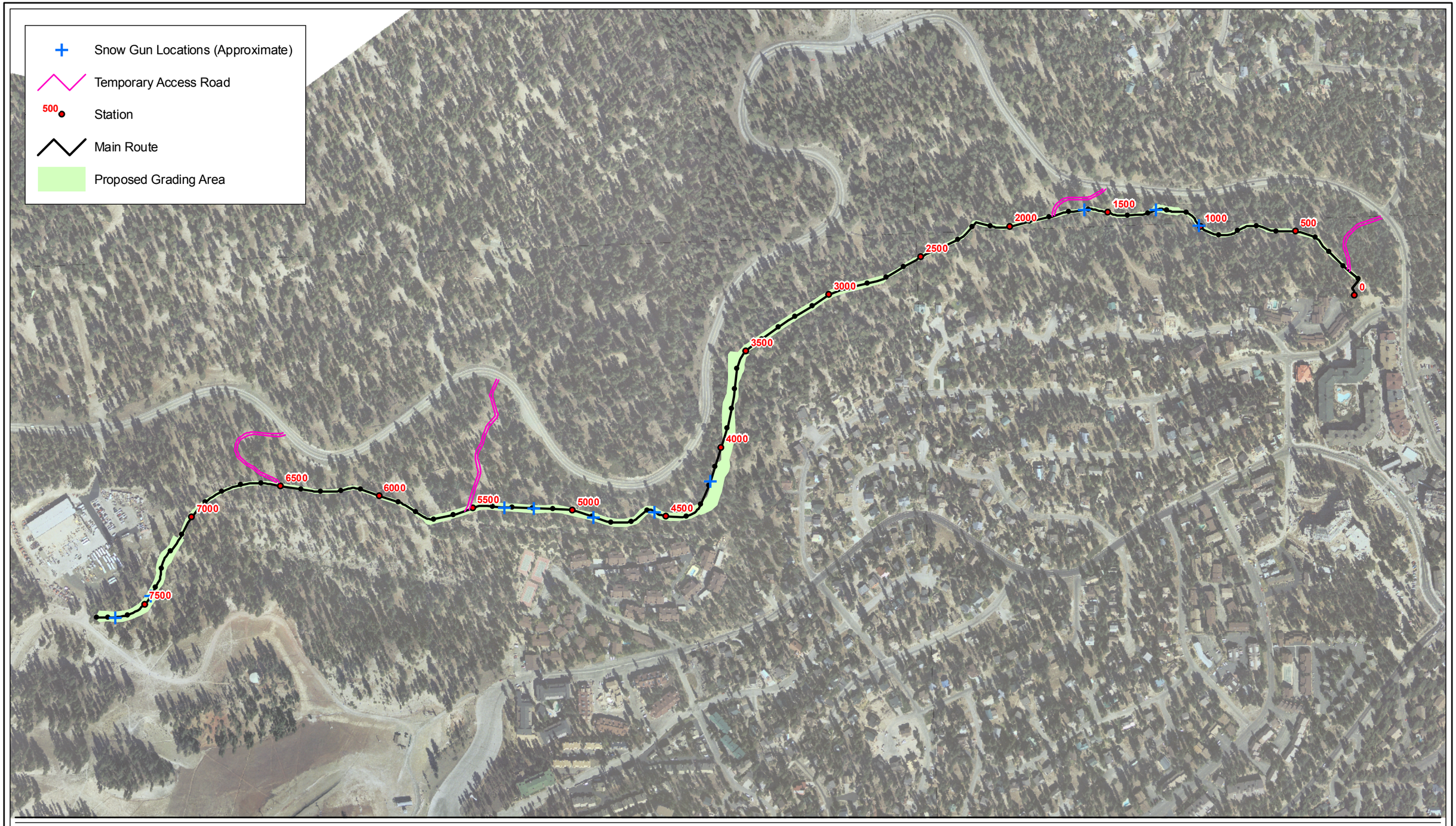
Noise levels from the snow-making guns at a distance of 200 feet, range from 64 dBA at 180 degrees, or behind the snow-making gun tower, to 67 dBA at 135 degrees, to 68 dBA at 0 degree, and 73 dBA at 45 and 90 degrees.[51] As previously described, the closest noise-

[48] *Based on the data provided in the U.S. EPA's Protective Noise Levels (U.S. EPA 550/9-79-100, November 1979).*

[49] *It should also be noted that implementation of the snow-making activities would not occur until snow retention information on the trail has been collected over several seasons.*

[50] *Normal-year best-estimate by the MMSA's staff (Clifford Mann and Alex Fabbro, November 2004).*

[51] *Based on the sound test results provided by HKD Spectrum (the manufacturer of the snow-making guns), which are included in Appendix C of this Final EA.*



Source: Triad Holmes, Inc., 2007.

Figure 12
Snow Gun Locations

Mammoth Mountain Ski Back Trail

sensitive receptors are single-family residential uses located approximately 200 feet south of the proposed Ski Back Trail alignment. These residences are also located approximately 30 to 40 feet below the proposed Ski Back Trail alignment. To allow for snow placement in consideration of the terrain (cross-slope) and dominant wind direction (west–northwest), snow-making guns would be placed in an up-slope configuration the majority, if not all of the time. Placement direction would be 270 to 0 to 190 degrees with 0 degrees at due north. Therefore, it is assumed that the snow-making guns would be 180 degrees from the nearest residence and the peak noise levels associated with the snow-making activities would be up to 64 dBA L_{max}. The difference in elevation and shielding provided by the terrain and trees would provide a minimum of 6 dBA in noise attenuation to the residences south of the proposed Ski Back Trail alignment. Therefore, the homes 200 feet from the snow-making activities would experience exterior noise levels up to 58 dBA L_{max} (64 dBA – 6 dBA = 58 dBA) outside the buildings.

This range of noise levels is comparable with the measured ambient noise levels included in Table 26. However, if this maximum sound level lasts continually for more than a few minutes, the noise could exceed the 50 dBA L_{eq} maximum allowable Noise Exposure at Stationary Noise Sources identified by the Town during winter daytime hours, as shown in Table 22. However, no noise-sensitive active outdoor uses such as residents sitting outside or barbecuing in the backyards or patios is anticipated at these residences. Occasional activities such as children having a snowball fight or playing in the snow would not be considered noise sensitive and would not be affected by snow-making noise. In addition, windows would be closed to keep the heat inside the house. Therefore, there would be no adverse effect regarding potential exterior noise at these residences. Regardless, Mitigation Measures 3.5-4, 3.5-5, and 3.5-6 are included to ensure there would be no adverse effect regarding snow-making noise.

(ii) Interior Noise Levels

As previously described, standard homes in central and northern California located within cold climates provide at least 17 dBA of exterior-to-interior noise attenuation with windows open and 27 dBA with windows closed. Therefore, these closest homes exposed to exterior noise levels reaching 58 dBA L_{max} would have interior noise levels reaching 31 dBA L_{max} with windows closed. This range of maximum interior noise levels is lower than the Town's interior noise standards of 55 dBA and 50 dBA, which is not to be exceeded by more than one minute and five minutes, respectively, in any hour during the daytime hours between 7:00 A.M. and 10:00 P.M. It is also lower than the interior noise standard of 45 dBA for noise lasting longer than five minutes in any hour during the daytime hours between 7:00 A.M. and 10:00 P.M. Therefore, no homes along the proposed Ski Back Trail alignment would be exposed to noise from snow-making that would exceed the Town's daytime exterior noise standards. In addition, implementation of Mitigation Measure 3.5-4 would ensure snow-making activities do not occur between 10:00 P.M. and 7:00 A.M., consistent with the Town's interior noise standard of 35 dBA

during the nighttime. Therefore, there would be no adverse effect regarding interior noise for the existing residential uses adjacent to the proposed Ski Back Trail alignment.

(c) Snow-Grooming Activities

(i) Exterior Noise Levels

In general, the Ski Back Trail would be groomed once daily although on heavily trafficked days, an additional grooming pass may be considered. It is anticipated that it would take approximately 15 minutes each way for the snowcats to groom the trail. Therefore, noise standards in terms of the maximum noise level (L_{max}) are needed to evaluate potential noise impacts from snow-grooming activities. Noise levels from snow-grooming activities showed a noise level of 55 to 59 dBA L_{max} at 200 feet, depending on the speed of the motor.[52] Attenuation provided by the terrain and trees would be 6 dBA. Therefore, the snow-grooming noise would be reduced to below 53 dBA L_{max} at the nearest residences along the proposed Ski Back Trail alignment. It is anticipated that snow-grooming would take place less than a few minutes for a specific area due to the continuously moving nature of the snowcats. Even without noise attenuation from the terrain and trees, noise levels associated with snow-grooming activities would be below the Town's standards at the nearest residences located approximately 200 feet south of the proposed Ski Back Trail alignment. Therefore, no homes along the proposed Ski Back Trail alignment would be exposed to noise from snow-grooming activity that would exceed the Town's daytime exterior noise standards. The placement of snow guns farther from the homes would increase the amount of time the grooming equipment would be in the project vicinity to place the snow. However, snow grooming would not take more than a few minutes depending on weather but could take up to no more than 10 minutes. However, noise levels would still be within and would not exceed the City's Noise Ordinance. There would be no adverse effect and no further mitigation measures are required.

(ii) Interior Noise Levels

The closest homes exposed to exterior noise levels reaching 53 dBA L_{max} would have interior noise levels reaching 26 dBA L_{max} with windows closed. This range of maximum interior noise levels is lower than the Town's 55 dBA and 50 dBA interior noise standards not to be exceeded by more than one minute and five minutes, respectively, in any hour during the daytime hours between 7:00 A.M. and 10:00 P.M. It is also lower than the interior noise standard of 45 dBA for noise lasting longer than five minutes in any hour during the daytime hours. The maximum interior noise level is also lower than the Town's 45 dBA and 40 dBA interior noise

[52] *Based on the sound level readings provided by Pisten Bully, the manufacturer of snow-grooming machines that most likely would be used for this project.*

standards not to be exceeded by more than one minute and five minutes, respectively, in any hour during the nighttime hours between 10:00 P.M. and 7:00 A.M. It is also lower than the interior noise standard of 35 dBA for noise lasting longer than five minutes in any hour during the nighttime hours. Therefore, there would be no adverse effect regarding interior noise for the existing residential uses adjacent to the proposed Ski Back Trail alignment from snow-grooming activities and no further mitigation measures are required.

(d) Skier Pass-By Noise

(i) Exterior Noise Levels

It is assumed that up to 16 skiers would pass through a given point at any one time during the peak afternoon hour during operational hours. Based on the average dBA of speech for different vocal efforts under quiet conditions at a distance of three feet in a free field, male shouting would result in 88 dBA and female shouting can reach 82 dBA.[53] A loud voice for a male is approximately 75 dBA and for a female is 71 dBA. Meanwhile, a raised voice is 65 dBA for male and 62 dBA for female. These are all maximum sound pressure levels (L_{max}) measured at three feet from the person. As previously described, every doubling of an equal sound energy would result in a 3 dBA increase in combined noise level. Therefore, two males shouting at the same time (worst-case scenario to have them reaching the peak level at the same time) would result in 91 dBA, four males in 94 dBA, eight males in 97 dBA, and 16 males in 100 dBA, all at three feet from the males. Similarly, for females shouting at three feet, two females would result in 85 dBA, four females in 88 dBA, eight females in 91 dBA, and 16 females in 94 dBA. The above calculation shows that as the number of people increase from 1 to 16, the peak noise level would increase by 12 dBA. It should be noted that this is the worst-case assumption since it is rarely possible for 16 people to generate peak vocal level at the same time. In addition, it is impossible to maintain a distance of three feet from all 16 people, since it is assumed they remain a point source. Similarly, for loud voice, 16 males would result in an increase from 75 dBA to 87 dBA at three feet and 16 females would result in 83 dBA at three feet. For raised voice, 16 males would result in 77 dBA at three feet, and 16 females would result in 74 dBA at three feet. Since male voice levels are higher than female voice levels, it is assumed that all skiers are male for a worst-case analysis scenario.

At a distance of 200 feet, the distance attenuation would provide approximately 36 dBA in noise reduction, compared to the noise level at three feet from the point source(s). Therefore, noise level from a single male person would be reduced to 52 dBA L_{max}, 39 dBA L_{max}, and 29 dBA L_{max}, respectively, for shouting, loud, and raised voice levels. At this distance, the above male shouting noise from 16 people would be reduced to 64 dBA L_{max}. Male loud voice

[53] *Harry Levitt and John C. Webster, Handbook of Acoustical Measurements and Noise Control Third Edition, 1991.*

from 16 people would be reduced to 51 dBA. Male raised voice from 16 people would be reduced to 41 dBA. In addition, noise attenuation provided by terrain and trees would further reduce the skier noise by 6 dBA or more. Therefore, no homes along the proposed Ski Back Trail alignment would be exposed to noise from skiers passing by that would exceed the Town's daytime exterior noise standards. There would be no adverse effect and no mitigation measures are required.

(ii) Interior Noise Levels

The closest homes exposed to exterior noise levels reaching 64 dBA L_{max} would have interior noise levels reaching 37 dBA L_{max} with windows closed. This range of maximum interior noise levels is lower than the Town's 55 dBA and 50 dBA interior noise standards not to be exceeded by more than one minute and five minutes, respectively, in any hour during the daytime hours between 7:00 a.m. and 10:00 p.m. It is also lower than the interior noise standard of 45 dBA for noise lasting longer than five minutes in any hour during the daytime hours. Therefore, there would be no adverse effect regarding interior noise for the existing residential uses adjacent to the proposed Ski Back Trail alignment from skier pass-by noise.

(3) Mitigation Measures

(a) Construction

Construction would be limited to the hours of 7:00 A.M. to 7:00 P.M. Monday through Saturday in accordance with the Town Noise Ordinance. No construction activities are permitted outside of these hours or on Sundays and Federal holidays.

Mitigation Measure 3.5-1: During all site excavation and grading, the project contractors shall equip all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers' standards.

Mitigation Measure 3.5-2: The project contractor shall place all stationary construction equipment so that emitted noise is directed away from sensitive receptors nearest the project site.

Mitigation Measure 3.5-3: The construction contractor shall locate equipment staging in areas that would create the greatest distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.

(b) Operation

Mitigation Measure 3.5-4: Snow-making activities shall be limited to daytime hours between 7:00 A.M. and 8:00 P.M. with no snow-making activities permitted between 8:00 P.M. and 7:00 A.M.

Mitigation Measure 3.5-5: Maintain or establish vegetative screening between gun placements and residences.

Mitigation Measure 3.5-6: All snow-making equipment shall be placed a minimum of 300 feet from the nearest residential unit. The placement of snow guns farther from the homes would increase the amount of time the grooming equipment would be in the project vicinity to place the snow. However, snow grooming would not take more than a few minutes depending on weather but could take up to no more than 10 minutes. Confirmation that due to the distance and intervening topography, the snow-making equipment does not exceed the City's Noise Ordinance shall be performed by a qualified Acoustical Engineer.

c. Environmental Consequences of Alternative 1 – Original Alignment Proposal

(1) Construction Impacts

The Original Alignment Proposal Alternative would be similar to the Proposed Action with the exception that this Alternative would require substantially more cut and fill along the proposed alignment. Under this Alternative, construction of this trail would require six retaining walls and the temporary access corridors, which would maintain the same alignments as the Proposed Action.

Similar to the Proposed Action, short-term construction-related noise impacts would be associated with excavation, grading, and construction of the six retaining walls along the trail alignment. Construction-related short-term noise levels would be higher than existing ambient noise levels in the area but would no longer occur once construction of the trail is completed. Construction crew commute and the transport of construction equipment and materials to the site would incrementally increase noise levels on access roads leading to the site and may be more frequent than the Proposed Action.[54] There would be a relatively high single-event noise

[54] *Construction of Alternative 1 would utilize primarily existing MMSA workers, except for construction of the six retaining walls. However, this analysis was conservative and assumed a worst-case scenario of requiring 1.25 trips per the four pieces of construction equipment utilized per day, resulting in a total of five worker trips per day.*

exposure potential at a maximum level of 87 dBA L_{max} with trucks passing at 50 feet. However, the projected construction traffic would be small when compared to the existing traffic volumes on SR-203 and other affected streets, and it's associated longer-term (e.g., hourly or daily) noise level changes would not be measurable. Therefore, short-term construction-related worker commutes and equipment transport noise impacts would not be substantial.

In addition, as this Alternative requires more cut and fill along the trail, construction noise would be higher than under the Proposed Action. Regardless, this Alternative would be required to implement the same construction mitigation measures (refer to Mitigation Measures 3.5-1 through 3.5-3), which would ensure that there would be no adverse effect regarding short-term construction noise impacts.

(2) Operational Impacts

All other operations and maintenance activities including transportation noise, snow-making, snow grooming, and skier pass-by noise would be the same under this Alternative as the Proposed Action. As such, the Original Alignment Proposal Alternative would have operational noise impacts similar to the Proposed Action.

Traffic noise impacts would be very similar to the Proposed Action in terms of effects on vehicular traffic trips on SR-203. The residences would still continue to experience similar traffic noise with this Alternative since there would be no change in traffic noise levels on the weekdays or weekends. Therefore, there would be no adverse effect and no mitigation measures would be required.

Snowmaking would occur for approximately 60 hours throughout the ski season and snow-making guns would be placed in the same configuration as in the Proposed Action. Under this Alternative, mitigation measures would also be required to ensure that snow-making activities comply with the Town's Noise Ordinances and would not take place between the hours of 8:00 P.M. and 7:00 A.M. As such, no homes along the Original Alignment Proposal ski trail alignment would be exposed to noise from snow-making that would exceed the Town's daytime exterior or interior noise standards.

Snow-grooming would not take place between the hours of 8:00 P.M. and 7:00 A.M. and would occur only when the maintenance is needed. Noise levels from snow-grooming activities would have a noise level of 55 to 59 dBA L_{max} at 200 feet, depending on the speed of the motor. With tree attenuation, the activities would have a noise level of 53 dBA and interior noise levels reaching 26 dBA L_{max} with windows closed. These levels would be below the Town's standards at the nearest residences adjacent to the trail alignment. Therefore, there would be no adverse

effect regarding exterior or interior noise for the existing residential uses adjacent to the Original Alignment Proposal from snow-grooming activities.

The exterior noise levels due to skier pass-by noise would reach 64 dBA L_{max} and the interior noise levels would reach 37 dBA L_{max} with windows closed. The interior noise levels are lower than the Town's 55 dBA and 50 dBA interior noise standards not to be exceeded by more than one minute and five minutes, respectively, in any hour during the daytime hours between 7:00 A.M. and 10:00 P.M. and is also lower than the interior noise standard of 45 dBA for noise lasting longer than five minutes in any hour during the daytime hours. No homes along the Original Alignment Proposal would be exposed to noise from skiers passing by that would exceed the Town's daytime exterior noise standards. Therefore, there would be no adverse effect regarding exterior or interior noise for the existing residential uses adjacent to the Original Alignment Proposal from skiers passing by.

d. Environmental Consequences of Alternative 2 – Transit Emphasis Alternative

(1) Construction Impacts

The Transit Emphasis Alternative does not include the construction of the Ski Back Trail. Rather, an increased emphasis would be on transit provisions focused on returning skiers from the Main Lodge, Chair 2/10, and Chair 4/20 to The Village, and other destinations in Town. As the Ski Back Trail would not be constructed under this alternative, no construction noise impacts would occur.

(2) Operational Impacts

Although under this Alternative a total of 240 additional skiers could, theoretically, be transported to The Village in the winter afternoon peak hours, it is not likely that this scenario would actually reduce traffic demand in the peak hour since not all of the total 240 additional transit riders would utilize the transit buses only during the peak hours. The daily reduction of 240 skiers using private vehicles among the 7,000 total skiers and snowboarders on typical winter Saturdays or 14,000 total skiers and snowboarders represent less than four percent and two percent, respectively, of the total skiers and snowboarders. The resulting change in traffic noise would not be measurable and there would be no adverse effect regarding traffic noise.

As the Transit Emphasis Alternative does not include the construction of the Ski Back Trail, impacts from snow-making, snow-grooming, or skiers passing by, would not occur to the single-family residential uses located 200 feet south of the Ski Back Trail (sensitive receptors).

e. Environmental Consequences of Alternative 3 – No Action Alternative

(1) Construction Impacts

The No Action Alternative would reflect a continuation of existing conditions without changes, additions, or upgrades. Since there would be no development under this Alternative, there would be no construction-related noise impacts.

(2) Operational Impacts

The No Action Alternative would result in the continued operation of the existing public transit system, Village Gondola, parking facilities, and mountain operations with no changes. Consequently, traffic noise conditions would remain the same, and thus, no traffic noise impacts would occur. In addition, this Alternative would not involve snow-making and snow-grooming activities and no skiers would pass by within 200 feet of single-family residential units. Therefore, there would be no operational noise impacts under this Alternative.

f. Conformity with Applicable Plans and Policies

(1) Construction

As described above, construction of the Proposed Action and Alternative 1 would result in a maximum of 74 dBA impacting the nearby residential community. The Proposed Action and Alternative 1 would also be required to comply with the Town's Noise Ordinance limiting the times of day construction activities may occur. Therefore, construction of the Proposed Action and Alternative 1 would be consistent with the Noise Element of the *General Plan Update*, Policy C.6 of the Community Design Element of the *General Plan Update*, and the Town's Municipal Code.

Since Alternative 2 and Alternative 3 would not result in construction impacts, they would both also be consistent with the Noise Element of the *General Plan*, Policy C.6 of the Community Design Element of the *General Plan Update*, and the Town's Municipal Code.

(2) Operation

Operational noise associated with the Proposed Action and Alternative 1 would include snow-making activities, snow-grooming activities, and skier pass-by noise. Since the Proposed Action and Alternative 1 would not result in an increase in traffic, there would not be an increase in traffic noise, thereby maintaining the existing ambient noise level ranging from 62.3 to 66.5 dBA. In addition, the maximum exterior noise levels of 64 dBA due to the snow-making

activities, 53 dBA due to the snow-grooming activities, and 52 dBA would all be consistent with the existing ambient noise levels and would not exceed the City's exterior noise standard. As such, operational noise levels would also be consistent with the City's interior noise standards since all exterior noise levels would be reduced by up to 17 dBA, well within the City's interior noise standards. Therefore, the Proposed Action and Alternative 1 would also be consistent with DHS' *Guidelines for Noise and Land Use Compatibility* and U.S. EPA guidelines.

Operation of Alternative 3 would result in an increase of four bus trips during the peak hour. Therefore, under this Alternative there would only be an increase in traffic noise and there would not be any operational noise impacts as a result of snow-making activities, snow-grooming activities, and skier pass-by noise. However, due to the high amount of traffic currently on SR-203 during the peak hours, four additional bus trips would not result in an increase in traffic noise and/or ambient noise levels in the area. Therefore, Alternative 3 would be consistent with the Town's exterior and interior noise standard and with DHS' *Guidelines for Noise and Land Use Compatibility* and U.S. EPA guidelines.

Alternative 4 would not result in any operational noise impacts and therefore, would also be consistent with the Town's exterior and interior noise standard and with DHS' *Guidelines for Noise and Land Use Compatibility* and U.S. EPA guidelines.

3.0 ENVIRONMENTAL CONSEQUENCES
3.6 BIOLOGICAL RESOURCES

INTRODUCTION

This section analyzes and summarizes the applicable regulations and policies regarding biological resources and provides an analysis of direct and indirect impacts to biological resources. Information regarding the sensitive biological resources in the Ski Back Trail area is based on a literature review including a review of the California Natural Diversity Database (CNDDB) in 2007, survey data from two bike trail projects within the project area, information from the Original Ski Back Trail site review, and information from a reconnaissance of the study area. A *Management Indicator Species (MIS) for the Mammoth Mountain Ski Area, Ski Back Trail Project* (December 2008) and a *Biological Evaluation – Wildlife (BE) for the Mammoth Mountain Ski Area, Ski Back Trail Project* (December 2008), both prepared by PCR Services Corporation, are also incorporated by reference. The Floral and Faunal Compendium and Sensitive Plant Species Table are included in Appendix D of this Final EA.

3.6.1 REGULATORY FRAMEWORK

Any project must be in compliance with a number of laws, terms, provisions, and regulations required by Federal, State, and local agencies in regards to biological resources such as sensitive plants. Federal, State, and local agencies include the United States Fish and Wildlife Service (USFWS), United States Department of Agriculture Forest Service (Forest Service), and the California Department of Fish and Game (CDFG). The applicable regulations are discussed below.

a. Federal Level

(1) Federal Endangered Species Act, Section 10 and Section 7

Taking of a threatened or endangered species is prohibited under Federal law without a special permit. Section 10(a)(1)(B) of the Endangered Species Act (ESA) allows for take of a threatened or endangered species incidental to development activities once a Habitat Conservation Plan (HCP) has been prepared to the satisfaction of the USFWS. For Federal projects (including those involving Federal funding), Section 7 of the ESA allows for consultation between the affected agency and the USFWS to determine what measures may be necessary to compensate for the incidental take of a listed species. A "Federal" project is any

project that is proposed by a Federal agency or is at least partially funded or authorized by a Federal agency. If the listed species or federally designated "critical habitat" for that species occurs in a portion of the project subject to Federal jurisdiction or activity (such as "Waters of the United States"), then consultation under Section 7 of the Act is usually permissible and may be required.

(2) Forest Service

(a) Forest Service Sensitive Species

The National Forest Management Act (NFMA) of 1976, and its implementing regulations require the Forest Service to ensure a diversity of animal and plant communities and maintain viable populations of existing native species as part of their multiple use mandate. The Forest Service sensitive species program is a proactive approach to conserving species to ensure the continued existence of viable, well-distributed populations, and to maintain biodiversity of National Forest Service lands (Forest Service 2004). In addition, the Secretary of Agriculture's policy on fish and wildlife (Department Regulation 9500-4) directs the USFS to avoid actions "which may cause a species to become threatened or endangered."

The Forest Service defines sensitive species as those animal and plant species identified by a regional forester for which population viability is a concern. This may be a result of significant current or predicted downward trends in habitat that would reduce a species' existing distribution or significant current or predicted downward trends in density or population numbers (CNDDB 2005, Special Animals List).

The Forest Service, Pacific Southwest Region, maintains a Regional Forester's Sensitive Species List. This list was last updated in 2006 and consists of rare plants and animals which are given special management consideration to ensure their continued viability on the national forests. Species on the sensitive species list are considered sensitive for every forest where they occur in the region (U.S. Forest Service 2006).

(b) Inyo National Forest Land and Resource Management Plan

The Inyo National Forest Land and Resource Management Plan establishes the management, direction, and long-range goals for the Inyo National Forest (U.S. Forest Service 1988). Management goals for the Inyo National Forest include (but are not limited to) the following:

- Protect and improve riparian area-dependent resources while allowing for management of other compatible uses.

- Protect or improve the habitats of threatened or endangered species in cooperation with State and other Federal agencies.

- Protect sensitive plants to ensure they will not become threatened or endangered.

- Manage wildlife habitat to provide species diversity, ensure that viable populations of existing native wildlife are maintained, and that the habitats of management emphasis species are maintained or improved.

- Manage timber resources to provide a sustained yield of commercial sawtimber, public fuelwood, and wood products while maintaining other resource values.

Forest-wide standards and guidelines provide specific guidelines for the management of each resource to ensure its enhancement and protection. These include (but are not limited to) the following:

Riparian Areas

- Protect streams, streambanks, lakes, wetlands, and shorelines, and the plants and wildlife dependent on these areas.

- Prevent adverse riparian area changes in water temperature, sedimentation, chemistry, and water flow.

- Rehabilitate and/or fence riparian areas that consistently show resource damage.

- Allow new developments and surface disturbance in riparian areas only after on-site evaluations have determined that resources are not adversely affected, or mitigation of any adverse impacts is identified and incorporated into the project design.

Sensitive Plants

- Allow no new disturbance of identified sensitive plant habitat without direction from Interim Management Guidelines, Species Management Guides, or an environmental analysis.

- Complete inventories of project sites and areas of disturbance if there is potential habitat or known population locations identified.

Additional standards required by the Sierra Nevada Forest Plan Amendment (SNFPA) include: (1) conducting field surveys for threatened, endangered, proposed and sensitive (TEPS) plant species early enough in project planning process that the project can be designed to

conserve or enhance TEPS plants and their habitat; and (2) conducting surveys according to procedures outlined in the Forest Service Handbook (FSH 2609.25.11). If additional field surveys are to be conducted as part of project implementation, survey results must be documented in the project file.

Wildlife – Threatened, Endangered, and Sensitive Wildlife Species

- Cooperate with the USFWS and the CDFG in the management of threatened and endangered species.

- Submit proposals for actions that might affect the continued existence of a threatened or endangered species to the USFWS for formal consultation.

Wildlife – Management Indicator Species

- Carnivores (Sierra Nevada red fox, pine marten, fisher, and wolverine): Maintain the integrity of habitats required by these species. Inventory project areas where development could alter habitats required by these species.

- Mule Deer: Maintain or enhance the integrity of key winter ranges, holding areas, migration routes, and fawning areas. The goal is to maintain deer habitat to support deer populations consistent with herd management area objectives. Coordinate with the CDFG in implementing existing deer herd plans. Goals of the CDFG herd management plans for the Buttermilk and Sherwin Grade Herds (which now comprise the Round Valley Herd) include maintaining the population of the Buttermilk Herd near current levels (3,000 deer) and maintaining the Sherwin Grade Herd at the current population (2,300 to 2,400 deer).

- Bald Eagle: Maintain the integrity of existing wintering areas. Maintain and enhance prey-base populations within winter foraging areas. Implement the Pacific States Bald Eagle Recovery Plan, and prepare a local winter bald eagle management plan.

- Golden Eagle and Prairie Falcon: Maintain and enhance the integrity of nesting habitats.

- Tule Elk: Follow the guidelines of the Tule Elk Management Plan for the Owens Valley.

- Peregrine Falcon: Establish two nesting pairs of peregrine falcons and implement the Pacific Coast American Peregrine Falcon Recovery Plan prepared by the USFWS.

- Goshawk: Maintain a density of at least one goshawk territory per eighteen square miles within goshawk habitat range. Maintain at least one hundred acres of mature timber per territory. Exclude timber activities within occupied nest stands during the nesting period.

- Blue Grouse: Maintain or enhance blue grouse habitat by protecting vegetative diversity, riparian habitat, and down logs.

- Sage Grouse: Allow no vegetative treatment in sage grouse habitats that would have a significant negative impact on the species. Recognize the sensitivity of sage grouse leks during March 1 through April 30.

- Spotted Owl and Great Gray Owl: Conduct periodic inventories. If owls are located, maintain foraging and nesting habitat.

- Sierra Nevada Mountain Sheep and Nelson Mountain Sheep: Maintain existing sheep habitat, and maintain the health of established mountain sheep populations.

- Riparian Area-Dependant Species: Maintain the viability of the yellow warbler by implementing management direction for riparian habitats.

- Snag-Dependant Species: Maintain the habitat of the hairy woodpecker and Williamson sapsucker by implementing management direction for snags, down logs, and habitat diversity.

(c) Sierra Nevada Forest Plan Amendment

On January 21, 2004, a new Record of Decision (ROD) for the SNFPA was signed. The final Supplemental Environmental Impact Statement (SEIS) and ROD amended the existing Sierra Nevada Forest Plan to improve the protection of wildlife habitats, watersheds, old forests, and communities in the Sierra Nevada Mountains and Modoc Plateau. The SEIS evaluates new information available since the adoption of the SNFPA ROD and proposes to make changes in specific standards and guidelines. The SEIS, therefore, focuses on those management indicator species (MIS) that may be affected by changes in levels of activity or habitat as a result of the proposed alternatives.

MIS are identified in the Land and Resources Plans of each national forest. MIS are designated as such because they are sensitive to National Forest System management activities and/or they represent habitat types that occur within the national forest boundary. Federally listed threatened, endangered, or proposed species and Forest Service sensitive species were excluded from further evaluation in the SEIS because effects to those species are considered in more detail in the FEIS, SEIS, and other environmental documentation. The remaining MIS were

assigned to one or more primary habitat associations because lists of MIS for individual forest plans vary in terms of habitat representation or sensitivity to management activity.

Habitat classifications that correspond with each MIS include the following: Snag and Down Log; Meadow, Riparian (Wetlands); Aquatic (Lakes/Streams); Chaparral; Cliff, Caves, Talus, and Rock Outcrops; Hardwoods (Oaks, Aspen); Openings and Early Seral Stages; Pinyon Juniper; Eastside Pine; Ponderosa Pine; Grasslands and Shrub-Steppe; Mature Conifer; Multi-Habitat; and Mixed Conifer.

b. State Level

(1) California Endangered Species Act

The California Endangered Species Act (CESA) and the California Native Plant Protection Act of 1977 provide the framework for protection of California-listed rare and endangered plant species. The CDFG implements CESA and maintains the CNNDB, a computerized inventory of information on the general location and status of California's rare species and natural biological communities.

The Federal and State Endangered Species Acts operate in conjunction with NEPA to help protect the ecosystems upon which endangered and threatened species depend.

(2) State of California Fish and Game Code, Section 1602

Section 1602 of the California Fish and Game Code requires any entity (e.g., person, State or local government agency, or public utility) who proposes a project that will substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake, to notify CDFG of the proposed project. In the course of this notification process, the CDFG will review the proposed project as it affects streambed habitats within the project site. The CDFG may then place conditions on the Section 1602 clearance to avoid, minimize, and mitigate the potentially significant adverse impacts within CDFG jurisdictional limits.

(3) California Native Plant Society - Native Plant Species List

The California Native Plant Society (CNPS) is a professional society that maintains a list of plant species native to California with indications of low numbers, limited distribution, or is otherwise threatened with extinction. The CNPS list does not afford legal status or protection for

the species; however, the Forest Service uses the CNPS lists in developing recommendations for species to include on the Regional Forester's sensitive species list.

(4) Timber Harvest

The removal of trees for commercial purposes is subject to regulations enforced by the CDFG and Fire Protection.

c. Local Level

As previously described in Section 1.0, Introduction/Purpose and Need, of this Final EA, the Town of Mammoth Lakes (Town) and the Mammoth Mountain Ski Area have a close relationship due to their physical land connection and economic dependency. As such, despite the fact that the Proposed Action does not require approval by the Town, it is necessary to ensure that the Proposed Action is consistent with the relevant Town's plans and policies.

(1) Town of Mammoth Lakes 2007 General Plan Update

The Habitat Resources policies of the *Town of Mammoth Lakes 2007 General Plan Update (General Plan Update)* include the following:

- **Policy R.1.A.** Be stewards of important wildlife and biological habitats within the Town's municipal boundary.
    - **R.1.A.1.** Action: Prepare species, habitat and natural community preservation and conservation strategies.
    - **R.1.A.1.** Action: Maintain an inventory of all Special Status Wildlife Species and Special Status Plants and Plant Communities within the Planning Area.
- **Policy R.1.B.** Development shall be stewards of Special Status plant and animal species and natural communities and habitats.
    - **Policy R.1.B.1.** Action: Plan development to minimize removal of native vegetation and trees and destruction of wildlife habitat.
    - **Policy R.1.B.2.** Action: Reflect the high value the community places on existing mature trees by updating the formula to calculate value in the tree replacement ordinance.

- **Policy R.1.C.** Prior to development, projects shall identify and mitigate potential impacts to site-specific sensitive habitats, including special status plant, animal species and mature trees.

- **Policy R.1.D.** Be stewards of primary wildlife habitats through public and/or private management programs. For example, construction of active and passive recreation and development areas away from the habitat.

3.6.2 AFFECTED ENVIRONMENT

a. Biological Survey Methods

The assessment of biological resources contained in this section is based on information compiled through previous documentation and appropriate reference materials. The study began with a review of relevant literature on the biological resources of the project site and the surrounding vicinity. Initially, the CNDDB, a CDFG sensitive resources account database, was reviewed for all pertinent information regarding the locations of known observations of sensitive species and habitats in the vicinity of the study area. Federal register listings, protocols, and species data provided by the USFWS and CDFG were reviewed in conjunction with anticipated federally and State listed species potentially occurring within the vicinity. Information pertaining to sensitive species provided by the Inyo National Forest was also reviewed. In addition, previous documentation relevant to the study area was reviewed to include the following:

- Northern Goshawk Survey Report, Ski Back Trail, prepared by Joel Ellis, 2005.

- Meso-Carnivore Survey Report, prepared by the USFS, dated spring 2005.

- Botanical Field Reconnaissance Report for the Ski Back Trail, prepared by Kathleen Nelson, dated 2004.

- Summary of California Spotted Owl Survey Results, Ski Back Tail, prepared by the USFS, 1999.

- Botanical Field Reconnaissance Report for the Mammoth Mountain Ski Area – Bicycle Trail, prepared by Sue Weis, dated 1998.

- Botanical Field Reconnaissance Report for the Mammoth Mountain Ski Area – Uptown Bike Trail, prepared by K. Nelson, dated 1996.

Plant community descriptions were based on the findings presented in the above documentation and descriptions contained in Holland's *Preliminary Descriptions of the Terrestrial Natural Communities of California* (1986). Scientific names are employed upon initial mention of each species; common names are employed thereafter. Appendix D, Floral and Faunal Compendium includes those plant species reported within the study area from Botanical Field Reconnaissance Reports prepared by the Forest Service (Nelson 2004, Weis 1998, and Nelson 1996).

Expected use of the study area by wildlife was derived from the analysis of habitats within the study area combined with known habitat preferences of regionally-occurring wildlife species. Wildlife taxonomy follows Stebbins (2003) for amphibians and reptiles, the American Ornithologists' Union (1998) for birds, and Jameson and Peeters (1988) for mammals. Scientific names are used during the first mention of a species; common names only are used in the remainder of the text. A list of those wildlife species detected within the study area from a northern goshawk survey, meso-carnivore surveys, and California spotted owl surveys conducted by the Forest Service (Ellis 2005, U.S. Department of Agriculture, Forest Service, 2005 and 1999) are included in Appendix D, Floral and Faunal Compendium. Wildlife species expected to occur within the study area based on habitat known to be present are also included in Appendix D.

b. Plant Communities

The study area supports red fir forest which is characteristically a dense forest with the narrow tree crowns often overlapping. The understory of this plant community typically lacks shrubs or herbs and contains needle litter and downed branches. The growing season is midsummer. This community occurs typically on north-facing slopes on coarse, well-drained, moist soils.

Within the study area, red fir (*Abies magnifica*) is the dominant species. Additional tree species reported as occurring within the study area include lodgepole pine (*Pinus contorta* ssp. *murrayana*), and mountain hemlock (*Tsuga mertensiana*). Much of the study area contains a sparse understory with openings supporting montane chaparral species and perennial forbs. Additional shrub and herb species reported as occurring within the study area include, but are not limited to, greenleaf manzanita (*Arctostaphylos patula*), chinquapin (*Chrysolepis sempervirens*), mountain pennyroyal (*Monardella odoratissima*), Douglas' chaenactis (*Chaenactis douglasii*), and bristly-leaved rockcress (*Arabis holboellii* var. *retrofracta*).

c. Existing Jurisdictional Waters

PCR did not conduct a jurisdictional delineation for the study area; however, based on information contained in the Botanical Field Reconnaissance Reports prepared by the Forest

Service (Nelson 2004, Weis 1998, and Nelson 1996), it does not appear that U.S. Army Corps of Engineers (ACOE) jurisdictional "waters of the U.S.," ACOE jurisdictional wetlands, or areas that would fall under the jurisdiction of the CDFG and RWQCB occur within the study area.

d. Wildlife Species

The plant community discussed above provides wildlife habitat; however, due to the fact that the Ski Back Trail area is adjacent to a well-traveled road and the eastern end of the trail is almost completely surrounded by development, wildlife diversity within the area is expected to be low. Following are discussions of wildlife populations within the Ski Back Trail area, segregated by taxonomic group. Representative examples of each taxonomic group expected within the study area are provided. Wildlife species observed during surveys conducted by the USFS (Ellis 2005, Forest Service, 2005 and 1999), as well as those expected to occur within the study area are listed in Appendix D, Floral and Faunal Compendium.

(1) Invertebrates

Focused surveys for common invertebrate species were not conducted; however, the Ski Back Trail area would not be expected to support populations of a diverse assortment of invertebrates due to fact that the study area supports only one plant community.

(2) Amphibians

Terrestrial amphibian species may or may not require standing water for reproduction. Terrestrial species avoid desiccation by burrowing underground; within crevices in trees, rocks, and logs; and under stones and surface litter during the day and dry seasons. Due to their secretive nature, terrestrial amphibians are rarely observed, but may be quite abundant if conditions are favorable. Aquatic amphibians are dependent on standing or flowing water for reproduction. Such habitats include fresh water marshes and open water (reservoirs, permanent and temporary pools and ponds, and perennial streams). Many aquatic amphibians will utilize vernal pools as breeding sites. These pools are temporary in duration and form following winter and spring rains. Due to the lack of aquatic habitat within the study area, no amphibian species are expected to occur.

(3) Reptiles

Reptiles, as a group, occupy a much broader spectrum of habitats than amphibians. Reptilian diversity and abundance typically varies with habitat type and character. Some species prefer only one or two natural communities; however, most will forage in a variety of communities. A number of reptile species prefer open habitats that allow free movement and

high visibility. Most species occurring in open habitats rely on the presence of small mammal burrows for cover and escape from predators and extreme weather.

Several species have the potential to occur on-site. These include rubber boa (*Charina bottae*), mountain garter snake (*Thamnophis elegans*), Sierra alligator lizard (*Elgaria coerulea palmeri*), and Sierra fence lizard (*Sceloperus occidentalis*). The rubber boa is a MIS associated with meadow, riparian (wetlands), mature conifer, and multi-habitat community types in the SEIS of the SNFPA. The mountain garter snake is a subspecies of the western terrestrial garter snake (*Thamnophis elegans*), which is a MIS associated with meadow and riparian (wetlands) habitat types. All reptile species expected to occur within the study area are included in Appendix D, Floral and Faunal Compendium. Sensitive reptile species are discussed further in Section 3.6.2(g), Sensitive Biological Resources, below.

(4) Birds

The habitat within the Ski Back Trail area provides foraging and cover habitat for year-round and seasonal residents; however, due to the Ski Back Trail area's small size and proximity to development and human disturbance, bird diversity is expected to be low. A common raven (*Corvus corax*) was detected within the study area during meso-carnivore surveys conducted by the Forest Service in spring 2005 (Forest Service, 2005). Bird species with the potential to occur on-site include, but are not limited to, the European starling (*Sturnus vulgaris*), Stellar's jay (*Cyanocitta stelleri*), Brewer's blackbird (*Euphagus cyanocephalus*), American crow (*Corvus brachyrhynchos*), mourning dove (*Zenaida macroura*), northern flicker (*Colaptes auratus*), Clark's nutcracker (*Nucifraga columbiana*), mountain chickadee (*Poecila gambeli*), house wren (*Troglodytes aedon*), spotted towhee (*Pipilo erythrophthalmus*), white-crowned sparrow (*Zonotrichia leucophrys*), song sparrow (*Melospiza melodia*), and lesser goldfinch (*Carduelis psaltria*).

A red-tailed hawk (*Buteo jamaicensis*) was detected within the study area during a northern goshawk survey conducted by the Forest Service in 2005 (Ellis 2005). Raptor species with the potential to occur on-site include the turkey vulture (*Cathartes aura*) and American kestrel (*Falco sparverius*). As noted previously, northern flicker, song sparrow, and white-crowned sparrow have the potential to occur on-site. Northern flicker is a MIS associated with snag and down log (cavity-nesters) and mixed conifer habitat types in the SEIS of the SNFPA. The song sparrow and white-crowned sparrow are MIS associated with meadow and riparian (wetlands) habitat types. All bird species observed or expected to occur within the study area are included in Appendix D, Floral and Faunal Compendium. Sensitive bird species are discussed further in Section 3.6.2(g), Sensitive Biological Resources, below.

(5) Mammals

Due to the Ski Back Trail area's small size and proximity to development and human disturbance, mammal diversity is expected to be low, especially for large mammal species. Most mammals are either nocturnal, reclusive, or both, and are more often detected by their sign, denning sites, etc., or through live-trapping (rodents).

One American marten (*Martes americana*) and a northern flying squirrel (*Glaucomys sabrinus*) were detected within the study area during surveys conducted by the Forest Service in spring 2005 (U.S. Department of Agriculture, Forest Service 2005). The American marten is a Forest Service, Inyo National Forest, sensitive species. The Northern flying squirrel is not a Forest Service designated sensitive species. Mammal species expected to occur on-site primarily include those species that may be more tolerant of living in close proximity to urban environments including the California ground squirrel (*Spermophilus beecheyi*), lodgepole chipmunk (*Tamias speciosus*), mountain pocket gopher (*Thomomys monticola*), deer mouse (*Peromyscus maniculatus*), long-tailed weasel (*Mustela frenata*), Belding ground squirrel (*Spermophilus beldingi*), Sierra Nevada golden-mantled ground squirrel (*Spermophilus lateralis*), raccoon (*Procyon lotor*), coyote (*Canus latrans*), and black bear (*Ursus americanus*). Northern flying squirrel is a MIS associate with snag and down log (cavity nesters) and mature conifer habitat types. Black bear is a MIS associated with meadow, hardwoods, mature conifer, multi-habitat, and mixed conifer habitat types. Mule deer (*Odocoileus hemionus*) has a low potential to occur on-site and this is a MIS associated with multi-habitat and opening and early seral stages typed habitats. All mammal species observed or expected to occur within the study area are included in Appendix D, Floral and Faunal Compendium. Sensitive mammal species are discussed further in Section 3.6.2(g), Sensitive Biological Resources, below.

Although not considered a sensitive wildlife species, mule deer are considered an important harvest species by the CDFG. The study area is located within the Eastern Sierra Nevada Deer Assessment Unit. Two mule deer herds make use of locations within the vicinity of the study area during their annual migrations including the Round Valley Herd and the Casa Diablo Herd. These herds are migratory. Deer herd management plans were prepared by the CDFG in the mid 1980's for both herds. Management objectives include enhancing important winter, holding, migratory, and fawning habitats. Migratory movements occur over a six to ten week period. Deer begin their spring migration in April or May after occupying holding areas to feed and regain strength lost over the winter. When the snow recedes and forage is available at their higher elevation summer ranges (usually mid-June), they migrate to these areas. Additional details regarding mule deer migration in the vicinity of the study area is provided in the following Section 3.6.2(e), Wildlife Movement.

e. Wildlife Movement

Wildlife movement activities usually fall into one of three movement categories: (1) dispersal (e.g., juvenile animals from natal areas, individuals extending range distributions); (2) seasonal migration; and (3) movements related to home range activities (foraging for food or water, defending territories, searching for mates, breeding areas, or cover). Each type of movement has the possibility of occurring at varying spatial scales. These scales range from non-migratory, daily, local movements to seasonal migrations and dispersal events at the regional and landscape scale.

A number of terms have been used in various wildlife movement studies, such as "travel route," "wildlife corridor," and "wildlife crossing" to refer to areas in which wildlife move from one area to another. To clarify the meaning of these terms and facilitate the discussion on wildlife movement in this section, these terms are defined as follows:

Travel route: A landscape feature (such as a ridge line, drainage, canyon, or riparian strip) within a larger natural habitat area that is used frequently by animals to facilitate movement and provide access to necessary resources (e.g., water, food, cover, den sites). The travel route is generally preferred because it provides the least amount of topographic resistance in moving from one area to another; it contains adequate food, water, and/or cover while moving between habitat areas; and provides a relative direct link between target habitat areas.

Wildlife corridor: A piece of habitat that connects two or more habitat patches that would otherwise be fragmented or isolated from one another. Wildlife corridors are usually bounded by urban land areas or other areas unsuitable for wildlife. The corridor generally contains suitable cover, food, and/or water to support species and facilitate movement while in the corridor. Larger, landscape-scale corridors (often referred to as "habitat or landscape linkages") can provide both transitory and resident habitat for a variety of species.

Wildlife crossing: A small, narrow area, relatively short in length and generally constricted in nature, that allows wildlife to pass under or through an obstacle or barrier that otherwise hinders or prevents movement. Crossings typically are man-made and include culverts, underpasses, drainage pipes, and tunnels to provide access across or under roads, highways, pipelines, or other physical obstacles. These are often "choke points" along a movement corridor (Noss 1983, Fahrig and Merriam 1985, Simberloff and Cox 1987, Harris and Gallagher 1989).

The Town, which occurs to the east of the study area, represents the most densely developed area within the vicinity of the study area. Numerous structures associated with the ski area also occur throughout the study area. In addition, the study area is heavily utilized for

recreational purposes throughout the year. Open space, owned by the U.S. Forest Service, occurs to the north, south, and west of the study area.

Local scale wildlife movement likely occurs within the study area as well as its surrounding vicinity. The study area contains habitat that supports a variety of common species of invertebrates, amphibians, reptiles, birds, and mammals. The home range and average dispersal distance of many of these species may be entirely contained within the study area and immediate vicinity. Numerous populations of insects, amphibians, reptiles, small mammals, and a few bird species may find all of their resource requirements within the study area and its immediate vicinity. Riparian areas and other natural landscape features located in and around the study area can serve as natural guides for wildlife along travel routes. Local movement by small and medium-sized mammals such as California ground squirrel (*Spermophilus beecheyi*), mountain pocket gopher, deer mouse, long-tailed weasel (*Mustela frenata*), American marten, and gray fox (*Urocyon cinereoargenteus*) may occur within the study area; the American marten was detected within the study area in 2005 (U.S. Department of Agriculture, Forest Service, 2005). Occasionally, individuals expanding their home range or dispersing from their natal range will attempt to disperse from the study area.

While it is unlikely the study area serves as a major component of a landscape scale linkage, it is possible for wayward, migratory individuals to utilize the study area. The Round Valley and Casa Diablo Mule Deer Herds are known to use areas north and south of the study area for portions of their migrations from winter ranges in the lowlands to summer ranges within the higher elevations of the Sierra Nevada. Predators, such as the mountain lion (*Puma concolor*), have also been known to make migrations that directly correlate temporally and spatially with those of mule deer in the region. Additional predatory and scavenger species, such as the black bear, wolverine (*Gulo gulo*), coyote (*Canis latrans*), and countless additional species likely benefit from mule deer migrations, as well. In Canada, wolverines have been known to trail herds of large ungulates in order to scavenge scraps of their carcasses that were taken by other predators.

Mule deer (Odocoileus hemionus)

Deer have been able to adapt to a wide range of habitats throughout North America. Mule deer are browsers, thus a majority of their diet is composed of leaves and twigs of woody shrubs. Since shrubs mostly occur in early succession habitats, disturbance is a key component to maintaining high quality deer habitat. In addition to browse, mule deer supplement their diet with forbs such as poppies (*Eschscholzia* spp.) and lupines (*Lupinus* spp.), which supply concentrations of valuable nutrients that are lacking from their normal browse.

Two deer herds make use of locations within the vicinity of the study area during their annual migrations. The Mammoth Lakes Basin, which is located south-southeast of the study

area, is utilized as a migratory corridor and holding area by the Round Valley Herd. The Casa Diablo Herd utilizes an area approximately eight to nine miles to the northwest of the study area and six to seven miles north of the Town.

Approximately 75 percent of the Round Valley Herd leaves their wintering grounds in the Round Valley, which is located approximately 20 miles southeast of the study area, to migrate in a northerly direction along the toe of the Eastern Sierra to the Mammoth Lakes Basin. The herd utilizes the Mammoth Lakes Basin as a holding area for approximately eight weeks while they forage and wait for winter snows to recede from the mountain passes. Following the snowmelt, some deer leave the approximately 11,300-acre holding area to traverse over the Mammoth Crest via McGee, Hopkins, Solitude, Mammoth, and San Joaquin passes to their preferred summering grounds in the Sierra Nevada between the Sierra Nevada's western slope and the San Joaquin Ridge. Those deer that do not continue their migration beyond the Mammoth Lakes Basin remain there until the herd makes its way back to the Round Valley in the fall months.

The *General Plan Update* identifies three distinct migration corridors for the Round Valley Herd, which occur within the vicinity of the study area:

1. The Solitude Pass/Duck Pond herd segment leaves the holding area and migrates to summer ranges through the Solitude Pass located in the Sherwin Range, and Duck Pass located approximately three miles south of the holding area.

2. The Mammoth Pass herd segment of the Round Valley Herd migrates along a route that heads westerly below Mammoth Rock, passes through the Mammoth Lakes Basin, and then crosses over Mammoth Pass into the Middle Fork of the San Joaquin River Drainage.

3. The San Joaquin herd segment migrates across the Sierra crest over San Joaquin Ridge between Minaret Summit and Deadman Pass from the western portion of the holding area.

A fairly consistent timeline of movement is generally observed for the Round Valley Herd's annual migration. Interannual temporal variability does occur, however, with respect to migrations. Variability in migration timing is generally dependent on environmental factors that affect food and habitat requirements. The Round Valley Herd begins to appear in the Mammoth Lakes Basin during the spring. Migrants typically occupy the basin from April through June. Around mid-June most deer that are going to continue their journey to summering grounds in the higher elevations of the Sierra have left the Mammoth Lakes Basin. Not all deer continue on to the higher elevations. Some choose to spend their summers in and around the holding area. The Round Valley Herd will begin to return to its wintering grounds in the fall months as temperatures drop and snow begins to accumulate.

The Mammoth Lakes Basin holding area represents the point where migration associated areas are most closely located to the study area. Deer from the Round Valley Herd generally occupy an area south of Interstate 395 and between Tobacco Flats to the east and Mammoth and Sherwin Creeks to the west. This area is known as the Sherwin Holding Area. The westernmost portion of the Sherwin holding area nearly abuts the study area in the Twin Lakes region, which is located near the study area's southeast corner.

Although the study area is located adjacent to a well-traveled road (Minaret Road) and the eastern portion of the study area is surrounded by development within the Town, the close proximity of these two areas presents a low potential for members of the Round Valley Herd to occur within the study area during the spring through fall months. Within the vicinity of the Town, mule deer are more likely to be found near the southeast corner around the Mammoth Creek/Twin Lakes region; however, it is possible that they do occur within the study area as well.

Mountain lion (*Puma concolor*)

Mountain lions were once the broadest ranging terrestrial mammals in the western hemisphere ranging from British Columbia to southern Chile and Argentina, and from coast to coast in North America. As time has passed, land use changes, extermination campaigns, and hunting pressure have diminished the geographic range of the mountain lion to rocky, mountainous, and relatively unpopulated areas.

A wide range of habitats, including swamps, riparian woodlands, and open space with ample brush and/or woodland cover, are utilized by mountain lions throughout their range. This highly adaptable species is found in North America between sea level and approximately 11,500 feet above MSL.

Mule deer make up the bulk of the mountain lion's diet throughout North America. Some experts have observed mule deer constituting over 90 percent of a mountain lion's diet. This rate has been known to vary between seasons. Small to medium sized mammals, birds, and reptiles are also opportunistically consumed by mountain lions.

Home range figures are highly variable throughout the mountain lion's range with males typically utilizing larger home ranges than females. Home ranges between 164 square miles and 315 square miles have been documented for mountain lions in the Round Valley area of California. Mountain lions are generally solitary in nature, but home ranges have been known to overlap.

An interesting connection between mountain lion home range size and behavior of their prey has been observed. Mountain lions from the Round Valley Herd that primarily preyed on migratory mule deer had home ranges that rarely changed over time. Contrastingly, mountain lions that primarily preyed on non-migratory mule deer tended to make seasonal migrations that corresponded to mule deer movements, both spatially and temporally. Home ranges for mountain lions that were contiguous throughout the year were larger than those with distinct summer and winter ranges.

The Round Valley mountain lion population exhibited two different modes of migration. Some lions tended to move rather slowly along the deer herd's migratory route, but did not show signs of having a discontinuous home range. Other lions moved more rapidly and had distinct summer and winter ranges that mirrored those of the Round Valley Herd.

Mountain lions that followed the migration of the Round Valley Herd to the Sherwin Holding Area have a potential to occur within the study area. Documented transient behavior in numerous mountain lion populations describe the possibility of mountain lions making the change from transient behavior to territorial multiple times throughout its life. Transient behavior usually occurs because of one or a combination of four potential conditions: (1) population isolation; (2) an extremely low, patchy, or migratory food base; (3) an extremely diffuse mountain lion population; and (4) inability to compete. If transient lions make their way into the Sherwin Holding Area it is possible that they could wander into the study area in search of food, mates, or establishment of a new home range.

f. Critical Habitat

The study area does not fall within the Critical Habitat boundaries as designated by the USFWS for any threatened or endangered plant or wildlife species.

g. Sensitive Biological Resources

Special status or sensitive biological resources include declining habitats as well as species that have been afforded special recognition by Federal, State, or local conservation agencies and organizations as endangered, threatened, rare, or otherwise sensitive, principally due to the species' declining or limited range, usually resulting from habitat loss. Watch lists of such resources are maintained by the CDFG, the USFWS, and groups such as the CNPS.

(1) Sensitive Resource Classification

(a) Federal Protection and Classifications

A Federally endangered species is a species of invertebrate, plant, or wildlife formally listed by the USFWS under the ESA as facing extinction throughout all or a significant portion of its geographic range. A Federally threatened species is one formally listed by the USFWS as likely to become endangered within the foreseeable future throughout all or a significant portion of its range. "Take" of a federally endangered or threatened species or, in some cases, its habitat is prohibited by Federal law without a special permit. The term "take," under the ESA, means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in such conduct. Harm is defined by the USFWS to encompass "an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering."

A Federal species of concern is an informal term that refers to a species that the USFWS believes might be declining and in need of concentrated conservation actions to prevent decline. These species receive no legal protection and the use of the term does not mean that they will eventually be proposed for listing. The Federal species of concern status has not been maintained on a Statewide basis, so this designation has been removed from CDFG's "Special Animals" list. Some USFWS field offices (e.g., Sacramento) continue to maintain lists of Federal species of concern.

The NFMA of 1976 and its implementing regulations require the Forest Service to ensure a diversity of animal and plant communities and maintain viable populations of existing native species as part of their multiple use mandate. The Forest Service sensitive species program is a proactive approach to conserving species, to ensure the continued existence of viable, well-distributed populations, and to maintain biodiversity of National Forest Service lands (Forest Service 2004).

The Forest Service defines sensitive species as those animal and plant species identified by a regional forester for which population viability is a concern. This may be a result of significant current or predicted downward trends in habitat that would reduce a species' existing distribution or significant current or predicted downward trends in density or population numbers (CNDDB 2007, Special Animals List). The Forest Service, Regional Forester's, Pacific Southwest Region, has published a list of sensitive animal and plant species that is organized according to the forest in which the species occurs.

(b) State of California Protection and Classifications

The State of California considers an endangered species one whose prospects of survival and reproduction are in immediate jeopardy; a threatened species is one present in such small numbers throughout its range that it is considered likely to become an endangered species in the near future in the absence of special protection or management; and a rare species is one present in such small numbers throughout its range that it may become endangered if its present environment worsens. The designation "rare species" applies only to California native plants. State threatened and endangered species include both plants and wildlife but do not include invertebrates and are legally protected against "take" as this term is defined in the California Endangered Species Act (California Fish and Game Code, Section 2050 et seq.).

Species of special concern is an informal designation used by the CDFG for some declining wildlife species that are not officially listed as endangered, threatened, or rare. This designation does not provide legal protection, but signifies that these species are recognized as vulnerable by CDFG.

Species that are California fully protected include those protected by special legislation for various reasons, such as the white-tailed kite (*Elanus leucurus*).

(c) California Native Plant Society

The CNPS is a statewide resource conservation organization that has developed an inventory of California's special status plant species (CNPS 2001). This inventory is a summary of information on the distribution, rarity, and endangerment of California's vascular plants. This rare plant inventory consists of four lists. CNPS List 1A plant species are presumed extinct in California because they have not been seen in the wild for many years. List 1B plants are considered as rare, threatened, or endangered throughout their range. List 2 plant species are considered rare, threatened, or endangered in California, but more common in other states. Plant species on Lists 1A, 1B, and 2 generally meet the CDFG criteria for endangered, threatened, or rare listing. Plant species for which CNPS requires additional information in order to properly evaluate their status are included on List 3. List 4 plant species are those of limited distribution in California whose susceptibility to threat is considered low at this time, or for which more survey data must be acquired within the State to adequately assess whether the species is rare in California.

The CNPS recently updated their Lists to include Threat Codes. These codes are shown as a decimal and number code after the List number.

1. Seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat);

2. Fairly endangered in California (20 to 80 percent occurrences threatened); and

3. Not very endangered in California (less than 20 percent of occurrences threatened or no current threats known).

The following sections indicate the habitats, as well as plant and animal species, present or potentially present within the study area that have been afforded special recognition. Sources used to determine the potential occurrence of special status resources in the vicinity of the study area include the CDFG (CDFG 2007), CNPS (CNPS 2007 and 2001), and CNDDB (CNDDB 2007).

(2) Sensitive Plant Communities

The study area does not support any plant communities considered sensitive by the CDFG's CNDDB.

(3) Sensitive Plant Species

For the purposes of this discussion, sensitive plants include those plant species designated by the Regional Forester as such, and are included on the Regional Sensitive Plant List. The Regional Sensitive Plant List includes, but is not limited to, those species listed as rare, threatened, endangered, or proposed by the CDFG or USFWS (particularly Lists 1A, 1B, and 2).

Several species listed by the CNPS, including Forest Service Sensitive and Watch List species, were reported in the CNDDB from the broader general area, such as Inyo and Mono Counties, through not within the project area. Based on additional review of the literature, and based on habitat preferences, known ranges, and the available habitat within the project area, only one of these species was determined to be potentially present in the project area. The Sensitive Plant Species Table in Appendix D presents those species reported in the CNDDB from the broader area.

No plant species listed as sensitive by the Forest Service, nor species listed as threatened, endangered, or proposed by the USFWS, are known to occur within the project area, nor is there potential habitat for any sensitive or federally listed species within the project area.

The Pine City sedum *(Sedum pinetorum)*, a Forest Service Watch List species, could potentially occur within the project area, based on the known range, though the habitat is only marginally suitable. This species' habitat is expected more on rocky ledges and cliffs, which are habitats not present in the project area. No *Sedum pinetorum* species were observed during project surveys.

(4) Sensitive Wildlife Species

Sensitive wildlife species include those species listed as endangered or threatened under FESA or CESA, candidates for listing by USFWS or CDFG, and species of special concern to CDFG. In addition, species considered sensitive by the Forest Service (Inyo National Forest) have also been included and analyzed in this document to provide a comprehensive list of species.

A number of sensitive wildlife species were reported in the CNDDB as occurring in the vicinity of the study area. These species are included in Appendix D, which provides a summary of the sensitive wildlife species potentially occurring within the study area based upon their known geographic ranges, distributions, and preferred habitats.

In addition, several wildlife species are listed as sensitive by the Forest Service (Inyo National Forest). Several of these species may occur within the general bioregional location of the study area and presence of suitable habitat. Some species are not expected to occur within the study area due to limited distributional range and/or lack of suitable habitat. These species are included in Table 29 on page 158.

One American marten was detected within the study area during surveys conducted by the Forest Service in spring 2005 (U.S. Department of Agriculture, Forest Service, 2005). Sensitive wildlife species with a potential to occur within the study area include northern goshawk (*Accipiter gentilis*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter cooperii*), great gray owl (*Strix nebulosa*), Townsend's western big-eared bat (*Corynorhinus townsendii townsendii*), California wolverine (*Gulo gulo*), Pacific fisher (*Martes pennant pacifica*), and Sierra Nevada red fox (*Vulpes vulpes necator*).

3.6.3 ENVIRONMENTAL CONSEQUENCES

a. Methodology

The determination of impacts in this analysis is based on both the features of the Proposed Action and Alternatives and the biological values of the habitat and/or sensitivity of plant and wildlife species to be affected. Much of the information was supplied in digital format and impacts to biological resources were calculated using GIS technology in order to maximize the accuracy of the assessment.

Table 29

Sensitive Wildlife Species

VERTEBRATES							
Scientific Name	**Common Name**	**Federal**	**State**	**Other**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
BIRDS							
Accipitridae	**Hawks, Kites, Harriers, and Eagles**						
Accipiter gentilis	northern goshawk	NONE	CSC	FS: SENSITIVE	Nests within mature or old-growth coniferous forests. Usually nests on north slopes, near water. Typical nest trees include red fir, lodgepole pine, Jeffrey pine, and aspens.	Through U.S. and Canada.	P, F, B
Strigidae	**Owls**						
Strix nebulosa	great gray owl	NONE	SE	FS: SENSITIVE	Nests in mixed conifer or red fir forests in or on the edge of meadows; requires large diameter snags in a forest with high canopy closure which provides a cool sub-canopy microclimate.	Sierra Nevadas, CA; Alaska, Canada, and northern United States.	P, F
Comments: The CNDDB has a recorded occurrence of the great gray owl in 1975 in Valentine Camp which is approximately one mile south of the study area; one owl was observed, and records indicate this was most likely a breeding area.							
MAMMALS							
Corynorhinus (Plecotus) townsendii townsendii	Townsend's western big-eared bat	NONE	CSC	FS: SENSITIVE	Found in all but sub-alpine and alpine habitats. Commonly occurs in mesic habitats characterized by coniferous and deciduous forests, but occupies a broad range of habitats. Maternity and hibernation colonies typically are in caves and mine tunnels.	Throughout CA.	P

Table 29 (Continued)

Sensitive Wildlife Species

VERTEBRATES							
Scientific Name	**Common Name**	**Federal**	**State**	**Other**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
Mustelidae	**Weasels, Martins, and Allies**						
Gulo gulo	California wolverine	NONE	ST	FS: SENSITIVE	Found mainly in subalpine forest and alpine fellfields within alpine meadows, lodgepole forests, and red fir forests. Dens in caves, rock crevices, under fallen trees or tree roots, and in thickets. Needs water source – can travel long distances.	Sierra Nevadas and northwestern California.	P
Martes americana	American marten	NONE	NONE	FS: SENSITIVE	Dense coniferous forest and lowland forest. May use rocky alpine areas. May occupy holes in dead or live trees or stumps, abandoned squirrel nests, rock piles, or burrows.	Sierra Nevadas, Klamath Ranges and north Coast Ranges.	OBS
Comments: The CNDDB has a recorded occurrence of the American marten in 2002 within the vicinity of the Mammoth Mountain Ski Area main lodge approximately two miles west of the study area. One American marten was detected within the study area during surveys conducted by the USFS in spring 2005 (U.S. Department of Agriculture, Forest Service, 2005).							
Martes pennanti pacifica	Pacific fisher	FC	CSC	FS: SENSITIVE	Intermediate to large-tree stages of coniferous forests and deciduous riparian areas with high percent canopy closure. Use cavities, snags, logs, and rocky areas for cover and dens sites; need large areas of mature, dense forest.	Sierra Nevadas, Klamath Ranges and north Coast Ranges	P
Comments: The CNDDB has a recorded occurrence of the Pacific fisher in the 1970s approximately 3.5 miles northwest of the Town of Mammoth Lakes in the vicinity of the Mammoth Lodge. The Mammoth Lodge is approximately two miles west of the study area.							

Table 29 (Continued)

Sensitive Wildlife Species

VERTEBRATES							
Scientific Name	**Common Name**	**Federal**	**State**	**Other**	**Preferred Habitat**	**Distribution**	**Occurrence On-site**
Canidae	**Foxes, Wolves, & Coyotes**						
Vulpes vulpes necator	Sierra Nevada red fox	NONE	ST	FS: SENSITIVE	Found in a variety of habitats from wet meadows to forested areas; use dense vegetation and rocky areas for cover and den sites. Prefers forests interspersed with meadows or alpine fell-fields.	From Cascades to Sierra Nevada.	P

Key to Occurrence Codes

NE Not expected
P Potential
OBS Observed
F Foraging
B Breeding

Key to Species Listing status Codes

FE *Federally Listed as Endangered*
FT *Federally Listed as Threatened*
FPE *Federally Proposed as Endangered*
FPT *Federally Proposed as Threatened*
FPD *Federally Proposed for Delisting*
FC *Federal Candidate Species*
SE *State Listed as Endangered*
ST *State Listed as Threatened*
SCE *State Candidate for Endangered*
SCT *State Candidate for Threatened*
SFP *State Fully Protected*
CSC *California Special Concern Species*

Source: PCR Services Corporation, 2007.

The biological values of resources within, adjacent to, and outside the area to be affected by the Proposed Action and Alternatives were determined by consideration of several factors. These included the overall size of habitats to be affected, the current level of disturbance of the habitats on the site, the site's surrounding environment and regional context, the on-site biological diversity and abundance, the presence of sensitive and special-status plant and wildlife species, the site's importance to regional populations of these species, and the degree to which on-site habitats are limited or restricted in distribution on a regional basis and, therefore, are considered sensitive in themselves. Whereas this assessment is comprehensive, the focus is on sensitive plant communities/habitats, resources that play an important role in the regional biological systems, and special-status species.

b. Environmental Consequences of the Proposed Action

(1) Construction Impacts

(a) Sensitive Plant Species

Many of the sensitive plant species mentioned in Section 3.6.2(g)(3), Sensitive Plant Species, of this section may occur within the region but are not expected to occur within the study area due to the lack of suitable habitat or due to the fact that they were not observed during botanical surveys conducted by the Forest Service during their blooming period. Species not expected to occur within the study area include Bolander's brachia, Blandow's bog-moss, three-ranked hump-moss, broad-nerved hump-moss, hydrotheria lichen, upswept moonwort, scalloped moonwort, slender moonwort, common moonwort, mingan moonwort, Gilman's goldenbush, Hall's fleabane, Kern River daisy, lone fleabane, short-leaved hulsea, pygmy hulsea, Mono ragwort, Tulare cryptantha, bristlecone cryptantha, Bodie Hills rock cress, Pinzl's rock cress, Shockley's rock cress, Jaeger's caulostramina, Lake Tahoe draba, hoary draba, Sweetwater Mountains draba, spear-fruited draba, White Mountains draba, subalpine draba, Mt. Whitney draba, William's combleaf, alpine jewel-flower, Masonic Mountain jewelflower, Pine City sedum, inflated milk-vetch, Long Valley milk-vetch, Lemmon's milk-vetch, Kern milk-vetch, Mono milk-vetch, Raven's milk-vetch, woolly-leaved milk-vetch, Mono Lake lupine, slender lupine, Hockett Meadows lupine, Father Crowley's lupine, DeDecker's clover, Inyo phacelia, Mono County phacelia, Death Valley round-leaved phacelia, Nine-Mile Canyon phacelia, sweet-smelling monardella, Ramshaw Meadows abronia, Coville's dwarf abronia, subalpine fireweed, Mason's sky pilot, July gold, Olancha Peak buckwheat, White Mountains horkelia, marble rockmat, Morefield's cinquefoil, short-fruited willow, Siskiyou indian paintbrush, Kern's Plateau bird's-beak, grey-leaved violet, Tioga sedge, seep kobresia, Inyo County star-tulip, pine fritillary, Scribner's wheat grass, and Robbins' pondweed. As such, these species would not be adversely affected and is consistent with findings from the MIS and BE documents. Furthermore, a mitigation measure has been prescribed below to ensure that non-native, noxious weed plant species would be controlled and minimized during ground disturbing activities.

(b) Sensitive Wildlife Species

Several of the sensitive wildlife species mentioned in Section 3.6.2(g)(4), Sensitive Wildlife Species, of this section may occur within the region but are not expected to occur within the study area due to the lack of suitable habitat. Those species not expected to occur due to the lack of suitable habitat include Owens Valley springsnail, Wong's springsnail, Paiute cutthroat trout, Volcano Creek golden trout, Owens sucker, steelhead – Klamath Mountain Province ESU, Chinook salmon – spring run – Klamath-Trinity population, Chinook salmon – central valley fall/late fall run, Inyo Mountains salamander, Kern Plateau salamander, Yosemite toad, mountain yellow-legged frog, northern leopard frog, Panamint alligator lizard, golden eagle, Swainson's hawk, northern harrier, bald eagle, American peregrine falcon, prairie falcon, greater sage-grouse, western yellow-billed cuckoo, yellow warbler, California spotted owl, willow flycatcher, Mount Lyell shrew, pallid bat, western red bat, western white-tailed jackrabbit, Sierra Nevada mountain beaver, American badger, and Sierra bighorn sheep. As such, these species would not be adversely affected.

Several sensitive wildlife species (detailed by taxonomic group below) have a potential to occur within the study area, as previously mentioned in Section 3.6.2(g)(4), Sensitive Wildlife Species. Long- and short-term adverse effects may occur as a result of construction activities and conversion of the study area to a ski trail.

No sensitive fish, amphibian, or reptiles have a potential to occur within the study area.

Several sensitive bird species have a potential for occurrence within the study area including northern goshawk, sharp-shinned hawk, Cooper's hawk, and great gray owl. All of these species, with the exception of the great gray owl, are not protected by Federal or State listings as threatened or endangered. Project implementation would not threaten the regional populations; therefore, removal of their habitat is not expected to adversely affect regional populations of these species.

The great gray owl is a State-listed endangered species (and Forest Service, Inyo National Forest, sensitive species) that is protected during nesting activities. This species has the potential to forage within the study area; however, it is not expected to utilize the study area for nesting activities since they nest in coniferous forests near the edge of meadows (no meadows are present within the study area). Project implementation would not threaten the regional population; therefore, removal of its foraging habitat would not adversely affect regional populations of this species.

The American marten was detected within the study area during meso-carnivore surveys conducted by the Forest Service in spring 2005 (U.S. Department of Agriculture, Forest Service,

2005). Specifically, according to the 1996 Ecology of American Martens on the Inyo National Forest and the 2004 Ecology of American Martens on the Mammoth Mountain Ski Area, Inyo National Forest, California, the average range of the American Marten is approximately 1,962 and 400 acres, respectively, (Kucera 1996, Kucera 2004). Given the 6.16 acre total impacted area of the proposed Ski Back Trail, impact to the American Marten would be less than significant as approximately 0.3 to 1.5 percent of American Marten habitat would be impacted, respectively. Sensitive mammal species potentially occurring within the study area include Townsend's western big-eared bat, California wolverine, Pacific fisher, and Sierra Nevada red fox. American marten, Townsend's western big-eared bat, and Pacific fisher are not protected by Federal or State listings as threatened or endangered, and loss of individuals would not threaten the regional populations; therefore, removal of their habitat is not expected to adversely affect regional populations of these species.

The California wolverine and Sierra Nevada red fox are State-listed threatened species (and Forest Service, Inyo National Forest, sensitive species). The California wolverine is found mainly in subalpine forest and alpine fellfields within alpine meadows, lodgepole forests, and red fir forest. This species dens in caves, rock crevices, under fallen trees or tree roots, and in thickets. The Sierra Nevada red fox is found in a variety of habitats from wet meadows to forested areas, and it uses dense vegetation and rocky areas for cover and den sites. This species prefers forests interspersed with meadows or alpine fell-fields. Although these species have the potential to occur within the study area, that potential is low due to the proximity of development, the secretive nature of the species, and the fact that habitat within the study area is not considered its preferred habitat type. As such, the Proposed Action is not expected to adversely affect regional populations of this species.

(c) Wildlife Movement

The eastern portion of the Ski Back Trail area is surrounded by development and the western portion runs adjacent to Minaret Road; therefore, the study area does not provide an effective route for migratory species including the mule deer. As such, development of the Proposed Action would not have a significant adverse effect on any known or suspected wildlife movement corridors.

(d) Critical Habitat

As discussed above, the Ski Back Trail area does not fall within the Critical Habitat boundaries as designated by the USFWS for any threatened or endangered plant or wildlife species. Therefore, the Proposed Actions would not have a significant adverse effect to critical habitat during construction activities.

(e) Nesting Birds

The study area has the potential to support both raptor and songbird nests due to the presence of trees, shrubs, and ground cover. Nesting activity typically occurs from mid-February to mid-August. Disturbing or destroying active nests is a violation of the Migratory Bird Treaty Act. In addition, nests and eggs are protected under Fish and Game Code Section 3503. The removal of vegetation during the breeding season could result in an adverse effect as a result of Proposed Action. Mitigation Measure 3.6-1 is recommended in order to ensure there would be no adverse effect to nesting birds with implementation of the Proposed Action.

(f) Management Indicator Species

As described above, the majority of the Management Indicator Species are not anticipated to occur in the study are and therefore, there would be no adverse effect to these species; including the pine marten, fisher, bald eagle, golden eagle, prairie falcon, tule elk, peregrine falcon, blue grouse, sage grouse, spotted owl, riparian area-dependent species, and the snag-dependent species. In addition, while the northern goshawk, great gray owl, wolverine, and the Sierra Nevada red fox have a potential occurrence within the study area, implementation of the Proposed Action is not expected to adversely affect regional populations of these species.

(2) Operational Impacts

The study area is not expected to support any sensitive plant species, is not considered a wildlife movement corridor, and is not within critical habitat for any listed plant or wildlife species. The Proposed Action is not expected to have any adverse impacts to regional populations of sensitive wildlife species and findings are consistent with those presented in the MIS and BE documents. As such, no adverse effects to Management Indicator Species would occur. In addition, temporary and permanent erosion control would be installed including revegetation of the trail surface with native grasses and a mix of native shrubs and wildflowers in the disturbed areas. This will control the colonization of disturbed ground by non-native, weedy, plant species. As such, implementation of the Proposed Action would not result in operational impacts to these biological resources. Mitigation measures to reduce potential impacts to nesting birds and to ensure that non-native, noxious weed plant species would be controlled and minimized as a result of the Proposed Action are discussed as follows.

(3) Mitigation Measures

Mitigation Measure 3.6-1: The project applicant shall schedule construction, grading, and vegetation removal activities outside the nesting season (nesting season is typically February 15–August 31) to the extent feasible to avoid the taking of

migratory bird species. If initial vegetation removal occurs during the nesting season, all suitable habitat shall be thoroughly surveyed for the presence of nesting birds by a qualified biologist before commencement of vegetation clearing. If any active nests are detected, a buffer of at least 100 feet (300 feet for raptors) shall be delineated, flagged, and avoided until the nesting cycle is complete as determined by the biological monitor or until construction, grading, and vegetation removal activities are completed (whichever comes first). The results of the monitoring shall be provided in writing by the biological monitor to the CDFG subsequent to the monitoring activities.

Mitigation Measure 3.6-2: The project applicant shall implement the following measures during ground disturbing activities:

1. All equipment used in ground disturbing activities will be cleaned free of soil and plant parts prior to beginning work on the project to prevent introduction or translocation of weed species. Ensure equipment is free of mud and plant parts by completing a thorough visual inspection of tires, tracks, and underbody.
2. Minimize the amount of ground disturbance through careful equipment operation.
3. Monitor project area for new noxious weed species for up to three years following project implementation, and remove any newly established noxious weed populations. Consult with the Forest Service botany personnel as needed to identify weed species
4. Revegetate project area with native species. Consult with the Forest Service botany staff on appropriate species mix.

c. Environmental Consequences of Alternative 1 – Original Alignment Proposal

(1) Construction Impacts

(a) Plant Species

Development of Alternative 1 would require grading a total of approximately 8.3 acres of land and would require substantially more cut and fill along the proposed Ski Back Trail alignment, including the export of 23,000 cubic yards of cut and the import of 2,000 cubic yards of rock stack. Alternative 1 construction would also require the six retaining walls and four temporary access corridors and would result in grading and slope retention techniques. No sensitive plant species are expected to occur within the Original Proposed Alignment area due to a lack of suitable habitat or because they were not detected during botanical surveys conducted by the USFS during their blooming period. As such, implementation of Alternative 1 would

result in construction impacts that would not adversely affect regional populations of sensitive plant species.

(b) Sensitive Wildlife Species

As previously described, the American marten was observed within the Original Proposed Alignment area. In addition, the following sensitive wildlife species have the potential to occur within the Original Proposed Alignment area: northern goshawk, sharp-shinned hawk, Cooper's hawk, great gray owl, Townsend's western big-eared bat, California wolverine, Pacific fisher, and Sierra Nevada red fox. The northern goshawk, sharp-shinned hawk, Cooper's hawk, Townsend's western big-eared bat, American marten, and Pacific fisher are not listed as threatened or endangered; the great gray owl is protected during nesting (but not expected to nest within the study area); and the California wolverine and Sierra Nevada red fox have a very low potential to occur within the study area. As such, implementation of Alternative 1 would result in construction impacts that do not adversely affect regional populations of sensitive wildlife species.

(c) Wildlife Movement

Alternative 1's project boundaries are not within any known wildlife movement corridors. In addition, the eastern end of the project boundary is almost completely surrounded by development. As such, implementation of Alternative 1 would not have an adverse effect on any known or suspected wildlife movement corridors.

(d) Critical Habitat

As discussed above, Alternative 1's project boundaries do not fall within the Critical Habitat boundaries as designated by the USFWS for any threatened or endangered plant or wildlife species. Therefore, implementation of Alternative 1 would not result in any adverse impacts to critical habitat.

(e) Nesting Birds

The habitat within Alternative 1's project boundaries has the potential to support both raptor and songbird nests due to the presence of trees, shrubs, and ground cover. The removal of vegetation during the breeding season (mid-February to mid-August) is considered a potentially adverse impact of the Proposed Action. Mitigation Measure 3.6-1 is recommended in order to ensure there are no adverse effects to nesting birds with implementation of Alternative 1.

(f) Management Indicator Species

As described above, the majority of the Management Indicator Species are not anticipated to occur in the study area and therefore, anticipated to occur within the boundaries of Alternative 1. As such, there would be no adverse effect to these species including the pine marten, fisher, bald eagle, golden eagle, prairie falcon, tule elk, peregrine falcon, blue grouse, sage grouse, spotted owl, riparian area-dependent species, and the snag-dependent species. In addition, while the northern goshawk, great gray owl, wolverine, and the Sierra Nevada red fox have a potential for occurrence within the study area, implementation of Alternative 1 is not expected to adversely affect regional populations of these species.

(2) Operational Impacts

Indirect impacts are considered to be those that involve the effects of increases in ambient levels of sensory stimuli (e.g., noise, light), unnatural predators (e.g., domestic cats and other non-native animals), and competitors (e.g., exotic plants, non-native animals). Indirect impacts may be associated with the construction and/or eventual habitation/operation of a project; therefore, these impacts may be both short-term and long-term in their duration. As such, there would also not be any adverse effects to Management Indicator Species. These impacts are commonly referred to as "edge effects" and may result in changes in the behavioral patterns of wildlife and reduced wildlife diversity and abundance in habitats adjacent to study area. In certain situations, indirect impacts may adversely affect sensitive wildlife species, wildlife movement, or nesting birds. Furthermore, native vegetation within the project area may also be indirectly and adversely impacted.

Because the study area is surrounded by development along its eastern end and located adjacent to Minaret Road throughout its entire length, indirect operational impacts are not expected to adversely impact sensitive wildlife species, wildlife movement, or nesting birds within the study area. In addition, temporary and permanent erosion control would be installed including revegetation of the trail surface with native grasses and a mix of native shrubs and wildflowers in the disturbed areas. This will control the colonization of disturbed ground by non-native, weedy, plant species. As such, implementation of Alternative 1 would not result in operational impacts to biological resources.

d. Environmental Consequences of Alternative 2 – Transit Emphasis Alternative

(1) Construction Impacts

Under Alternative 2, the Ski Back Trail area would not be constructed. No grading or excavation activities that would affect plant species, sensitive wildlife species, wildlife

movement, critical habitat, or Management Indicator Species, located in the Ski Back Trail area would be impacted. As such, implementation of Alternative 2 would not adversely affect biological resources in the area.

(2) Operational Impacts

Alternative 2 would have an emphasis on transit provisions and would provide four additional buses along existing roadways that have already been developed. Implementation of Alternative 2 would not adversely affect biological resources in the area.

e. Environmental Consequences of Alternative 3 – No Action Alternative

(1) Construction Impacts

Under Alternative 3, the Ski Back Trail would not be constructed, other improvements to the area would not be implemented, and all existing conditions would remain unchanged. As such, implementation of Alternative 3 would not adversely affect biological resources in the area.

(2) Operational Impacts

Alternative 3 would result in the continued operation of the existing public transit system, Village Gondola, parking facilities, and mountain operations. As such, implementation of Alternative 3 would not adversely affect biological resources in the area.

f. Conformity with Applicable Plans and Policies

While implementation of the Proposed Action and Alternative 1 would result in grading of approximately 6.16 or 8.3 acres of land, respectively, within the Forest Service area, implementation is not expected to have an adverse impact on any biological resources given the proposed mitigation measures. As such, the Proposed Action and Alternative 1 would be consistent with the Federal Endangered Species Act, Forest Service plans and policies, CESA, CDFG, CNPS, and the *General Plan Update*.

Alternative 2 and Alternative 3 would not result in any construction activities. In addition, Alternative 2 would add four additional buses to an already developed bus route and Alternative 3 would not result in any operational impacts to biological resources. Therefore, both Alternative 2 and Alternative 3 would also be consistent with the Federal Endangered Species Act, Forest Service plans and policies, CESA, CDFG, CNPS, and the *General Plan Update*.

3.0 ENVIRONMENTAL CONSEQUENCES
3.7 CULTURAL RESOURCES

INTRODUCTION

This section discusses cultural and paleontological resources within the Proposed Action's Area of Potential Effect (APE), addressing existing conditions, applicable regulations, and the potential for the Proposed Action to have an adverse effect on cultural resources. The APE for purposes of analyzing potential impacts on cultural and paleontological resources consists of the proposed Ski Back Trail alignment. This discussion is based on a Heritage Resources records review and field survey conducted for the proposed Ski Back Trail, on June 27, 2005 by the Inyo National Forest. A copy of the letter confirming the Inyo National Forest records review and field survey is included in Appendix E of this Final EA.

Cultural resources include prehistoric resources, Native American resources, and historical-period resources. Prehistoric resources are physical properties resulting from human activities that predate written records and are generally identified as isolated finds or sites. Prehistoric resources can include village sites, temporary camps, lithic (stone tool) scatters, roasting pits/hearths, milling features, rock features, and burials.

Native American resources are sites, areas, and materials important to Native Americans for religious, spiritual, or traditional reasons. These resources may include villages, burials, rock art, rock features, or spring locations. Fundamental to Native American religions is the belief in the sacred character of physical places, such as mountain peaks, springs, or burials. Traditional rituals may also prescribe the use of particular native plants, animals, or minerals that may be found in certain locations. Developments that may affect sacred areas, their accessibility, or the availability of materials used in traditional practices are considered when identifying these resources.

Historic resources consist of physical properties, structures, or built items resulting from human activities after the time of written records. In North America, the historical-period is generally considered to be equivalent to the time period since European contact, beginning in a.d. 1492. Historic resources can include archaeological remains and architectural structures. Historic archaeological site types include town sites, homesteads, agricultural or ranching features, mining-related features, refuse concentrations, and features or artifacts associated with early military use of the land. Historic architectural resources can include houses, cabins, barns, lighthouses, early military structures, and local structures, such as missions, post offices, and meeting halls.

Paleontology is a branch of geology that studies the life forms of the past, especially prehistoric life forms, through the study of plant and animal fossils. Paleontological resources represent a limited, non-renewable, and impact-sensitive scientific and educational resource. As defined in this section, paleontological resources are the fossilized remains or traces of multi-cellular invertebrate and vertebrate animals and multi-cellular plants, including their imprints from a previous geologic period. Fossil remains such as bones, teeth, shells, and leaves are found in the geologic deposits (rock formations) where they were originally buried. Paleontological resources include not only the actual fossil remains, but also the collecting localities, and the geologic formations containing those localities.

The Heritage Resources records review and field survey conducted for the proposed Ski Back Trail determined that no historical structures would be impacted by the proposed actions. Therefore, the following sections cover the regulatory framework, methods, and findings pertaining to archaeological and Native American cultural resources.

3.7.1 REGULATORY FRAMEWORK

Numerous laws and regulations require Federal, State, and local agencies to consider the effects a project may have on cultural resources. These laws and regulations stipulate a process for compliance, define the responsibilities of the various agencies proposing the action, and prescribe the relationship among other involved agencies (e.g., State Historic Preservation Office and the Advisory Council on Historic Preservation). The National Historic Preservation Act (NHPA) of 1966, as amended; and the California Register of Historical Resources, Public Resources Code (PRC) 5024, are the primary Federal and State laws governing and affecting preservation of cultural resources of national, State, regional, and local significance. The applicable regulations are discussed below.

a. Federal Level

(1) National Register of Historic Places

First authorized by the Historic Sites Act of 1935, the National Register of Historic Places (National Register) was established by the NHPA of 1966, as "an authoritative guide to be used by Federal, State, and local governments, private groups, and citizens to identify the Nation's historic resources and to indicate what properties should be considered for protection from destruction or impairment."[55] The National Register recognizes both historical-period and prehistoric archaeological properties that are significant at the national, State, and local levels.

[55] *Code of Federal Regulations (CFR), 36 Section 60.2.*

In the context of this Proposed Action, which does not involve any historical-period structures, the following National Register criteria are given as the basis for evaluating archaeological resources.

To be eligible for listing in the National Register, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must meet one or more of the following four established criteria:[56]

- Are associated with events that have made a significant contribution to the broad patterns of our history;
- Are associated with the lives of persons significant in our past;
- Embody the distinctive characteristics of a type, period, or method of construction or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Have yielded, or may be likely to yield, information important in prehistory or history.

Unless the property possesses exceptional significance, it must be at least 50 years old to be eligible for National Register listing.[57]

In addition to meeting the criteria of significance, a property must have integrity. Integrity is defined as "the ability of a property to convey its significance."[58] The National Register recognizes seven qualities that, in various combinations, define integrity. To retain historic integrity a property must possess several, and usually most, of these seven aspects. Thus, the retention of the specific aspects of integrity is paramount for a property to convey its

[56] *U.S. Department of the Interior, National Park Service, National Register Bulletin: How to Apply the National Register Criteria for Evaluation, 1995.*

[57] *U.S. Department of the Interior, National Park Service, Exceptional Significance as defined by National Register Criteria Consideration G: Properties That Have Achieved Significance Within the Past Fifty Years. National Register Bulletin: How to Apply the National Register Criteria for Evaluation, 1995.*

[58] *U.S. Department of the Interior, National Park Service, National Register Bulletin: How to Apply the National Register Criteria for Evaluation, 1995, p. 44.*

significance.[59] The seven factors that define integrity are location, design, setting, materials, workmanship, feeling, and association.

(2) Forest Service

The Forest Service propose to identify, evaluate, treat, protect, manage, and consult about historic properties, as stated in the: Antiquities Act of 1906 (34 Stat. 225; 16 U.S.C. §§431 433), Historic Sites Act of 1935 (49 Stat. 666; 16 U.S.C. §§461 467), NHPA, as amended (80 Stat. 915 *et seq*.; 16 U.S.C. §470 *et seq*.), National Environmental Policy Act of 1969 (NEPA), as amended (83 Stat. 852 *et seq*.; 42 U.S.C. §§4321 4347), Archaeological and Historical Data Preservation Act of 1974 (88 Stat. 174; 16 U.S.C. §469), American Indian Religious Freedom Act of 1978 (92 Stat. 469; 42 U.S.C. §1996), the Archaeological Resources Protection Act of 1979, as amended (ARPA) (93 Stat. 721 *et seq*.; 16 U.S.C. §470 *et seq*.); and the Native American Graves Protection and Repatriation Act of 1990 (NAGPRA) (104 Stat. 3048 3058; 25 U.S.C. §§3001 3013); and as mandated under Executive Order 11593, entitled Protection and Enhancement of Cultural Environment, Executive Order 13007, entitled Indian Sacred Sites, Executive Order 13175, entitled Consultation and Coordination with Indian Tribal Governments; and Executive Order 13287, entitled Preserve America.

(3) National Environmental Policy Act of 1969 (42 USC 4321)

The National Environmental Policy Act (NEPA) directs Federal agencies to use all practicable means to "Preserve important historic, cultural, and natural aspects of our national heritage" (Section 101(b)(4)). Regulations for implementing the procedural provisions of NEPA are found in 40 CFR 1500 1508. If the presence of a significant environmental resource is identified during the scoping process, Federal agencies and their agents must take the resource into consideration when evaluating project effects. Consideration of paleontological, pre-historical or historical resources may be required under NEPA when an action is proposed for development on Federal land, land under Federal jurisdiction, or has Federal bank funding.

b. State Level

The State implements the NHPA through its Statewide comprehensive cultural resources surveys and preservation programs. The California Office of Historic Preservation (OHP), as an office of the California Department of Parks and Recreation, implements the policies of the NHPA on a Statewide level. The OHP also maintains the California Historic Resources Inventory. The State Historic Preservation Officer (SHPO) is an appointed official who implements historic preservation programs within the State's jurisdictions.

[59] *Ibid.*

(1) California Register of Historical Resources

The California Register of Historical Resources (California Register) is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change."[60] The criteria for eligibility for the California Register are based upon National Register criteria.[61] Certain resources are determined by the statute to be automatically included in the California Register, including California properties formally determined eligible for, or listed in, the National Register of Historic Places.[62]

To be eligible for the California Register of Historical Resources, a prehistoric or historical-period property must be significant at the local, State, and/or Federal level under one or more of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- Is associated with the lives of persons important in our past;
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
- Has yielded, or may be likely to yield, information important in prehistory or history.

A resource eligible for the California Register must meet one of the criteria of significance described above, and retain enough of its historic character or appearance (integrity) to be recognizable as a historical resource and to convey the reason for its significance. It is possible that a historic resource may not retain sufficient integrity to meet the criteria for listing in the National Register, but it may still be eligible for listing in the California Register.

Additionally, the California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

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[60] *California Public Resources Code § 5024.1(a).*

[61] *Ibid, § 5024.1(b).*

[62] *Ibid, § 5024.1(d).*

- California properties listed on the National Register of Historic Places and those formally Determined Eligible for the National Register of Historic Places.
- California Registered Historical Landmarks from No. 770 onward.
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Commission for inclusion on the California Register.

Other resources that may be nominated to the California Register include:

- Historical resources with a significance rating of Category 3 through 5.[63]
- Individual historical resources.
- Historical resources contributing to historic districts.
- Historical resources designated or listed as local landmarks, or designated under any local ordinance, such as an historic preservation overlay zone.

(2) Senate Bill 18

Senate Bill 18 (SB 18) is State legislation enacted for the purpose of establishing meaningful consultation between California Native American tribal governments and California local governments at the earliest possible point in local government land use planning. The objective of the consultation is to identify and allow careful consideration of important Native American places, including archaeological, cultural, spiritual, and ceremonial places, in the planning process at the government-to-government level. The circumstances and timeframes of consultation are as follows:

- Prior to the adoption or any amendment of a city or county's general plan, proposed on or after March 1, 2005, the city or county shall conduct consultations with California Native American tribes that are on the contact lists maintained by the Native American Heritage Commission (NAHC) for the purpose of preserving or mitigating impacts to places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code that are located within the city or county's jurisdiction. Tribes have 90 days from the date they receive notification to request consultation, unless a shorter timeframe has been agreed to by the tribe (Government Code §65352.3).

[63] *Those properties identified as eligible for listing in the National Register of Historic Places, the California Register of Historical Resources, and/or a local jurisdiction register.*

- Prior to the adoption or substantial amendment of a general plan or specific plan, a local government must refer the proposed action to those tribes that are on the NAHC contact list and have traditional lands located within the city or county's jurisdiction. The referral must allow a 45 day comment period (Government Code §65352). Notice must be sent regardless of whether prior consultation has taken place. Such notice does not initiate a new consultation process.

- Local governments must send notice of a public hearing, at least 10 days prior to the hearing, to tribes who have filed a written request for such notice (Government Code §65092).

The locations and characteristics of the Native American places considered during the SB 18 consultation process are protected, as follows:

- Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Section 65040.2, the city or county shall protect the confidentiality of information concerning the specific identity, location, character, and use of those places, features, and objects (Government Code §65352.3 (b)).

The SB 18 consultation process is considered complete when the proposed plan amendment is adopted. However, if sensitive Native American places will be affected by the plan amendments, consultation may continue in order to ensure protection or management of those places.

c. Local Level

As previously described in Section 1.0, Introduction/Purpose and Need, of this Final EA, the Town of Mammoth Lakes and the Mammoth Mountain Ski Area have a close relationship due to their physical land connection and economic dependency. As such, despite the fact that the Proposed Action does not require approval by the Town, it is necessary to ensure that the Proposed Action is consistent with the relevant Town's plans and policies. Cultural resources within the jurisdiction of the Town are subject to documentation and subsequent planning and preservation consideration.

(1) Town of Mammoth Lakes 2007 General Plan Update

The *Town of Mammoth Lakes 2007 General Plan Update (General Plan Update)* includes the Economy; Arts, Culture, Heritage and Natural History; Land Use; and Parks, Open Space, and Recreation Elements, which all contain goals, policies, and action items regarding the preservation of cultural resources within the *General Plan Update* Planning Area.

Economy

E.1.L. Policy: Support diverse arts, cultural, and heritage programming, facilities and development of public venues for indoor and outdoor events.

E.2. Achieve sustainable tourism by building on the area's natural beauty, recreational, cultural, and historic assets.

Art, Culture, Heritage and Natural History

A.1. Be a vibrant cultural center by weaving arts and local heritage and the area's unique natural history into everyday life.

A.1.A. Policy: Encourage and support a wide variety of visual and performing arts, cultural amenities, events and festivals, and forums for local arts organizations.

A.2.B.3. Action: Maintain a strategic public art, cultural, and heritage plan.

A.2.D. Policy: Be stewards of the cultural, historical and archeological [sic] resources in and adjacent to town.

A.2.E.1. Action: Develop and maintain a cultural resources database of historic and archaeological resources within the Planning Area.

Land Use

L.4. Be the symbolic and physical heart of the Eastern Sierra: the regional economic, administrative, commercial, recreational, educational and cultural center.

Parks, Open Space, and Recreation

P.2.D. Policy: Increase understanding and appreciation of the cultural, natural and historical resources of the region and town through development of programs, facilities and interpretive signage.

3.7.2 AFFECTED ENVIRONMENT

The affected environment in the case of cultural resources is the physical remains of past human occupation. Current evidence indicates that humans began to live in western North

America approximately 13,000 years ago. Because of this great temporal span and the potential uniqueness of archaeological materials, which are the traces of past human behavior, the effects of a Proposed Action on the cultural resource environment can be large, even if the geographic extent of the Proposed Action is relatively small. The following summary of human prehistory and history in the region surrounding the project area is given to provide a context for evaluating the potential effects of the Proposed Action on project area cultural resources.

a. Paleo-Indian Period (approximately 13,000 to 7,000 years before present [YBP])[64]

The first people in California may have been among the first people in North America. Recent research at the Monte Verde site in Chile has demonstrated human presence in the Americas approximately 12,500 years ago and challenged the established model of initial overland migration from Siberia through western Canada into the Great Plains at the end of the last Ice Age. Initial migration down the western coast of North America, including coastal California, now appears to be a more likely scenario. One of the earliest radiocarbon dates from North America come from the Arlington Springs Woman site on Santa Rosa Island, in southern California. The human remains from this site have been dated to approximately 13,000 YBP.

The rate of movement from the coast to inland California locations is not known, but may have been relatively rapid. Many early California sites, characterized as Late Paleoindian/Early Archaic period, are located near pluvial desert valley lakes formed by glacial meltwaters that are now evaporated or much reduced in size. Lakeshore occupation sites often include artifacts such as large projectile points (e.g., Lake Mohave), flaked stone debitage, and fire-affected rock concentrations.

Lifeways during the Paleoindian Period were characterized by highly mobile hunting and gathering. Prey included megafauna such as mammoth and technology included a distinctive flaked stone toolkit that has been identified across much of North America and into Central America. The megafauna went extinct during a warming trend that began approximately 10,000 years ago and both the extinction and climatic change (which included warmer temperatures in desert valleys and reduced precipitation in mountain areas) were factors in widespread cultural change. Lifeways continued to be organized around hunting and gathering, but the resource base expanded and used a wider range of plant and game resources. Technological traditions also became more localized. This constellation of characteristics has been given the name "Archaic" and it was the most enduring of cultural adaptations to the North American environment.

[64] *Town of Mammoth Lakes, Eagle Lodge Base Environmental Assessment, September 2006.*

b. Early Archaic (7,000-4,000 YBP)

The Early Archaic in the Mammoth Lakes region is known as the Little Lake Phase, dating from approximately 7,500 to 3,150 YBP. Between 7,500 and 5,500 YBP the period is not as well defined for the rest of the Western Great Basin. The climate in the middle Holocene was generally hot and dry. During this time, people used base camps adjacent to rivers and used temporary task-based camps at higher altitudes on a seasonal basis. These lithic scatters higher than 6,000 feet above mean sea level are thought to be hunting camps. Diagnostic tools of the Early Archaic include Pinto and Little Lake series projectile points. The Early Archaic economy was for the most part, organized around hunting of large game. However, faunal and milling evidence from the Owens Valley suggests a broad spectrum diet that also included lizards, reptiles, rodents, etc.

c. Middle Archaic (4,000-1,500 YBP)

The Middle Archaic period is referred to as the Newberry Phase (3,150-1,350 YBP) in the southern section of the Eastern Sierra Front. The Middle Archaic is characterized by a transition from the Early Archaic emphasis based on hunting to a more diversified subsistence base that included the exploitation of plant and small animal resources. Grinding stones appear in the archaeological record for the first time in the region. This is consistent with the archaeological remains recovered from Mammoth Creek Cave and Hot Creek Shelters. Large bifaces were fashioned to export raw material. Diagnostic artifact types include Elko and Humboldt series dart points. Site types include quarries, multi-purpose camps located in upland valleys and seed camps located near springs and creeks. Base camps contained features such as pithouses, storage areas, and burials. Seasonal camps were often reoccupied year after year. Kobari and others (1980) suggest that high altitude resources were also exploited as hunting camps were located at high elevations, such as the Casa Diablo and Long Valley Caldera. The prehistoric exchange system appears between 3,150 YBP and 1,950 YBP.

d. Late Archaic (1,500-400 YBP)

The Late Archaic in the region is subdivided into the Haiwee Phase (1,350 to 650 YBP) and the Marana Phase (650 YBP to EuroAmerican contact). During this time, a wide range of resources and ecozones were exploited. There was an increased emphasis on plant resources and small game hunting replaced large game hunting. There were many technological changes during the Late Archaic. For example, the bow and arrow replaced the atlatl and darts. Diagnostic artifacts include Rose Spring, Eastgate, and Desert Side-Notched projectile points and brownware ceramics (after 900 YBP). Rosegate projectile points are characteristic of the Haiwee Phase, while small Desert Side-Notched and Cottonwood arrow points and brownware ceramics define the Marana. Steatite disk beads are also common. Obsidian trade was thought

to be east-west from Mono Lake and Long Valley Caldera over the Sierra Nevada. As the climate again oscillated to a warmer and drier regime, the area also experienced significant human population increase. With the shift to dryer conditions came a shift to piñon exploitation. Higher elevations continued to be exploited at this time. After 750 YBP, wild crop irrigation and lowland base camps were common. Food processing implements such as flat slab schist milling stones, milling slicks, and bedrock mortars were first used extensively during the Late Archaic. The Marana Phase sites are thought to represent Owens Valley Paiute pre-contact sites, as the Owens Valley Paiute were the occupants of the region at the time of contact.

e. Ethnographic Context[65]

Traditionally, groups of Owens Valley Paiute have occupied an area from the Town to approximately 60 miles to the east and 100 miles to the south. A 10 to 15 mile-wide band of land immediately north-northeast of the Town was jointly used by Owens Valley Paiute and Northern Paiute groups from Mono Lake. This territory includes all of Owens Valley, Round Valley, Long Valley, Fish Lake Valley, and Deep Springs Valley. While both Paiute groups speak Western Numic languages, the Northern Paiute speak Northern Paiute and the Owens Valley Paiute speak Owens Valley Paiute (Nancy Peterson Walter 2005). Other neighboring groups, on the west side of the Sierra Nevada (the Monache) and south of the Town on both flanks of the mountains (Monache and Owens Valley Paiute) speak other dialects of Mono and share many cultural bonds.

The Owens Valley Paiute occupied the Owens Valley on a year-round basis with many semi-sedentary settlements located on major rivers and streams along the west side of the valley. Closer to the Town, in both Long Valley and in the Mammoth Basin, the pre-contact and historic use of the area by the Owens Valley Native American groups has been vaguely documented. However, ethnographic notes from the 1930s and oral interviews of local people from the 1970s clearly document the year-round occupation of Long Valley by the Long Valley Paiute (a subgroup of the Owens Valley Paiute), during the 1800s and 1900s. It has also been suggested that Long Valley included an indigenous population of Northern Paiute in historic times and provided resources and refuge on an occasional basis to Northern Paiute from Mono Lake, to Monache and Miwok from the west side of the Sierra, and to surrounding Mono-speaking groups of Paiute from Benton, Round Valley, and Owens Valley.

In contrast to the Owens Valley Paiute, the Long Valley Paiute were very mobile in historic times, constantly moving in search of food resources and often gathering resources

[65] *The following ethnographic summary of the Owens Valley Paiute is derived in part from the Cultural Resources section of Revised Draft Program Environmental Impact Report for the Town of Mammoth Lakes General Plan Update (Town of Mammoth Lakes 2005). In addition, Sven Liljeblad and Catherine S. Fowler (1986) provide a comprehensive synthesis of the Owens Valley Paiute.*

beyond Long Valley. Their movements included frequent trips over the Sierra crest, through Mammoth Pass, in order to collect acorns and to fish and hunt in the San Joaquin River drainage, and area within North Fork Mono Territory.

In the vicinity of Mammoth Lakes, Mammoth Mountain is reported as being a sacred place as it stands on the border between the Monache (western Mono) and the Owens Valley Paiute (eastern Mono), and is considered to be the place of origin in all Mono-speakers' traditional myths. The actual locations of human origins are marked by particular geographic features. Elsewhere in Mammoth Basin, ethnographic use by Long Valley Paiute and others is assumed to be seasonal rather than year round.

Extensive trading with their neighbors was done by Owens Valley Paiute groups in order to acquire additional foods as well as ornaments, money, and other commodities. Owens Valley Paiute traded salt, piñon pine nuts, seeds, obsidian, sinew-backed bows, rabbit skin blankets, deerskins, moccasins, mountain sheepskin, fox skin leggings, balls of tobacco, baskets, basketry water bottles waterproofed with pitch, wooden hot rock lifters, and red and white pigments, in exchange for shell money (e.g., disc beads, tubular clam beads, and more recently, glass beads), acorns and acorn meal, finely-constructed Yokuts baskets, cane for arrows, manzanita berries, squaw berries, and elderberries from the Monache. The Mono Paiute traded salt, piñon pine nuts, piagi (i.e., Pandora moth larvae), brine fly larvae, rabbit skin blankets, baskets, pumice stones, and red and white pigments to the Sierra Miwok, in exchange for shell money, acorns, baskets, arrows, a fungus used in paints, manzanita berries, elderberries, and squaw berries.

In Owens Valley, the population was sedentary, with year-round occupation in permanent villages and short-term visits to temporary camps for resource procurement. Leadership was hereditary and headmen were responsible for organizing communal work projects and festivals that may have served to redistribute resource surpluses as well as to fulfill other social functions. As for the other groups using Long Valley, the Monache and the Southern Sierra Miwok groups were probably similar in their social organization to the Owens Valley Paiute, with at least some hereditary rulers and semi-permanent villages. Some researchers have postulated that any indigenous Long Valley groups that may have existed would have followed a pattern closer to that of the Mono Lake Paiute (and other Great Basin groups) than that of Owens Valley Paiute, due to similarities in environmental constraints. However, Long Valley residents may have been closely tied to the Owens Valley Paiute through kinship and trade.

Long Valley offered a variety of food resources during snow-free months. In the spring, Tui chub, speckled dace, and Owens sucker may have been dished from creeks, while roots, wild onions, and greens along creeks and meadows might have replenished dwindling winter food supplies. Small game, deer, and antelope could have been hunted nearby. In the summer, grass seeds may have been collected from meadows and drier upland areas. Fall subsistence activities of both the Mono Lake and Owens Valley Paiute revolved around the collection of piñon. Piagi

are another food resource available every two years in the Jeffery pine forests. Piagi were collected as they descended the Jeffery pine trees during mid to late summer. Also, there are several recorded archaeological sites in the region that are associated with piagi exploitation (Weaver and Basgall 1986).

Much of the trade and travel likely occurred during the summer months, when the high Sierra passes were free of deep snow. Inter- and intra-regional trade may have had extensive ramifications for subsistence and settlement systems of the Owens Valley and Long Valley areas. It is proposed that an elaborate exchange system might account for the relatively complex sociopolitical organization of the Owens Valley Paiute.

f. Environmental Context

As described above, human occupation of the region surrounding the project area has a time depth of approximately 10,000 years. The environment 10,000 years ago was at the end stages of the last Ice Age. Therefore, all sediments younger than the glacial period have the potential to contain traces of human activity, specifically cultural resources.

Results of the Preliminary Geotechnical Study (included in Appendix F of this Final EA) prepared for the proposed Ski Back Trail, indicate the pre-volcanic basement rock in the Mammoth Lakes area is predominantly Mesozoic granite rocks of the Sierra Nevada batholith. The batholith is a series of intrusions that displaced overlying ancient sedimentary seafloor rocks (roof pendants) during the Jurassic and Cretaceous Periods. Piedmont glaciation occurred throughout the Pleistocene leaving a mantle of glacial till covering the basement and volcanic rocks throughout the area now occupied by the Town. As observed in the Preliminary Geotechnical Study, Topsoil/Colluvium extended to a depth of approximately three feet below existing grades. Pleistocene Avalanche Deposits underlie the Topsoil/Colluvium, extending to approximately seven feet in depth. Finally, Quartz Latite Volcanic Rock extends to at least 9 ½ feet below the Pleistocene Avalanche Deposits, where further excavation could not be advanced due to rock refusal.

3.7.3 ENVIRONMENTAL CONSEQUENCES

a. Methodology

In the summer of 1983, Far Western Anthropological Research Group, Inc. completed an archaeological survey of the Mammoth Mountain Ski Area. The survey consisted of 2,700 acres that were surveyed using 30 meter intervals on flats and 40 meter intervals on steeper slopes with crews of six people. Two kinds of areas were excluded from consideration. First, areas that had

been extensively disturbed by prior construction or development were given only cursory inspection. Second, all areas too steep for standard survey, but were examined for the presence of rock shelters and caves. Sites, defined as more than 10 artifacts within a 10 by 10 meter area were recorded. Isolated finds, less than what is defined as a site were plotted on large scale maps and recorded. Conifer duff and extensive surficial deposits of volcanic ash from Holocene eruptions were two conditions that greatly reduced visibility of archaeological remains.

b. Environmental Consequences of the Proposed Action

(1) Construction Impacts

The Proposed Action has the potential to disturb buried cultural resources in the area during construction activities. However, as described above, the Preliminary Geotechnical Study for the proposed Ski Back Trail determined that the stratigraphy of the project area consists of an upper three feet of Topsoil/Colluvium over Pleistocene Avalanche Deposits and Quartz Latite Volcanic Rock, that extends for approximately 9 ½ feet. It is unlikely that there are archaeological deposits within the subsurface conditions, as these likely predate the human occupation, occurring during the Jurassic and Cretaceous Periods. In addition, the Heritage Resources records review and field survey conducted for the proposed Ski Back Trail also indicated that no cultural resources have been identified within the vicinity. Regardless, since the proposed Ski Back Trail area has not been previously graded or excavated, there is the potential for previously undiscovered subsurface cultural deposits to occur in the project area. As discussed further below, monitoring is recommended for all ground-disturbing construction activities related to the Proposed Action in order reduce the impact on previously undiscovered cultural resources in the project area.

The Proposed Action would not affect cultural resources on the surface of the project area. The project area has been maintained in its vegetated state. As such, no archaeological or other cultural resources were identified on the visible surfaces. In addition, the potential for cultural resources remaining below current development would be addressed by the monitoring recommended for potential subsurface resources. Therefore, with the implementation of Mitigation Measure 3.7-1, the Proposed Action would not have an adverse effect to historical, archaeological, or paleontological, resources.

Finally, no areas containing human remains have been documented within a one-mile radius of the project area. If human remains are unexpectedly encountered during construction excavation and grading activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to the origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the NAHC. The NAHC will then

identify the person(s) thought to be the Most Likely Descendent of the deceased Native American, who will then help determine what course of action should be taken in dealing with the remains. Therefore, with the implementation of Mitigation Measure 3.7-2, the Proposed Action would not disturb any human remains, including those interred outside of formal cemeteries, ensuring there would be no adverse effect to human remains.

(2) Operational Impacts

All impacts to historical, archaeological, and paleontological resources and human remains would occur during construction of the Proposed Action. As such, there would be no operational impacts to cultural resources with implementation of the Proposed Action.

(3) Mitigation Measures

Mitigation Measure 3.7-1: A qualified archaeological monitor shall be present during the ground-disturbing construction activities. Due to the potential for subsurface cultural deposits, a culturally affiliated Native American monitor with experience in cultural resources also shall monitor these ground-disturbing activities. In the event that the lead agency determines that it will not include a Native American monitor in the archaeological monitoring process, this decision shall be sent in writing to an updated list of all Native American individuals and organizations identified by the NAHC as having affiliation with the project area. These individuals and organizations shall be provided with a comment period of not less than four weeks on this decision. If this course of action is taken, affiliated Native American groups shall also be notified if sensitive deposits or cultural materials are encountered. No monitor is required for construction-related activities in the lower glacial deposits.

If cultural resources are identified, the archaeologist shall be allowed to temporarily divert or redirect grading or excavation activities in the vicinity in order to make an evaluation of the find and determine appropriate treatment. Treatment will include the Town's goals of preservation where practicable and public interpretation of historic and archaeological resources. The archaeologist shall prepare a final report about the monitoring to be filed with the Project Applicant, Mono County, and the CHRIS-EIC, as required by the State Historic Preservation Officer (SHPO). The report shall include documentation and interpretation of resources recovered, if any. Interpretation will include evaluation of eligibility of the resources with respect to the National Register and California Register. The report shall also include all specialists' reports as appendices. The lead agency shall designate repositories in the event that significant resources are recovered.

Mitigation Measure 3.7-2: If human remains are encountered unexpectedly during construction excavation and grading activities, State Health and Safety Code Section 7050.5 requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to PRC Section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the NAHC. The NAHC will then identify the person(s) thought to be the Most Likely Descendent of the deceased Native American, who will then help determine what course of action should be taken in dealing with the remains.

c. Environmental Consequences of Alternative 1 – Original Alignment Proposal

(1) Construction Impacts

It is unlikely that there are archaeological deposits within the subsurface conditions underlying the Original Alignment Proposal and the records review and field survey conducted for the Original Alignment Proposal also indicated that no cultural resources have been identified within the vicinity. In addition, no archaeological or other cultural resources were identified on the visible surfaces. Regardless, since the Original Alignment Proposal area has not been previously graded or excavated, there is the potential for previously undiscovered cultural deposits to occur in the area. Therefore, Mitigation Measure 3.7-1 is recommended, which would require monitoring for all ground-disturbing construction activities related to the Proposed Action ensuring there would be no adverse effect to historical, archaeological, and paleontological resources.

In addition, while no areas containing human remains have been documented within a one-mile radius of the project area, Mitigation Measure 3.7-2 is included to ensure that implementation of Alternative 1 would not disturb any human remains, including those interred outside of formal cemeteries, ensuring there would be no adverse effect to human remains.

(2) Operational Impacts

All impacts to historical, archaeological, and paleontological resources and human remains would occur during construction of Alternative 1. As such, there would be no adverse effects to cultural resources with implementation of the Alternative 1.

d. Environmental Consequences of Alternative 2 – Transit Emphasis Alternative

(1) Construction Impacts

Under Alternative 2, the Ski Back Trail would not be constructed. Therefore, there would not be any grading or excavation activities that could impact historical, archaeological, or paleontological resources, or disturb human remains. Therefore, there would be no construction impacts to cultural resources with implementation of Alternative 2.

(2) Operational Impacts

Alternative 2 would provide four additional buses along existing roadways that have already been developed. As such, there would be no operational impacts to cultural resources with implementation of the Alternative 2.

e. Environmental Consequences of Alternative 3 – No Action Alternative

(1) Construction Impacts

Under Alternative 3, the Ski Back Trail would not be constructed. Therefore, there would not be any grading or excavation activities that could impact historical, archaeological, or paleontological resources, or disturb human remains. Therefore, there would be no construction impacts to cultural resources with implementation of Alternative 3.

(2) Operational Impacts

Alternative 3 would involve not involve any actions that could impact historical, archaeological, or paleontological resources, including human remains. Therefore, there would be no operational impacts to cultural resources with implementation of Alternative 3.

f. Conformity with Applicable Plans and Policies

No historical resources have been identified within the proposed Ski Back Trail area. Therefore, construction and operation of the Proposed Action or Alternative 1 would not impact historical resources. In addition, the subsurface geologic conditions of the area have not been identified to contain archaeological or paleontological resources. Regardless, mitigation measures have been included in order to ensure any impacts archaeological resources, paleontological resources, or human remains remain below a level of significance. Therefore, construction and/or operation of the Proposed Action and Alternative 1 would be consistent with

NHPA, Forest Service plans and policies, NEPA, the California Register, SB 18, and the *General Plan Update*.

Alternative 2 would involve providing four additional bus trips during the peak hour along an already developed bus route. As such, there would be no construction or operational impacts to cultural resources and therefore, Alternative 2 would be consistent with NHPA, Forest Service plans and policies, NEPA, the California Register, SB 18, and the *General Plan Update*.

Alternative 3 would not involve any construction and operational activities and therefore, there would be no adverse effect to cultural resources. Therefore, Alternative 3 would be consistent with NHPA, Forest Service plans and policies, NEPA, the California Register, SB 18, and the *General Plan Update*.

3.0 ENVIRONMENTAL CONSEQUENCES
3.8 VISUAL RESOURCES

INTRODUCTION

This visual analysis has been prepared to identify the scenic context and evaluate the potential visual impacts associated with the proposed Ski Back Trail. This section is intended to satisfy the requirements of Inyo National Forest (INF) for a project-specific visual impact analysis by examining the potential impacts in the project vicinity and evaluating the effectiveness of the design features.

It should be noted that the analysis contained in this section is based upon the Scenery Management System (SMS), which is a regional approach to understanding and classifying the visual context of an area as established by the United States Department of Agriculture Forest Service (USDA Forest Division) (*Agricultural Handbook No. 701*, December 1995). The SMS creates an inventory and analysis of aesthetic values while attempting to determine the relative value and importance of scenery in a national forest.

The SMS establishes a series of components to analyze in a rational sequential format in order to arrive at a set of visual goals and objectives for Forest Service lands. First, the Ecological Unit Description describes the basic physical and biological elements of the study area. Based upon the Ecological Unit Description, the Landscape Character Description is developed by characterizing the existing landscape and describing its unique, natural elements. Once this general description is established, Scenic Attractiveness Classes are developed: Class A (Distinctive), Class B (Typical), and Class C (Indistinctive). Scenic Attractiveness Classes attempt to further describe the existing landscape in terms of line, color, form, texture, and the combined context.

Next, Landscape Visibility rates the viewing constituency in terms of vantage points and distance to the area in question. This is further developed into a Constituent Analysis, which connects the relative importance of the viewed landscape to the public, resulting in Concern Levels ranging from High to Low. Seen Areas and Distance Zones are mapped to indicate the distance of the public viewers from the viewed landscape, with general categories of Foreground, Middleground, and Background.

Finally, Scenic Integrity is also described, mapped, and categorized in qualitative rankings ranging from Very High to Unacceptably Low. Further, the SMS applies to all Forest

Service property when developing an inventory, database, and management objectives, as well as in considering potential changes to the landscape.

Pursuant to the aforementioned publication, the SMS should identify the following:

- Visual Sensitivity;
- Landscape Character; and
- Scenic Integrity.

Overall, the SMS communicates the importance of the natural landscape of the national forest in both its intrinsic state and as viewed by constituents. Being a "system," several sequential phases of analysis characterize the SMS process. First, the Landscape Character is defined by identifying the Existing Land Uses within the Ecological Unit. Then Scenic Attractiveness values, Distinctive, Typical, and Indistinctive, are established for subunits within the study area. The SMS then sets forth the Scenic Integrity (e.g., degree of intactness vs. disruption and/or alteration) for these areas. Landscape Visibility is based upon public vantage points in terms of the uniqueness of and distance from the viewed area. Scenic Attractiveness and Landscape Visibility are combined to determine a numerically ranked Scenic Class. These Scenic Classes are ranked in an order identifying relative scenic importance, or value, of discrete landscape areas.

This analysis is based on the *Ski Back Trail Visual Resources Analysis/Assessment, Mammoth Mountain Ski Back Trail*, conducted by LSA Associates, Inc. dated July 2007. This technical report is included in Appendix H of this Final EA.

3.8.1 REGULATORY FRAMEWORK

a. Inyo National Forest Land and Resources Management Plan

The Inyo National Forest Land and Resources Management Plan (INFLRMP 1988) was developed to provide an "integrated, multiple resource management direction for all Forest resources" and thereby contributes to defining the area's land use and visual policy context. The Forest Standards and Guidelines set the stage for management of visual resources. Each management prescription includes an assigned Visual Quality Objective (VQO). For visual resources, the following list of concerns is provided in Chapter 2 of the INFLRMP:

- Maintain and manage for visual quality;

- Resolve conflicts between visual quality and other resources; and
- Maintain or enhance current visual resources and scenic attractions.

Chapter 3 of the INFLRMP provides a summary analysis of the management situation for each of the resources within this region. It is noted in this chapter that the "Mammoth and June Lake communities and associated winter sports development represent the most significant visual impacts within the Forest boundary." This section further notes that, "additional winter sports development could cause major visual resource disruptions during the planning period," and that there is a need to establish direction for applying VQOs to such developments. Chapter 3 also emphasizes the need to maintain the visual resources values of the INF, particularly as it is viewed from U.S. Highway 395. Finally, this chapter recognizes the following:

> *The Plan emphasizes a continued high level of visual quality for its economic and social benefits to local communities and to millions of annual recreation visitors. This emphasis is expressed by assigning VQOs to specific acres of land that are consistent with the overall management direction for that land.*

In Chapter 4 of the INFLRMP, the management direction for visual resources within the proposed Ski Back Trail area is described as meeting or exceeding "the Partial Retention [VQO] for runs, lifts, and base areas as seen at middle ground distances from Sensitivity Level 1 routes and occupancy sites." Applicable Management Direction statements provided in Chapter 4 of the INFLRMP include the following:

Maintain foregrounds and middlegrounds of the (scenic) corridors of the following travel routes to Retention and/or Partial Retention VQOs as inventoried, but not (lower) than Partial Retention:

1. Highways officially designated by the State as California State and County Scenic Highways.
2. California State Scenic Highway System reroutes as designated in the September 1970 Master Plan. [These] highways include:
    - State Highway 120, west of U.S. Highway 395 to Tioga Pass;
    - U.S. Highway 395;
    - State Highway 158;
    - State Highway 203; and
    - State Highway 168.

The Mammoth area can be partially viewed from U.S. Highway 395 and State Highway 203 (SR-203 or Minaret Road). Although the Ski Back Trail would not be visible from U.S. Highway 395, it is within the immediate foreground and foreground view distances of SR-203. However, it should be noted that although the Ski Back Trail is within immediate foreground and foreground distances, the majority of the trail cannot be seen from SR-203 due to elevation differences and existing tree cover. Therefore, Management Direction of maintaining the Partial Retention VQO would apply to the Ski Back Trail.

3.8.2 AFFECTED ENVIRONMENT

a. Visual Context

Mammoth is the most identifiable and largest Eastern Sierra Nevada alpine resort. Mammoth is located within a valley floor (actually within a portion of an ancient caldera) surrounded by moderately to steeply rising slopes on the south, west, and north.[66] Physical and visual access into Mammoth begins from the east at the SR-203 and U.S. Highway 395 interchange. Traveling west into town, urbanization typical of a destination resort dominates the immediate horizontal view. Minaret Road (SR-203) consistently rises as it proceeds west, which directs the eye upward toward the mountains. Mammoth Mountain, located directly to west of the Town of Mammoth Lakes (Town) provides a prominent visual backdrop. Again, mountains rise quickly to the south and north.

During all seasons it is apparent that Mammoth Mountain has been altered to accommodate skiing. Stands of Jeffrey pines are interspersed among large, extended open areas. Ski lifts and roadways are seen on the face of the mountain, particularly to the west. The mountains to the south and north do not have the degree of physical alteration apparent on Mammoth Mountain; however, several roadways can be seen on these slopes from the valley floor.

The proposed Ski Back Trail is located within a relatively localized and narrow area between SR-203 and existing residential development. The proposed Ski Back Trail alignment, SR-203, which is located to the north of the trail alignment, and the residential development located to the south of the trail alignment, are all oriented in general west to east direction. SR-203 is located to the north and at a higher elevation than the proposed Ski Back Trail alignment.

[66] *A caldera is a large depression commonly formed by collapse of the ground following explosive eruption of a large body of stored magma (Wright and Pierson, 1992, Living with Volcanoes, The U.S. Geological Survey's Volcano Hazards Program: U.S. Geological Survey Circular, 1973).*

b. Ecological Unit Description

(1) Regional Landscape Character

The proposed Ski Back Trail alignment lies within the Sierran Steppe-Mixed Forest-Coniferous Forest-Alpine Meadow Ecological Province (Ecological Province). This province covers an area of approximately 68,300 square miles and includes most of the Sierra Nevada range in California, extending northward into southern Oregon. Its landform description includes steeply sloping to precipitous mountains crossed by many valleys with steep gradients. The long west slope of the Sierra Nevada rises gradually from 2,000 feet to more than 14,000 feet; the east slope drops abruptly to the floor of the Great Basin, approximately 4,000 feet. Much of this region has been glaciated. Figure 13 on page 192 depicts the Proposed Action's location within this Ecological Province.

Climatic description of this Ecological Province includes temperature averages ranging from 35 to 52 degrees Fahrenheit, falling with rising elevation. The base of the west slope receives approximately 10 to 15 inches of rainfall per year and has a long, unbroken, dry summer season. At higher elevations, the dry summer season shortens and precipitation rises to as much as 70 inches, with a larger portion falling as snow. Prevailing west winds influence climatic conditions for the whole region, which results in the eastern slopes being much drier than the western slopes. Winter precipitation makes up 80 to 85 percent of the total precipitation during the year with mostly snow at the higher elevations. The greatest total precipitation reported is on slopes between 3,000 and 7,000 feet, which support the luxuriant mixed conifer forests of the montane zone. The subalpine zone coincides with the altitude of greatest snowfall, where precipitation is 40 to 50 inches per year.

The combination of the land surface form, elevation differences, and climatic environment results in vegetation zones that are well defined. The lower slopes and foothills, from approximately 1,500 to 4,000 feet, are covered with coniferous and shrub associations. On higher slopes, digger pine and blue oak dominate, forming typical open or woodland stands. Most of the low hills are covered by close-growing evergreen scrub, or chaparral, in which buckbrush and manzanita predominate including several types of oaks.

The montane zone lies between approximately 2,000 and 6,000 feet in the Cascades, 4,000 and 7,000 feet in the Central Sierras, and 5,000 and 8,000 feet or more in the south. The most important trees are ponderosa pine, Jeffrey pine, Douglas-fir, sugar pine, white fir, red fir, and incense cedar; however, several other conifers are also present. The giant Sequoia is one of the most spectacular species, but grows only in a few groves on the western slope. Dense chaparral communities of manzanita, buckbrush, and buckthorn may appear after fire, sometimes persisting for years. Within the Sierran rain shadow, on the dry eastern slopes, Jeffrey pine

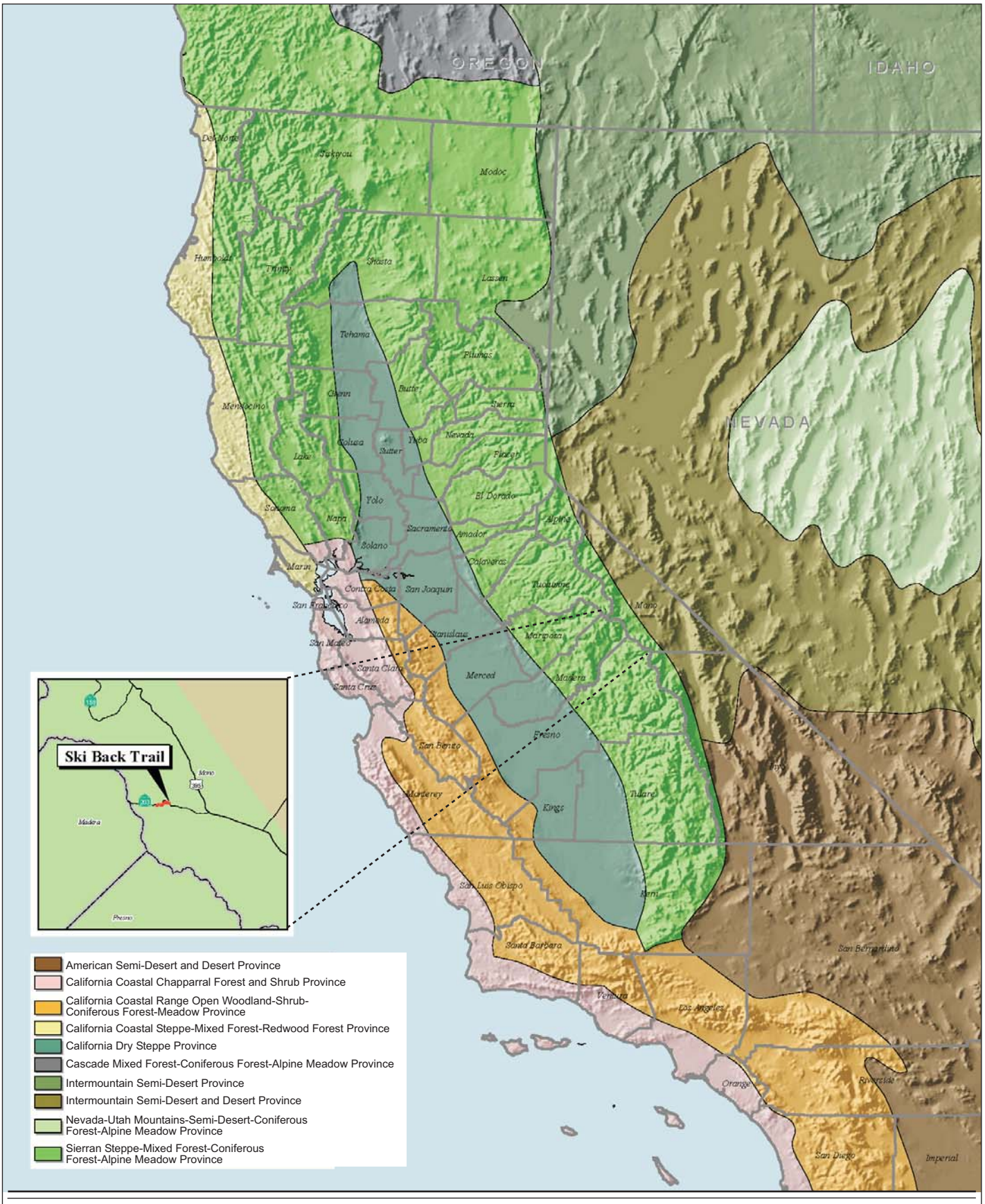

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Figure 13
Eco-Provinces of California

Source: LSA, 2007.

replaces ponderosa pine. At lower elevations, pine forests are replaced by sagebrush pinyon forest, part of the Intermountain Desert Province.

The subalpine zone begins from 6,500 to 9,500 feet, depending on latitude and exposure, and extends up-slope approximately 1,000 feet. Mountain hemlock, California red fir, lodgepole pine, western white pine, and whitebark pine are also common. Conditions are severe and timberline varies from approximately 7,000 feet in the north to 10,000 feet in the south. Lodgepole pine is said to have climax characteristics near the upper limits of this zone. The alpine zone covers the treeless areas above timberline.

(2) Local Landscape Character

The Sierra ridgeline creates a distinct rain shadow, resulting in a progressively dry climate to the east. Within two horizontal miles, the climate will range from a moist mountain ecosystem to a semiarid desert. An example is Mono Lake lying at the foot of the Eastern Sierras. At its westerly shoreline, the average annual rainfall is approximately 12 inches, while the east side of the lake experiences approximately six inches of annual precipitation.[67]

Great Basin sagebrush steppe and bitterbrush vegetation exist at the base of the Eastern Sierra escarpment. These arid shrublands have much less species diversity than western slope chaparrals. Depending on the latitude, the conifer zone initiates at elevations ranging from 3,000 to 5,000 feet above sea level. Pinon pine and juniper are at the lower elevations with Jeffrey and ponderosa pines emerging just above in moderate to higher elevations. As the elevation increases, white and red fir begins to appear. Above these zones, alpine vegetation adapted to cold, dry conditions of the highest elevations remain characterized by low shrubs and cushion plant communities that grow between rock crevices and survive wind and ice.[68]

In general, the Mammoth area is a combination of a developed, resort community in the valley floor flanked on the north, west, and south, by moderately to steeply rising slopes accommodating conifer stands, residential units, and ski runs and associated facilities. Volcanic domes are apparent, particularly to the west and north, providing an undulating skyline. Most foreground views are dominated by urbanization, with the middle ground view providing a mixture of structures and trees on moderate to steeply rising slopes. Distance views from the valley floor provide a view of the topographic shape resulting from combined volcanic and tectonic forces.

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[67] *Centers for Water and Wildland Resources, University of California, Davis, Status of the Sierra Nevada, Wildland Resources Center Report No. 39, June 1996.*

[68] *Ibid, Page 12.*

(3) Site Specific Landscape Character

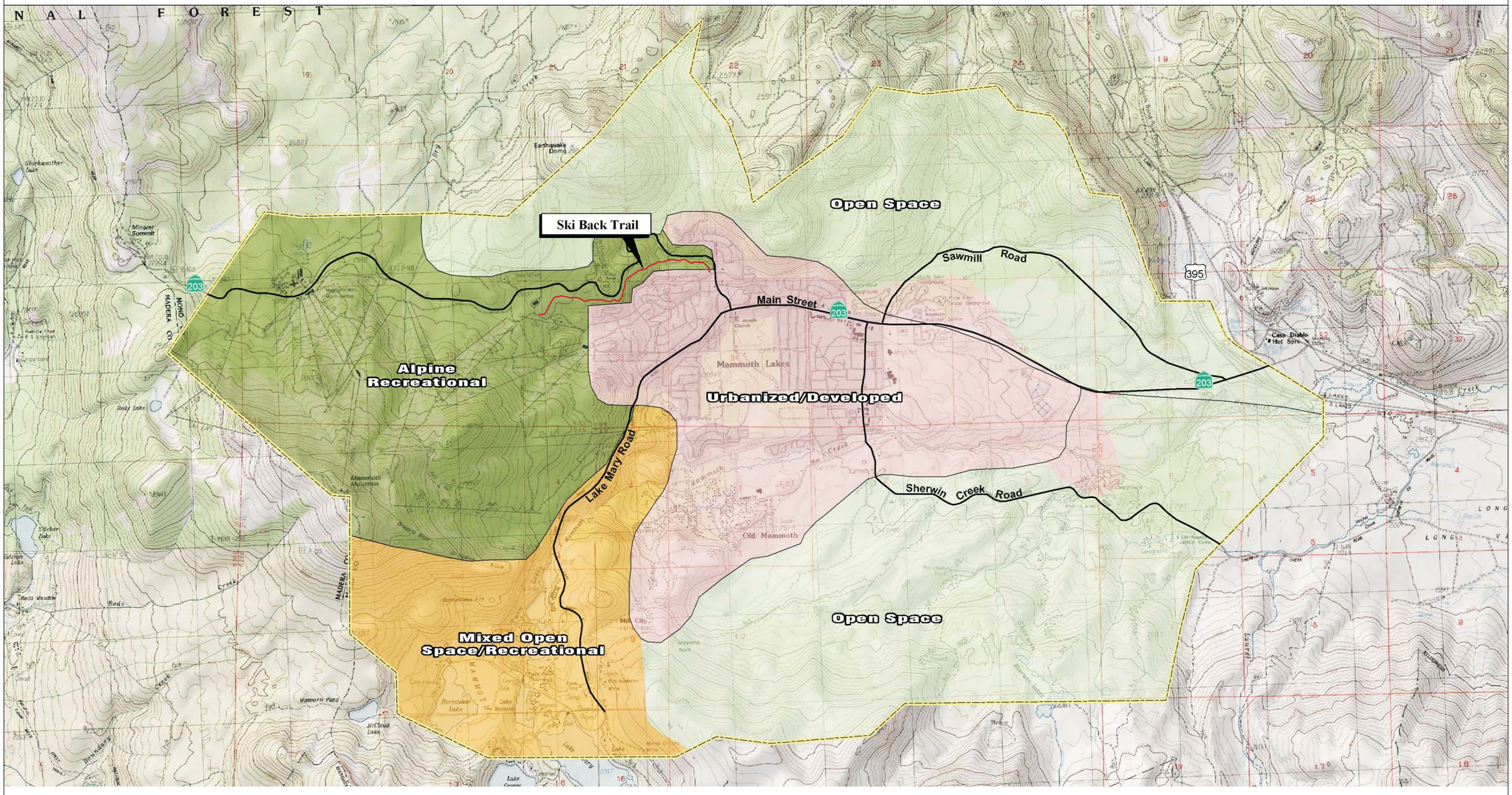
The Ski Back Trail area has a moderately dense cover of Jeffrey pines *(Pinus jeffreyi)*, with trees ranging from several inches to nearly 80 feet above the ground surface. In addition, red fir *(Albies magnifica)* populates the proposed Ski Back Trail alignment. The understory is a mixture of manzanita type shrub, buff ground cover, and fallen woody debris.

The dominant cover in sunny, open areas consists of greenleaf manzanita *(Arctostaphylos patula)*, pinemat manzanita *(Arctostaphylos nevadensis)*, tobacco brush *(Ceanothus velutinus)*, big sagebrush *(Artemisia tridentata)*, and antelope bitterbrush *(Purshia tridentata)*. The dominant cover on shaded slopes consists of less common shrubs and the understory is comprised mainly of herbaceous perennials and grasses, including nude *buckwheat (Eriogonim nudum)* and bottlebrush squirreltail *(Sitanion hystrix)*. Although SR-203 and the residential areas are relatively close to each other, there are only a few areas along this entire proposed Ski Back Trail alignment where these facilities are visible to each other due to the elevation differences and existing stands of trees.

c. Existing Land Use Patterns/Themes

Three general land use patterns and themes exist for the Mammoth area. There is a central core (Urbanized/Developed) of the Town, characterized by development and infrastructure. The ski area (Alpine Recreational) is located directly to the west on the higher elevations and is defined by open areas that accommodate ski runs interspersed with tree cover. Facilities in this area directly support the recreational skiing and include lifts, gondolas, huts, and maintenance buildings. The southwestern portion of this area has a mixture of open space, roadways, camping areas, and other recreational facilities and is termed as Mixed Open Space/Recreation. To the north and south of the Town are areas with a small amount of facilities and infrastructure characterized by steeper terrain and varied topography, termed as Open Space. Figure 14 on page 195 depicts the existing land use patterns and themes.

Figure 15 on page 196 illustrates the proposed Ski Back Trail alignment within the subregional area of the Town. Approximately 25 square miles are represented within this area. The area is characterized by a centrally located developed area with a mix of residential, commercial, and recreational uses/buildings, and supporting infrastructure surrounded by rising topography. The surface area is covered with mixed stands of conifers and cleared areas accommodating recreational uses. As such, the evidence of alteration from the natural landscape can be seen from most public vantage points within this subregion.



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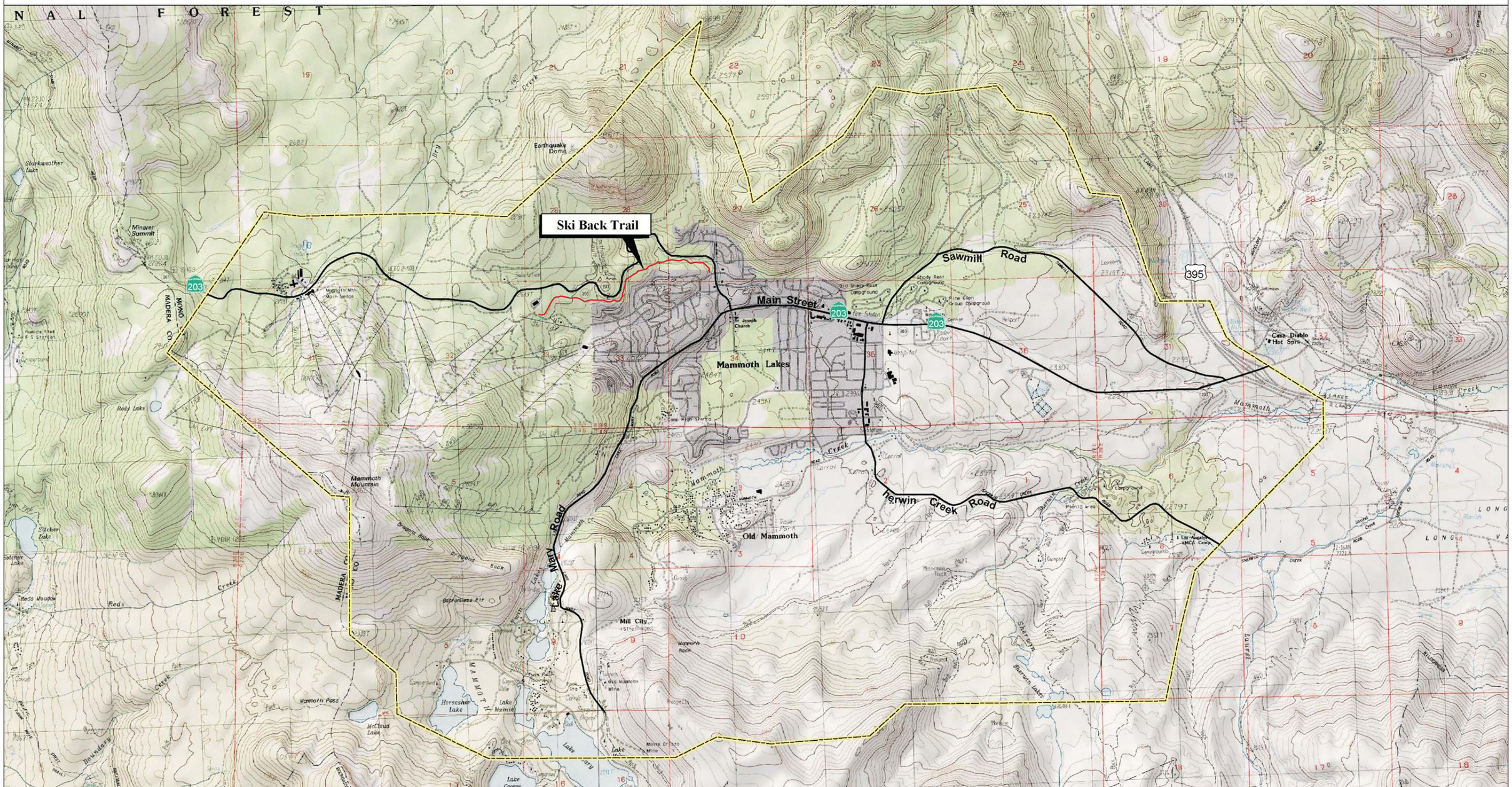
0 3500 7000 Feet

Source: Triad/Holmes Associates, June 28, 2004.

Figure 14
Existing Land Use Patterns and Themes



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0 3500 7000 Feet

Source: LSA, 2007.

Figure 15
Mammoth Subregion

As previously described, the proposed Ski Back Trail alignment is placed within a relatively narrow strip of USDA Forest Service area between SR-203 to the north and a series of privately owned multi-story residential units to the south. The proposed Ski Back Trail roughly parallels SR-203; however, it would be on a lower elevation than the road surface within an area of moderate slopes and a mix of timber cover of conifers, with a range of heights and maturity that generally obscure views of development south of SR-203.

3.8.3 ENVIRONMENTAL CONSEQUENCES

a. Methodology

(1) Visual Sensitivity

Visual sensitivity is measured by what is defined as "Scenic Attractiveness." Scenic Attractiveness usually involves the combined visual effect of the natural landscape and its stability. Three classes normally encompass the category of Scenic Attractiveness: Distinctive (Class A), Typical (Class B), and Indistinctive (Class C). The following defines the different classes for Scenic Attractiveness.

Class A: Distinctive - Areas where landform, vegetation patterns, water characteristics, and cultural features combine to provide ordinary or common scenic quality. These landscapes have strong positive attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.

Class B: Typical - Areas where landform, vegetation patterns, water characteristics, and cultural features combine to provide unusual, unique, or outstanding scenic quality. These landscapes have generally positive, yet common, attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance. Normally, they would form the basic matrix within the ecological unit.

Class C: Indistinctive - Areas where landform, vegetation patterns, water characteristics, and cultural land use have low scenic quality. Often water and rockform of any consequence are missing in Class C landscapes. These landscapes have weak or missing attributes of variety, unity, vividness, mystery, intactness, order, harmony, uniqueness, pattern, and balance.

(2) Landscape Visibility

Landscape visibility is generally defined as the ability to view national forests from public spaces such as roadways and use areas. Landscape visibility is a function of several considerations: (1) context of viewers; (2) duration of views; (3) degree of discernable detail; (4) seasonal variation; and (5) number of viewers.

(3) Scenic Integrity

The following is a frame of reference for the various scales of Scenic Integrity:

- Very High: These areas are unique and classic examples of outstanding natural landscape that has been completely unaltered over a large area. It has been preserved in its natural form.
- High: These areas may have been altered in the past; however, they appear to have maintained their natural state and have retained their natural integrity.
- Moderate: These areas have been slightly, yet noticeably, altered and changed from their natural state. They are classified as having been partially retained.
- Low: These areas have been altered and changed in a noticeable manner. These areas have been modified with potential remnants of the past natural landscape.
- Very Low: These areas have been completely altered and changed and have experienced maximum modification.
- Unacceptably Low: These areas' natural state cannot be recognized as it has been extremely altered.

Table 30 on page 199 provides further assistance in understanding Scenic Integrity of a given area.

b. Environmental Consequences of the Proposed Action

(1) Construction Impacts

Construction of the Proposed Action would involve clearing and grading along the proposed Ski Back Trail right-of-way for approximately two and a half months. Construction of the five retaining walls would occur over the next approximately two months, with the final grading, storm drain improvements, and soil erosion control measures implemented over an

Table 30

Scenic Integrity Summary

Criteria for Scenic Integrity of the Landscape Character Image/Sense of Place	Very High (VH)	High (H)	Moderate (M)	Low (L)	Very Low (VL)	Unacceptably Low (UL)
Dominance Landscape Character vs. Deviation	Landscape Character	Landscape Character	Landscape Character	Deviation	Deviation	Deviation
Degree of Deviation From the Landscape Character	None	Not Evident	Evident but not dominant	Dominant	Very Dominant	Extremely Dominant
Intactness of the Landscape Character	Landscape character Fully Expressed	Landscape character Largely Expressed	Slightly Altered and character Expression Moderate	Altered and Low Expression of Character	Heavily Altered and Very Low Expression of Character	Extremely Altered

Source: LSA Associates, Inc.

approximately 45 day period. Trail and retaining wall construction would generally utilize existing access corridors, including utility pole lines and utility access roads from SR-203. In addition, construction of the Ski Back Trail would also require establishment of additional corridors to provide adequate access points to the trail. The unimproved temporary access roads would be approximately 10 to 15 feet wide. After completion of the Ski Back Trail is completed, the temporary access roads would be decommissioned by grading the compacted soils and revegetating the areas with native plants. The Proposed Action does not incorporate any soil or debris hauling as a result of clearing or grading activities since all materials would be maintained and reused on-site.

Construction of the Ski Back Trail would be short-term, occurring for approximately six months. In addition, most of the construction activity would occur out of the line of site for travelers along SR-203 and the residential uses to the south, due to intervening topography and vegetation. The most visible portion of the construction activity would be the construction equipment traversing the access corridors. However, as noted above, these access corridors would utilize existing corridors, including utility pole lines and utility access roads, which have already been cleared and/or are currently being utilized by mechanical equipment. In addition, the access corridors would be decommissioned after construction activities are complete, which would include re-vegetation with native plants and materials. As such, there would be no adverse effect since the construction activities would be short-term with limited viewsheds of the construction activities. No mitigation measures would be required.

(2) Operational Impacts

(a) Visual Sensitivity

As previously described, Scenic Attractiveness is a "primary indicator of the intrinsic scenic beauty of a landscape and of the positive responses it evokes in people."[69] Scenic Attractiveness usually involves the combined visual effect of the natural landscape and its stability. Refer to Figure 16 on page 201 for an illustration of the classes for this subregion.

(i) Class A

In the general Mammoth subregion, distinctive landscapes are exemplified by the landforms resulting from the combined tectonic and volcanic forces, most notably the upper slopes and skyline. Specifically, this area appears to be unaltered and retains much of the natural landscape.

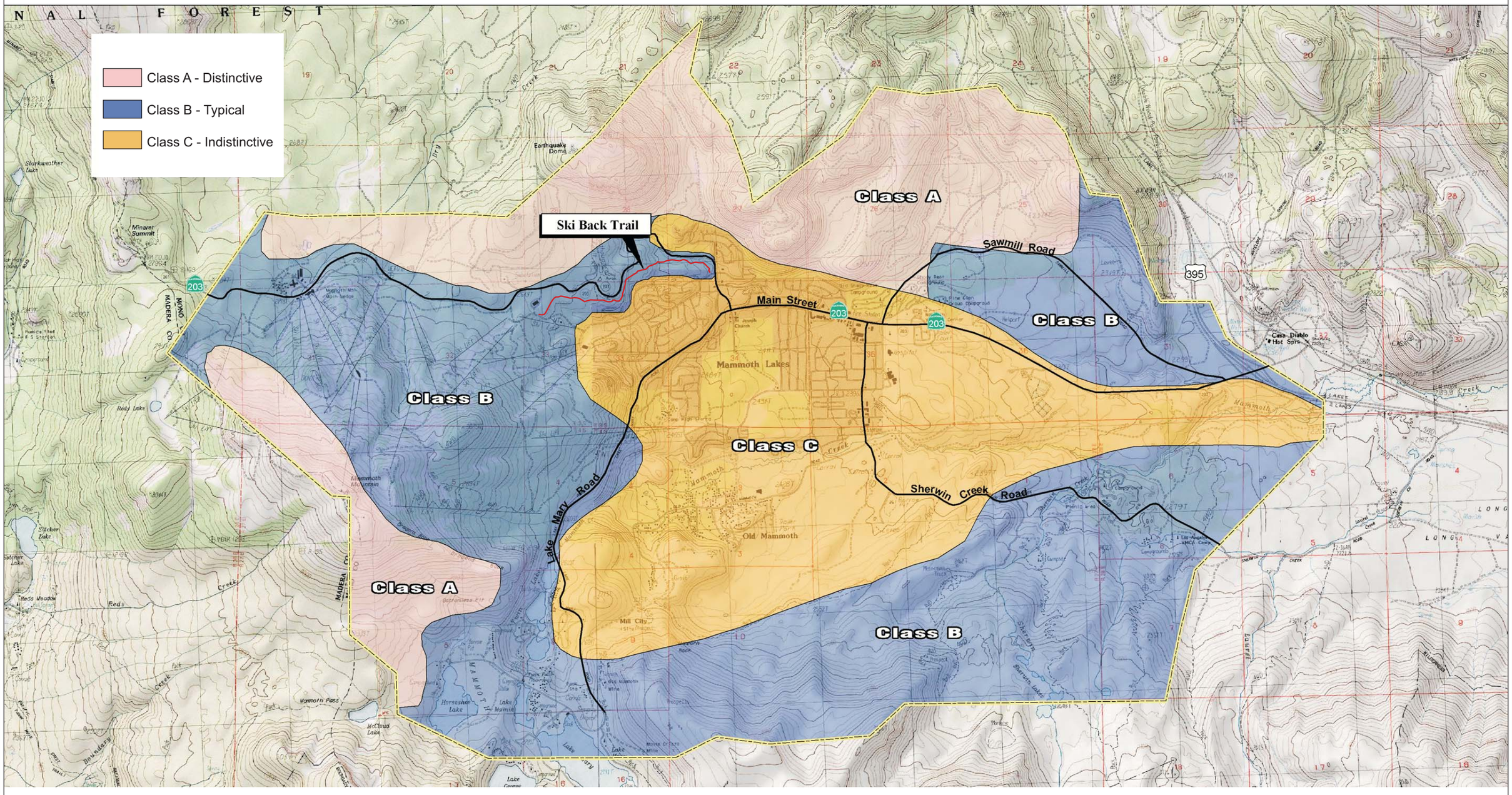
(ii) Class B

The green timber and other Eastern Sierra vegetation provide an aesthetically pleasing contrast to the abrupt topography, sheer rock faces, and blue sky. Again, it is apparent that the tree stands have been isolated by urban development on the lower slopes, recreational development (e.g., ski runs) on the upper slopes, and the network of roadways connecting these areas. The design, form, color, and massing of the ski-related structures and facilities attempt to acknowledge and complement the surrounding natural landscape. The residential development, while being influenced by and reflective of the surrounding alpine context, tends to be more intense and warrants a greater degree of infrastructure than the recreational facilities. Generally, a positive scenic quality has been maintained.

(iii) Class C

The majority of the valley floor and lower slopes is occupied by urban development that is distinct from the areas dedicated to public ski areas. The Town core is an intense development of residential, commercial, and institutional uses with supporting infrastructure. This development has changed the natural landscape character of much of the valley floor, resulting in a relatively low scenic value.

[69] *USDA Forest Service, Landscape Aesthetics, A Handbook for Scenery Management, Agricultural Handbook No. 701, 1995, p. 1–14.*



PCR

N

0 3500 7000 Feet

Source: LSA, 2007.

Figure 16
Scenic Atractiveness

(b) Landscape Visibility

There are several general ranges of landscape visibility: Immediate Foreground visibility is typically defined as 0 to 300 feet from the vantage point; Foreground visibility range is 300 feet to 2,500 feet; Middleground visibility is from 2,500 feet to four miles; and Background views include four miles and beyond. Figure 17 and Figure 18 on page 203 and 204 respectively, illustrate these categories.

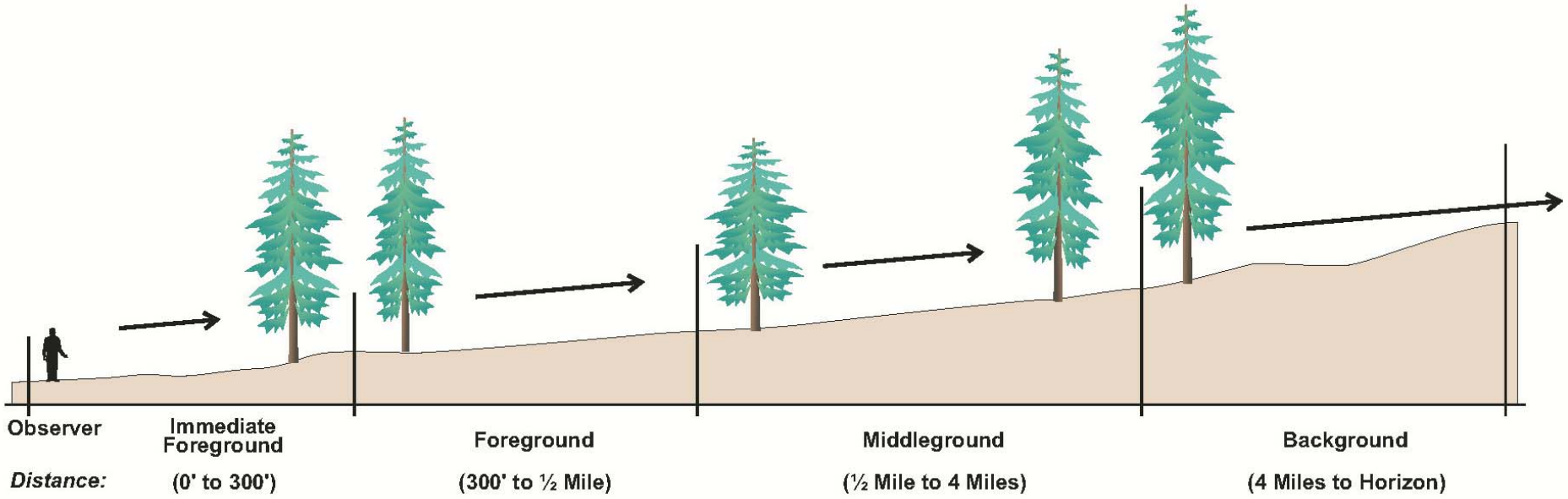
Immediate Foreground can be qualitatively defined as a distance where viewers can distinguish vegetation details such as leaves, grasses, and flowers along with small animals. Foreground is described as the distance where viewers can distinguish large tree branches, shrubs, moderately sized animals, and movement of plant material due to wind. Middleground is normally the distance zone where national forest landscapes can be viewed on a regional level. At this distance, viewers can determine vegetation forms, unique topographic formations and flower fields. Background usually includes mountain ranges, large expanses of wooded hillsides, and open spaces.

Figure 19 on page 205 depicts three landscape visibility ranges, primarily due to limited visual range within the study area. Visibility ranges were determined from the major roadways, which provide the greatest range and variation of views. In addition, the Proposed Action would be seasonably visible from existing off-road bike trails (e.g., Uptown/Downtown bike trails) that are in the same area. These bike trails could be classified as secondary travelways experiencing seasonal moderate use. Travelways are "linear concentrations of public viewing, including freeways, highways, roads, railroads, trails, commercial flight paths, rivers, canals, and other waterways."[70] These travelways are then separated into categories ranging from Primary Travelways with High Use to Secondary Travelways with Low Use. SR-203, near the Ski Back Trail area, is classified as a Secondary Travelway with Moderate Use. This roadway extends from the Town, connecting the main urban center with a few residential areas and resort facilities. The primary function of this roadway segment is to facilitate traffic between the urban core and the resort facilities (and residential areas) within a relatively short distance. There are no turnouts or scenic viewpoints along this portion of SR-203.

Use areas are defined as "spots that receive concentrated public-viewing use."[71] Samples include visitor centers, vista points, ski areas, and recreational sites. The Ski Back Trail area is not readily visible to any significant degree from such areas. The degree of public importance assessed to landscapes as viewed from travelways and use areas are measured in terms of Concern Levels. Table 31 on page 206 identifies the hierarchy of the Concern Levels.

[70] *Ibid, p. 4–6.*

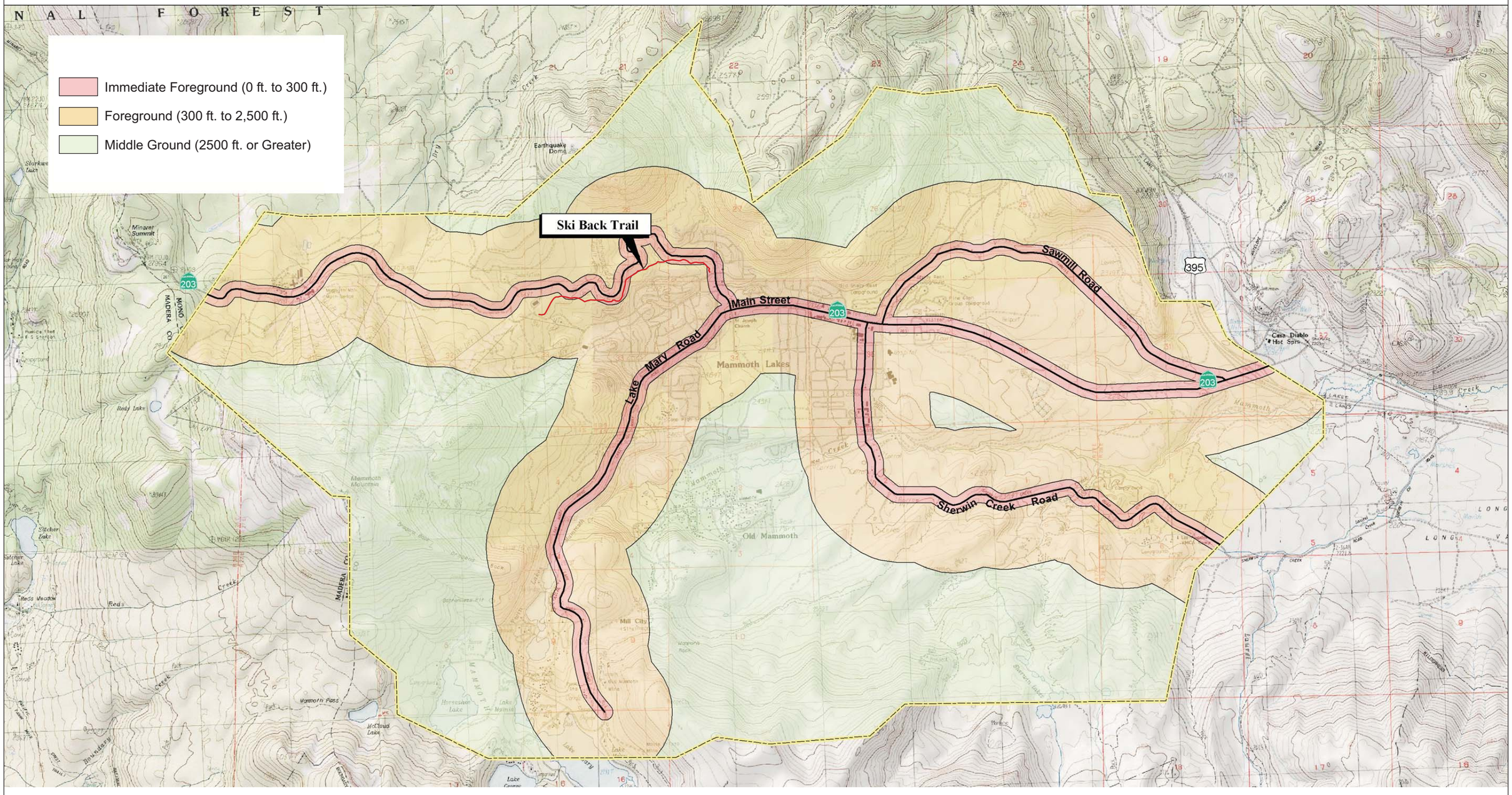
[71] *Ibid, p. 4–7.*



PCR

Figure 17
Landscape Visibility (Typical Cross-Section)

Source: LSA, 2007.



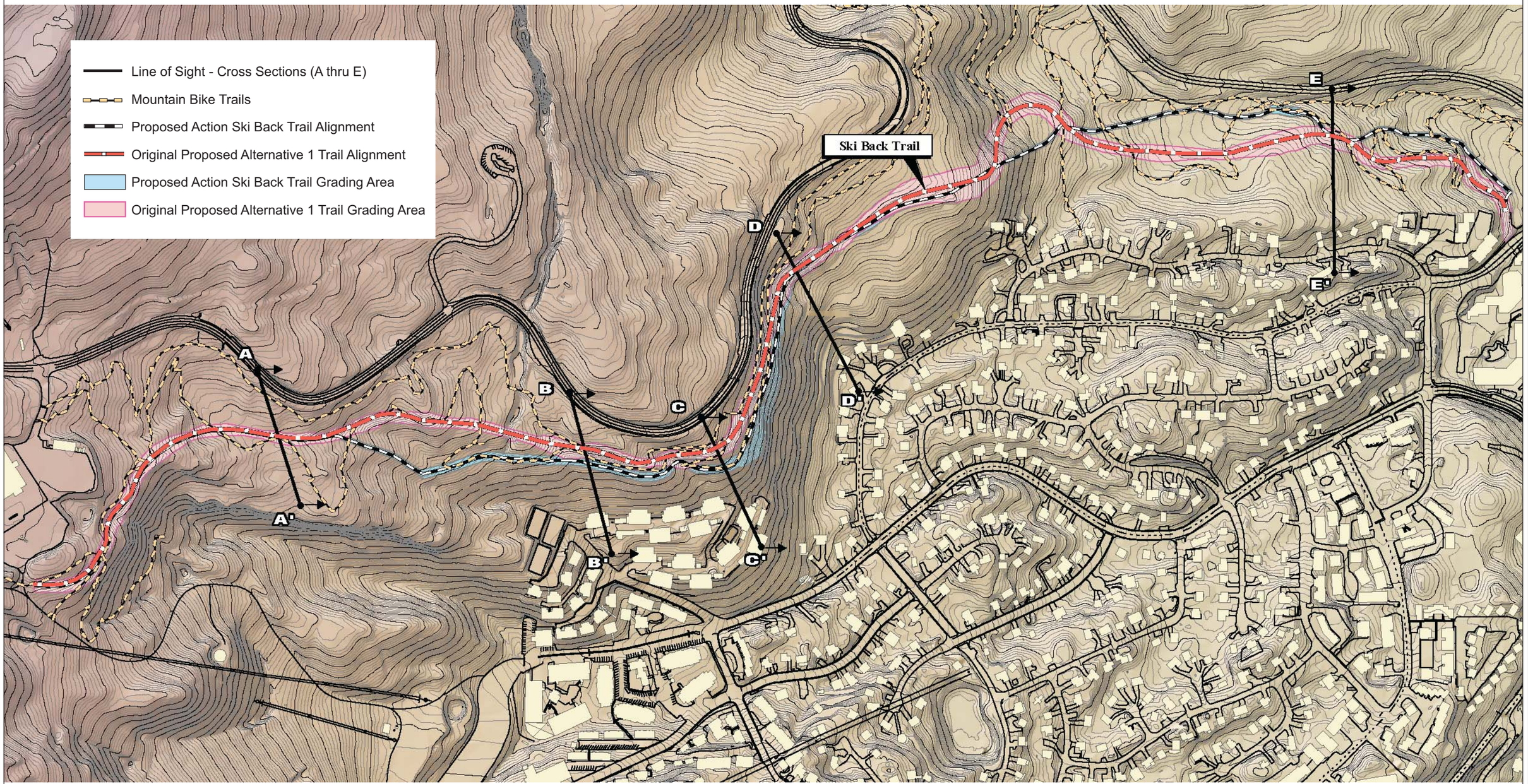
PCR

0 3500 7000 Feet

Source: LSA, 2007.

Figure 18
Landscape Visibility

Mammoth Mountain Ski Area Ski Back Trail



PCR

N

0 400 800 Feet

Source: LSA, 2007.

Figure 19
Plan View with Cross-Sections

Table 31

Hierarchy of Concern Levels

	Interest in Scenery		
	High	**Moderate**	**Low**
Primary Travelway/Use Area High Use	1	2	2
Primary Travelway/Use Area Moderate Use	1	2	2
Primary Travelway/Use Area Low Use	1	2	3
Secondary Travelway/Use Area High Use	1	2	2
Secondary Travelway/Use Area Moderate Use	1	2	3
Secondary Travelway/Use Area Low Use	1	2	3

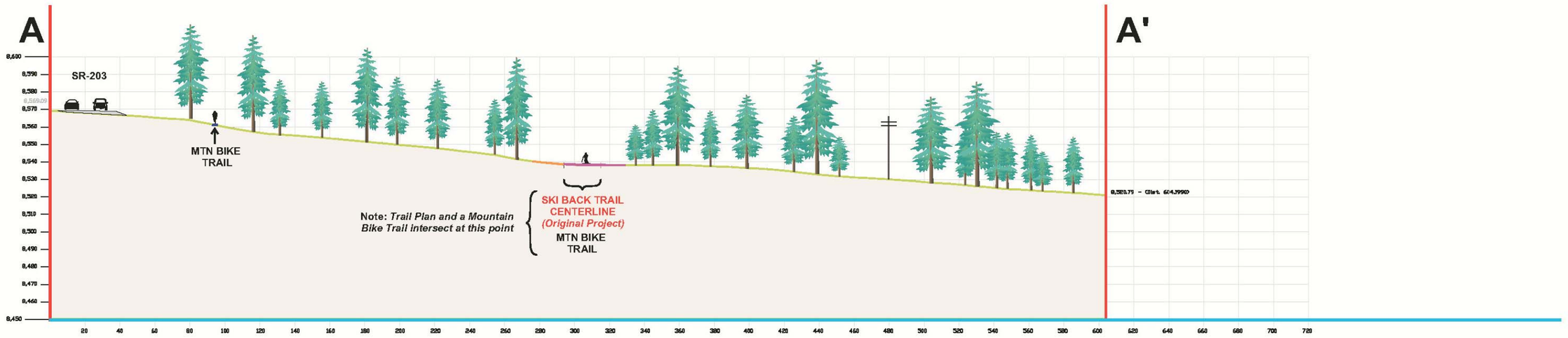
Source: LSA Associates, Inc.

The combination of the existing travelways and lack of appropriate use areas would result in a Concern Level of 2 (combination of Secondary Travelway/Use Area: Moderate Use with a Moderate Interest in Scenery).

It should be noted, however, that Figure 18 depicts these visibility ranges on a two dimensional scale and does not account for the varying topography and landscaping that may inhibit views from these locations. For example, the proposed Ski Back Trail is relatively close to SR-203; however, continual direct views of the proposed alignment are not possible due to differences in elevation. Figure 19 is a plan view of the Ski Back Trail area with a series of cross sections that illustrates the topography and actual visible areas from SR-203 to the south toward the proposed Ski Back Trail alignment. Figure 19 also depicts the previously mentioned bike trails. Figure 19 does not take into account the presence of the existing timber stands, which further serve to impair potential views of the proposed alignment from SR-203. These cross sections were based upon points that would provide the most optional vantage points from SR-203. Figure 20 through Figure 24 on page 207 through 211, respectively, are cross sections that illustrate the perspective from SR-203. With the exception of Figure 23, the topography prevents direct views of the proposed Ski Back Trail alignment. This limited portion of SR-203 essentially provides the only potential public views of the Ski Back Trail alignment.

(i) Scenic Classes

Scenic classification is possible by combining the Scenic Attractiveness classification and Landscape Visibility (Distance Zones). As previously noted, Scenic Attractiveness measures the visual importance of the natural landscape and is divided into three general categories: (1) Distinctive, (2) Typical, and (3) Indistinctive. The proposed Ski Back Trail alignment is within



- Fill Slope
- Cut Slope
- Mountain Bike Trail

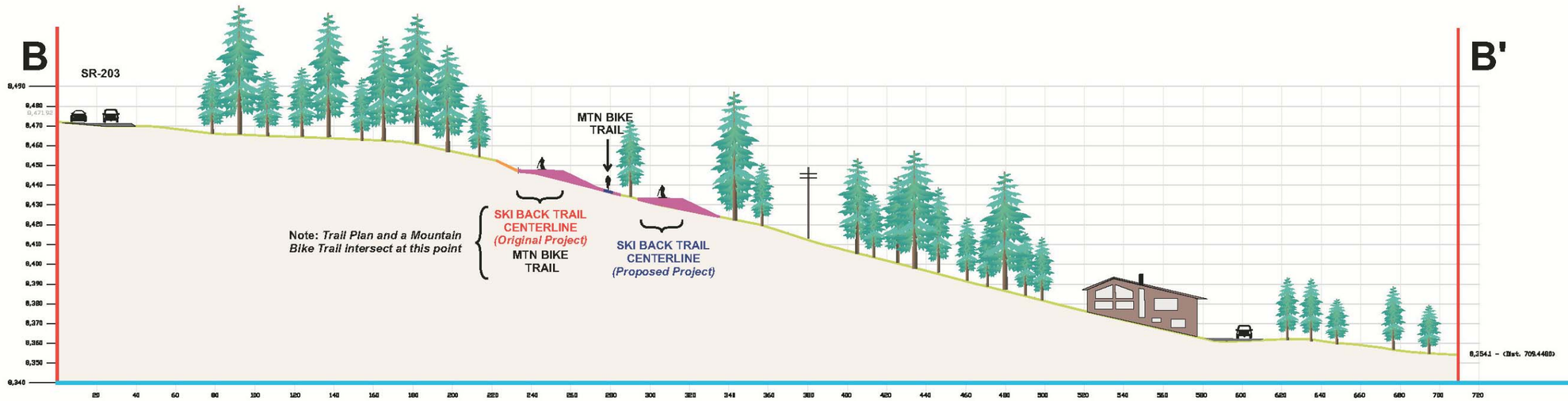
PCR

N

0 60 120 Feet

Source: LSA, 2007.

Figure 20
Vantage Point A - Line of Sight Cross-Section



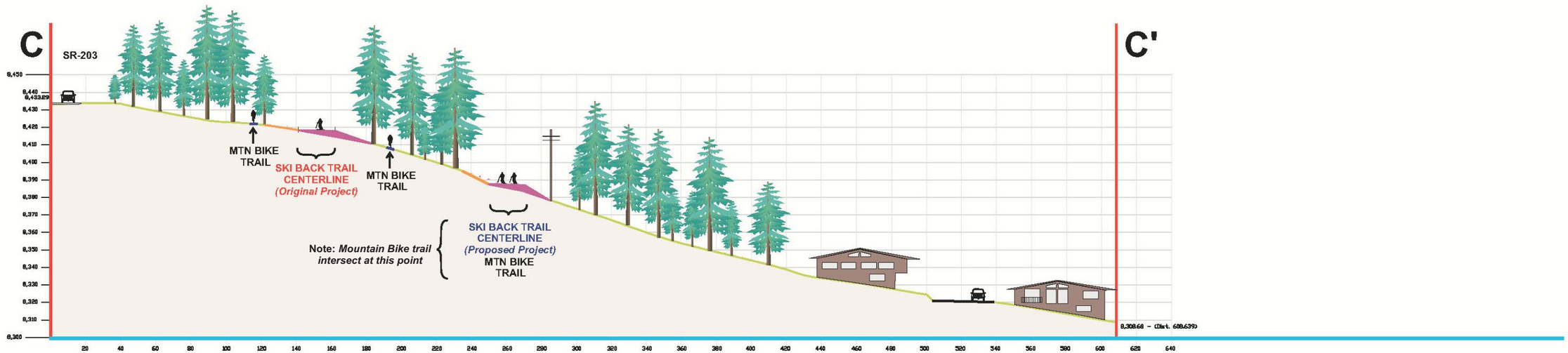
- Fill Slope
- Cut Slope
- Mountain Bike Trail

PCR

0 60 120 Feet

Source: LSA, 2007.

Figure 21
Vantage Point B - Line of Sight Cross-Section

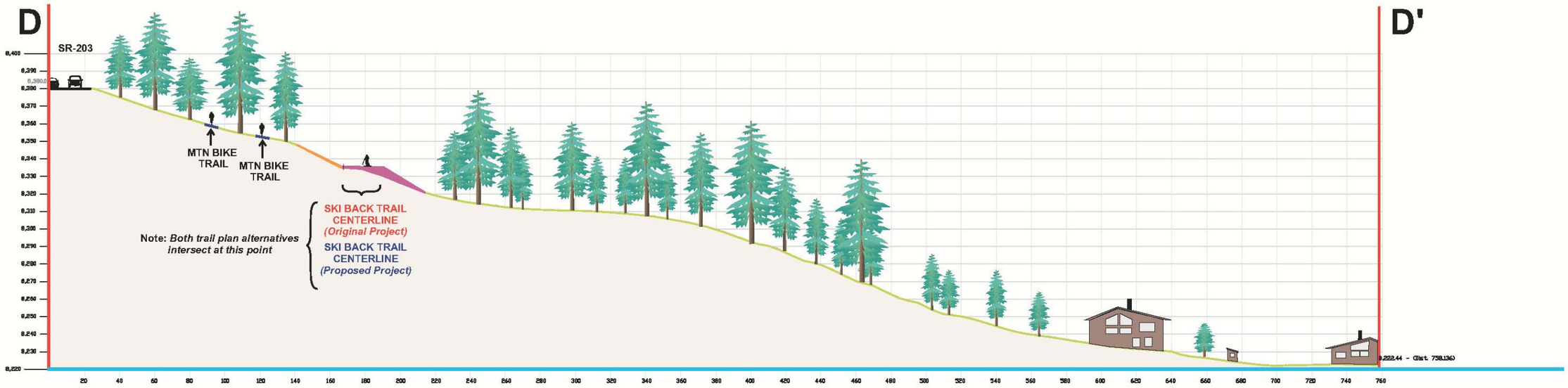


PCR

0 60 120 Feet

Source: LSA, 2007.

Figure 22
Vantage Point C - Line of Sight Cross-Section



- Fill Slope
- Cut Slope
- Mountain Bike Trail

PCR

0 60 120 Feet

Source: LSA, 2007.

Figure 23
Vantage Point D - Line of Sight Cross-Section

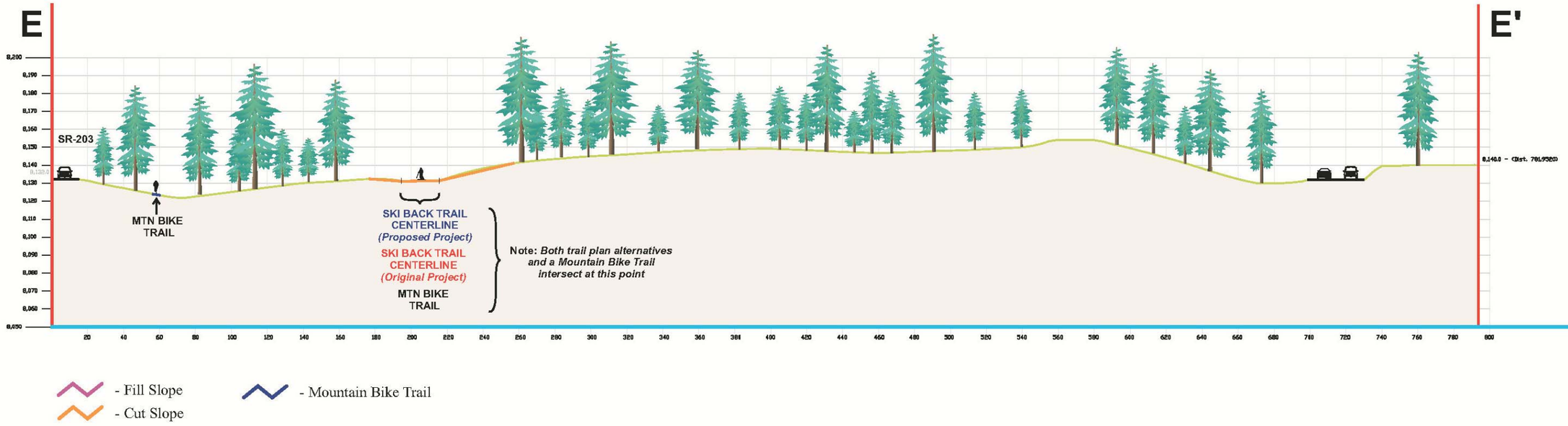


Figure 24
Vantage Point E - Line of Sight Cross-Section

an area tentatively identified as a Typical landscape for the Mammoth area. The higher degree (or relatively closer distance) of visibility from a public vantage point, the greater (or higher) the concern level. Combining these two qualitative facts results in a relatively high concern level.

As previously noted, the proposed Ski Back Trail alignment is not readily viewed from (although in close proximity to) SR-203, due to the grade difference and existing vegetation. Figure 25 on page 213 provides a simple analysis of the applicable Scenic Class by combining the following factors:

- Scenic Attractiveness: Class B, Typical;
- Visibility Distance: Immediate Foreground/Foreground, FG1/FG2; and
- Concern Level: Secondary TW/UA Moderate Use, Moderate Scenery Interest, 2.

Figure 25 depicts a compilation of Scenic Attractiveness (Figure 16) and Landscape Visibility (Figure 18) using GIS. Each of the categories within Scenic Attractiveness and Landscape Visibility were assigned a value, mapped as such, and then combined revealing a range of Scenic Classes. All values were assigned equal weight allowing for a simplified methodology. These values are expressed as follows:

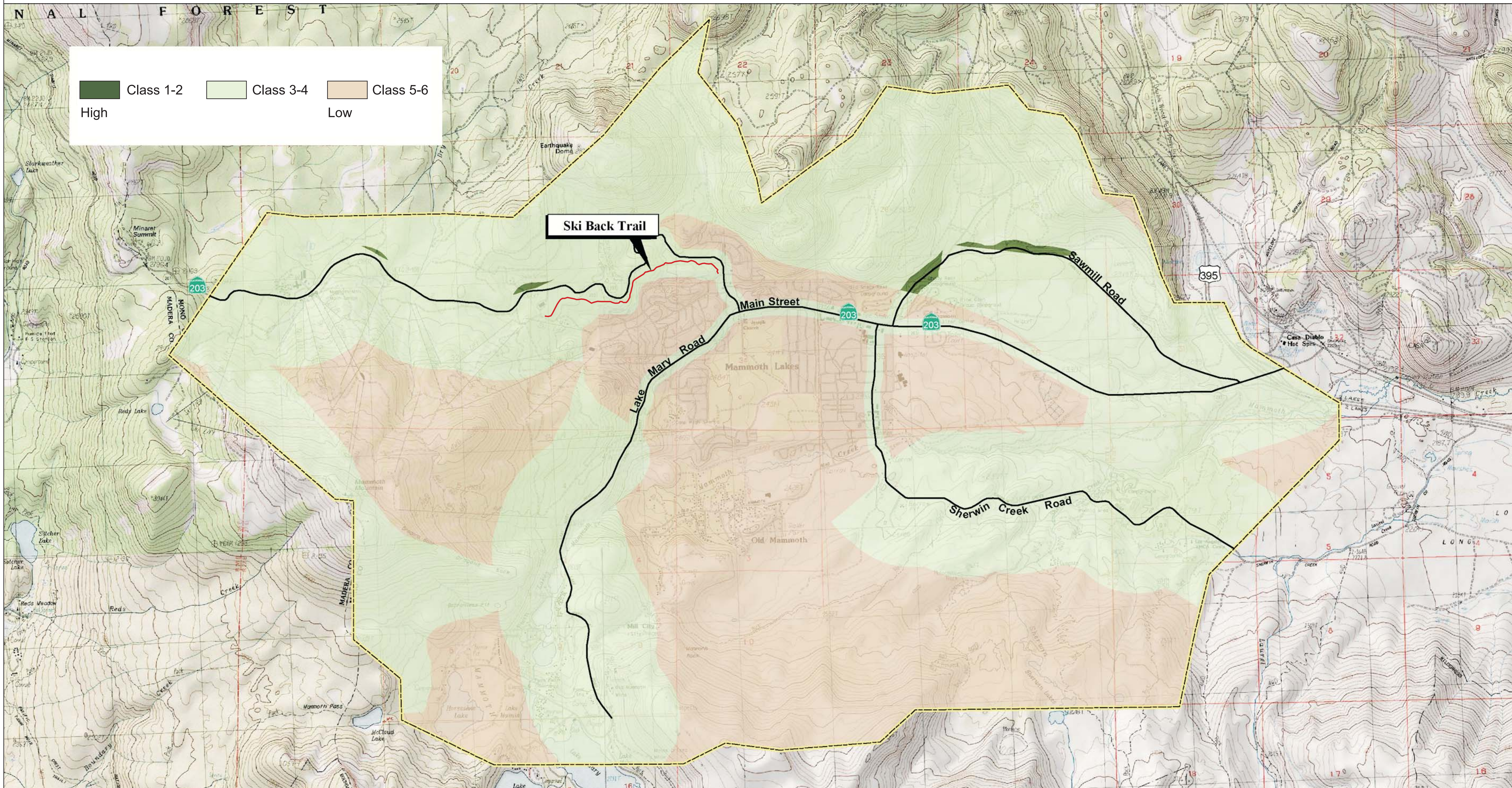
Category	Description	Value
Scenic Attractiveness		
Class A	Distinctive	1
Class B	Typical	2
Class C	Indistinctive	3
Landscape Visibility		
Immediate Foreground	0–300‘	1
Foreground	300–2,500’	2
Middle Ground	2,500’ +	3

The lower the combined “score,” the higher the public value. Generally, Scenic Classes 1 to 2 have high public value, Classes 3 to 5 have moderate value, and Classes 6 to 7 have low value.[72] Figure 25 illustrates that the specific Ski Back Trail area received a relative ranking of 3 to 4, or one of having moderate value.

(c) Scenic Integrity

Scenic Integrity speaks to an area’s “completeness” or preservation within its natural state. In regards to the Proposed Action, Scenic Integrity will describe the existing condition as

[72] *Ibid, p. 4–14.*



0 3500 7000 Feet

Source: LSA, 2007.

PCR

Figure 25
Scenic Classes

opposed to establishing a standard for management or preferred future condition. As described below, there are four Scenic Integrity Classes applicable to the study area within the relative aesthetics context.

High: The far upper reaches of the area retain the natural landscape character with no evidence from public vantage points of much, if any, deviation from this landscape character. The ridgeline form, rocky outcrops, and Eastern Sierra landscape appear to be intact.

Moderate: This class includes the mid-slopes of the recreational ski area as well as the relatively unaltered topography to the west, south, and east of the Town. This area maintains a natural landscape dominance with a very minor degree (if noticeable at all) of deviation from this landscape character. This area has been slightly altered by recreational facilities on public land; however, these facilities have been designed to reflect the surrounding natural context with scale, massing, and materials. The natural landscape has generally remained intact.

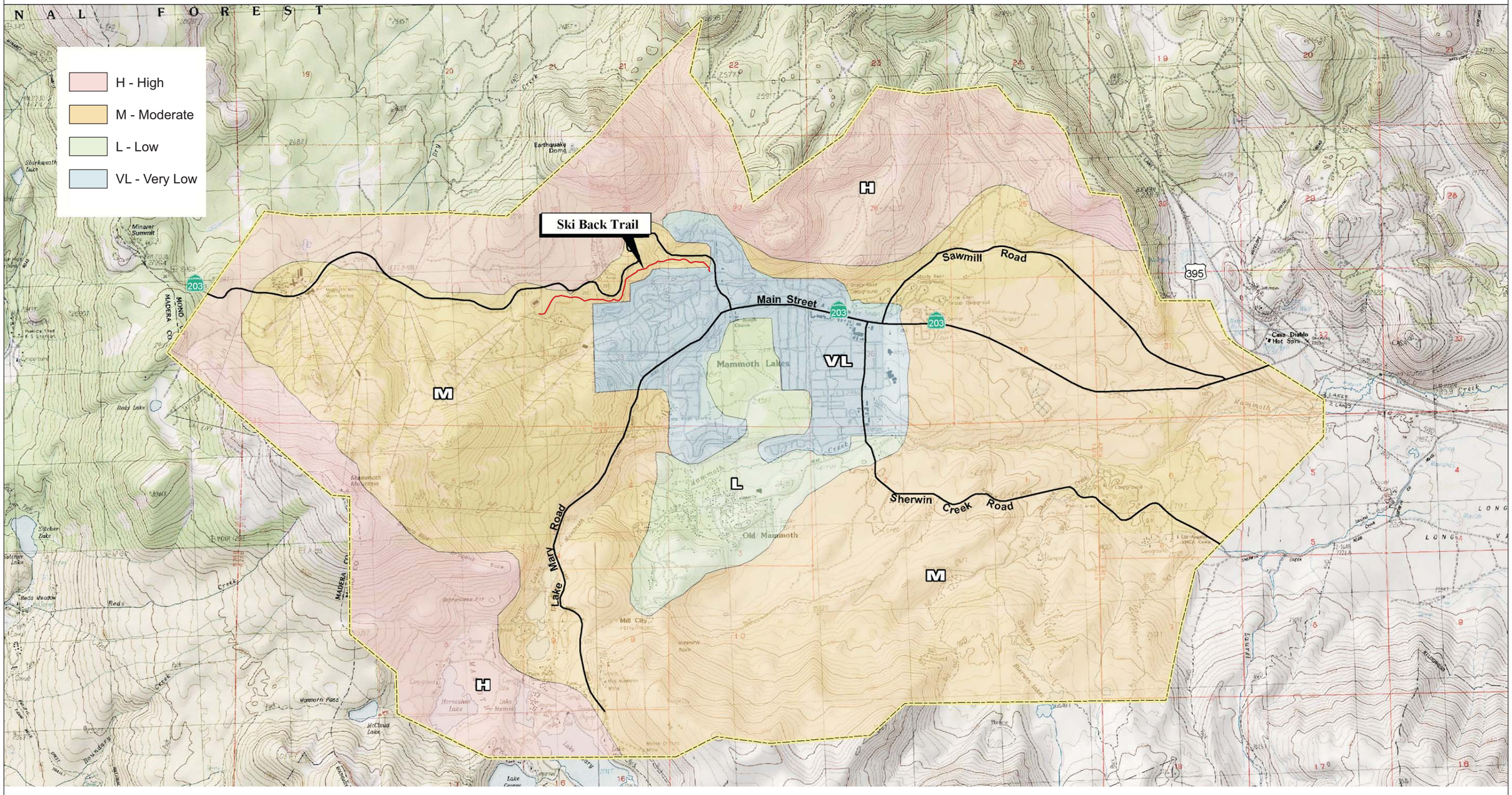
Low: This class is assigned to the area immediately south of the Town and represents a combination of clustered residential development with open space recreational uses (e.g., golf courses). This development generally depicts a degree of deviation from the natural landscape character. The landscape character has definitely been changed from its natural state.

Very Low: In relative terms, the Town core represents a Very Low Scenic Integrity class due to the intensity and dominance of the built environmental and accompanying infrastructure. The degree of deviation from the natural landscape context can be defined as dominant, with a small portion of the natural landscape remaining intact.

Due to its proximity to SR-203 and the residential areas, and due to the presence of overhead power lines, the Ski Back Trail alignment area is considered to have a "Moderate" level of scenic integrity. Figure 26 on page 215 illustrates the various Scenic Integrity classes assigned to the study area.

(d) Site Specific

As previously mentioned, the SMS is oriented toward large-scale, regional inventories and not necessarily small projects with relatively small magnitudes and significance. Therefore, the traditional SMS has been augmented by a site-specific analysis of the Proposed Action by analyzing its potential impacts to the visual environment. Several steps characterize this analysis. First, the proposed Ski Back trail alignment was mapped. Then potential public vantage points were mapped, primarily focusing on such vantage points along SR-203, located just north of the proposed Ski Back Trail alignment. Photographs were taken from these vantage points portraying existing (pre-Proposed Action) conditions. Where the Ski Back Trail alignment was visible from the public vantage point; the post-Proposed Action condition was depicted using digitally placed improvements or project design features as prescribed by the improvement plans.



PCR

0 3500 7000 Feet

Source: LSA, 2007.

Figure 26
Scenic Integrity

Existing landscaping between SR-203 and the proposed Ski Back Trail alignment would be left in place, as much as feasible, in order to retain the existing visual context. Finally, natural rock material from the area would be used to fortify any manufactured slopes on an as-needed basis.

Figure 27 on page 217 depicts the locations of the various vantage points. As noted above, the proposed Ski Back Trail alignment is not readily visible from most of the SR-203 segment in this area, thereby limiting the potential number of vantage points. Four public vantage points (A–D) were established and photographed. In addition, two privately oriented vantage points (E and F) augment the analysis to provide views of the project design features (rock wall).

Vantage Point A

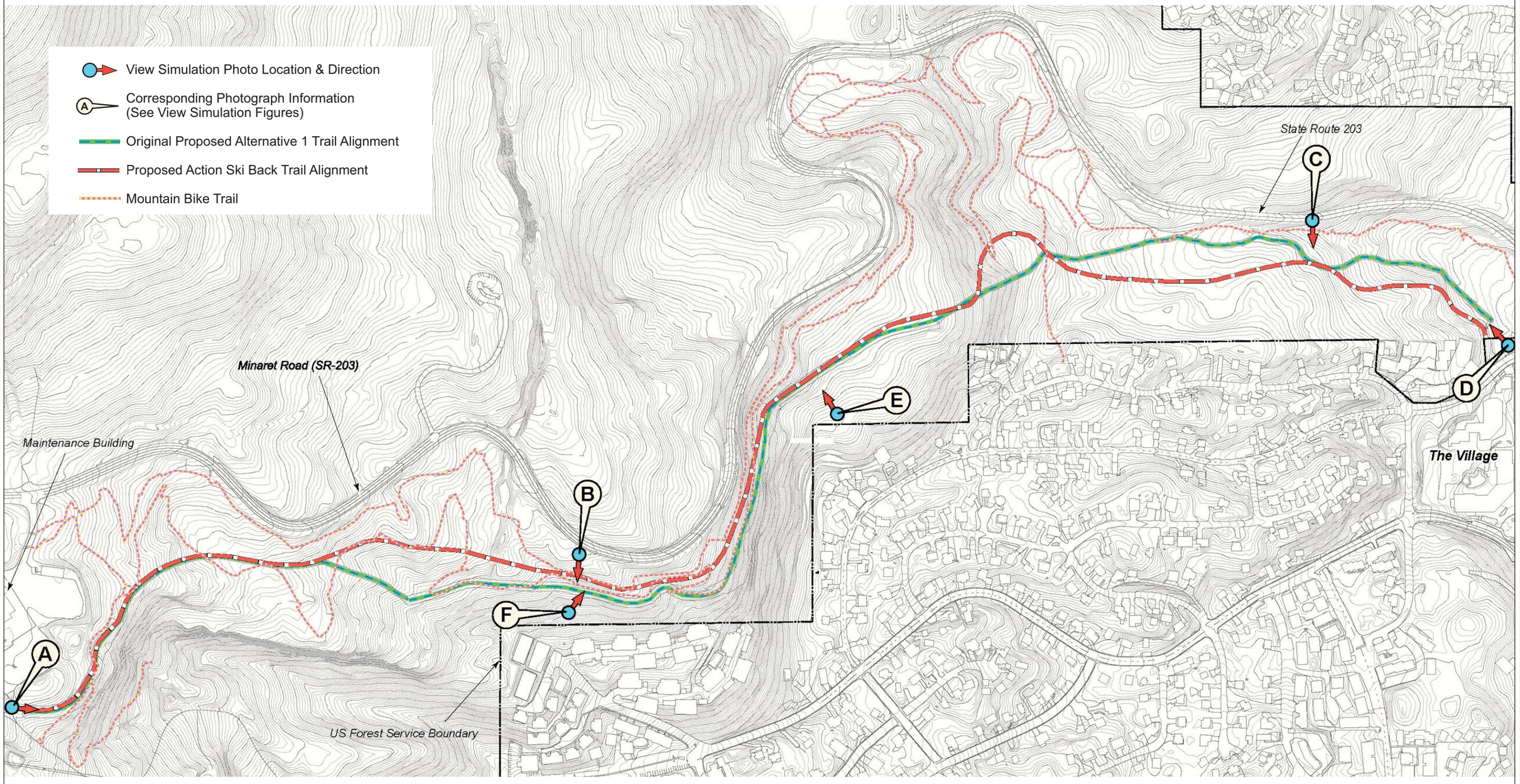
This vantage point depicts the start of the Ski Back Trail at the uppermost elevation. Figure 28A on page 218 provides the existing view, while Figure 28B on page 219 illustrates the post-Proposed Action view. The most notable change in view would be the removal of several trees and signage indicating the trail's location and direction. The existing visual context remains unchanged because the remaining Jeffery pines and red firs are of significant enough size, maturity, and density.

Vantage Point B

Figure 29 on page 220 depicts the vantage point that would provide the best opportunity to view the trail from this portion of SR-203. Due to the elevation difference between the vantage point and proposed Ski Back Trail alignment and the existing tree variety and density, the trail and its support improvements would not be visible from this location.

Vantage Point C

Figure 30 on page 221 depicts the vantage point that would probably be the closest and most direct view of the proposed Ski Back Trail alignment. However, there are no structural improvements proposed for this segment of the trail. The person in the photograph provides a sense of scale and is standing within the alignment of the Proposed Action. The tree density would allow the trail to be constructed without removing these trees. No post-Proposed Action analysis is warranted since the visual change would be minimal, if at all.



PCR

N

0 400 800 Feet

Source: LSA, 2007.

Figure 27
View Simulation Photo Locations

PCR

Figure 28A
Vantage Point A (Before)

Source: LSA, 2007.

PCR

Figure 28B
Vantage Point A (After)

Source: LSA, 2007.

PCR

Figure 29
Vantage Point B

Source: LSA, 2007.

PCR

Figure 30
Vantage Point C

Source: LSA, 2007.

Vantage Point D

Figure 31A on page 223 provides a vantage point from the intersection of SR-203 and Forest Trail Road. Vantage Point D also illustrates the terminus of the proposed Ski Back Trail. A bridge is located to the left of the scene portrayed in Figure 31B on page 224, connecting the trail to The Village. Figure 31B depicts the post-Proposed Action view from this vantage point. Figure 31B illustrates the proposed use of a slope stabilization measure using vegetation to support the Ski Back Trail. Also, some smaller trees have been removed to accommodate the proposed Ski Back Trail alignment in this area.

Vantage Point E

Figure 32A on page 225 illustrates a vantage point of the proposed Ski Back Trail from a private residential area. Although not a public vantage point, this perspective is provided to allow a view of the use of the slope stabilization measure using natural vegetation and ground cover as a potential design feature, as depicted in Figure 32B on page 226.

Vantage Point F

Figure 33A on page 227 illustrates a vantage point of the proposed Ski Back Trail from a private residence that is located in relatively close proximity. Figure 33B on page 228 depicts the post-Proposed Action condition with the slope stabilization measure using natural vegetation and ground cover.

Summary

In summary, the analysis identified the potentially affected area as having a Scenic Class that reflects the general goals of the INFLRMP, Partial Retention, and even perhaps Retention, so that the existing visual character would not change as a result of the Proposed Action. Therefore, the Proposed Action would not have an adverse effect to regional visual resources.

The site specific visual simulations further support this conclusion. Project design features such as natural rock walls and minimal tree removal would minimize any potential impact to the existing visual resources as a result of the Proposed Action. As such, the Proposed Action would not have an adverse effect to the visual resources along the Ski Back Trail alignment.

(3) Mitigation Measures

Since there would not be an adverse effect due to construction and operational impacts regarding visual resources with implementation of the Proposed Action, no mitigation measures are required.

PCR

Figure 31A
Vantage Point D (Before)

Source: LSA, 2007.

PCR

Figure 31B
Vantage Point D (After)

Source: LSA, 2007.

PCR

Figure 32A
Vantage Point E (Before)

Source: LSA, 2007.

PCR

Figure 32B
Vantage Point E (After)

Source: LSA, 2007.

PCR

Figure 33A
Vantage Point F (Before)

Source: LSA, 2007.

PCR

Figure 33B
Vantage Point F (After)

Source: LSA, 2007.

c. Environmental Consequences of Alternative 1 – Original Alignment Proposal

(1) Construction Impacts

Construction of Alternative 1 would take approximately six months for clearing and grading along the trail right-of-way, construction of the six retaining walls, final grading, storm drain improvements, and implementation of soil erosion control measures. Construction of the Ski Back Trail would also require establishment of additional corridors to provide adequate access points to the trail. The unimproved temporary access roads would be approximately 10 to 15 feet wide. After the construction of Alternative 1 is completed, the temporary access roads would be decommissioned by grading the compacted soils and re-vegetating the areas with native plants. However, Alternative 1 would require a substantially greater amount of cut and fill along the proposed alignment. Specifically, Alternative 1 would require the export of 23,000 cubic yards of cut and the import of 2,000 cubic yards of rock stack, thereby resulting in an increase in the amount of construction equipment traversing the trail and access corridors and the amount of construction time.

Regardless, construction of Alternative 1 would be short-term with most of the construction activity occurring out of the line of sight for travelers along SR-203 and the residential uses to the south. The most visible portion of the construction activity would be the construction equipment traversing the access corridors. However, as noted above, these access corridors would utilize existing corridors, including utility pole lines and utility access roads, which have already been cleared and/or are currently being utilized by mechanical equipment. In addition, the access corridors would be decommissioned after construction activities are complete and re-vegetated with native plants and materials. As such, there would not be an adverse effect since the construction activities would be short-term with limited viewsheds of the construction activities.

(2) Operational Impacts

(a) Visual Sensitivity

Scenic Attractiveness for Alternative 1 can be classified as follows (refer to Figure 16 for an illustration of the classes for this subregion):

(i) Class A

In the general Mammoth subregion, distinctive landscapes are exemplified by the landforms resulting from the combined tectonic and volcanic forces, most notably the upper

slopes and skyline. Specifically, this area appears to be unaltered and retains much of the natural landscape.

(ii) Class B

The green timber and other Eastern Sierra vegetation provide an aesthetically pleasing contrast to the abrupt topography, sheer rock faces, and blue sky. Again, it is apparent that the tree stands have been isolated by urban development on the lower slopes, recreational development (e.g., ski runs) on the upper slopes, and the network of roadways connecting these areas. The design, form, color, and massing of the ski-related structures and facilities attempt to acknowledge and complement the surrounding natural landscape. The residential development, while being influenced by and reflective of the surrounding alpine context, tends to be more intense and warrants a greater degree of infrastructure than the recreational facilities. Generally, a positive scenic quality has been maintained.

(iii) Class C

The majority of the valley floor and lower slopes is occupied by urban development that is distinct from the areas dedicated to public ski areas. The Town core is an intense development of residential, commercial, and institutional uses with supporting infrastructure. This development has changed the natural landscape character of much of the valley floor, resulting in a relatively low scenic value.

(b) Landscape Visibility

Figure 19 depicts three landscape visibility ranges, primarily due to limited visual range within the study area. SR-203, near the Alternative 1 trail alignment, is classified as a Secondary Travelway with Moderate Use. The Alternative 1 area is not readily visible from visitor centers, vista points, ski areas, and recreational sites to any significant degree. The combination of the existing travelways and lack of appropriate use areas would result in a Concern Level of 2 (combination of Secondary Travelway/Use Area: Moderate Use with a Moderate Interest in Scenery). However, as illustrated in Figure 20 through Figure 24, with the exception of Figure 23, the topography along the Alternative 1 trail alignment prevents direct views of the proposed Ski Back Trail alignment. Therefore, this limited portion of SR-203 essentially provides the only potential public views of the proposed Ski Back Trail alignment.

(i) Scenic Classes

As previously noted, the Alternative 1 trail alignment is not readily viewed from (although in close proximity to) SR-203 due to the grade difference and existing vegetation.

Figure 25 illustrates that the Alternative 1 area received a relative ranking of 3 to 4, or one of having moderate value.

(c) Scenic Integrity

Due to its proximity to SR-203 and the residential areas, and due to the presence of overhead power lines, the Alternative 1 alignment area is considered to have a "Moderate" level of scenic integrity. Figure 26 illustrates the various Scenic Integrity classes assigned to the Alternative 1 alignment area.

(d) Site Specific

Existing landscaping between SR-203 and the Alternative 1 trail alignment would be left in place, as much as feasible, in order to retain the existing visual context. In addition, natural rock material from the area would be used to fortify any manufactured slopes on an as-needed basis. Finally, the Alternative 1 alignment is not readily visible from most of the SR-203 segment in this area, thereby limiting the potential number of vantage points. Four public vantage points (A–D) were established and photographed. In addition, two privately oriented vantage points (E and F) augment the analysis to provide views of the project design features (rock wall).

Vantage Point A

This vantage point depicts the start of the Alternative 1 trail alignment at the uppermost elevation. Figure 28A provides the existing view, while Figure 28B illustrates the post-Alternative 1 view. The most notable change in view would be the removal of several trees and signage indicating the trail's location and direction. The existing visual context remains unchanged because the remaining Jeffery pines and red firs are of significant enough size, maturity, and density.

Vantage Point B

Figure 29 depicts the vantage point that would provide the best opportunity to view the Alternative 1 trail from this portion of SR-203. Due to the elevation difference between the vantage point and the Alternative 1 trail alignment and the existing tree variety and density, the trail and its support improvements would not be visible from this location.

Vantage Point C

Figure 30 depicts the vantage point that would probably be the closest and most direct view of the Alternative 1 trail alignment. However, there are no structural improvements

proposed for this segment of the trail. The Alternative 1 alignment is located several yards/meters beyond this point. However, the tree density would allow the trail to be constructed without removing these trees. No post-Alternative 1 analysis is warranted since the visual change would be minimal, if at all.

Vantage Point D

Figure 31A provides a vantage point from the intersection of SR-203 and Forest Trail Road. Vantage Point D also illustrates the terminus of the Alternative 1 trail alignment. A bridge is located to the left of the scene portrayed in Figure 31B, connecting the trail to The Village. Figure 31B depicts the post-Alternative 1 view from this vantage point. Figure 31B illustrates the proposed use of a slope stabilization measure using vegetation to support the trail. Also, some smaller trees have been removed to accommodate the Alternative 1 alignment in this area.

Vantage Point E

Figure 32A illustrates a vantage point of the Alternative 1 trail from a private residential area. Although not a public vantage point, this perspective is provided to allow a view of the use of the slope stabilization measure using natural vegetation and ground cover as a potential design feature, as depicted in Figure 32B.

Vantage Point F

Figure 33A illustrates a vantage point of the proposed trail from a private residence that is located in relatively close proximity. Figure 33B depicts the post-Alternative 1 condition with the slope stabilization measure using natural vegetation and ground cover.

Summary

In summary, the analysis identified the Alternative 1 area as having a Scenic Class that reflects the general goals of the INFLRMP, Partial Retention, and even perhaps Retention, so that the existing visual character would not change as a result of Alternative 1. Therefore, Alternative 1 would not have an adverse effect to regional visual resources.

The site-specific visual simulations further support this conclusion. Project design features such as natural rock walls and minimal tree removal would minimize any potential impact to the existing visual resources as a result of Alternative 1. As such, Alternative 1 would not have an adverse effect to the visual resources along the Ski Back Trail alignment.

d. Environmental Consequences of Alternative 2 – Transit Emphasis Alternative

(1) Construction Impacts

Under Alternative 2, the Ski Back Trail would not be constructed. Instead, there would be an increased emphasis on transit provisions focused on returning skiers to The Village. Therefore, there would not be an adverse effect since there would not be any construction activities or associated construction impacts for the Transit Alternative.

(2) Operational Impacts

Alternative 2 involves providing four additional bus trips originating from the Main Lodge and associated parking areas to The Village during the peak hour. As such, the increase in bus trips would occur along SR-203, which is a road that currently carries a large amount of traffic. An additional four bus trips along this roadway would not alter the visual character, landscape character, or scenic integrity of the area. As such, Alternative 2 would not result in an adverse effect regarding visual resources.

e. Environmental Consequences of Alternative 3 – No Action Alternative

(1) Construction Impacts

Under Alternative 3, the Ski Back Trail would not be constructed. Therefore, there would not be any construction activities or associated construction impacts for the No Action Alternative.

(2) Operational Impacts

Under Alternative 3, the Ski Back Trail would not be constructed. Therefore, there would be no impacts to the visual character, landscape character, or scenic integrity under the No Action Alternative.

f. Conformity with Applicable Plans and Policies

The Proposed Action and Alternative 1 would be consistent with Chapter 2 of the INFLRMP, since it would maintain the visual quality of the Ski Back Trail area by limiting the amount of grading required, since the majority of the trail would be developed within existing access corridors and along existing utility lines. In addition, due to the intervening topography and vegetation between the trail and the residential community located south of the Ski Back

Trail, the Proposed Action and Alternative 1 would not conflict between the visual quality of the mountain the residential uses viewsheds. Finally, the Proposed Action would work to maintain current visual resources and scenic attractions by significantly reducing the amount of grading required for the Ski Back Trail compared to Alternative 1. In addition, both the Proposed Action and Alternative 1 would utilize cut from the trail for fill where needed elsewhere in the trail and provide retaining walls developed with materials native to the area. As Alternative 2 and Alternative 3 would not involve development of the Ski Back Trail, the visual quality of the area would be maintained, there would be no conflict between visual quality and other resources, and the current visual resources and scenic attractions would be maintained.

While the Proposed Action and Alternative 1 would result in additional winter sports development, it would not result in major visual resource disruptions. While the Ski Back Trail would be developed between SR-203 located north of the trail and residential uses located south of the trail, viewsheds from either the roadway or residential uses would be limited due to intervening topography and vegetation. In addition, it should be noted that the Ski Back Trail is not visible from Highway 395. Therefore, the Proposed Action and Alternative 1 would be consistent with Chapter 3 of the INFLRMP. Alternative 2 and Alternative 3 would not result in an increase in winter sports development and therefore, would not conflict with Chapter 3 of the INFLRMP.

Finally, as concluded above, the Proposed Action and Alternative 1 would not alter the existing visual character of the area, thereby maintaining the Partial Retention designation of the area and having a Scenic Class that reflects the general goals of the INFLRMP. Therefore, the Proposed Action and Alternative 1 would be consistent with Chapter 4 of the INFLRMP and there would not be an adverse effect. Since Alternative 2 and Alternative 3 would not impact the Scenic Class of the Ski Back Trail area, they would be consistent with Chapter 4 of the INFLRMP.

3.0 ENVIRONMENTAL CONSEQUENCES
3.9 CUMULATIVE EFFECTS

INTRODUCTION

NEPA requires the consideration of cumulative impacts for a proposed action or project. CEQ regulations (40 CFR 1508.7) implementing NEPA defines cumulative impacts as follows:

> *Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

In order to provide a conservative, worst-case analysis, the cumulative analysis has been based upon buildout of the Mammoth Mountain Ski Area (MMSA), as projected in the *MMSA Master Plan.*[73] It should be noted that environmental issues for which the Proposed Action is not anticipated to result in adverse effects, would not result in cumulative impacts. As such, only the environmental issue areas analyzed in this Final EA are anticipated to result in potential cumulative impacts and therefore, are analyzed below.

3.9.1 EVALUATION OF POTENTIAL CUMULATIVE EFFECTS

a. Recreation

(1) Proposed Action

Cumulative development assumed in the *MMSA Master Plan* would result in an increase of 2,240 skiers/snowboarders on a normal day and 3,200 skiers/snowboarders on a peak day. However, as described in Section 3.2, *Recreation*, the Proposed Action would have a beneficial effect on winter sports by providing the Ski Back Trail, which was assumed in the *MMSA Master Plan*. The Ski Back Trail would increase skiable terrain at the Canyon Lodge portal and simultaneously create skier return capacity to The Village portal. Therefore, construction of the

[73] *Mammoth Mountain Ski Area, MMSA Master Plan, Table II.27 and Table VI.6, 2005.*

Ski Back Trail would reduce the cumulative demand for the Village Gondola and the Canyon Lodge and Main Lodge Transit systems, resulting in a beneficial cumulative impact on winter sports.

The proposed Ski Back Trail would require mitigation measures for short-term impacts to the Uptown and Downtown mountain bike trails and to ensure mountain bikers do not utilize the Ski Back Trail. Similar to the Proposed Action, cumulative development may result in a general increase in use of the mountain bike trails at North Village build out and may result in higher maintenance needs, trail restoration needs, and a minor reroute to accommodate the roundabout. However, cumulative projects that may result in adverse effects to the mountain bike trails would be required to restore the trails or provide alternative routes. Therefore, there would be no cumulative adverse effects to mountain bike trails.

(2) Alternative 1 – Original Alignment Proposal

Alternative 1 would reduce the cumulative demand for demand for the Village Gondola and the Canyon Lodge and Main Lodge Transit systems, resulting in a beneficial cumulative impact on winter sports. In addition, under Alternative 1, cumulative development may result in a general increase in use of the mountain bike trails with buildout of the North Village and may result in higher maintenance needs, trail restoration needs, and a minor reroute to accommodate the roundabout. However, cumulative projects that may result in adverse effects to the mountain bike trails would be required to restore the trails or provide alternative routes. Therefore, there would be no cumulative adverse effects to mountain bike trails.

(3) Alternative 2 – Transit Emphasis Alternative

Alternative 2 would result in adding a total of four buses during the peak hour (3:30 P.M. to 5:00 P.M.) running only from the Main Lodge to The Village. While this Alternative would reduce the cumulative demand for the Village Gondola and the Canyon Lodge and Main Lodge Transit systems, it would not increase skiable terrain to accommodate the increase in skiers under buildout conditions.

This Alternative would not require construction of the Ski Back Trail. Mitigation would not be required for the mountain bike trails. Regardless, similar to the Proposed Action, there would not be a cumulative adverse effect regarding summer recreational facilities.

(4) Alternative 3 – No Action Alternative

Alternative 3 would not result in development of the Ski Back Trail and therefore, would not provide additional skiable terrain or provide skier return capacity to The Village portal

resulting in a cumulative adverse effects to winter recreational sports. However, while this Alternative would not impact mountain bike trails, cumulative development may result in a general increase in use of the mountain bike trails with buildout of North Village and may result in higher maintenance needs, trail restoration needs, and a minor reroute to accommodate the roundabout. However, cumulative projects that may result in adverse effects to the mountain bike trails would be required to restore the trails or provide alternative routes. Therefore, there would be no cumulative adverse effects to mountain bike trails.

b. Transportation

(1) Proposed Action

The analysis in Section 3.3, *Transportation*, included buildout of the MMSA and therefore, included cumulative effects. As described in Section 3.3, based on the buildout traffic analysis for the *General Plan Update*, the intersections of Minaret Road/Main Street will be LOS D and the intersection of Minaret Road/Forest Trail Road will be LOS B. In addition, under cumulative conditions, the Village Gondola return trip demand will increase to 4,500 skiers and on peak days 6,400 skiers.[74] Finally, cumulative development would increase the lines for the buses going from the Canyon and Main Lodges to The Village.

As concluded in Section 3.3, under cumulative (buildout) conditions, the Ski Back Trail would not provide relief to traffic congestion on southbound Minaret Road towards The Village but would provide an alternative to waiting in line for public transit and would provide relief to existing and future demand for the Village Gondola. Therefore, implementation of the Proposed Action would result in a beneficial cumulative effect to transportation.

(2) Alternative 1 – Original Alignment Proposal

Similar to the Proposed Action, Alternative 1 would not provide relief to traffic congestion on southbound Minaret Road towards The Village but would provide an alternative to waiting in line for public transit and would provide relief to existing and future demand for the Village Gondola. Therefore, implementation of Alternative 1 would result in a beneficial cumulative effect to transportation.

[74] *Town of Mammoth Lakes, North Village Specific Plan (2000), identifies the projects that are currently in the CDD development list.*

(3) Alternative 2 – Transit Emphasis Alternative

Alternative 2 would provide an additional four buses during the peak hour (3:30 P.M. to 5:00 P.M.) running only from the Main Lodge to The Village. As concluded in Section 3.3, Alternative 2 would reduce the line of transit riders but would not result in a change in traffic congestion due to latent demand. Regardless, similar to the Proposed Action, this Alternative would not result in a cumulative adverse effect regarding transportation.

(4) Alternative 3 – No Action Alternative

The No Action Alternative would not develop a Ski Back Trail to alleviate the cumulative demand for the Village Gondola and the Canyon Lodge and Main Lodge Transit systems. As such, this Alternative would result in a cumulative adverse effect regarding transportation.

c. Air Quality

(1) Proposed Action

While the Proposed Action would not result in adverse effects to air quality as a result of construction activities, construction emissions associated with buildout of the MMSA could exceed the Great Basin Unified Air Pollution Control District's (GBUAPCD) emission thresholds. However, the GBUAPCD requires standard mitigation measures associated with any construction activities. As such, compliance with the GBUAPCD requirements for mitigating construction emissions would ensure that there would not be a cumulative adverse effect to air quality due to construction activities.

As discussed in Section 3.4, although the proposed Ski Back Trail is located in a region that is in non-attainment for ozone and $PM_{10,}$ the emissions associated with the Proposed Action would not be cumulatively considerable, as the emissions would fall below GBUAPCD emission thresholds. In fact, it should also be noted that the Proposed Action would result in a net reduction of operational emissions as a result of development of the Ski Back Trail. In addition, the Proposed Action would be consistent with the Air Quality Management Plan (AQMP), which is intended to bring the Basin into attainment for all criteria pollutants. As such, the Proposed Action would have a beneficial effect regarding cumulative air quality.

(2) Alternative 1 – Original Alignment Proposal

Under Alternative 1, compliance with the GBUAPCD requirements for mitigating construction emissions would ensure that there would not be a cumulative adverse effect to air

quality. In addition, Alternative 1 would result in a net reduction of operational emissions and as such, would have a beneficial effect regarding cumulative air quality.

(3) Alternative 2 – Transit Emphasis Alternative

Under Alternative 2, no construction activities would be required and therefore, there would not be construction emissions that would contribute to the local and regional air quality. With the increase of four buses during the peak hour, Alternative 2 would result in a greater amount of operational emissions. Regardless, the operational emissions associated with Alternative 2 would be below GBUAPCD thresholds and would be consistent with the AQMP and therefore, would not contribute to a cumulative adverse effect regarding air quality.

(4) Alternative 3 – No Action Alternative

This Alternative would not result in any construction or operational emissions. Therefore, Alternative 3 would not result in cumulative adverse effects to air quality.

d. Noise

(1) Proposed Action

Similar to the Proposed Action, cumulative development projects would be required to comply with the Town's Noise Ordinance requirements, which states that the maximum construction noise level permitted is 75 dBA or lower for residences in a single-family residential zone. Section 15.08.020 of the Town of Mammoth Lakes Municipal Code also limits construction during the weekdays and only permits weekend construction activities with prior approval. Therefore, all cumulative projects would be required to comply with the Town's Noise Ordinance ensuring that there would be no adverse cumulative noise effects.

Similar to the construction noise effects, the Town's Noise Ordinance stipulates indoor and outdoor noise requirements for various land uses. Therefore, future development within the MMSA would all be required to comply with the Town's Noise Ordinance, ensuring that there would be no adverse noise effects due to cumulative operations.

(2) Alternative 1 – Original Alignment Proposal

Under Alternative 1, compliance with the Town's Noise Ordinance would ensure that there would be no adverse cumulative noise effects due to construction activities. In addition, cumulative projects would all be required to comply with the maximum permitted interior and

exterior noise levels permitted by the Town's Noise Ordinance, ensuring that there would be no adverse noise effects due to cumulative operations.

(3) Alternative 2 – Transit Emphasis Alternative

Alternative 2 would not require construction activities and as such, there would be no cumulative adverse effects regarding noise due to construction activities. In addition, this Alternative would result in adding four buses during the peak hour to Minaret Road, which is already a highly trafficked road. The increase in four bus trips combined with the trips associated with the cumulative projects would not result in an increase in ambient noise level. Therefore, there would not be a cumulative adverse effect to noise with implementation of Alternative 2.

(4) Alternative 3 – No Action Alternative

The No Action Alternative would not result in construction or operational noise impacts since there would be no development under this Alternative. As such, Alternative 3 would not result in a cumulative adverse effect regarding noise.

e. Biological Resources

(1) Proposed Action

As concluded in Section 3.6, *Biological Resources,* the study area is not expected to support any sensitive plant species, is not considered a wildlife movement corridor, and is not within critical habitat for any listed plant or wildlife species. In addition, the Proposed Action is not expected to have any adverse impacts to regional populations of sensitive wildlife species. Finally, similar to the Proposed Action, cumulative projects would be required to limit construction activities during nesting periods, in order to further ensure there would be no adverse effects to wildlife resources. As such, implementation of the Proposed Action would not result in adverse cumulative effects to biological resources.

(2) Alternative 1 – Original Alignment Proposal

Under Alternative 1, the study area is not expected to support any sensitive plant species, is not considered a wildlife movement corridor, and is not within critical habitat for any listed plant or wildlife species. In addition, Alternative 1 is not expected to have any adverse effects to regional populations of sensitive wildlife species. Finally, cumulative projects would be required to limit construction activities during nesting periods, in order to further ensure there would be

no adverse effects to wildlife resources. As such, implementation of Alternative 1 would not result in adverse cumulative effects to biological resources.

(3) Alternative 2 – Transit Emphasis Alternative

Alternative 2 would provide four additional buses along an already developed roadway that is currently heavily trafficked. Therefore, the addition of four buses during the P.M. peak hour is not anticipated to impact biological resources. Consequently, implementation of Alternative 2 would not contribute to cumulative adverse effects to biological resources.

(4) Alternative 3 – No Action Alternative

The No Action Alternative would not result in biological resources impacts since there would be no development under this Alternative. As such, Alternative 3 would not result in a cumulative adverse effect regarding biological resources.

f. Cultural Resources

(1) Proposed Action

A Heritage Resources records review and field survey conducted for the proposed Ski Back Trail concluded that there were no cultural resources within the Ski Back Trail's Area of Potential Effect (APE) and therefore, the Proposed Action would not result in adverse effects to cultural resources. In addition, similar to the Proposed Action, all cumulative projects would have to comply with federal and State regulations if cultural resources are identified during construction activities. As such, there would not be a cumulative adverse effect regarding cultural resources.

(2) Alternative 1 – Original Alignment Proposal

The Heritage Resources records review and field survey concluded that there were no cultural resources within the Proposed Action's APE, which includes the Original Alignment Proposal. Therefore, Alternative 1 would not result in adverse effects to cultural resources. In addition, all cumulative projects would have to comply with federal and state regulations if cultural resources are identified during construction activities. As such, there would not be a cumulative adverse effect regarding cultural resources.

(3) Alternative 2 – Transit Emphasis Alternative

Alternative 2 would provide four additional buses along an already developed roadway that is currently heavily trafficked. Therefore, the addition of four buses during the P.M. peak hour is not anticipated to impact cultural resources. Consequently, implementation of Alternative 2 would not contribute to cumulative adverse effects to cultural resources.

(4) Alternative 3 – No Action Alternative

The No Action Alternative would not result in cultural resources impacts since there would be no development under this Alternative. As such, Alternative 3 would not result in a cumulative adverse effect regarding cultural resources.

g. Aesthetics

(1) Proposed Action

The Ski Back Trail is surrounded by development with residential uses located south of the trail and Minaret Road, a heavily trafficked roadway, located north of the trail. Cumulative projects within the area would, therefore, be separated by intervening development. In addition, the remaining surrounding area consists of the MMSA, which has significant intervening topography and forestation that obstructs views of surrounding areas. Therefore, due to intervening development and the visual separation of the Proposed Action from the cumulative projects, the potential for simultaneous viewing of the Proposed Action and the cumulative projects is minimized. Therefore, there would be no cumulative adverse effects regarding aesthetics.

(2) Alternative 1 – Original Alignment Proposal

The Original Alignment Proposal is surrounded by development with residential uses located south of the trail and Minaret Road, a heavily trafficked roadway, located north of the trail. Cumulative projects within the area would therefore, be separated by intervening development. In addition, the remaining surrounding area consists of the MMSA, which has significant intervening topography and forestation that obstructs views of surrounding areas. Therefore, due to intervening development and the visual separation of Alternative 1 from the cumulative projects, the potential for simultaneous viewing of Alternative 1 and the cumulative projects is minimized. Therefore, there would be no cumulative adverse effects regarding aesthetics.

(3) Alternative 2 – Transit Emphasis Alternative

Alternative 2 would provide four additional buses along an already-developed roadway that is currently heavily trafficked. Therefore, the addition of four buses during the P.M. peak hour is not anticipated to impact the aesthetic value of the area. Consequently, implementation of Alternative 2 would not result in a cumulative adverse effect regarding aesthetics.

(4) Alternative 3 – No Action Alternative

The No Action Alternative would not result in aesthetic impacts since there would be no development under this Alternative. As such, Alternative 3 would not result in a cumulative adverse effect regarding aesthetics.