TOWN OF MOUNTAIN VILLAGE
COMPREHENSIVE PLAN

TRANSPORTATION PLAN

Prepared for:

Town of Mountain Village
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Mountain Village, CO 81435

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

This report provides transportation findings for the Town of Mountain Village Comprehensive Plan. The analysis has been completed to determine what additional traffic will be on the road network and additional public parking that may need to be provided as a result of the land use proposed in the Comprehensive Plan, prepared by AECOM, Inc. and Oz Architects. All analyses completed for this transportation plan have been based on existing economic and land use data, information which has been compiled with assistance from Town of Mountain Village staff and Economic & Planning Systems (EPS).

The development of future forecast volumes and parking demands using the Town of Mountain Village Comprehensive Plan as a basis relied on the creation of a unique transportation model that was developed and calibrated to reflect existing conditions. Following the calibration of the model, land use data and travel characteristics of the proposed Comprehensive Plan were input into the model to yield traffic forecasts for the build out of the community. Based on these build out traffic forecasts, future infrastructure needs were identified to ensure acceptable roadway operations and parking provisions in accord with the vision of the Comprehensive Plan.

II. DATA COLLECTION

For the Town of Mountain Village, the winter ski season represents the period with the highest occupancy, most trip making, and highest parking demand and is the focus of the traffic forecasting process. Thus, the data collection, model development, and calibration have focused on trip making characteristics during the peak ski season. Since key trip making aspects of the town dynamic change based on the season, especially the destination of visitors during daily activities, the time of day that travel is made, and what mode of transportation is used, the transportation model and all subsequent analysis are valid for the winter season only and cannot be readily converted into summer season traffic forecasts.

The transportation analyses and calibration were based on various data sources.

- Historic traffic counts were completed by TDA for Mountain Village; three studies were used to determine traffic volumes on key roadway segments in town:
  - Mountain Village Christmas 2006 Traffic Count Summary (January 2007),
  - Mountain Village May 2007 Traffic Survey Summary (June 2007), and
  - Annual Traffic Count Program; Initial Assessment (October 2008).
- Peak hour turning movement counts were collected on February 20, 2011 (Presidents' Holiday weekend) at SH 145 / Mountain Village Boulevard and SH 145 / Highway 145 (Society Turn).
- Daily parking counts have historically been taken at all public parking locations throughout Mountain Village at noon daily; count data was provided by town staff for January 2007 through January 2011.
- Dial-A-Ride ridership statistics are recorded on a daily basis for all trips using the service; count data was provided by the Town for all of 2010 and January 2011.
- Telluride Express provided ridership for daily trips on a seasonal basis; data was provided focusing on employee use of the service to Mountain Village.

The historic traffic count data, combined with daily parking (2007-2010) and daily skier data (2009-2010 provided by Telluride Ski & Golf), was used to determine anticipated daily traffic volumes in Mountain Village for the 10th Highest Winter Day.

The 10th Highest Winter Day is a common planning metric for ski resort communities. The usefulness of this hypothetical day is in planning for a very busy day for the ski community while not considering traffic impacts on the highest traffic volume day of the entire year. By using this metric, we can determine that traffic in Mountain Village will only be greater on nine days a year during the winter season. As a point of reference, the 10th Highest Winter Day typically occurs during Presidents' Weekend or during Spring Break (middle of March). Lower traffic volumes can be expected within the Town on the average day during the winter season. Based on 2009-2010 skier visit data provided by Telluride Ski & Golf, the average ski day is historically 62% of the 10th Highest Winter Day. This means that for year round residents of the Town, the average traffic volumes on Mountain Village roads can be expected to be lower than volumes presented in this report.

Additionally, during development of the 10th Highest Winter Day daily volumes, all construction traffic included in the historic traffic counts was removed for this study. There are several reasons for removing construction traffic; most importantly, this study has been developed to determine traffic forecasts at build out of the community. By definition, this means there will be limited construction traffic since the ultimate Comprehensive Plan vision will have been accomplished. Second, the amount of construction traffic within town on the 10th Highest Winter Day will be negligible since this day represents a peak visitor day during the winter. It is likely that limited construction traffic will be present due to the increased activity in town on a holiday or weekend.

As a result of the data collection and processing, key daily traffic volumes on Mountain Village Boulevard from SH 145 east have been developed for this study. For the reader's reference, three different time of year daily volumes taken from the TDA studies are provided in **Table 1**, to provide a comparison between the 10th Highest Winter Day (5,400 vehicles per day (vpd)) and daily traffic at other times in the year.

Table 1. Existing Volumes on Mountain Village Boulevard east of SH 145

Time of Year	Existing Volume (vpd)
10th Highest Winter Day	5,400
May	3,900
August	4,800

III. LAND USE – EXISTING AND BUILD OUT

The Town of Mountain Village provides a unique transportation environment that has developed due to the terrain of the surrounding mountains. Specifically, the road system was laid out like a tree, with Mountain Village Boulevard serving as a trunk, with SH 145 at the base, and the Village Core at the top. Adams Ranch Road, Russel Drive, Touchdown Drive, Benchmark Drive, the Parking Garage driveway and San Joaquin Road are all major branches of the tree extending from the trunk, each serving individual areas (travel sheds). In addition to this road system, the gondola at the Village Core provides a vital link to the Town of Telluride. The transportation model developed for Mountain Village takes into consideration the trips generated by each travel shed, the land use relationships between the areas, and the distinct alternative modes of transportation available in each area.

The land use is the most paramount input for the transportation model. A visual survey of all parcels in the Town was conducted in Summer 2010 by Town staff in order to accurately determine existing land use throughout town. The resulting land use table was then divided among six key travel sheds: development in the Core, at the Gondola Parking Garage, along San Joaquin Road, along Benchmark Drive, along Russel and Touchdown Drives, and along Adams Ranch Road. The residential and commercial development membership to each of these travel sheds can be seen on **Figure 1**. It is worth mentioning that due to the unique zoning for Mountain Village, many times the concept of built and unbuilt density credits are brought into discussion. It is important to remember that for this study all analyses consider actual units. Additionally, only built units recorded during the visual survey have been used during the existing model development, since only those units are responsible for generating traffic. The existing land use is presented in **Table 2.**

Table 2. Existing Land Use

Residential Land Use

Travel Shed	Single Family	Condo	Employee Condo/Apt	Employee Dorm	Lodge	Efficiency Lodge	Hotel Efficiency	Hotel
Core	37	385	22	0	38	167	8	79
Town Hall/Garage	0	10	166	0	73	57	0	0
San Joaquin Rd	73	153	6	0	0	0	0	0
Benchmark Dr	153	60	0	0	0	0	0	0
Russel/Touchdown Dr	65	8	30	0	0	0	0	0
Adams Ranch Rd	55	66	150	149	60	36	0	0
Total	**383**	**682**	**374**	**149**	**171**	**260**	**8**	**79**
Overall Total	**2,106**							

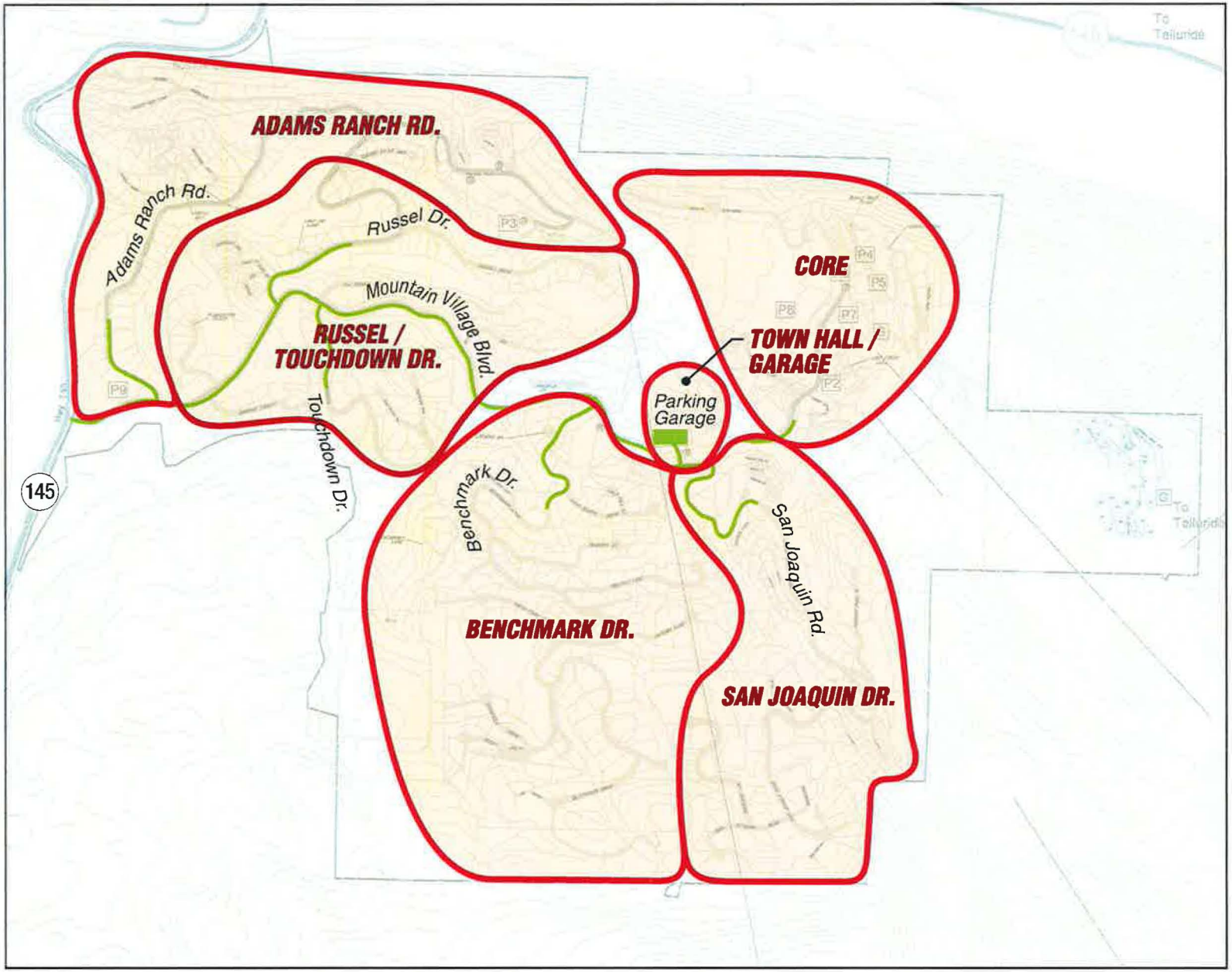

Figure 1

Transportation Analysis Zones

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Table 2 (continued). Existing Land Use

Commercial Land Use

Travel Shed	Retail (sq ft)	Office (sq ft)	Town Hall (sq ft)	Post Office (sq ft)	Town Maintenance (sq ft)	Medical Office (sq ft)	Wellness (sq ft)
Core	65,200	89,400	0	0	0	0	4,000
Town Hall/Garage	11,800	0	14,000	740	0	0	0
San Joaquin Rd	0	0	0	0	0	0	0
Benchmark Dr	0	0	0	0	0	0	0
Russel/Touchdown Dr	0	0	0	0	0	0	0
Adams Ranch Rd	14,400	6,500	0	0	34,400	0	0
Total	**91,400**	**95,900**	**14,000**	**740**	**34,400**	**0**	**4,000**
Overall Total	**240,440**						

The forecasted build out land use for Mountain Village includes the existing built land use, the approved but unbuilt parceled land use (contained within the Town's Residential Lot List), and land use identified in the Town Comprehensive Plan Sub-Areas. **Table 3** summarizes the built out land use forecasts for the community. Additionally, it should be noted that some existing commercial space is unoccupied but is assumed to be fully occupied along with all new commercial space for the future build out scenario.

Table 3. Build Out Land Use

Residential Land Use

Travel Shed	Single Family	Condo	Employee Condo/Apt	Employee Dorm	Lodge	Efficiency Lodge	Hotel Efficiency	Hotel
Core	56	672	27	103	681	702	29	256
Town Hall/Garage	0	18	269	7	106	103	0	0
San Joaquin Rd	117	186	7	12	56	78	0	0
Benchmark Dr	213	82	1	0	0	0	0	0
Russel/Touchdown Dr	115	12	30	0	0	0	0	0
Adams Ranch Rd	130	76	467	158	67	79	0	0
Total	**631**	**1,046**	**801**	**280**	**910**	**962**	**29**	**256**
Overall Total	**4,915**							

Table 3 (continued). Build Out Land Use

Commercial Land Use

Travel Shed	Retail (sq ft)	Office (sq ft)	Town Hall (sq ft)	Post Office (sq ft)	Town Maintenance (sq ft)	Medical Office (sq ft)	Wellness (sq ft)
Core	147,200	126,900	0	0	0	0	89,100
Town Hall/Garage	16,800	24,600	14,000	740	0	68,000	9,000
San Joaquin Rd	5,000	8,000	0	0	0	0	0
Benchmark Dr	0	0	0	0	0	0	0
Russel/Touchdown Dr	0	0	0	0	0	0	0
Adams Ranch Rd	19,400	6,500	0	0	34,400	0	8,000
Total	188,400	166,000	14,000	740	34,400	68,000	106,100
Overall Total	**577,640**						

By comparing the existing land use to the build out land use scenario in the Comprehensive Plan, overall development trends can be identified. Generally speaking, a 133% increase in residential units and commercial square footage is anticipated with build out of Mountain Village as defined by the Comprehensive Plan.

IV. TRANSPORTATION MODEL

The transportation model developed for the Town of Mountain Village is, at its core, generally based on similar ski resort town transportation efforts undertaken by FHU. However, due to the unique destination that each ski resort represents, it cannot be expected that trip making in Mountain Village will behave like any other community. Thus, the model was specifically developed and calibrated to accurately represent the unique traffic characteristics found in Mountain Village.

A. Existing Model

To develop a model which accurately reflects the local conditions in Mountain Village, an existing conditions model was created that includes all of the trip making relationships and mode split characteristics that are currently experienced in Town. This model was then calibrated so that the mode splits and traffic forecasts closely matched existing conditions in town. Once the model of existing conditions was completed, the build out land use was re-entered into the calibrated model along with known alternative travel mode changes called for in the Comprehensive Plan. Forecasted daily volumes could then provide information about how Mountain Village will operate in the future.

The model process was completed in spreadsheet format, utilizing Microsoft Excel, and used the four step travel demand forecasting process. The four steps of the transportation process are: trip generation, trip distribution, mode split, and trip assignment. This process provides the ability to build upon industry experience when considering traffic forecasting and provides a systematic method for calibrating the results to account for local factors.

The four step process begins with trip generation. The key input into trip generation is the land use, which has already been discussed and provided in Section III. For this study, *Trip Generation, Institute of Transportation Engineers (ITE), Eighth Edition, 2008*, generation averages were used as the basis for the four step process. By using this documented trip generation reference, the modeling process began with base rates that have been documented nationally to ensure reasonable relationships between uses. However, once these base rates were established, the model departed from national standards by applying unique local conditions into the remaining steps of the four step model to accurately reflect individual conditions in Mountain Village.

The first significant change was to modify trip generation by utilizing occupancy rates for residential land uses in Town. EPS provided information about visitor occupancy rates in residential units based on the economic model for the town. The occupancy rate considers that on the 10th Highest Winter Day in Mountain Village, the occupancy of the town will be approximately 75 percent (taking into account unoccupied residential units). Additionally, due to Mountain Village being a ski resort, skier participation represents a significant daily activity on the 10th Highest Winter Day, so these trips were separated out from other trips generated by residential properties (i.e. shopping trips, social trips, off mountain trips, etc.). The skier participation in Town was developed using the occupancy rate of residential units in town along with participation rates provided from the economic model.

The second step in the four step process is trip distribution. This step provides the second significant means for calibrating the model to account for local factors. As noted previously, in order to generate a systematic method for describing the behavior of visitors between individual travel sheds within Mountain Village, six traffic analysis zones (TAZ) have been defined (**Figure 1**). By defining these six zones along with an external zone that represents trips external to Mountain Village by way of SH 145, each trip origin and destination can be uniquely identified.

The transportation model that was developed further breaks the trip distribution process into four key trip types. These trip types are residential, commercial, employee, and day skier. Each trip type could then be sub-divided into activity types based on the user. The following describe the general sub-categories used to define travel within Mountain Village.

- Residential – Three key types of trips can be expected from a residence during the 10th Highest Winter Day: ski trips, commercial trips (to include office, shopping, and dining), and trips external to Mountain Village (which includes the arrival and departure trip, trips to Telluride, and other trips outside of Mountain Village).
- Commercial – Three key types of trip makers can be expected from a commercial property in Mountain Village: commercial trips from skiers (for example, shopping trips and dining trips made during the ski day), residential shopping trips (to include trips from non-skiers as well as nighttime trips), and external trips into Mountain Village with the intention of shopping (which includes trips from Telluride and other trip makers from outside Mountain Village).
- Employee Trips – Three key employee types can be expected within Mountain Village: Core employees, hotel/hospitality employees, and town employees.
- Day Skier Trips – These are trips which originate outside of Mountain Village and Telluride where the trip makers drive into Mountain Village, park in the gondola parking garage or other lots for the day, ski, and then leave at the end of the day.

By distinguishing trips into these numerous purposes and trip makers, the trip distribution process allows for separate assignment of each trip type to zones throughout Mountain Village and externally.

The third step in the four step process, mode split, integrated each of the unique alternative modes of transportation available in Mountain Village into the model. The mode split shares in the model was highly dependent upon where the trip was originating and destined, who was making the trip, and what was the purpose for the trip.

For many trip types, availability determined the tendency for travelers to use alternative modes. For instance, for a trip maker traveling from the Village Core to the Gondola Parking Garage, a gondola provides direct service. As a result, this trip type will not generate any vehicle trips. Similarly, from portions of the Adams Ranch Road travel shed, the chondola to the Core would provide an alternative mode of transportation. On the other end of the spectrum, a trip from Touchdown Drive to the Core is only supported by the Dial-A-Ride, which according to statistics maintained by the Town reflects a relatively small number of trips. As a result, the mode split between Touchdown Drive and the Core would focus primarily on vehicle trips.

Residential skier trips represent the most extreme example of mode split away from vehicle trips and to alternative modes of transportation. These trip types are afforded an alternative travel mode, ski-in/ski-out residences. Based on statistics provided by the Town, it was determined that a significant portion of residential ski trips are likely to use ski-in/ski-out facilities to access the hill. For example, San Joaquin Road, which for other trip types is only served by Dial-A-Ride, allows for significant ski-in/ski-out participation, significantly increasing the non-driving mode split for this trip type. In addition to mode split effects within Mountain Village, the Gondola provides access for skiers and visitors from Telluride, making it possible to travel between the two communities without using the road network, so that was also integrated into the mode split portion of the model.

By considering trip distribution characteristics and the associated mode split for each unique trip maker and trip type, the model reflects the local travel conditions present in Mountain Village. The last step in the four step process, trip assignment, is easily accomplished by considering the road structure in Mountain Village. Since each vehicle trip between zones within town has one available route, the results of the vehicle trips following trip distribution and model split were assigned to the network.

Finally, after initial development of the four step model, the resulting traffic forecasts were reviewed and changes to factors within the model were made to calibrate the model. The goal for this process was to align the predicted daily volumes of the model with the actual daily volumes resulting from the count data. After calibration of the model, the build out land use from the Comprehensive Plan Sub-Areas was input into the model to determine the future forecast volumes.

B. Future Model

As part of the future volumes forecasting, new mode split opportunities and likely travel trends were incorporated into the model to reflect how the town is anticipated to operate in the future. For example, starting with the 2011 ski season, the Town has begun charging for parking in the parking garage. This new charge will likely affect who and how often users elect to pay for parking. To account for this change, the existing Dial-A-Ride mode split portion was increased to reflect use of this alternative mode alternative.

The other significant change within the Sub-Area Plans is the development of three parcels along San Joaquin Road: Boomerang Mountain Parcel, Comanche Mountain Parcel, and Mountain Shops Parcel. With the development of these three areas, a new pulse gondola is planned in the Comprehensive Plan. This new gondola will operate between Boomerang Mountain Parcel and the Core, transporting all employees and visitors from the three new development areas to the Core (bus and shuttle will be provided between Comanche Mountain Parcel and Mountain Shops Parcel to the gondola). With the addition of this new alternative mode, San Joaquin Road, which previously had only ski-in/ski-out service and Dial-A-Ride, will drastically increase its alternative mode availability and use for the new residences and commercial within its travel shed.

V. MODEL RESULTS

The existing and forecast traffic volumes from the travel demand model are presented in **Table 4**. All volumes in this table are presented on a daily basis, which includes the sum of each direction during a complete 24-hour day.

Table 4. Roadway Segment Volumes and Volume to Capacity (V/C) Ratios

Location	Roadway Capacity (vpd)	Existing Volume (vpd)	Existing V/C	Future Volume (vpd)	Future V/C
Mountain Village Blvd (SH 145-Adams Ranch Rd)	15,000	5,400	0.36	10,600	0.71
Mountain Village Blvd (Adams Ranch Rd-Russel Dr)	15,000	5,700	0.38	11,100	0.74
Mountain Village Blvd (Russel Dr-Benchmark Dr)	15,000	5,800	0.39	11,100	0.74
Mountain Village Blvd (Benchmark Dr-Parking Garage)	15,000	5,500	0.37	10,800	0.72
Mountain Village Blvd (Parking Garage-San Joaquin Rd)	15,000	4,300	0.29	9,000	0.60
Mountain Village Blvd (East of San Joaquin Rd)	15,000	4,100	0.27	8,300	0.55
Adams Ranch Rd (North of Mountain Village Blvd)	7,500	2,300	0.31	3,100	0.41
Russel Dr (North of Mountain Village Blvd)	7,500	300	0.04	600	0.08
Touchdown Dr (South of Mountain Village Blvd)	7,500	200	0.03	300	0.04
Parking Garage (North of Mountain Village Blvd)	7,500	1,300	0.17	1,900	0.25
San Joaquin Rd (South of Mountain Village Blvd)	7,500	1,200	0.16	1,700	0.23
Benchmark Dr (South of Mountain Village Blvd)	7,500	1,300	0.17	1,800	0.24

As **Table 4** indicates, although the land use within the Town increases by 133 percent, individual roadway links along Mountain Village Boulevard are anticipated to have less robust traffic increases, growing by between 91 percent and 109 percent. This difference in vehicular volume compared to land use growth can be attributed to the unique alternative modes available to residents of Mountain Village as well as the unique trip characteristics of the ski town. **Figure 2** and **Figure 3** display the existing and future volumes on major roads within Mountain Village.

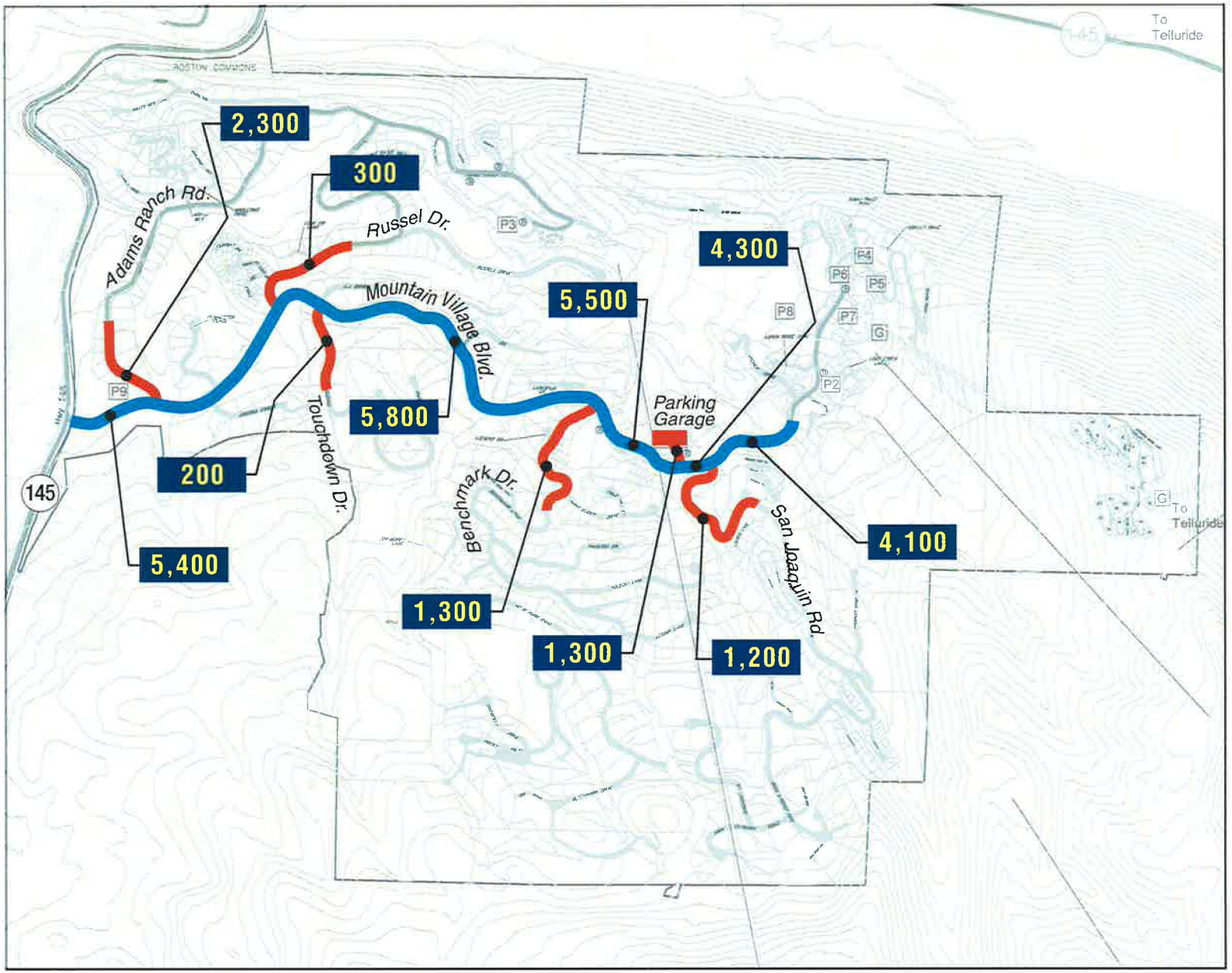

Figure 2
Existing Volumes

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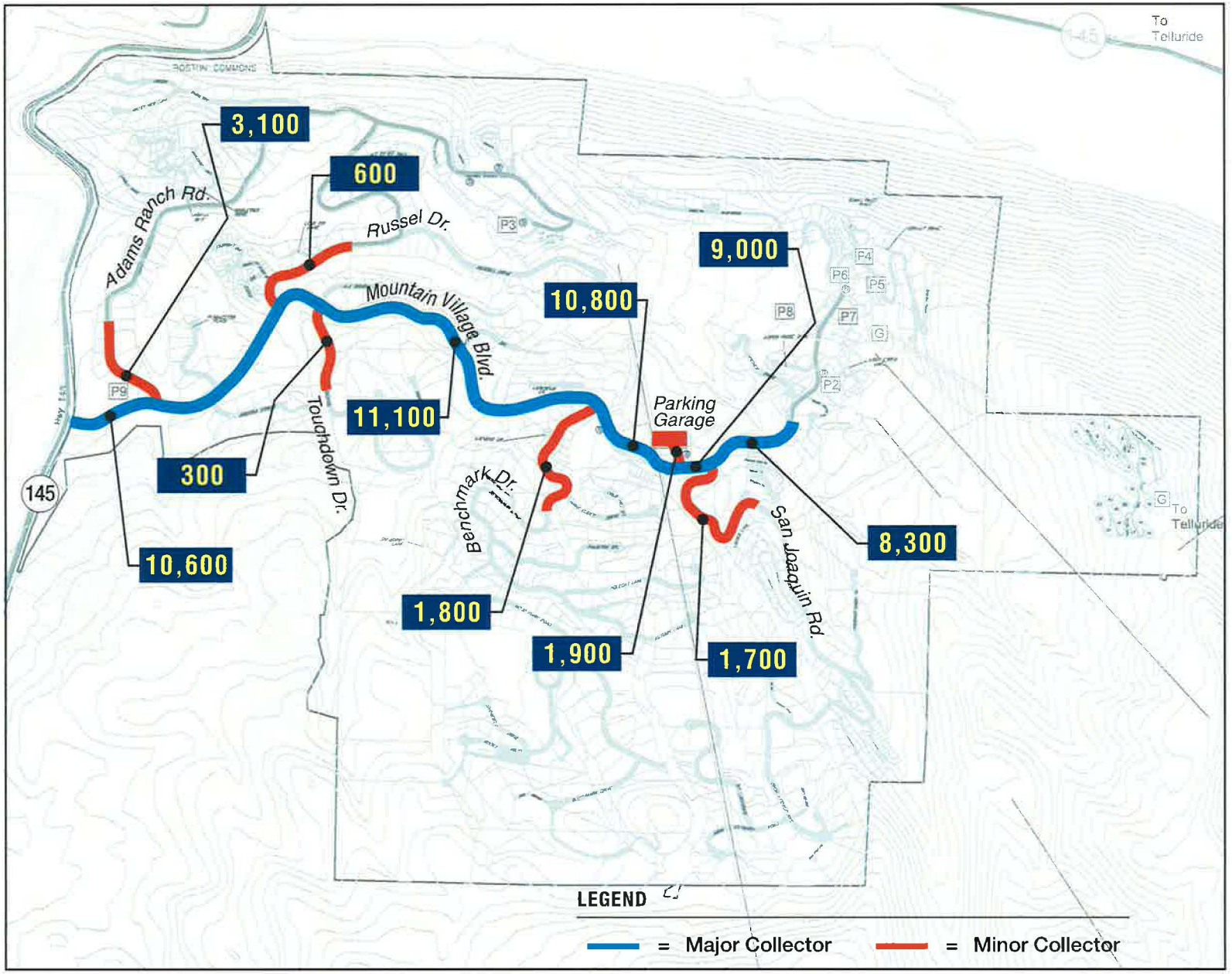

LEGEND
= Major Collector
= Minor Collector

Figure 3
Future Volumes

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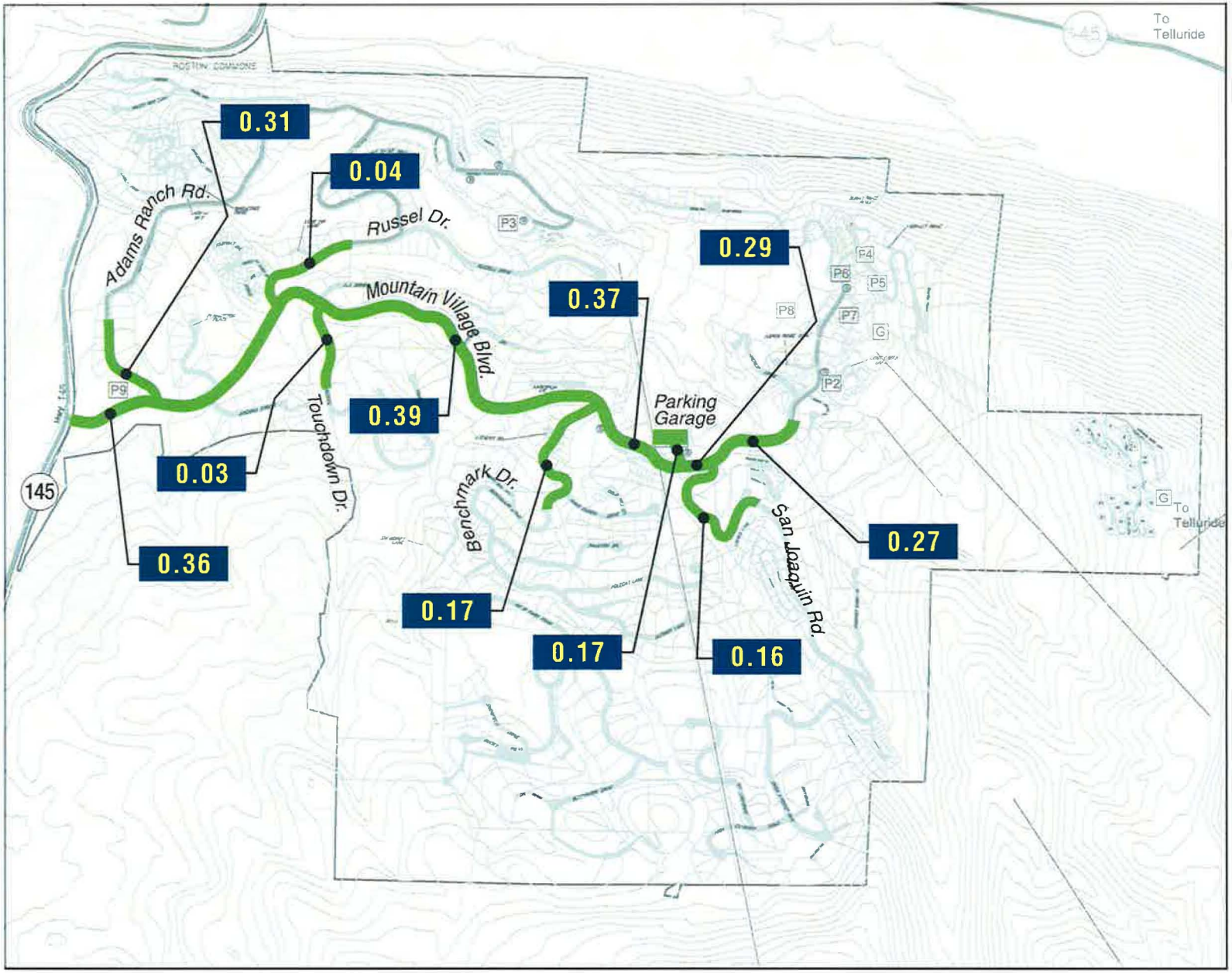
Roadway capacities were determined for each of the roadway facilities in Town. Mountain Village Boulevard has been classified as a major collector with a roadway capacity of 15,000 vehicles per day (vpd). Other roadways in town which have been considered during this study, Adams Ranch Rd, Russel Dr, Touchdown Dr, San Joaquin Rd, and Benchmark Dr, have been classified as minor collectors with a roadway capacity of 7,500 vpd.

The existing volume to capacity (v/c) ratio and future v/c ratio are shown in **Table 4**. The existing v/c ratio may be helpful in determining what roadways are currently near or above capacity and, similarly, the future v/c ratio provides information about what roadways may be near or above capacity if the proposed land use is reached in the future. In a planning context, a volume to capacity of less than 0.80 generally represents acceptable travel conditions. A volume to capacity between 0.80 and 1.0 indicates the facility is approaching capacity, and a volume to capacity above 1.0 represents over capacity. For the Town of Mountain Village, transportation findings show that all roadways in Town will operate with acceptable v/c ratios in the future. The highest v/c ratios occur along Mountain Village Boulevard which serves as the spine for travel between all areas of Town. **Figure 4** and **Figure 5** display the existing and future volume to capacity on major roads within Mountain Village.

The volume to capacity analysis indicates that no roadway sections need additional through laneage to handle traffic volumes anticipated with the development of Mountain Village according to the Comprehensive Plan.



LEGEND

= 0 - 0.80 = 0.81 - 1.00 = >1.01

Figure 4
Existing Volume to Capacity Ratio

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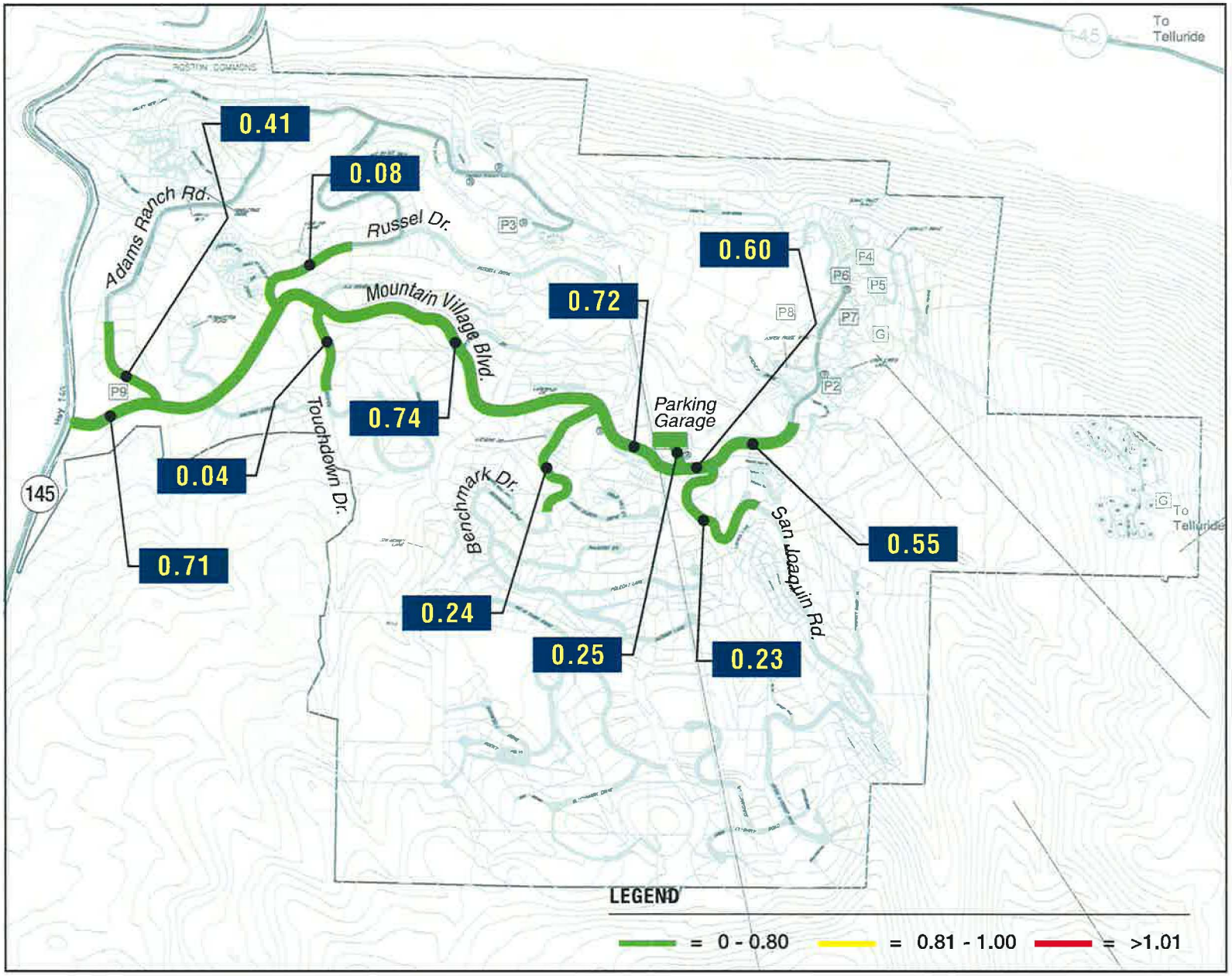

LEGEND

= 0 - 0.80 = 0.81 - 1.00 = >1.01

Figure 5
Future Volume to Capacity Ratio

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VI. INTERSECTION ANALYSES

In addition to considering through laneage requirements for roadway segments in Town, effects on the road network at individual intersections were considered. The goal for this analysis is to determine what, if any, laneage or signing changes need to be made at intersections within Mountain Village in order to provide acceptable levels of service (LOS) during the peak hour with the future build out of the Town. This level of service analysis has been completed for the following intersections on Mountain Village Boulevard:

- Adams Ranch Road
- Russel Drive
- Benchmark Drive
- Gondola Parking Garage Access
- San Joaquin Road
- Country Club Road

In addition, level of service analysis has been completed for two key intersections on the periphery of the Town of Mountain Village. These intersections are:

- State Highway 145 / Mountain Village Boulevard
- Society Turn (State Highway 145 @ Highway 145)

The analyses of the two peripheral intersections have been based on peak hour traffic counts which were taken on February 20, 2011, by Mountain Village staff. Future turning movement projections were developed at these intersections for the 10th Highest Winter Day. The forecasts were developed by first correlating the count data to historic 10th Highest Winter Day volumes and then increasing the turning movements to accommodate growth due to development within Mountain Village. In addition, through movements along SH 145 were adjusted using the 20 year growth factor supplied by the Colorado Department of Transportation website. The existing and 10th Highest Winter Day turning movements at these two intersections can be found in **Appendix A**.

Future operational conditions were analyzed at each of the study intersections based on procedures documented in the *Highway Capacity Manual,* (Transportation Research Board, Third Edition, 2000). This analysis procedure provides a level of service which is a quantitative measure based on the average delay per vehicle at a controlled intersection. Levels of Service are described by a letter ranging from "A" to "F". LOS A represents minimal delay, while LOS F represents excessive congestion and delay. All of the major intersections that were analyzed currently have stop controls. Individual AM and PM peak LOS are provided for individual movements at each intersection which is based on the average vehicle delay for each movement.

Table 5 provides the delay thresholds for reference.

Table 5. Level of Service Criteria for Two-Way Stop Controlled Intersections

Level of Service	Delay Range (second/vehicle)
A	0.0 - 10.0
B	>10.0 - 15.0
C	>15.0 - 25.0
D	>25.0 - 35.0
E	>35.0 - 50.0
F	>50.0

The results of the level of service analysis can be found on **Figure 6**. This figure has been designed to first provide the anticipated level of service at each intersection in the future if the existing laneage is maintained. Then, if individual movements are recognized to operate with a low level of service in the future, a second bubble is provided with potential improvements and the new anticipated level of service. Finally, for those intersections which continue to have low level of service for an individual movement, a roundabout analysis has been performed to provide a level of service if a one-lane roundabout were installed. In addition to considering average delay to determine where improvements are required the Mountain Village Boulevard / Gondola Parking Garage Access and Mountain Village Boulevard / Country Club Road intersections have been evaluated for additional improvements or roundabouts based on traffic flow characteristics.

It is important to remember that this analysis has been completed for the 10th Highest Winter Day, and as a result, the large volumes along Mountain Village Boulevard will not occur all year. For intersections within Mountain Village, it is recommended that any improvements at intersections in the future should be made with community input, since it may be more desirable to leave the intersection geometry as it is and expect longer delays a few days a year rather than spend limited funds to add additional laneage that would only be needed occasionally. Because growth will occur fairly gradually, the community has time to make these decisions.

Future decisions for improvements at external intersections to Mountain Village should be considered with input from all involved interests. As a result, decisions along SH 145 at Mountain Village Boulevard and at Society Turn should be made with input from CDOT, San Miguel County, and the Town of Telluride.

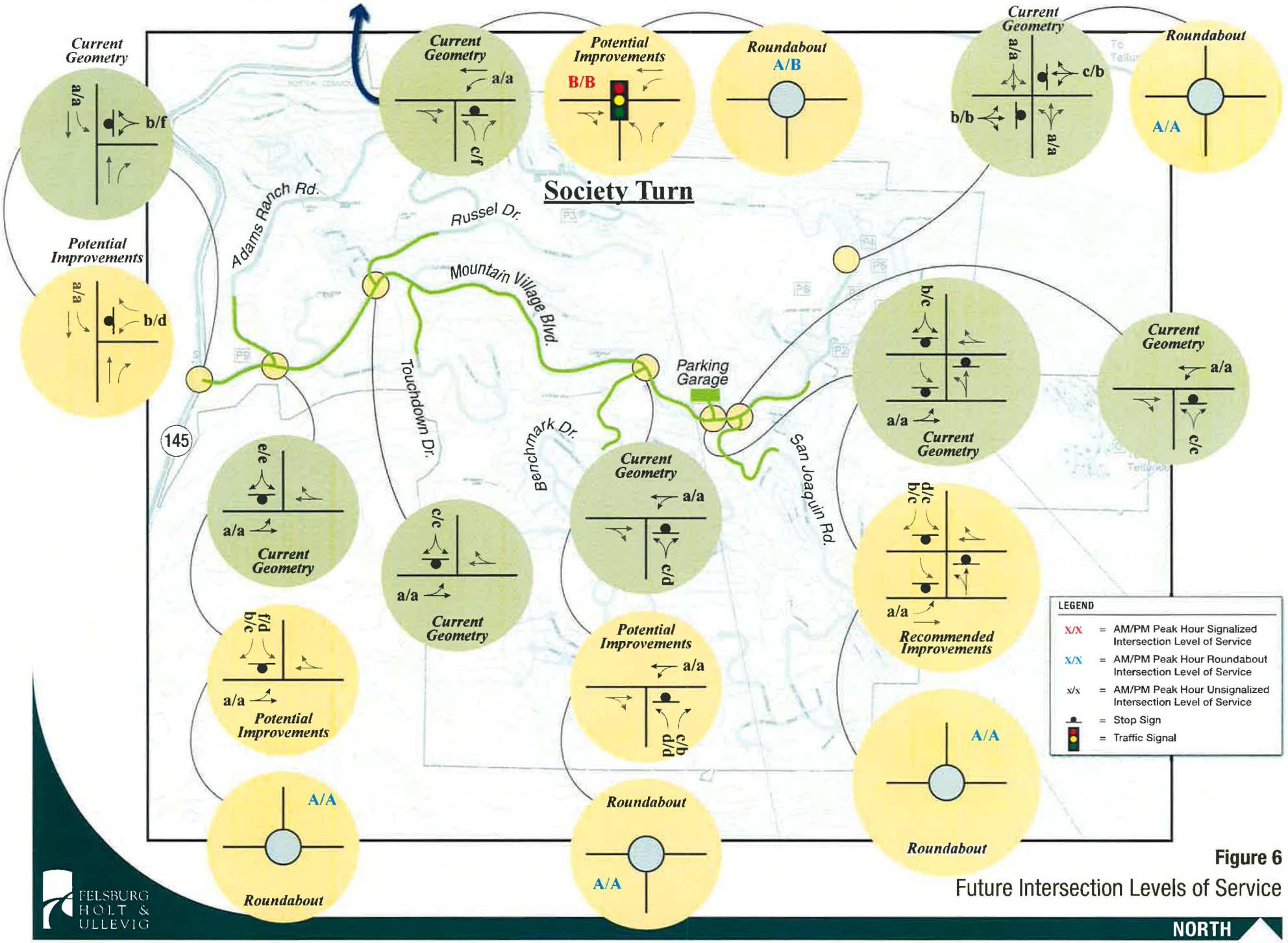

Figure 6

Future Intersection Levels of Service

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Further discussion about potential and recommended improvements has been included for each intersection:

Adams Ranch Road – This intersection is expected to operate with LOS C in the AM and PM peaks for the southbound movements in the future. Low levels of service for left turning movements on minor streets which must yield the right of way to all movements on the major street are quite common. One potential improvement would be to separate the southbound left and right turning traffic at this intersection. With this improvement, the southbound left turning traffic still experiences a poor level of service, but delays for right turning traffic are improved. A more aggressive improvement here would be constructing a one-lane roundabout, which would improve traffic operations to LOS A here in the future.

Russel Drive – This intersection is expected to operate with acceptable levels of service for all movements during the AM and PM peak periods with the existing lane geometry. Traffic volume counts were taken on February 20, 2011, by Mountain Village staff, at the intersection of Adams Ranch Road and Double Eagle Road. These travel patterns were taken into account for this analysis to account for Double Eagle Drive which provides a connection between Adams Ranch Road and Russel Drive.

Benchmark Drive – This intersection is expected to operate with LOS C in the AM peak and LOS D in the PM peak for the northbound movements in the future. As with Adams Ranch Road, one potential improvement would be to separate the northbound left and right turning traffic at this intersection, which would still result in poor levels of service for the left turn movement but would reduce delays for right turning traffic, while a more aggressive improvement would be to construct a one-lane roundabout, which would improve traffic operations to LOS A here in the future.

Gondola Parking Garage Access – This intersection represents a unique condition within the Town of Mountain Village. While the levels of service suggest that acceptable conditions will continue with the build out scenario, significant volumes using the Parking Garage during the course of the day coupled with the unique geometry at the split intersection indicate that geometry revisions here would improve traffic flow. A separate left turn lane is recommended along eastbound Mountain Village Boulevard, along with separate southbound left and right turn lanes out of the parking garage. These improvements will result in similar levels of service at the intersection, but will improve traffic circulation and reduce traffic queuing. An alternate, more aggressive improvement here would be to construct a one-lane roundabout, which would improve traffic operations to LOS A in the future.

San Joaquin Road – This intersection is expected to operate with acceptable levels of service for all movements during the AM and PM peak periods with the existing lane geometry.

Country Club Road – This intersection is expected to operate with acceptable levels of service for all movements during the AM and PM peak periods with the existing lane geometry. However, because this intersection represents a significant intersection in the Village Core area, a one-lane roundabout has been analyzed as an alternative to the existing traffic control. For visitors and especially drivers of large trucks which have made their way to this intersection, a roundabout would alert drivers that Mountain Village Boulevard is ending and provide the

means for making a u-turn. With the installation of a one-lane roundabout the intersection would operate at LOS A in the future.

State Highway 145 / Mountain Village Boulevard – This intersection provides the only vehicle access in and out of Mountain Village via the state highway system. Therefore, maintaining efficient and safe conditions at this intersection is critical as Mountain Village develops. This intersection is expected to operate with LOS B in the AM peak and LOS F in the PM peak for the westbound movements in the future. As with several of the intersections within Mountain Village, low levels of service for left turning movements on minor streets which must yield the right of way to all movements on the major street are quite common. The recommended improvement would be to separate the westbound left and right turning traffic at this intersection. With the clear delineation of right and left westbound turn lanes, the westbound left turning movement at the intersection will operate with LOS A in the AM peak and LOS D in the PM peak. Due to the location of this intersection on a steep hill, it is recommended that careful consideration be given before installing any additional control devices on SH 145 at this intersection (including traffic signal control and installation of a roundabout), since during winter conditions vehicles may have difficulty stopping or maneuvering through the intersection.

Since access into Mountain Village is from the state highway system, the inbound deceleration lanes along SH 145 must abide by the State Highway Access Code. Based on the volumes anticipated at build out of Mountain Village, the southbound left and northbound right turn lanes can already adequately handle the storage lengths required for each movement, but the storage bays may not provide adequate deceleration lengths. As development continues within Mountain Village, traffic volumes should be monitored to ensure compliance with the State Highway Access Code.

Society Turn (SH 145 @ Highway 145) – This intersection represents the most congested intersection near the Town of Mountain Village. SH 145 represents the west and south legs at this intersection, with the east leg connecting the Town of Telluride to SH 145. At the intersection, the northbound movement is currently stop sign controlled and must yield right of way to all other movements, causing the northbound left turn to be the poorest performing movement at the intersection. This intersection is expected to operate with LOS C in the AM peak and LOS F in the PM peak for the northbound left turning movement in the future.

Poor future operations at this intersection have resulted in two alternative improvement recommendations at this intersection. For each of these recommendations, the level of service has been reported considering the average delay for all movements at the intersection. The first option would be to signalize this intersection. With a traffic control signal installed at this intersection, the intersection is anticipated to operate at LOS B in the AM and PM peak hours. The second option would be to install a roundabout at this intersection. With a roundabout, the intersection is anticipated to operate at LOS A in the AM peak hour and LOS B in the PM peak hour. Either option would therefore provide acceptable traffic operations for the intersection with build out of Mountain Village.

VII. PARKING ANALYSIS

For the Town of Mountain Village, an important consideration when evaluating the operations of the transportation system is related to parking demand and supply. For this transportation plan, the Town provided parking count data between January 2007 and January 2011 for all of the public parking lots located in Town. This data was collected at noon everyday to capture peak parking conditions.

Ecosign Mountain Resort Planners completed a parking study, dated December 2007, *Short Term Parking Relief in Sight*. This study focused on in-vehicle surveys and daily counts to determine current parking trends at the garage in an effort to alleviate the number of vehicles parking along Mountain Village Boulevard and surrounding streets when the gondola parking structure reached capacity. During this study, a key finding was that a significant number of vehicles using the garage were long term parkers and employees of the resort. As a result of this finding, it was recommended that an overnight fee structure be developed to encourage long term parkers to locate elsewhere, leaving the garage available for day skiers. It was also recommended that an incentive program be used to encourage employees to relocate to the Meadows lot. These recommendations appear to have significantly affected the parking trends throughout town in subsequent years.

For the 2010-2011 ski season, a five dollar per day parking fee was introduced for the Gondola Parking Garage, which has had significant impact to the parking utilization within Mountain Village. It is anticipated that some form of parking fee will continue during the 2011-2012 ski season, but after the close of next year's ski season there is uncertainty whether the parking fees will continue or if the structure will return to free parking.

In order to fully consider the future operations of the parking within Town, it is important to consider not only the 10th Highest Winter Day parking conditions, but also the Peak Winter Day. As a result, the following parking analysis was performed considering the parking needs with and without a parking fee for the 10th Highest and Peak Winter Day. This analysis was based on parking trends experienced during the 2009-2010 ski season in order to accurately reflect the impacts of recommendations from the Ecosign study while considering a ski season with complete data.

Table 6 shows the existing parking available in Town.

Table 6. Existing Parking Supply

Parking Lot	Spaces Available
Gondola Parking Garage	475
Town Hall Plaza	60
Gondola Parking Garage & Town Hall Plaza	**535**
Upper Mountain Village Blvd Lot (Employee)	30
North Village Center Lot	25
Pond Lot	25
Blue Mesa	18
Meadows Parking Lot	110
Heritage Parking Garage	106
Total Parking	**849**

The parking demands were developed based on the current parking data within town, employee parking location data, day skier and resident parking location data, and results from the Travel Demand Model developed for the Transportation Plan. The 10th Highest Winter Day parking numbers used for this analysis are based on the demand recorded for the 2009-2010 ski season (for the without fee scenario) and adjusted parking demand based on 2010-2011 parking trends (for the with fee scenario). The Peak Winter Day parking numbers have been based on the historic relationship between parking demand on the Peak and 10th Highest Winter Days. The results of the parking demand analysis are shown on **Table 7**.

Table 7. Future Parking Demand

Parking Location	Current Parking Capacity	10th Highest Winter Day		Peak Winter Day	
		Without Fee	With Fee	Without Fee	With Fee
Gondola Parking Garage & Town Hall Plaza	535	500	385	775	680
Other Lots	314	250	300[1]	300[1]	300[1]
Total Parking	849	750	685	1075	980

[1] 300 spaces represents the practical capacity of the lots excluding the Gondola Parking Garage and Town Hall Plaza (i.e., 95% of the true capacity)

The total parking values in **Table 7** represent the total number of parking spaces which are anticipated to be needed within Town, and include public parking for which the Town must provide public lots. All new residential and hotel development has been assumed to provide adequate on-site parking as an integrated element of the development. Additionally, as with the Travel Demand Model, no additional day skiers have been included in this analysis since it is assumed that all new skiers to Telluride Ski and Golf will come from residences of Mountain Village.

The long term effects of a parking fee for this study have been based on previous work completed by Felsburg, Holt and Ullevig for other resort communities. For Mountain Village, it

can be expected that during the first couple of years of parking fees, many visitors to the community will recall the lack of a fee on previous visits and will be resistant to paying. As a result, these visitors will change their travel behavior, some will choose another mode to get to the slope while others will increase the vehicle occupancy when a trip is made or decide to park in another lot without charge. Over time, however, the parking fee will be expected by visitors and travel behavior will settle into a pattern closer to the historic (no fee) utilization, but overall it is anticipated that a nine percent decrease in total vehicles will occur with the addition of a parking fee at the Gondola Parking Garage at build out. It is assumed in this analysis that future parking fees will not prevent visitors to the community, but instead alter travel behavior (i.e., the same number of people will visit, but in fewer vehicles).

In order to better understand where people will be parking, the available spaces have been tabulated to include the Gondola Parking Garage and Town Hall Plaza. These two existing lots represent the trips anticipated within the Travel Demand Model (TAZ 2) and have been combined since they represent available parking in close proximity to one another, with the opportunity for overflow from the Town Hall Plaza lot to use the garage. For drivers, deciding where to park with the fee is difficult to anticipate since there is a trade-off between the convenience of the parking garage and the cost.

On the 10th Highest Winter Day, it is anticipated that there is enough available parking within Mountain Village to supply a parking space for all vehicles based on the available parking supply located within Town, whether the Town charges for parking at the garage or not.

Peak Winter Day forecasts show that some additional parking will be required with build out of the Comprehensive Plan if the goal is to avoid having visitors park along Mountain Village Boulevard and along other surrounding streets. From information gathered from the Town, it is anticipated that additional parking can be added to the parking garage in two phases. The first option would add 230 parking spaces to the garage by adding one addition level to the existing garage. The second option would continue by adding a second new level to the garage for a total of 460 new parking spaces.

In order to determine how many new spaces would be required, parking demand management strategies must be considered to optimize the existing parking already available. In general, there are 314 public parking spaces available in Town. If it is assumed that 95 percent of those spaces are occupied in the future (before determining how many spaces are required for the garage), approximately 300 parking spaces should be filled. This analysis assumes that some parking demand management strategies would be used by the Town to effectively use these spaces before additional capacity is built or street parking is allowed (via signage, personnel, etc.). Thus, it is anticipated that 775 parking spaces must be provided on the Peak Winter Day between the Gondola Parking Garage and Town Hall Plaza at build out of the community if no parking fee is charged. Therefore, if the first garage expansion is built, the lots would have a capacity of 765 spaces (some of which would be 2 hour restricted parking), meaning that some vehicles would be forced to use the street for parking. If the full garage expansion is built (995 spaces), there would be sufficient capacity throughout town for all drivers to park in a public space, avoiding all on-street parking. If a fee is charged, Peak Winter Day demand could be accommodated in the Gondola Parking Garage with one level of expansion.

As noted previously, the development of Mountain Village will occur over a relatively long time frame. Thus, as development occurs, the Town should discuss the implementation of parking demand strategies to successfully use existing lot capacity to delay the need for garage expansion. On the other hand, if, as development occurs, the Town decides that any on-street parking is undesirable, even for peak days in the future, additional capacity should be constructed at the Gondola Parking Garage, sooner rather than later. Finally, as was mentioned previously, this analysis does not include potential improvements for the ski base (including additional day skiers), and discussions with Telluride Ski & Golf should continue as on-mountain development occurs to ensure adequate parking supply within Mountain Village for the resort.

VIII. SUMMARY AND RECOMMENDATIONS

This transportation plan determined the traffic growth anticipated for the Town of Mountain Village road network and increased public parking demand as a result of the land uses proposed in the Comprehensive Plan. The study included a traffic modeling process that used a travel demand model calibrated to existing traffic conditions as the basis for forecasting future daily traffic volumes once all of the land uses that are included in the Comprehensive Plan vision have been built.

As part of this analysis, daily traffic volumes and volume to capacity ratios were generated for roadway segments along Mountain Village Boulevard. These volume to capacity ratios indicated that no roadway sections need additional through laneage to handle traffic volumes anticipated with the development of Mountain Village according to the Comprehensive Plan.

In addition to the roadway segment analysis, six key intersections in Mountain Village and two intersections at the periphery of Mountain Village were evaluated at build out of the community. Based on the results of the intersection analyses, the following improvements have been identified:

- ***Adams Ranch Road*** – Separate the southbound left and right turning traffic at this intersection. An alternate, more aggressive improvement here would be constructing a one-lane roundabout, which would improve traffic operations to LOS A here in the future.

- ***Benchmark Drive*** – Separate the northbound left and right turning traffic at this intersection. An alternate, more aggressive improvement would be to construct a one-lane roundabout, which would improve traffic operations to LOS A here in the future.

- ***Gondola Parking Garage Access*** – Construct a separate left turn lane along eastbound Mountain Village Boulevard, along with separate southbound left and right turn lanes out of the parking garage. An alternate, more aggressive improvement here would be to construct a one-lane roundabout, which would improve traffic operations to LOS A in the future.

- ***Country Club Road*** – Construct a one-lane roundabout to alert drivers that Mountain Village Boulevard is ending and provide the means for making a u-turn. The roundabout would operate at LOS A in the future.

- **State Highway 145 / Mountain Village Boulevard** – Separate the westbound left and right turning traffic at this intersection.

- **Society Turn (State Highway 145 @ Highway 145)** – Install either a traffic signal or roundabout at this intersection. Either improvement would result in a LOS B or better during both the AM and PM peak hours.

The parking demand and supply was evaluated for the Town of Mountain Village based existing trends and results of the Travel Demand Model. The parking demands were evaluated for two different scenarios: with and without a charge at the Gondola Parking Garage. Also, parking

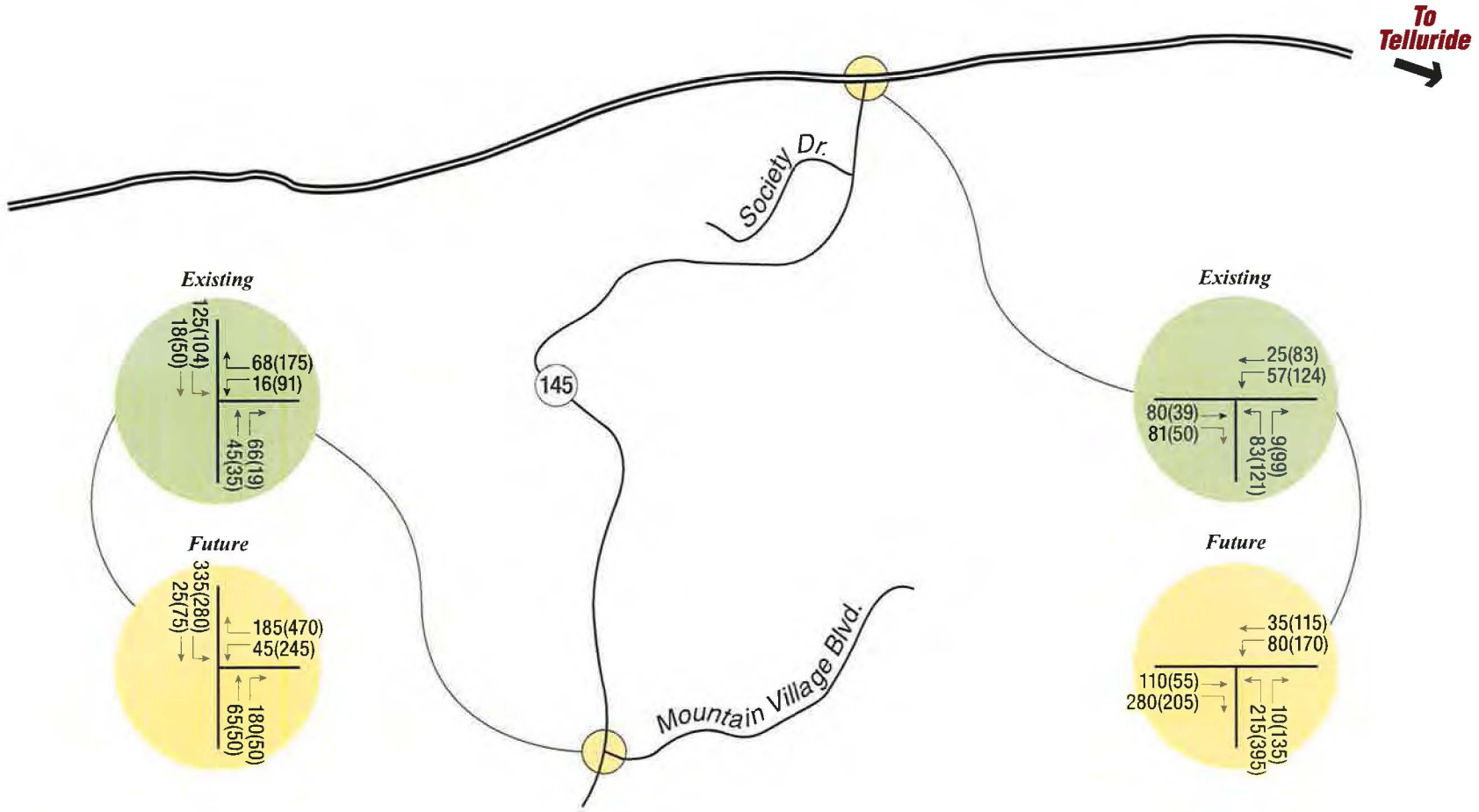
demand in Town was considered for the 10th Highest Winter Day and the Peak Winter Day to determine the required available parking for each day at noon (the busiest time of the day) for the build out ski season.

- Without parking fees, a two-level expansion of the parking garage (adding 460 new spaces) should be completed to provide sufficient public parking (gondola parking garage and other lots) for all visitors to the Town on the Peak Winter Day.

- With parking fees, one level of the parking garage (adding 230 new spaces) should be completed to provide sufficient public parking for all visitors (gondola parking garage and other lots) to the Town on the Peak Winter Day.

None of the above improvements are needed immediately, so they should be considered and implemented with community input as Mountain Village grows toward build out.

APPENDIX A STATE HIGHWAY 145 - EXISTING AND BUILD-OUT FUTURE TURNING MOVEMENTS



LEGEND

XXX(XXX) = AM(PM) Peak Hour Traffic Volumes

Appendix A

SH 145

Existing and Build-Out Future Turning Movements

FELSBURG HOLT & ULLEVIG

NORTH