APPENDIX D

NOISE TECHNICAL REPORT

ANALYSIS OF
EXISTING AND FUTURE NOISE LEVELS
TOWN OF MAMMOTH LAKES

PREPARED BY

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(Revised 9/1/05)

INTRODUCTION

The Town of Mammoth Lakes (Mammoth Lakes) is currently updating its general plan. Several of the comments that were received on the Draft Program Environmental Impact Report (PEIR) indicated that additional information on current and future noise levels experienced in the community should be included in the environmental documents. This report is intended to provide that supplemental information.

Appendix A provides definitions of the acoustical terminology used in this report. Unless otherwise stated, all sound levels reported in this analysis are A-weighted sound pressure levels in decibels (dB). A-weighting de-emphasizes the very low and very high frequencies of sound in a manner similar to the human ear. Most community noise standards utilize A-weighted sound levels, as they correlate well with public reaction to noise.

EXISTING CONDITIONS

Noise Sources:

Many of the noise sources in Mammoth Lakes are common to most communities. These include, for example, traffic noise and noise from commercial activities. However, due to skiing and other winter activities that occur within and adjacent to the urbanized areas of the community, there are important noise sources that are unique to Mammoth Lakes. These include noise related to removal of snow from streets, snowmaking, and avalanche control.

Both the common noise sources and sources that are more or less unique to the wintertime activities that occur in Mammoth Lakes are discussed below.

Background Noise Level Measurements:

The purpose of background noise level measurements is to determine the baseline or residual noise environment in a community at locations that are relatively unaffected by major noise sources, such as traffic. The measurements are usually conducted for 24 hours or more to sample the variation in noise levels that usually occurs during the day and night.

Background noise levels were measured for approximately three days during the July 4, 2005 holiday weekend at two residential locations in Mammoth Lakes. Measurements were conducted for approximately 17 hours at a third residential location. Because of equipment failure, a longer measurement was not possible. The three residences were the same or very close to the three residences where background noise levels were measured in the summer of 1995 as part of the data collection for the community's Noise Element Update. Figure 1 shows the locations of the background noise level measurement sites. Figures 2-4 show a comparison of hourly noise levels measured during the summer of 1995 compared to the summer of 2005. Table I compares the Day-Night Average Level (DNL) for 1995 and 2005 at the three locations.

Figure 1
Background Noise Level Measurement Locations -- July, 2005

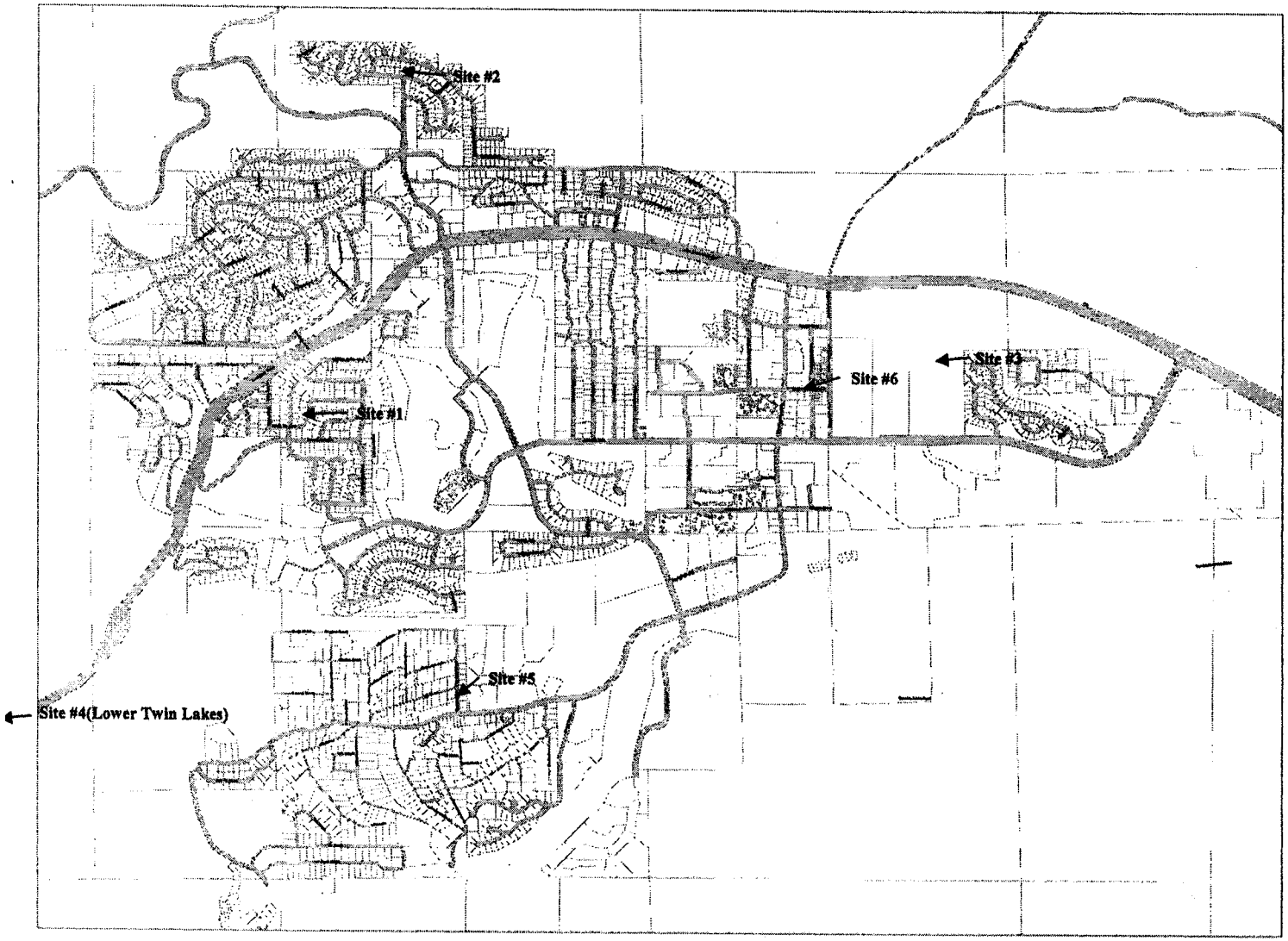

Figure 2
Background Noise Levels
107 Sugar Pine , 2005 and 1995
Site No. 1

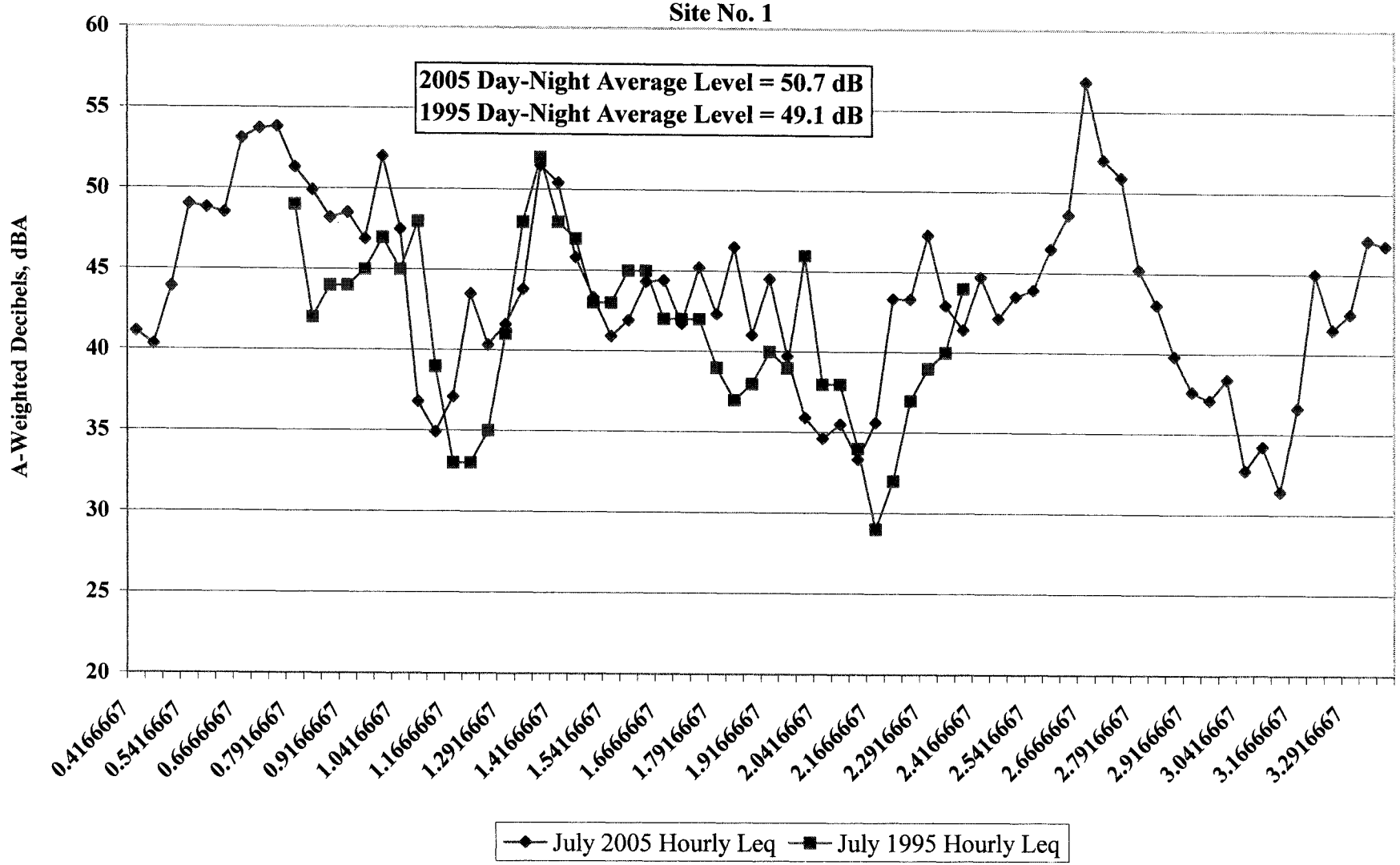

Figure 3
Background Noise Levels
286 Cortina (July 2005) - 394 Grindelwald (1995)
Site No. 2

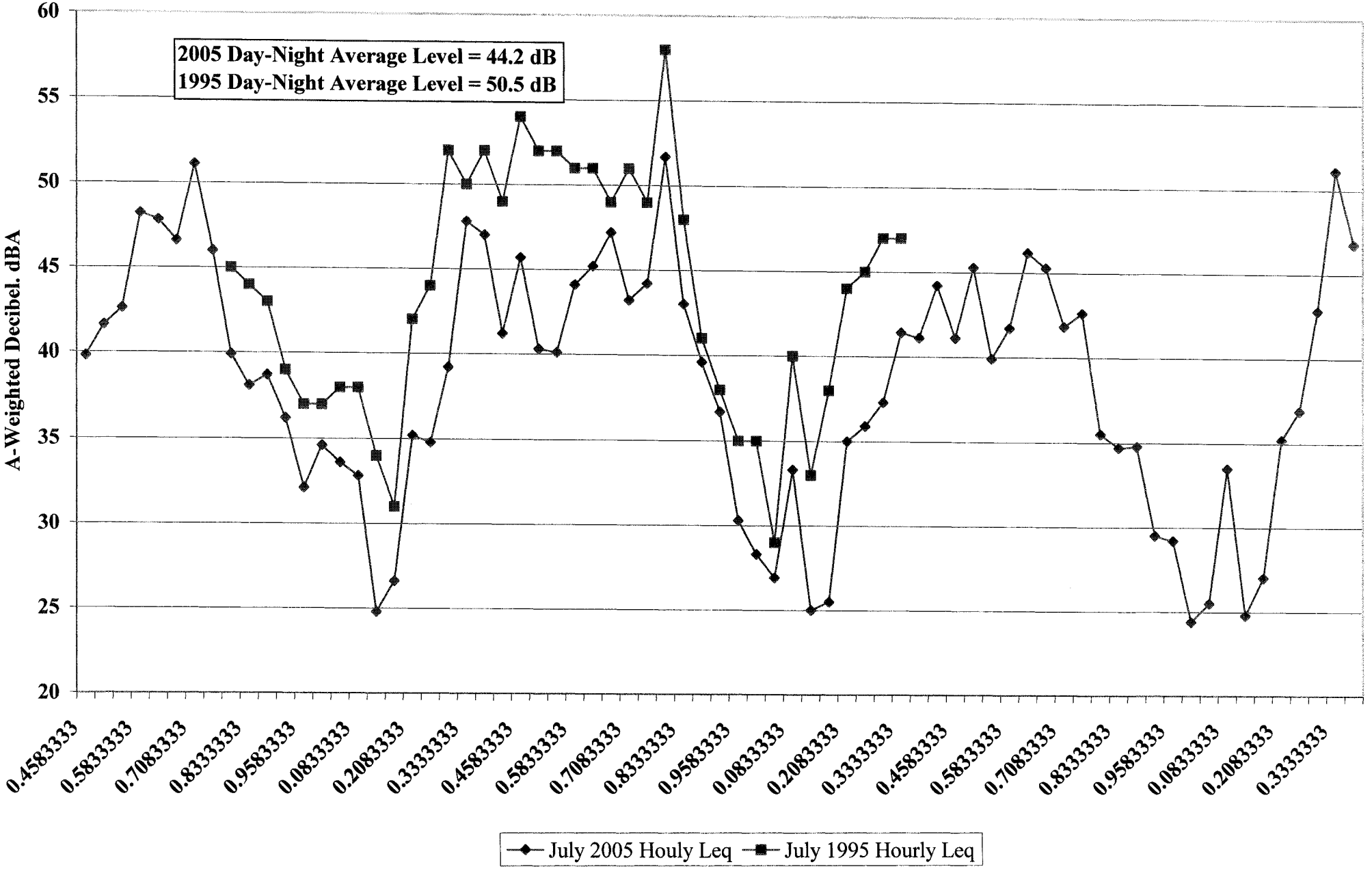

Figure 4
Background Noise Levels
323 Wagon Wheel/203 Trails End
Site No. 3

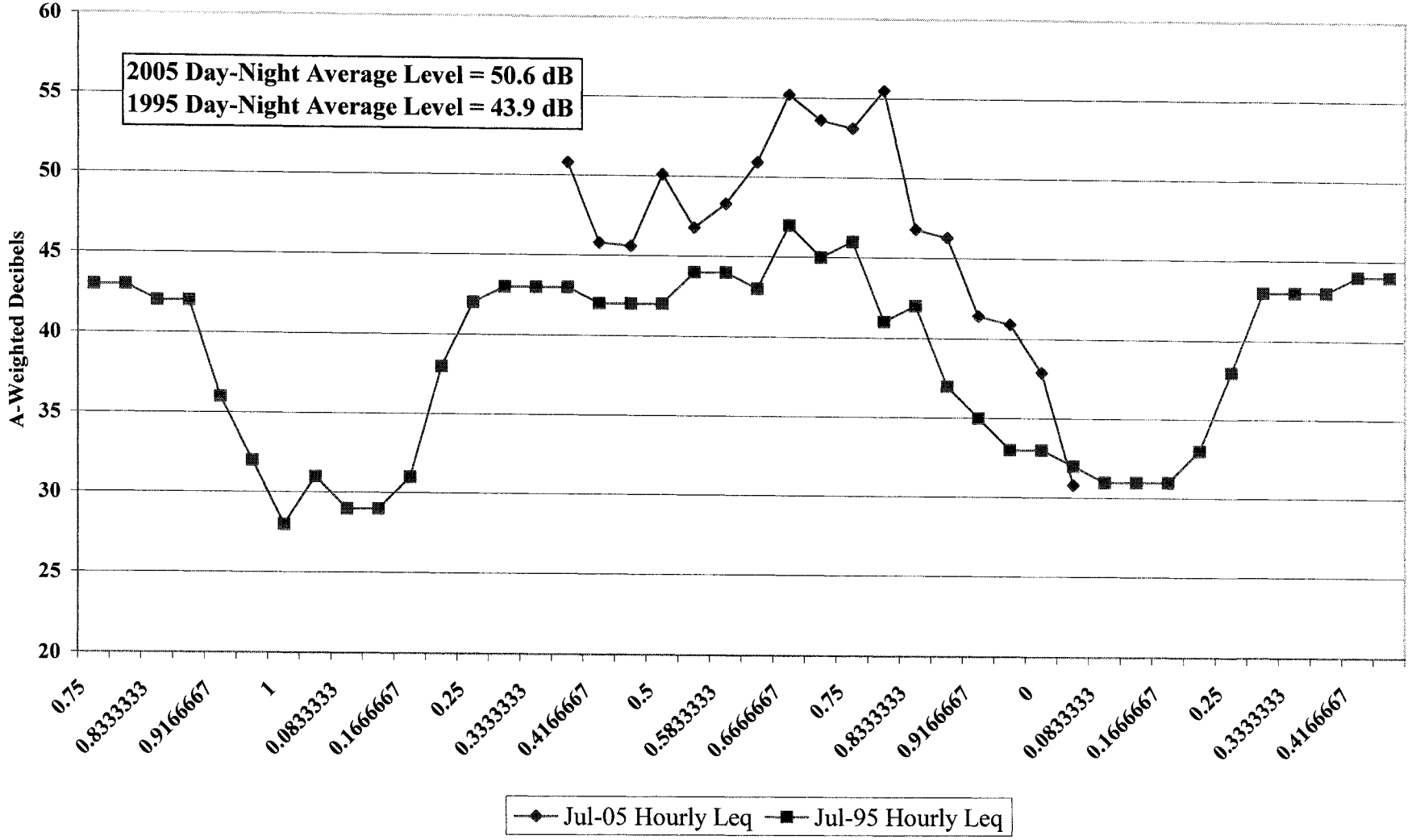

TABLE I

BACKGROUND NOISE LEVELS AT MAMMOTH LAKES RESIDENTIAL LOCATIONS

Site No./Location	July 1995 DNL, dB	July 2005 DNL, dB	Change
1/107 Sugar Pine	49.1	50.7	+1.6
2/286 Cortina Ct./394 Grindelwald Rd.	50.5	44.2	-6.3
3/323 Wagon Wheel/203 Trails End	43.9	50.6	+6.7
Source: Brown-Buntin Associates, Inc.			

In addition to the continuous measurements that were conducted through several days, short measurements were conducted at other locations in the community to characterize the background noise level environment. Table II describes noise levels at these locations.

TABLE II

SHORT BACKGROUND NOISE LEVEL MEASUREMENT RESULTS

Site No./Location	Date	Time	Noise Level, dBA		Sources
			Range	L_{eq}	
4/Lower Twin Lakes	7/3/05	11:20 a.m.	40-62	47	Traffic, voices
	7/3/05	2:30 p.m.	47-66	56	
	7/4/05	10:00 a.m.	40-72	54	
5/So. End Waterford Avenue	7/3/05	11:30 a.m.	52-55	53	Stream, generator
	7/3/05	3:00 p.m.	52-59	54	
	7/4/05	10:30 a.m.	45-64	53	Voices
6/Knoll Bet. Hospital & H.S.	7/3/05	12:10 p.m.	43-55	48	Wind
	7/3/05	3:30 p.m.	46-61	52	Wind & traffic
	7/4/05	11:00 a.m.	39-56	51	Wind & traffic
Source: Brown-Buntin Associates, Inc.					

Extensive conclusions about the meaning of the noise level changes from 1995 to 2005 should not be drawn since the measurements were for a few days and many factors can influence noise levels. However, the one conclusion that is obvious is that background noise levels in terms of the Day-Night Average Level at all locations were well below the 60 dB DNL criterion in both 1995 and 2005. It is generally acknowledged that community background noise levels below 60 dB DNL are fully compatible with residential uses.

The background noise level measurements that were conducted through the July 4th weekend (July 2-5) probably represent the busiest time period in Mammoth Lakes during the summer season. Hence, they represent near worst-case conditions from the standpoint of numbers of visitors in the community.

Specific Noise Sources:

Snow Making and Snow Grooming Devices

The Mammoth Lakes office of the United States Forest Service reports the following recently-collected source information, which are listed in Table III.

TABLE III

NOISE LEVELS FROM SNOWMAKING AND SNOW GROOMING DEVICES

Equipment	Distance	Noise Level, dBA	Notes
Piston Bully Groomer	100′	57-61	1200-1800 rpm
	200′	55-59	1200-1800 rpm
HKD Snow Gun	200′	68	In Front of Tower
	200′	73	90° From Tower
	200′	64	Behind Tower

Source: USFS

Avalanche Control Devices

The USFS reports a recent noise level measurement of 183 dBA at the gunner's location of a 105mm howitzer. This noise level measurement is not applicable to urbanized locations in Mammoth Lakes. Measurements conducted in 1995 at the west end of Meridian Boulevard from Gun #2 resulted in muzzle blast maximum (L_{max}) levels from 53-58 dBA and shell blast levels ranging from 71-79 dBA.

Snow Removal Devices

The following snow removal devices are used by Mammoth Lakes to clear snow from streets. Measurements were conducted July 5, 2005 in the community's equipment yard.

Equipment	Distance	Noise Level, dBA	
		Range	L_{eq}
Cat 966G Loader	50′	69-73	71
Snow Blower	50′	80-86	87
Trackless Sidewalk Sweeper & Blower	50′	85-86	85
Scraper	50′	86-89	87

Source: Brown-Buntin Associates, Inc.

Musical Events At The Village

Live amplified music was played at The Village on the evening of July 2, 2005. Sound level measurements and observations were made at several locations from about 7:00-8:00 p.m. to determine noise impacts from this type of entertainment. Following are the results of measurements/observations.

Location	Description
1. Condos @ Forest Trail & Hillside Dr.	Music not audible
2. Condos under construction about 200′ from rear of band	68-76 dBA; L_{eq} = 73 dBA 69-77 dBA; L_{eq} = 72 dBA
3. "Hillside Resort & Spa" construction site, opposite side Canyon Blvd.	56-64 dBA; L_{eq} = 60 dBA 56-63 dBA; L_{eq} = 59 dBA
4. Mammoth Fireside Condos	55-58 dBA; L_{eq} = 56 dBA 54-62 dBA; L_{eq} = 57 dBA
5. Forest Trail & Grindelwald	Music not audible
6. 286 Cortina Court	Music not audible Hourly L_{eq} Values:* 6:00 p.m. 46 dBA 7:00 p.m. 40 dBA 8:00 p.m. 38 dBA

Source: Brown-Buntin Associates, Inc.

*Background noise measurement site. Levels from July 2, 2005.

Traffic Noise

Existing traffic noise levels in Mammoth Lakes were determined by a combination of noise measurements and noise modeling. The FHWA's Highway Traffic Noise Prediction Model was used to calculate traffic noise levels based on peak hour Saturday afternoon traffic volumes. The peak hour volumes were converted to Annual Average Daily Traffic (AADT) volumes by applying a conversion factor, which was determined by LSC Transportation Consultants, Inc.

In addition to noise modeling, existing traffic noise levels were measured at several locations. Table IV lists traffic noise levels measured for 10-minute periods. Measured traffic noise levels are in terms of the energy average (L_{eq}) noise level for the 10-minute period. The purpose of Table IV is to show the variation in noise levels that occurs along roadways.

TABLE IV

MEASURED TRAFFIC NOISE LEVELS

Date	Time	Roadway	Distance From C/L	Measured L_{eq}, dBA
7/4/05	12:45 p.m.	SR203 @ Shiloh Inn	63′	65.1
7/5/05	1:00 p.m.	LK Mary Rd. @ Holden Valley Rd.	60′	65.4
7/5/05	1:30 p.m.	Minaret Rd. across from The Village	75′	58.4
7/5/05	2:30 p.m.	Meridian Rd. near Azimuth	75′	58.1
7/5/05	3:00 p.m.	Old Mammoth Rd. @ Ranch Rd.	48′	62.4

Source: Brown-Buntin Associates, Inc.

Table V shows year 2004 traffic noise levels in terms of the Day-Night Average Levels at a distance of 100 feet from road centers using the previously described FHWA Model.

TABLE V

EXISTING (2004) TRAFFIC NOISE LEVELS
IN TERMS OF DAY-NIGHT AVERAGE LEVEL (DNL)

Roadway	Segment	Road Classifications	DNL, dB @ 100'
SR203/Main	Meridian to Sierra Park	Arterial	59
	Sierra Park to Minaret	Arterial	61
	Minaret to Forest Trail	Arterial	59
	North of Forest Trail	Arterial	57
Lake Mary Rd	Minaret to Kelly	Collector	58
	East of Kelly	Collector	55
Meridian Blvd	SR203 to Commerce	Arterial	54
	Commerce to Old Mammoth	Arterial	59
	Old Mammoth to Azimuth	Arterial	58
	Azimuth to Minaret	Arterial	60
	East of Minaret	Collector	59
Old Mammoth Rd	SR203 to Meridian	Arterial	61
	Meridian to Chateau	Arterial	60
	Chateau to Minaret	Arterial	57
	East of Minaret	Collector	57
Minaret Rd	SR203 to Meridian	Arterial	58
	Meridian to Old Mammoth	Arterial	55
Forest Trail	North of Main	Collector	54
	East of Minaret	Collector	48
Canyon Blvd	Hillside to Lake Mary	Collector	57
Lakeview Blvd	East of Entry	Collector	53
	West of Entry	Collector	57
Kelly Road	South of Lake Mary	Collector	54
Center Street	South of Main	Local	53
Azimuth Drive	North of Meridian	Collector	52
	South of Meridian	Collector	57

Source: Brown-Buntin Associates, Inc.

Table V shows that at a few locations, existing traffic noise levels exceed 60 dB DNL at the 100 distance. At the two locations where existing traffic noise levels exceed 60 dB DNL, the adjoining uses are commercial. These uses have a higher noise level tolerance than residential uses.

FUTURE NOISE IMPACTS

The noise source that is most clearly related to future growth in the community is traffic noise. Traffic noise levels are directly correlated to projected future traffic volumes that are predicted in Mammoth Lakes, based on various growth assumptions. The previously discussed FHWA Traffic Noise Prediction Model was used to calculate traffic noise levels at a reference distance of 100 feet from road centerlines. The 100-foot setback represents the nearest receptors to the road. Receptors that are greater than 100 feet from road centers will be exposed to lower noise levels.

Table VI lists year 2024 traffic noise levels for the Proposed Action Alternative and year 2024 Alternatives 1, 2 and 4, based on AADT volumes for each alternative. The traffic analysis for the General Plan should be consulted for the full descriptions of these future alternatives. Truck proportions and the day/night traffic proportions that were used as inputs into the Model were derived from Caltrans data, file information from LSC Transportation Consultants, Inc. and from observations by Brown-Buntin Associates, Inc. (BBA). Traffic speeds were based on existing speed limits and BBA observations. The input assumptions are listed in Appendix B.

TABLE VI

FUTURE (2024) TRAFFIC NOISE LEVELS IN TERMS OF DAY-NIGHT AVERAGE LEVEL (DNL)

Roadway	Segment	Road Classification	DNL, dB @ 100'			
			Proposed Action Alt.	Alt. 1	Alt. 2	Alt. 3
SR203/Main	Meridian to Sierra Park	Arterial	62	62	61	61
	Sierra Park to Minaret	Arterial	63	63	62	63
	Minaret to Forest Trail	Arterial	61	61	60	60
	North of Forest Trail	Arterial	60	59	59	59
Lake Mary Rd	Minaret to Kelly	Collector	62	58	57	59
	East of Kelly	Collector	57	58	57	57
Meridian Blvd	SR203 to Commerce	Arterial	58	60	59	60
	Commerce to Old Mammoth	Arterial	62	62	60	61
	Old Mammoth to Azimuth	Arterial	60	60	59	60
	Azimuth to Minaret	Arterial	62	62	61	61
	East of Minaret	Collector	63	63	62	63
Old Mammoth Rd	SR203 to Meridian	Arterial	62	64	61	63
	Meridian to Chateau	Arterial	63	62	61	62
	Chateau to Minaret	Arterial	61	61	59	61
	East of Minaret	Collector	60	60	59	60
Minaret Rd	SR203 to Meridian	Arterial	61	61	60	61
	Meridian to Old Mammoth	Arterial	60	60	59	61
Forest Trail	North of Main	Collector	57	57	56	56
	East of Minaret	Collector	54	51	52	54
Canyon Blvd	Hillside to Lake Mary	Collector	60	60	61	60
Lakeview Blvd	East of Entry	Collector	56	56	55	55
	West of Entry	Collector	57	57	57	57
Kelly Road	South of Lake Mary	Collector	57	57	56	55
Center Street	South of Main	Local	57	57	55	56
Azimuth Drive	North of Meridian	Collector	55	55	53	55
	South of Meridian	Collector	59	59	58	59

Source: Brown-Buntin Associates, Inc.

Table VI shows that future traffic noise levels for the Proposed Action Alternative or the other alternatives will be very similar, usually varying by 0 to 1 dB. In some locations, the future traffic noise level will exceed 60 dB DNL at the 100-foot distance. Where noise-sensitive receptors (full-time occupancy residences) are located next to roads, there is a potential for adverse noise impacts if noise levels exceed 60 dB DNL. Whether there is an actual adverse impact depends on site-specific conditions. Local topography may shield residences at some locations, and the orientation, location and design of noise-sensitive areas (e.g., patios & backyards) may adequately mitigate noise impacts. Interior noise levels should be satisfactory (45 dB DNL or less) at all locations and for all alternatives. Normal construction practices that satisfy building codes will reduce exterior noise levels by 20-25 dB. This means that exterior noise levels up to 70 dB DNL will still provide interior noise levels no greater than 45 dB DNL, assuming windows and doors are closed.

Along most of the arterial streets, land uses are commercial or residential/commercial mixed uses. These uses have a higher tolerance for noise levels than true residential uses. Locations where there is a potential for adverse noise impacts for the Proposed Action Alternative, based on existing or possible future true residential uses, are shown in Figure 5.

ANALYSIS OF MITIGATION MEASURES

As described in the preceding discussion and as shown in Figure 5, there are some locations in Mammoth Lakes where there is a potential for adverse noise impacts due to traffic. The following mitigation measures will reduce significant impacts to less than significant levels.

1. Mixed commercial and residential uses have a higher tolerance for noise levels than true residential uses. Occupants (full or part-time) move into such locations for the convenience that such uses provide. They are fully aware and accept that by living next to or over commercial uses they are likely to experience higher noise levels than within a true residential setting. Mammoth Lakes should adopt a noise compatibility standard for 65 dB DNL for mixed residential/commercial uses. This criterion will provide adequate protection for this type of land use, and is more appropriate than the 60 dB DNL standard used for true residential uses.

2. For true residential settings with full-time occupancy, the current Mammoth Lakes 60 dB DNL compatibility standard is appropriate. When such uses are proposed in locations where there is a potential for future traffic noise levels to exceed 60 dB DNL, mitigation can be provided by the normal development review and building permit process currently utilized by Mammoth Lakes staff. If the roadway is blocked from view by topography or structures, noise levels will probably be reduced by 3 dB or more. Outdoor activity areas, such as patios and backyards, should be oriented or moved to take advantage of shielding provided by other parts of the structure. Solid patio or balcony walls that are 6 or 4 feet high, respectively, will reduce noise by 4 dB or more. For developments where a more in-depth analysis of noise impacts and abatement strategies is necessary, a site-specific acoustical analysis should be considered.

APPENDIX A

ACOUSTICAL TERMINOLOGY

APPENDIX A

ACOUSTICAL TERMINOLOGY

AMBIENT NOISE LEVEL: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

CNEL: Community Noise Equivalent Level. The average equivalent sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night before 7:00 a.m. and after 10:00 p.m.

DECIBEL, dB: A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

DNL/L_{dn}: Day/Night Average Sound Level. The average equivalent sound level during a 24-hour day, obtained after addition of ten decibels to sound levels in the night after 10:00 p.m. and before 7:00 a.m.

L_{eq}: Equivalent Sound Level. The sound level containing the same total energy as a time varying signal over a given sample period. L_{eq} is typically computed over 1, 8 and 24-hour sample periods.

NOTE: The CNEL and DNL represent daily levels of noise exposure averaged on an annual basis, while L_{eq} represents the average noise exposure for a shorter time period, typically one hour.

L_{max}: The maximum noise level recorded during a noise event.

L_n: The sound level exceeded "n" percent of the time during a sample interval (L_{90}, L_{50}, L_{10}, etc.). For example, L_{10} equals the level exceeded 10 percent of the time.

ACOUSTICAL TERMINOLOGY

NOISE EXPOSURE CONTOURS: Lines drawn about a noise source indicating constant levels of noise exposure. CNEL and DNL contours are frequently utilized to describe community exposure to noise.

NOISE LEVEL REDUCTION (NLR): The noise reduction between indoor and outdoor environments or between two rooms that is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of "noise level reduction" combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

SEL or SENEL: Sound Exposure Level or Single Event Noise Exposure Level. The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the time-integrated A-weighted squared sound pressure for a stated time interval or event, based on a reference pressure of 20 micropascals and a reference duration of one second.

SOUND LEVEL: The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

SOUND TRANSMISSION CLASS (STC): The single-number rating of sound transmission loss for a construction element (window, door, etc.) over a frequency range where speech intelligibility largely occurs.

APPENDIX B

CALCULATION SHEETS

Appendix B-1

Brown Buntin Associates, Inc
FHWA-RD-77-108
Calculation Sheets
October 6, 2005

Project #:	05-056	**Contour Levels (dB)**	55	60	65	70	
Description:	Existing						
Ldn/Cnel:	Ldn						
Site Type:	Soft						

Segment	**Roadway Name**	**Segment Description**	**ADT**	**Day %**	**Eve %**	**Night %**	**Truck % Med**	**Truck % Hvy**	**Speed mph**	**Dist ft**
1	SR203/Main	Meridian to Sierra Park	7275	88		12	2.5	2.5	35	100
0		Sierra Park to Minaret	10922	88		12	2.5	2.5	35	100
0		Minaret to Forest Trail	8120	88		12	2.5	2.5	30	100
0		North of Forest Trail	5318	88		12	2.5	2.5	30	100
1	Lake Mary Rd	Minaret to Kelly	4882	88		12	2.5	2.5	35	100
0		East of Kelly	2454	88		12	2.5	2.5	35	100
1	Meridian Blvd	SR203 to Commerce	1575	88		12	2.5	2.5	40	100
0		Commerce to Old Mammoth	4909	88		12	2.5	2.5	40	100
0		Old Mammoth to Azimuth	4439	88		12	2.5	2.5	40	100
0		Azimuth to Minaret	6204	88		12	2.5	2.5	40	100
0		East of Minaret	4547	88		12	2.5	2.5	40	100
1	Old Mammoth Rd	SR203 to Meridian	8284	88		12	2.5	2.5	40	100
0		Meridian to Chateau	6539	88		12	2.5	2.5	40	100
0		Chateau to Minaret	2959	88		12	2.5	2.5	40	100
0		East of Minaret	3375	88		12	2.5	2.5	40	100
1	Minaret Rd	SR203 to Meridian	5645	88		12	2.5	2.5	35	100
0		Meridian to Old Mammoth	2754	88		12	2.5	2.5	35	100
1	Forest Trail	North of Main	2066	88		12	2.5	2.5	35	100
0		East of Minaret	512	88		12	2.5	2.5	35	100
1	Canyon Blvd	Hillside to Lake Mary	4527	88		12	2.5	2.5	35	100
2	Lakeview Blvd	East of Entry	1575	88		12	2.5	2.5	35	100
0		West of Entry	4384	88		12	2.5	2.5	35	100
1	Kelly Road	South of Lake Mary	2284	88		12	2.5	2.5	35	100
2	Center Street	South of Main	1677	88		12	2.5	2.5	35	100
3	Azimuth Drive	North of Meridian	1350	88		12	2.5	2.5	35	100
0		South of Meridian	3695	88		12	2.5	2.5	35	100
0						0				
0						0				

Appendix B-2

Brown Buntin Associates, Inc
FHWA-RD-77-108
Calculation Sheets

October 6, 2005

Project #: 05-056 **Contour Levels (dB)** 55 60 65 70
Descriptio: 2024 Proposed Action Alternative
Ldn/Cnel: Ldn
Site Type: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	Truck % Med	Truck % Hvy	Speed mph	Dist ft
1	SR203/Main	Meridian to Sierra Park	14093	88		12	2.5	2.5	35	100
0		Sierra Park to Minaret	16650	88		12	2.5	2.5	35	100
0		Minaret to Forest Trail	14209	88		12	2.5	2.5	30	100
0		North of Forest Trail	9989	88		12	2.5	2.5	30	100
1	Lake Mary Rd	Minaret to Kelly	13364	88		12	2.5	2.5	35	100
0		East of Kelly	4493	88		12	2.5	2.5	35	100
1	Meridian Blvd	SR203 to Commerce	4337	88		12	2.5	2.5	40	100
0		Commerce to Old Mammoth	9089	88		12	2.5	2.5	40	100
0		Old Mammoth to Azimuth	7043	88		12	2.5	2.5	40	100
0		Azimuth to Minaret	10568	88		12	2.5	2.5	40	100
0		East of Minaret	12995	88		12	2.5	2.5	40	100
1	Old Mammoth Rd	SR203 to Meridian	10445	88		12	2.5	2.5	40	100
0		Meridian to Chateau	11325	88		12	2.5	2.5	40	100
0		Chateau to Minaret	7336	88		12	2.5	2.5	40	100
0		East of Minaret	6464	88		12	2.5	2.5	40	100
1	Minaret Rd	SR203 to Meridian	10554	88		12	2.5	2.5	35	100
0		Meridian to Old Mammoth	8489	88		12	2.5	2.5	35	100
1	Forest Trail	North of Main	3852	88		12	2.5	2.5	35	100
0		East of Minaret	1868	88		12	2.5	2.5	35	100
1	Canyon Blvd	Hillside to Lake Mary	7943	88		12	2.5	2.5	35	100
2	Lakeview Blvd	East of Entry	3402	88		12	2.5	2.5	35	100
0		West of Entry	4384	88		12	2.5	2.5	35	100
1	Kelly Road	South of Lake Mary	4050	88		12	2.5	2.5	35	100
2	Center Street	South of Main	4282	88		12	2.5	2.5	35	100
3	Azimuth Drive	North of Meridian	2352	88		12	2.5	2.5	35	100
0		South of Meridian	7043	88		12	2.5	2.5	35	100
0						0				

Appendix B-3

Brown Buntin Associates, Inc
FHWA-RD-77-108
Calculation Sheets
October 6, 2005

Project #: 05-056 **Contour Levels (dB)** 55 60 65 70
Descriptio 2024 Alt 1
Ldn/Cnel: Ldn
Site Type: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	Truck % Med	Truck % Hvy	Speed mph	Dist ft
1	SR203/Main	Meridian to Sierra Park	13316	88		12	2.5	2.5	35	100
0		Sierra Park to Minaret	16145	88		12	2.5	2.5	35	100
0		Minaret to Forest Trail	13070	88		12	2.5	2.5	30	100
0		North of Forest Trail	9109	88		12	2.5	2.5	30	100
1	Lake Mary Rd	Minaret to Kelly	5775	88		12	2.5	2.5	35	100
0		East of Kelly	4807	88		12	2.5	2.5	35	100
1	Meridian Blvd	SR203 to Commerce	5761	88		12	2.5	2.5	40	100
0		Commerce to Old Mammoth	8993	88		12	2.5	2.5	40	100
0		Old Mammoth to Azimuth	6627	88		12	2.5	2.5	40	100
0		Azimuth to Minaret	10118	88		12	2.5	2.5	40	100
0		East of Minaret	12327	88		12	2.5	2.5	40	100
1	Old Mammoth Rd	SR203 to Meridian	14659	88		12	2.5	2.5	40	100
0		Meridian to Chateau	11086	88		12	2.5	2.5	40	100
0		Chateau to Minaret	7384	88		12	2.5	2.5	40	100
0		East of Minaret	6386	88		12	2.5	2.5	40	100
1	Minaret Rd	SR203 to Meridian	10227	88		12	2.5	2.5	35	100
0		Meridian to Old Mammoth	8509	88		12	2.5	2.5	35	100
1	Forest Trail	North of Main	4254	88		12	2.5	2.5	35	100
0		East of Minaret	927	88		12	2.5	2.5	35	100
1	Canyon Blvd	Hillside to Lake Mary	8134	88		12	2.5	2.5	35	100
2	Lakeview Blvd	East of Entry	3327	88		12	2.5	2.5	35	100
0		West of Entry	4622	88		12	2.5	2.5	35	100
1	Kelly Road	South of Lake Mary	4064	88		12	2.5	2.5	35	100
2	Center Street	South of Main	3947	88		12	2.5	2.5	35	100
3	Azimuth Drive	North of Meridian	2543	88		12	2.5	2.5	35	100
0		South of Meridian	6791	88		12	2.5	2.5	35	100
0						0				

Appendix B-4

Brown Buntin Associates, Inc
FHWA-RD-77-108
Calculation Sheets
October 6, 2005

Project #: 05-056 **Contour Levels (dB)** 55 60 65 70
Descriptio: 2024 Alt 2
Ldn/Cnel: Ldn
Site Type: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	Truck % Med	Truck % Hvy	Speed mph	Dist ft
1	SR203/Main	Meridian to Sierra Park	10278	88		12	2.5	2.5	35	100
0		Sierra Park to Minaret	13259.25	88		12	2.5	2.5	35	100
0		Minaret to Forest Trail	10963.13	88		12	2.5	2.5	30	100
0		North of Forest Trail	8467.875	88		12	2.5	2.5	30	100
1	Lake Mary Rd	Minaret to Kelly	4336.313	88		12	2.5	2.5	35	100
0		East of Kelly	3701.813	88		12	2.5	2.5	35	100
1	Meridian Blvd	SR203 to Commerce	5491.688	88		12	2.5	2.5	40	100
0		Commerce to Old Mammoth	6877.688	88		12	2.5	2.5	40	100
0		Old Mammoth to Azimuth	5486.625	88		12	2.5	2.5	40	100
0		Azimuth to Minaret	7813.125	88		12	2.5	2.5	40	100
0		East of Minaret	9081.563	88		12	2.5	2.5	40	100
1	Old Mammoth Rd	SR203 to Meridian	7823.813	88		12	2.5	2.5	40	100
0		Meridian to Chateau	8100	88		12	2.5	2.5	40	100
0		Chateau to Minaret	5236.313	88		12	2.5	2.5	40	100
0		East of Minaret	5113.125	88		12	2.5	2.5	40	100
1	Minaret Rd	SR203 to Meridian	7849.125	88		12	2.5	2.5	35	100
0		Meridian to Old Mammoth	6652.688	88		12	2.5	2.5	35	100
1	Forest Trail	North of Main	2930.063	88		12	2.5	2.5	35	100
0		East of Minaret	1344.375	88		12	2.5	2.5	35	100
1	Canyon Blvd	Hillside to Lake Mary	9419.063	88		12	2.5	2.5	35	100
2	Lakeview Blvd	East of Entry	2444.063	88		12	2.5	2.5	35	100
0		West of Entry	4367.25	88		12	2.5	2.5	35	100
1	Kelly Road	South of Lake Mary	3037.5	88		12	2.5	2.5	35	100
2	Center Street	South of Main	2853	88		12	2.5	2.5	35	100
3	Azimuth Drive	North of Meridian	1585.125	88		12	2.5	2.5	35	100
0		South of Meridian	4990.5	88		12	2.5	2.5	35	100

Appendix B-5

Brown Buntin Associates, Inc
FHWA-RD-77-108
Calculation Sheets
October 6, 2005

Project #: 05-056 **Contour Levels (dB)** 55 60 65 70
Description 2024 Alt 4
Ldn/Cnel: Ldn
Site Type: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	Truck % Med	Truck % Hvy	Speed mph	Dist ft
1	SR203/Main	Meridian to Sierra Park	11597	88		12	2.5	2.5	35	100
0		Sierra Park to Minaret	16568	88		12	2.5	2.5	35	100
0		Minaret to Forest Trail	12129	88		12	2.5	2.5	30	100
0		North of Forest Trail	8925	88		12	2.5	2.5	30	100
1	Lake Mary Rd	Minaret to Kelly	7152	88		12	2.5	2.5	35	100
0		East of Kelly	3934	88		12	2.5	2.5	35	100
1	Meridian Blvd	SR203 to Commerce	5836	88		12	2.5	2.5	40	100
0		Commerce to Old Mammoth	7902	88		12	2.5	2.5	40	100
0		Old Mammoth to Azimuth	5877	88		12	2.5	2.5	40	100
0		Azimuth to Minaret	8754	88		12	2.5	2.5	40	100
0		East of Minaret	11489	88		12	2.5	2.5	40	100
1	Old Mammoth Rd	SR203 to Meridian	13009	88		12	2.5	2.5	40	100
0		Meridian to Chateau	10118	88		12	2.5	2.5	40	100
0		Chateau to Minaret	7302	88		12	2.5	2.5	40	100
0		East of Minaret	6218	88		12	2.5	2.5	40	100
1	Minaret Rd	SR203 to Meridian	11550	88		12	2.5	2.5	35	100
0		Meridian to Old Mammoth	9266	88		12	2.5	2.5	35	100
1	Forest Trail	North of Main	3675	88		12	2.5	2.5	35	100
0		East of Minaret	1964	88		12	2.5	2.5	35	100
1	Canyon Blvd	Hillside to Lake Mary	7704	88		12	2.5	2.5	35	100
2	Lakeview Blvd	East of Entry	2475	88		12	2.5	2.5	35	100
0		West of Entry	4582	88		12	2.5	2.5	35	100
1	Kelly Road	South of Lake Mary	2550	88		12	2.5	2.5	35	100
2	Center Street	South of Main	2966	88		12	2.5	2.5	35	100
3	Azimuth Drive	North of Meridian	2407	88		12	2.5	2.5	35	100
0		South of Meridian	6886	88		12	2.5	2.5	35	100
0						0				
0						0				