APPENDIX F

TRAFFIC STUDY

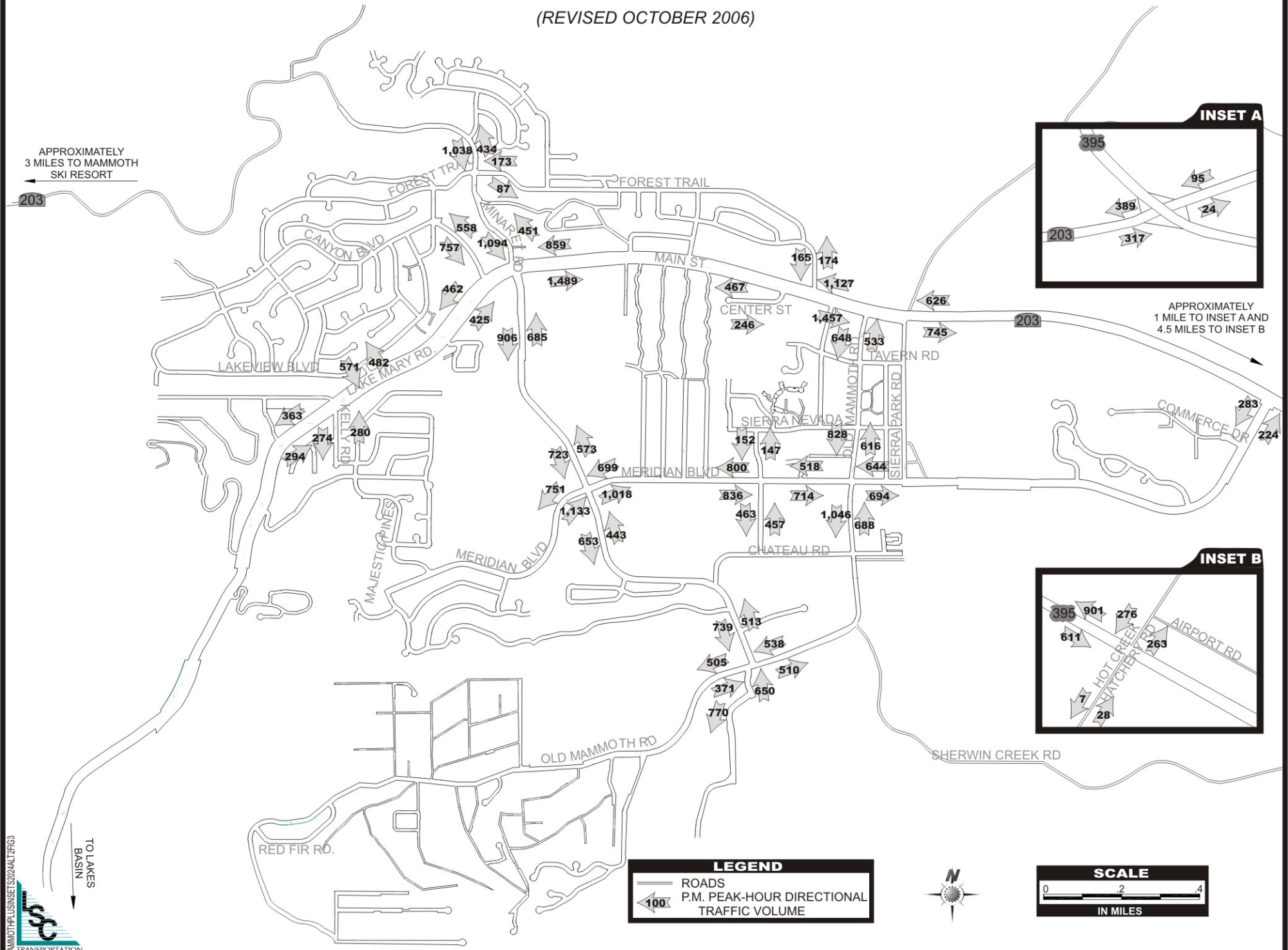
Mammoth Lakes General Plan
Revisions to Traffic Analysis

October 2006

FIGURE A

2024 PROPOSED GENERAL PLAN WINTER SATURDAY PM PEAK-HOUR VOLUMES PER DIRECTION

(REVISED OCTOBER 2006)



Model Land Uses
For Alternatives
By Transportation Analysis Zone (TAZ)

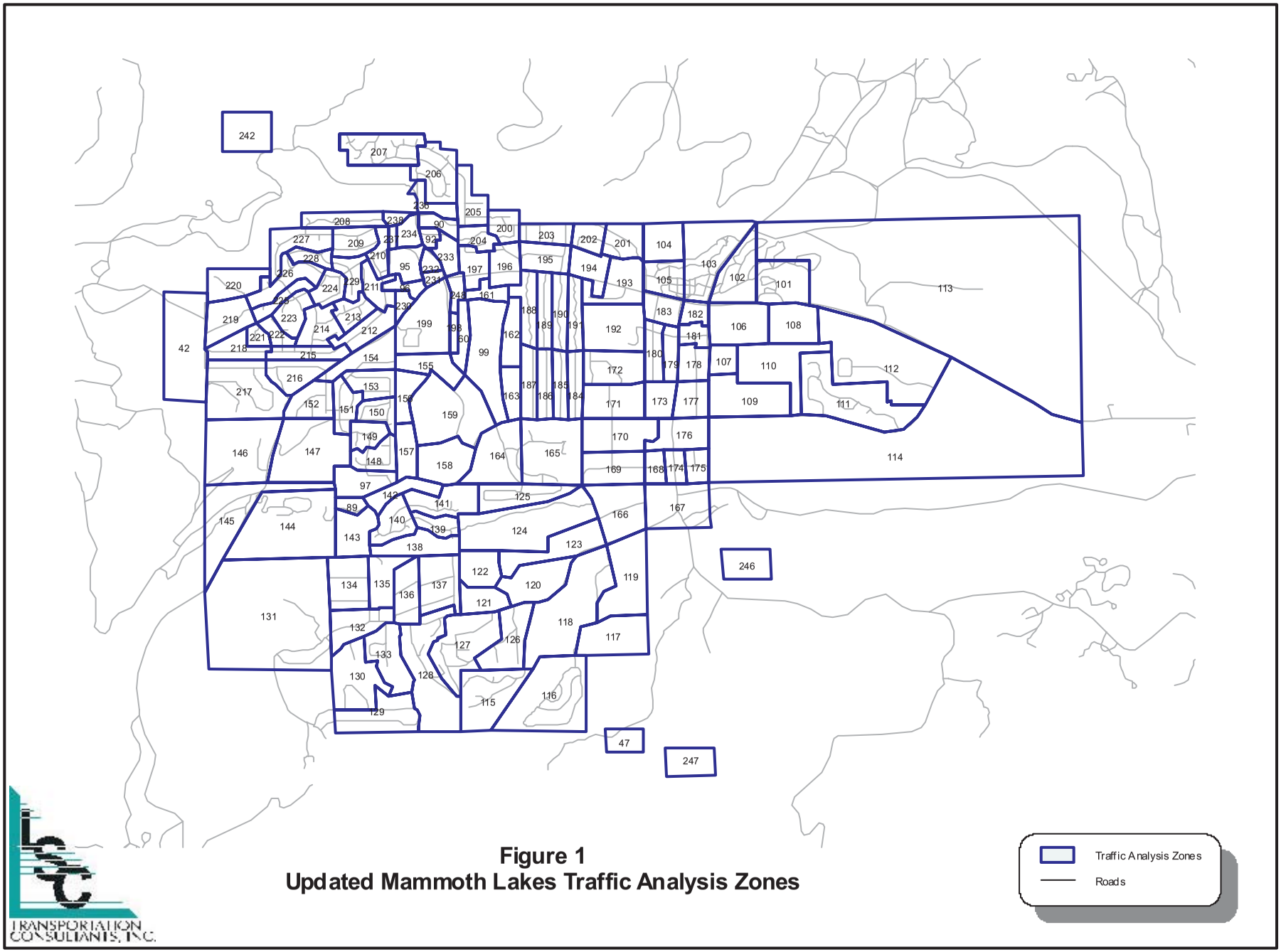


Figure 1
Updated Mammoth Lakes Traffic Analysis Zones

Table A: Alternative 5: Proposed Project Alternative (Page 1 of 2)

TAZ	1 Residential Low Density (SF) - Resident	2 Residential Medium Density (SF) - Resident	3 Residential High Density (MF) - Resident	4 Mobile Home Park - Resident	5 Residential Low Density (SF) - Visitor	6 Residential Medium Density (SF) - Visitor	7 Residential High Density (MF) - Visitor	10 Lodging (Hotel) Visitor	11 Resort Hotel - Visitor	12 Retail/Comm'l & Town Offices (ACRES)	13 Retail/Commercial	21 Light Industrial	23 Public Utility	31 Public School	32 High School	33 College	34 Hospital	36 Post Office	37 Church	39 Downhill Skiing-Employees	40 Downhill Skiing-Skiers	41 Cross-country Skiing/Snowmobiling
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	6,000	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	0	0	0	0	0	0	400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	280	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	104	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	712	0	63	0	0	0	0	0	0	0	0	400	6,000	0
96	0	0	0	0	0	0	0	0	221	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	90	0	0	0	0	4	0	0	0	0	0	0	0	0	63	6,000	0
98	0	0	0	0	0	0	0	0	213	0	0	0	0	0	0	0	0	0	0	1,300	6,000	0
99	0	0	0	0	0	0	210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	264
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	187	0	0	8	8	0	0	0	0	0	0	0	0	0	0	0
107	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	21	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	20	11	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0
111	0	77	0	0	0	30	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	36	0	0	0	0	0	0	0	0	0	0
114	0	0	450	0	0	0	0	0	0	0	47	20	36	3	0	500	0	0	0	0	0	0
115	25	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	72	0	0	0	216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	348	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	1,045	0	0	0	150	0	0	0	0	0	0	0	0	0	0	0
120	0	100	0	40	0	72	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
121	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	0	40	0	0	0	134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	0	70	0	0	0	248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	22	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126	19	0	58	40	20	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
127	25	0	30	0	29	0	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	30	25	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	30	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	29	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	20	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	18	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	17	0	0	0	9	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	26	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	26	0	0	0	13	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	28	7	0	0	28	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	0	12	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	45	30	0	0	13	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	0	16	6	0	0	30	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	0	0	84	0	0	0	170	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0
143	1	0	5	0	0	0	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	36	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	10	0	34	0	17	3	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	14	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	3	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	22	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	27	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	19	36	0	0	21	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153	0	26	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	5	65	0	0	10	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	0	0	4	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	700	0	0	0	80	0	0	0	0	0	0	0	0	0	0	543
160	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	7	59	0	0	0	87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	14	0	0	56	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	170	0	0	0	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	46	0	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	48	0	0	0	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	109	40	0	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	145	0	0	0	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	69	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table A: Alternative 5: Proposed Project Alternative (Page 2 of 2)

TAZ	1 Residential Low Density (SF) - Resident	2 Residential Medium Density (SF) - Resident	3 Residential High Density (MF) - Resident	4 Mobile Home Park - Resident	5 Residential Low Density (SF) - Visitor	6 Residential Medium Density (SF) - Visitor	7 Residential High Density (MF) - Visitor	10 Lodging (Hotel) - Visitor	11 Resort Hotel - Visitor	12 Retail/Comm'l & Town Offices (ACRES)	13 Retail/Commercial	21 Light Industrial	23 Public Utility	31 Public School	32 High School	33 College	34 Hospital	36 Post Office	37 Church	39 Downhill Skiing-Employees	40 Downhill Skiing-Skiers	41 Cross-country Skiing/Snowmobiling
173	0	0	81	0	0	0	146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	48	0	5	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	60	0	0	10	0	0	0	4	0	0	1	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	30	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	45	0	0	0	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	160	0	4	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	100	0	0	30	42	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
181	0	0	30	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
182	0	0	10	0	0	0	0	72	0	4	0	0	0	0	0	0	0	0	0	0	0	0
183	0	0	30	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0
184	0	19	40	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	0	10	23	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186	0	28	26	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
187	0	18	120	0	0	8	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
188	0	10	40	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
189	0	12	31	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190	0	15	36	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
191	0	17	30	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
192	23	420	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
193	0	0	0	0	0	0	0	32	0	0	14	0	0	0	0	0	0	0	0	0	0	0
194	0	0	0	0	0	0	0	191	0	12	0	0	0	0	0	0	0	12,500	0	0	0	0
195	0	0	50	0	0	0	0	357	0	2	0	0	0	0	0	0	0	0	0	0	0	0
196	0	0	0	0	0	0	0	106	0	2	0	0	0	0	0	0	0	0	0	0	0	0
197	0	0	0	0	0	0	0	560	0	1	0	0	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	86	0	0	0	0	0	0	0	0	0	0	0	0	0
199	0	10	10	0	0	9	9	0	742	0	50	0	0	0	0	0	0	0	0	0	0	0
200	0	14	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201	0	23	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
202	0	24	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
203	0	44	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
204	0	38	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
205	0	31	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
206	0	49	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
207	0	54	0	0	0	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208	0	23	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
209	0	18	0	0	0	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210	0	8	12	0	0	1	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211	0	0	59	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
212	0	0	120	0	0	0	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213	0	25	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
214	0	23	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215	0	5	50	0	0	9	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
216	10	0	30	0	0	8	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
217	30	41	4	0	6	44	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218	0	4	17	0	0	0	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
219	0	0	12	0	0	0	256	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	0	0	18	0	0	0	169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
221	0	4	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
222	0	7	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223	0	26	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	0	14	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225	0	11	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
226	0	32	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
227	0	20	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	0	14	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
229	0	19	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	0	0	20	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231	0	0	0	0	0	0	0	0	81	0	10	0	0	0	0	0	0	0	0	0	0	0
232	0	0	0	0	0	0	0	0	129	1	0	0	0	0	0	0	0	0	0	0	0	0
233	0	0	0	0	0	0	0	0	338	0	0	0	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	448	0	65	0	0	0	0	0	0	0	0	0	0	0
235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
236	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
237	0	0	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0
238	0	0	16	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
244	0	0	0	0	0	0	0	0	117	0	0	0	0	0	0	0	0	0	0	18	0	0
246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
248	0	0	62	0	0	0	0	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**397**	**1,897**	**2,759**	**120**	**261**	**1,954**	**6,218**	**1,646**	**3,500**	**88**	**544**	**60**	**38**	**23**	**36**	**500**	**21**	**12,500**	**3**	**2,181**	**24,000**	**807**

Table B: Alternative 1: No Project Alternative/1987 General Plan Build Out (Page 1 of 2)

TAZ	1 Residential Low Density (SF) - Resident	2 Residential Medium Density (SF) - Resident	3 Residential High Density (MF) - Resident	4 Mobile Home Park - Resident	5 Residential Low Density (SF) - Visitor	6 Residential Medium Density (SF) - Visitor	7 Residential High Density (MF) - Visitor	10 Lodging (Hotel) Visitor	11 Resort Hotel - Visitor	12 Retail/Comm'l & Town Offices (ACRES)	13 Retail/Commercial	21 Light Industrial	23 Public Utility	31 Public School	32 High School	33 College	34 Hospital	36 Post Office	37 Church	39 Downhill Skiing-Employees	40 Downhill Skiing-Skiers	41 Cross-country Skiing/Snowmobiling
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	6,000	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	0	0	0	0	0	0	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	280	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	104	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	712	3	60	0	0	0	0	0	0	0	0	400	6,000	0
96	0	0	0	0	0	0	0	0	221	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	63	6,000	0
98	0	0	0	0	0	0	0	0	213	0	0	0	0	0	0	0	0	0	0	1,300	6,000	0
99	0	0	0	0	0	0	210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	264
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	187	0	0	0	8	0	0	0	0	0	0	0	3	0	0	0
107	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	21	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	20	11	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0
111	0	77	0	0	0	30	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	62	0	0	0	0	0	0	0	0	0	0
114	0	0	450	0	0	0	0	0	0	0	47	20	36	3	0	500	0	0	0	0	0	0
115	25	0	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	72	0	0	0	216	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	348	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	1,045	0	0	0	150	0	0	0	0	0	0	0	0	0	0	0
120	0	100	0	40	0	72	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
121	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	0	40	0	0	0	134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	0	70	0	0	0	248	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	22	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126	19	0	58	40	20	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
127	25	0	30	0	29	0	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	30	25	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	30	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	29	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	20	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	18	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	17	0	0	0	9	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	26	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	26	0	0	0	13	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	28	7	0	0	28	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	0	12	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	45	30	0	0	13	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	0	16	6	0	0	30	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	0	0	84	0	0	0	170	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0
143	1	0	5	0	0	0	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	36	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	10	0	34	0	17	3	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	14	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	3	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	22	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	27	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	19	36	0	0	21	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153	0	26	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	5	65	0	0	10	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	0	0	4	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	700	0	0	0	80	0	0	0	0	0	0	0	0	0	0	543
160	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	7	59	0	0	0	87	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	14	0	0	56	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	170	0	0	0	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	46	0	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	48	0	0	0	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	109	40	0	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	145	0	0	0	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	69	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table B: Alternative 1: No Project Alternative/1987 General Plan Build Out (Page 2 of 2)

TAZ	1 Residential Low Density (SF) - Resident	2 Residential Medium Density (SF) - Resident	3 Residential High Density (MF) - Resident	4 Mobile Home Park - Resident	5 Residential Low Density (SF) - Visitor	6 Residential Medium Density (SF) - Visitor	7 Residential High Density (MF) - Visitor	10 Lodging (Hotel) - Visitor	11 Resort Hotel - Visitor	12 Retail/Comm'l & Town Offices (ACRES)	13 Retail/Commercial	21 Light Industrial	23 Public Utility	31 Public School	32 High School	33 College	34 Hospital	36 Post Office	37 Church	39 Downhill Skiing-Employees	40 Downhill Skiing-Skiers	41 Cross-country Skiing/Snowmobiling
173	0	0	81	0	0	0	146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	48	0	5	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	60	0	0	10	0	0	0	4	0	0	1	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	30	0	0	0	0	0	0	9	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	45	0	0	0	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	160	0	4	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	100	0	0	30	42	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
181	0	0	30	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
182	0	0	10	0	0	0	0	72	0	4	0	0	0	0	0	0	0	0	0	0	0	0
183	0	0	30	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0
184	0	19	40	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	0	10	23	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186	0	28	26	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
187	0	18	120	0	0	8	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
188	0	10	40	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
189	0	12	31	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190	0	15	36	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
191	0	17	30	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
192	23	420	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
193	0	0	0	0	0	0	0	32	0	0	14	0	0	0	0	0	0	0	0	0	0	0
194	0	0	0	0	0	0	0	191	0	12	0	0	0	0	0	0	0	0	12,500	0	0	0
195	0	0	50	0	0	0	0	357	0	2	0	0	0	0	0	0	0	0	0	0	0	0
196	0	0	0	0	0	0	0	106	0	2	0	0	0	0	0	0	0	0	0	0	0	0
197	0	0	0	0	0	0	0	560	0	1	0	0	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	86	0	0	0	0	0	0	0	0	0	0	0	0	0
199	0	10	10	0	0	9	9	0	542	0	50	0	0	0	0	0	0	0	0	0	0	0
200	0	14	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201	0	23	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
202	0	24	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
203	0	44	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
204	0	38	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
205	0	31	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
206	0	49	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
207	0	54	0	0	0	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208	0	23	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
209	0	18	0	0	0	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210	0	8	12	0	0	1	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211	0	0	59	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
212	0	0	120	0	0	0	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213	0	25	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
214	0	23	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215	0	5	50	0	0	9	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
216	10	0	30	0	0	8	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
217	30	41	4	0	6	44	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218	0	4	17	0	0	0	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
219	0	0	12	0	0	0	256	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	0	0	18	0	0	0	169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
221	0	4	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
222	0	7	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223	0	26	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	0	14	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225	0	11	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
226	0	32	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
227	0	20	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	0	14	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
229	0	19	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	0	0	20	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231	0	0	0	0	0	0	0	0	81	0	10	0	0	0	0	0	0	0	0	0	0	0
232	0	0	0	0	0	0	0	0	129	1	0	0	0	0	0	0	0	0	0	0	0	0
233	0	0	0	0	0	0	0	0	338	0	0	0	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	448	0	65	0	0	0	0	0	0	0	0	0	0	0
235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
236	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0
237	0	0	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0
238	0	0	16	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
244	0	0	0	0	0	0	0	0	117	0	0	0	0	0	0	0	0	0	0	18	0	0
246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
248	0	0	62	0	0	0	0	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**397**	**1,897**	**2,759**	**120**	**261**	**1,864**	**5,997**	**1,646**	**3,300**	**78**	**544**	**86**	**38**	**23**	**36**	**500**	**21**	**12,500**	**7**	**2,181**	**24,000**	**807**

Table C: Alternative 2: Workforce/Affordable Housing Alternative (Page 2 of 2)

	1	2	3	4	5	6	7	10	11	12	13	21	23	31	32	33	34	36	37	39	40	41
TAZ	Residential Low Density (SF) - Resident	Residential Medium Density (SF) - Resident	Residential High Density (MF) - Resident	Mobile Home Park - Resident	Residential Low Density (SF) - Visitor	Residential Medium Density (SF) - Visitor	Residential High Density (MF) - Visitor	Lodging (Hotel) - Visitor	Resort Hotel - Visitor	Retail/Comm'l & Town Offices (ACRES)	Retail/Commercial	Light Industrial	Public Utility	Public School	High School	College	Hospital	Post Office	Church	Downhill Skiing-Employees	Downhill Skiing-Skiers	Cross-country Skiing/Snowmobiling
173	0	0	0	0	0	16	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	30	0	0	16	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	45	0	0	16	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	16	0	160	0	4	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	100	0	0	46	42	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	30	0	0	16	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	10	0	0	16	0	72	0	4	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	30	0	0	16	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0
181	0	44	40	0	0	28	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
182	0	40	23	0	0	28	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
183	0	57	26	0	0	28	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
184	0	48	120	0	0	36	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	0	44	40	0	0	28	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186	0	36	31	0	0	28	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
187	0	41	36	0	0	28	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
188	0	47	30	0	0	28	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
189	34	420	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190	0	0	0	0	0	16	0	32	0	0	14	0	0	0	0	0	0	0	0	0	0	0
191	0	0	0	0	0	0	0	191	0	12	0	0	0	0	0	0	0	12,500	0	0	0	0
192	0	0	50	0	0	0	0	357	0	2	0	0	0	0	0	0	0	0	0	0	0	0
193	0	0	0	0	0	0	0	106	0	2	0	0	0	0	0	0	0	0	0	0	0	0
194	0	0	0	0	0	0	0	560	0	1	0	0	0	0	0	0	0	0	0	0	0	0
195	0	0	0	0	0	0	0	0	86	0	0	0	0	0	0	0	0	0	0	0	0	0
196	11	10	10	0	0	37	9	0	542	0	50	0	0	0	0	0	0	0	0	0	0	0
197	11	14	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
198	11	23	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
199	11	24	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200	11	44	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201	11	38	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
202	11	31	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
203	11	49	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
204	11	54	0	0	0	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
205	11	23	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
206	11	18	0	0	0	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
207	11	8	12	0	0	29	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208	11	0	59	0	0	28	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
209	0	0	120	0	0	28	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210	11	25	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211	11	23	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
212	11	5	50	0	0	37	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213	10	0	30	0	0	36	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
214	41	41	4	0	6	72	420	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215	11	4	17	0	0	28	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
216	0	0	12	0	0	28	256	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
217	0	0	18	0	0	28	169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218	11	4	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
219	11	7	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	11	26	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
221	11	14	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
222	11	11	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223	11	32	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	11	20	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225	11	14	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
226	11	19	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
227	0	0	20	0	0	28	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	0	0	0	0	0	0	0	0	81	0	10	0	0	0	0	0	0	0	0	0	0	0
229	0	0	0	0	0	0	0	0	129	1	0	0	0	0	0	0	0	0	0	0	0	0
230	0	0	0	0	0	0	0	0	338	3	0	0	0	0	0	0	0	0	0	0	0	0
231	0	0	0	0	0	0	0	0	448	0	65	0	0	0	0	0	0	0	0	0	0	0
232	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
233	0	0	0	0	0	229	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0
234	0	0	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0
235	0	0	16	0	0	28	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
236	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
237	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
238	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239	0	0	0	0	0	0	0	0	213	0	0	0	0	0	0	0	0	0	0	1,300	6,000	0
240	0	0	0	0	0	0	0	0	117	0	0	0	0	0	0	0	0	0	0	0	0	0
241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
244	0	0	62	0	0	0	0	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
246	602	671	1,080	180	255	3,459	4,376	84	1,377	0	355	66	37	23	36	500	21	0	6	842	16,000	807
247	371	1,358	1,212	0	6	1,615	2,081	1,632	1,983	72	142	0	1	0	0	0	0	12,500	1	1,300	6,000	0
248	973	2,029	2,292	180	261	5,074	6,457	1,716	3,360	72	497	66	38	23	36	500	21	12,500	7	2,142	22,000	807
TOTAL	**2,920**	**6,089**	**6,738**	**544**	**788**	**15,190**	**19,232**	**5,110**	**10,091**	**220**	**1,503**	**220**	**137**	**100**	**140**	**1,533**	**97**	**37,536**	**58**	**6,465**	**66,040**	**2,462**

Table C: Alternative 2: Workforce/Affordable Housing Alternative (Page 1 of 2)

TAZ	1 Residential Low Density (SF) - Resident	2 Residential Medium Density (SF) - Resident	3 Residential High Density (MF) - Resident	4 Mobile Home Park - Resident	5 Residential Low Density (SF) - Visitor	6 Residential Medium Density (SF) - Visitor	7 Residential High Density (MF) - Visitor	10 Lodging (Hotel) Visitor	11 Resort Hotel - Visitor	12 Retail/Comm'l & Town Offices (ACRES)	13 Retail/Commercial	21 Light Industrial	23 Public Utility	31 Public School	32 High School	33 College	34 Hospital	36 Post Office	37 Church	39 Downhill Skiing-Employees	40 Downhill Skiing-Skiers	41 Cross-country Skiing/Snowmobiling
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	6,000	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	0	0	0	0	0	28	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	280	0	40	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	104	0	20	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	712	0	0	0	0	0	0	0	0	0	0	400	6,000	0
96	0	0	0	0	0	0	0	0	221	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	28	0	0	0	0	4	0	0	0	0	0	0	0	0	42	4,000	0
98	0	0	0	60	0	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0
99	0	0	0	0	0	28	210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	264
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	229	227	0	0	0	8	0	0	0	0	0	0	0	3	0	0	0
107	0	0	0	0	0	229	0	0	0	0	18	0	0	0	0	0	21	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	20	11	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0
110	11	77	0	0	0	72	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
111	0	0	0	0	0	220	0	0	0	0	0	62	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	229	0	0	0	0	0	0	36	3	0	500	0	0	0	0	0	0
114	36	0	0	0	24	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0
115	0	72	0	0	0	244	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	0	0	0	0	28	348	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	148	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	28	1,045	0	0	0	150	0	0	0	0	0	0	0	0	0	0	0
119	0	100	0	40	0	100	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
120	0	70	0	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
121	0	40	0	0	0	162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	0	70	0	0	0	276	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	11	22	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	30	0	58	40	20	28	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
126	36	0	30	0	29	28	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
127	41	25	0	0	24	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	41	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	40	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	31	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	29	0	0	0	18	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	28	0	0	0	9	28	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	31	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	31	0	0	0	13	28	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	34	7	0	0	28	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	11	0	0	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	11	12	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	11	45	30	0	0	13	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	11	16	6	0	0	58	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	0	0	84	0	0	28	170	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0
142	0	0	0	0	0	28	200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
143	0	36	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	10	0	34	0	17	31	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	11	14	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	11	3	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	11	22	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	11	27	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	11	19	36	0	0	49	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	11	26	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153	11	5	65	0	0	38	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	0	0	0	0	28	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	28	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	28	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	4	0	0	28	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	0	0	0	0	0	28	700	0	0	0	80	0	0	0	0	0	0	0	0	0	0	543
159	0	0	0	0	0	31	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
160	0	0	0	0	0	28	76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	144	0	0	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	28	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	7	-37	0	0	0	183	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	0	0	2	0	0	84	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	170	0	0	28	170	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	46	0	0	28	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	48	0	0	28	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	109	40	0	28	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	145	0	0	28	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	69	0	0	28	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	1	2	3	4	5	6	7	10	11	12	13	21	23	31	32	33	34	36	37	39	40	41

Table D: Alternative 4: Reduced Development Alternative (Page 1 of 2)

TAZ	1 Residential Low Density (SF) - Resident	2 Residential Medium Density (SF) - Resident	3 Residential High Density (MF) - Resident	4 Mobile Home Park - Resident	5 Residential Low Density (SF) - Visitor	6 Residential Medium Density (SF) - Visitor	7 Residential High Density (MF) - Visitor	10 Lodging (Hotel) Visitor	11 Resort Hotel - Visitor	12 Retail/Comm'l & Town Offices (ACRES)	13 Retail/Commercial	21 Light Industrial	23 Public Utility	31 Public School	32 High School	33 College	34 Hospital	36 Post Office	37 Church	39 Downhill Skiing-Employees	40 Downhill Skiing-Skiers	41 Cross-country Skiing/Snowmobiling
42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	400	6,000	0
47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
89	0	0	0	0	0	0	179	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0	155	0	40	0	0	0	0	0	0	0	0	0	0	0
91	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	0	0	0	0	0	0	0	104	0	20	0	0	0	0	0	0	0	0	0	0	0
93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
95	0	0	0	0	0	0	0	0	462	0	0	0	0	0	0	0	0	0	0	400	6,000	0
96	0	0	0	0	0	0	0	0	96	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	63	6,000	0
98	0	0	0	0	0	0	0	0	213	0	0	0	0	0	0	0	0	0	0	1,300	6,000	0
99	0	0	0	0	0	0	210	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
102	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	264
103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
106	0	0	0	0	0	0	118	0	0	0	8	0	0	0	0	0	0	0	3	0	0	0
107	0	0	0	0	0	0	0	0	0	0	18	0	0	0	0	0	21	0	0	0	0	0
108	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
109	0	0	0	0	0	0	0	0	0	0	0	0	0	20	11	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0	0	0	0	0	0	0
111	0	77	0	0	0	30	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0
112	0	0	0	0	0	0	0	0	0	0	0	62	0	0	0	0	0	0	0	0	0	0
114	0	0	0	0	0	0	0	0	0	0	0	0	36	3	0	500	0	0	0	0	0	0
115	25	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
116	0	72	0	0	0	199	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
117	0	0	0	0	0	0	331	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
118	0	0	0	0	0	103	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
119	0	0	0	0	0	0	903	0	0	0	230	0	0	0	0	0	0	0	0	0	0	0
120	0	100	0	40	0	55	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
121	0	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
122	0	23	0	0	0	134	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	0	70	0	0	0	231	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
125	0	22	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
126	19	0	41	40	20	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0
127	25	0	30	0	12	0	6	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
128	30	25	0	0	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
129	30	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
130	29	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
131	20	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
132	18	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
133	5	0	0	0	4	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
134	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
135	20	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
136	26	0	0	0	13	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
137	23	7	0	0	28	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
139	0	12	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
140	0	45	30	0	0	13	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
141	0	16	6	0	0	30	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
142	0	0	84	0	0	0	170	0	0	0	35	0	0	0	0	0	0	0	0	0	0	0
143	1	0	5	0	0	0	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
144	0	44	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
145	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
146	10	0	34	0	17	3	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
148	0	14	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
149	0	3	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	22	0	0	0	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
151	0	27	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
152	0	19	36	0	0	21	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
153	0	26	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
154	0	5	65	0	0	10	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
155	0	0	0	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
156	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
157	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
158	0	0	4	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
159	0	0	0	0	0	0	683	0	0	0	80	0	0	0	0	0	0	0	0	0	0	543
160	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
161	0	0	0	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	7	59	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	0	0	14	0	0	56	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
166	0	0	170	0	0	0	153	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	46	0	0	0	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
169	0	0	48	0	0	0	130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
170	0	0	109	40	0	0	144	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
171	0	0	145	0	0	0	214	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	69	0	0	0	59	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table D: Alternative 4: Reduced Development Alternative (Page 2 of 2)

	1	2	3	4	5	6	7	10	11	12	13	21	23	31	32	33	34	36	37	39	40	41
TAZ	Residential Low Density (SF) - Resident	Residential Medium Density (SF) - Resident	Residential High Density (MF) - Resident	Mobile Home Park - Resident	Residential Low Density (SF) - Visitor	Residential Medium Density (SF) - Visitor	Residential High Density (MF) - Visitor	Lodging (Hotel) - Visitor	Resort Hotel - Visitor	Retail/Comm'l & Town Offices (ACRES)	Retail/Commercial	Light Industrial	Public Utility	Public School	High School	College	Hospital	Post Office	Church	Downhill Skiing-Employees	Downhill Skiing-Skiers	Cross-country Skiing/Snowmobiling
173	0	0	81	0	0	0	146	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	0	0	0	0	0	0	0	48	0	4	0	0	0	0	0	0	0	0	0	0	0	0
175	0	0	60	0	0	10	0	0	0	3	0	0	1	0	0	0	0	0	0	0	0	0
176	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	30	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	45	0	0	0	165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	0	0	0	0	0	0	0	160	0	4	0	0	0	0	0	0	0	0	0	0	0	0
180	0	0	100	0	0	30	42	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0
181	0	0	30	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
182	0	0	10	0	0	0	0	72	0	4	0	0	0	0	0	0	0	0	0	0	0	0
183	0	0	30	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0
184	0	21	23	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
185	0	17	6	0	0	0	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
186	0	34	9	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
187	0	18	120	0	0	8	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
188	0	21	23	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
189	0	13	14	0	0	0	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
190	0	18	19	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
191	0	24	13	0	0	0	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
192	34	380	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
193	0	0	0	0	0	0	0	32	0	0	14	0	0	0	0	0	0	0	0	0	0	0
194	0	0	0	0	0	0	0	191	0	12	0	0	0	0	0	0	0	12,500	0	0	0	0
195	0	0	50	0	0	0	0	357	0	2	0	0	0	0	0	0	0	0	0	0	0	0
196	0	0	0	0	0	0	0	106	0	2	0	0	0	0	0	0	0	0	0	0	0	0
197	0	0	16	0	0	30	42	82	0	1	0	0	0	0	0	0	0	0	0	0	0	0
198	0	0	0	0	0	0	0	0	86	0	0	0	0	0	0	0	0	0	0	0	0	0
199	0	10	10	0	0	9	9	0	275	0	50	0	0	0	0	0	0	0	0	0	0	0
200	0	14	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
201	0	23	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
202	0	24	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
203	0	44	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
204	0	38	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
205	0	31	0	0	0	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
206	0	49	0	0	0	43	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
207	0	54	0	0	0	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
208	0	23	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
209	0	18	0	0	0	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
210	0	8	12	0	0	1	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
211	0	0	59	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
212	0	0	120	0	0	0	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
213	0	25	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
214	0	23	0	0	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
215	0	5	50	0	0	9	70	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
216	10	0	7	0	0	8	83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
217	30	41	4	0	6	44	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
218	0	4	17	0	0	0	152	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
219	0	0	12	0	0	0	256	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
220	0	0	18	0	0	0	169	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
221	0	4	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
222	0	7	0	0	0	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
223	0	26	0	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
224	0	14	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
225	0	11	0	0	0	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
226	0	32	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
227	0	20	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
228	0	14	0	0	0	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
229	0	19	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
230	0	0	20	0	0	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
231	0	0	0	0	0	0	0	0	81	0	10	0	0	0	0	0	0	0	0	0	0	0
232	0	0	0	0	0	0	0	0	129	0	5	0	0	0	0	0	0	0	0	0	0	0
233	0	0	0	0	0	0	0	0	88	3	0	0	0	0	0	0	0	0	0	0	0	0
234	0	0	0	0	0	0	0	0	198	0	65	0	0	0	0	0	0	0	0	0	0	0
235	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
236	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0	0
237	0	0	0	0	0	0	0	0	29	0	0	0	0	0	0	0	0	0	0	0	0	0
238	0	0	16	0	0	0	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
239	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
240	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
241	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
242	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
244	0	0	0	0	0	0	0	0	117	0	0	0	0	0	0	0	0	0	0	0	0	0
246	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
247	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
248	0	0	62	0	0	0	0	79	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**385**	**1,868**	**2,149**	**120**	**222**	**1,728**	**5,597**	**1,168**	**2,033**	**70**	**582**	**66**	**38**	**23**	**36**	**500**	**21**	**12,500**	**7**	**2,163**	**24,000**	**807**

Revised LOS Calculations

The calculation sheets are on file at Town Hall

Revised Vehicle Miles Traveled (VMT)
For Draft General Plan Update

Town of Mammoth Lakes Estimated 2004 and 2024 Vehicle Miles of Travel on Study Roadway Segments

Segment	Description	Length (Miles)	Revised 2004		Revised ALT 1	
			ADT	VMT	ADT	VMT
Main Street Segment 1	Between Meridian and Sierra Park	1.03	5,983	6,163	8,498	8,753
Main Street Segment 2	Between Sierra Park and Old Mammoth	0.12	8,733	1,048	11,775	1,413
Main Street Segment 3	Between Old Mammoth and Mono	0.48	17,298	8,303	22,452	10,777
Main Street Segment 3	Between Mono and Minaret	0.45	15,896	7,153	21,856	9,835
Lake Mary Road (Old Main Street Segment 5)	Between Minaret and Lakeview	0.49	7,216	3,536	10,322	5,058
Lake Mary Road Segment 1	Between Lakeview and Juniper	0.46	1,789	823	3,493	1,607
Lake Mary Road Segment 2	South of Juniper	1.20	145	174	1,138	1,365
Meridian Boulevard Segment 1	SR 203 to Sierra Park	1.09	1,751	1,909	4,363	4,756
Meridian Boulevard Segment 2	Sierra Park to Old Mammoth	0.14	4,071	570	6,507	911
Meridian Boulevard Segment 3	Old Mammoth to Minaret	0.58	8,079	4,686	12,016	6,969
Meridian Boulevard Segment 4	Minaret to Majestic Pines	0.66	5,811	3,835	11,808	7,793
Old Mammoth Road Segment 1	Main to Meridian	0.45	12,489	5,620	18,431	8,294
Old Mammoth Road Segment 2	Meridian to Sherwin Creek	0.36	7,381	2,657	13,267	4,776
Old Mammoth Road Segment 3	Sherwin to Minaret	0.29	5,000	1,450	10,590	3,071
Old Mammoth Road Segment 4	Minaret to Club	0.47	4,234	1,990	8,036	3,777
Old Mammoth Road Segment 5	Club Drive to Waterford	0.26	2,465	641	4,865	1,265
Old Mammoth Road Segment 6	West of Sherwin	0.71	1,018	723	2,272	1,613
Forest Trail	Entire Length of Road	1.06	742	786	2,493	2,643
Canyon Boulevard	Lake Mary to Lakeview	0.32	4,625	1,480	10,003	3,201
Lakeview Drive	Canyon to Davison	0.93	2,469	2,296	3,589	3,338
Kelly Road and Majestic Pines	Lake Mary to Meridian	0.60	1,492	895	2,538	1,523
SR 203 Segment 1 (Minaret North of Main)	Lake Mary to Forest Trail	0.26	11,712	3,045	13,431	3,492
SR 203 Segment 2	Forest Trail to 1.0 Mile North	1.00	6,475	6,475	7,241	7,241
Minaret Road Segment 1	Main to Meridian	0.64	6,983	4,469	14,522	9,294
Minaret Road Segment 2	Meridian to Chateau	0.51	4,049	2,065	11,220	5,722
Minaret Road Segment 3	Chateau to Old Mammoth	0.21	4,829	1,014	15,676	3,292
Fairway Drive	Immediately South of Old Mammoth	0.13	1,885	245	16,069	2,089
TOTAL VMT				74,051		123,868

Previous ALT 1 VMT	154,471
Previous Proposed GP VMT	159,961
Estimated Revised Proposed GP VMT	128,270

Revised Vehicle Miles Traveled (VMT)
For Project Alternatives

Town of Mammoth Lakes Estimated 2004 and 2024 Vehicle Miles of Travel on Study Roadway Segments

Segment	Description	Length (Miles)	Revised 2004		Revised ALT 1	
			ADT	VMT	ADT	VMT
Main Street Segment 1	Between Meridian and Sierra Park	1.03	5,983	6,163	8,498	8,753
Main Street Segment 2	Between Sierra Park and Old Mammoth	0.12	8,733	1,048	11,775	1,413
Main Street Segment 3	Between Old Mammoth and Mono	0.48	17,298	8,303	22,452	10,777
Main Street Segment 3	Between Mono and Minaret	0.45	15,896	7,153	21,856	9,835
Lake Mary Road (Old Main Street Segment 5)	Between Minaret and Lakeview	0.49	7,216	3,536	10,322	5,058
Lake Mary Road Segment 1	Between Lakeview and Juniper	0.46	1,789	823	3,493	1,607
Lake Mary Road Segment 2	South of Juniper	1.20	145	174	1,138	1,365
Meridian Boulevard Segment 1	SR 203 to Sierra Park	1.09	1,751	1,909	4,363	4,756
Meridian Boulevard Segment 2	Sierra Park to Old Mammoth	0.14	4,071	570	6,507	911
Meridian Boulevard Segment 3	Old Mammoth to Minaret	0.58	8,079	4,686	12,016	6,969
Meridian Boulevard Segment 4	Minaret to Majestic Pines	0.66	5,811	3,835	11,808	7,793
Old Mammoth Road Segment 1	Main to Meridian	0.45	12,489	5,620	18,431	8,294
Old Mammoth Road Segment 2	Meridian to Sherwin Creek	0.36	7,381	2,657	13,267	4,776
Old Mammoth Road Segment 3	Sherwin to Minaret	0.29	5,000	1,450	10,590	3,071
Old Mammoth Road Segment 4	Minaret to Club	0.47	4,234	1,990	8,036	3,777
Old Mammoth Road Segment 5	Club Drive to Waterford	0.26	2,465	641	4,865	1,265
Old Mammoth Road Segment 6	West of Sherwin	0.71	1,018	723	2,272	1,613
Forest Trail	Entire Length of Road	1.06	742	786	2,493	2,643
Canyon Boulevard	Lake Mary to Lakeview	0.32	4,625	1,480	10,003	3,201
Lakeview Drive	Canyon to Davison	0.93	2,469	2,296	3,589	3,338
Kelly Road and Majestic Pines	Lake Mary to Meridian	0.60	1,492	895	2,538	1,523
SR 203 Segment 1 (Minaret North of Main)	Lake Mary to Forest Trail	0.26	11,712	3,045	13,431	3,492
SR 203 Segment 2	Forest Trail to 1.0 Mile North	1.00	6,475	6,475	7,241	7,241
Minaret Road Segment 1	Main to Meridian	0.64	6,983	4,469	14,522	9,294
Minaret Road Segment 2	Meridian to Chateau	0.51	4,049	2,065	11,220	5,722
Minaret Road Segment 3	Chateau to Old Mammoth	0.21	4,829	1,014	15,676	3,292
Fairway Drive	Immediately South of Old Mammoth	0.13	1,885	245	16,069	2,089
TOTAL VMT				74,051		123,868

Previous ALT 1 (Existing General Plan) VMT	154,471
Estimated Revised ALT 1 (Existing General Plan) VMT	123,868
Previous Proposed GP VMT	159,961
Estimated Revised Proposed GP VMT	128,270
Previous ALT 2 (Workforce Housing) VMT	157,575
Estimated Revised ALT 2 (Workforce Housing) VMT	126,357
Previous ALT 4 (Reduced) VMT	145,745
Estimated Revised ALT 4 (Reduced) VMT	116,871

Mammoth Lakes General Plan - Proposed Action Alternative Analysis

LSC Transportation Consultants, Inc.
August 17, 2005

Introduction

The Town of Mammoth Lakes' TranPlan Traffic Model, which was last updated by LSC in 2004, was used as the basis of the traffic analysis for the Mammoth Lakes General Plan Proposed Action Alternative. It should be noted that any community-wide traffic model is a planning level "tool" and necessarily reflects a simplification of the roadway network, individual property access, and land uses. Detailed evaluation of individual roadway elements based upon specific project site plans, therefore, may yield differing results. The model, however, is more than adequate for purposes of overall planning for Mammoth Lakes transportation network, and meets or exceeds the standards of the traffic engineering profession.

The land use assumptions for all alternatives evaluated were provided by the Town of Mammoth Lakes Planning staff. It is assumed under this alternative (as was for the first four alternatives) that the maximum allowable density is built on currently undeveloped parcels. In addition, the proposed General Plan allows density transfers under special cases where the density transfer would provide a benefit to the Town. However, the level of density transfers that may occur in the future is unpredictable and would be subject to a separate environmental review. Therefore, the impact of potential density transfers is not analyzed in this document.

LOS Analysis Assumptions

The following assumptions were used in the LOS analysis:

1. Available turning-movement count data within the Town of Mammoth Lakes is relatively limited, and was not all collected during the Town's specified design period. As a result, adjustments were made to the actual count data, where available, to develop a set of design volumes reflecting the design period. One key factor in LOS analysis is the "peak-hour factor," which represents the variation in traffic activity over the course of the peak hour. Using actual count data to estimate peak hour factors is not appropriate in this circumstance (as these factors will change with future development) and some general assumptions regarding appropriate peak-hour factors were required. Based upon a review of available count data, it was assumed that the peak-hour factor along Main Street from Old Mammoth Road to Lake Mary Road and along Old Mammoth Road from Main Street to Meridian is 0.95. A peak-hour factor of 0.90 was assumed for all other intersections.

2. As the model represent winter Saturday peak-hour conditions, 2024 weekday peak-hour conditions were estimated by taking existing weekday traffic volumes provided by the Town of Mammoth Lakes and factoring them by the growth rate identified by the model. The resultant winter Saturday P.M. peak-hour traffic volumes are shown in Table A and Figure 1.

3. The capacity of the roadways within Mammoth Lakes were estimated as follows:

   - A base capacity of 1,600 vehicles per hour was assumed. This figure is slightly lower than is typically observed in urban areas, representing the reduction in effective capacity that results from both visitor drivers that are unfamiliar with the area as well as the impacts of winter driving conditions. It is consistent with observed capacity in the Tahoe Region, which is similarly affected by visitor drivers and winter weather conditions.

   - According to Chapter 10 (Urban Street Concepts) of the Highway Capacity Manual (TRB, 2000), the default directional lane split for roadways with two lanes per direction is 52.5 percent in one lane and 47.5 percent in the other. Therefore, as no recent count data was available to determine the actual lane split, for roadways with more than one lane in each direction, it was assumed that one lane would carry 52.5 percent of the directional traffic, while the second lane would carry 47.5 percent.

   - Reductions to roadway capacity were made as required on individual segments, to account for the presence of pedestrian crossings, on-street parking maneuvers, vehicles searching for parking spaces, and conflicting driveway turning movements.

   - The resulting roadway capacities are shown in Table B. Please note, however, that the roadway capacities applied in this study are for planning purposes only and are only based upon estimated effects of pedestrians, parking maneuvers, and driveway turning-movement conflicts.

LOS Thresholds

Consistent with adopted Town standards and the Mammoth Lake-Yosemite Valley Airport Traffic Impact Study (LSA, August, 2001), the Town of Mammoth Lakes staff directed LSC to apply the following LOS thresholds:

- For Signalized Intersections: *Total intersection LOS D or better must be maintained. Therefore, if a signalized intersection is found to operate at a total intersection LOS E or F, it is assumed mitigation is required.* It is assumed that this same threshold applies to roundabouts.

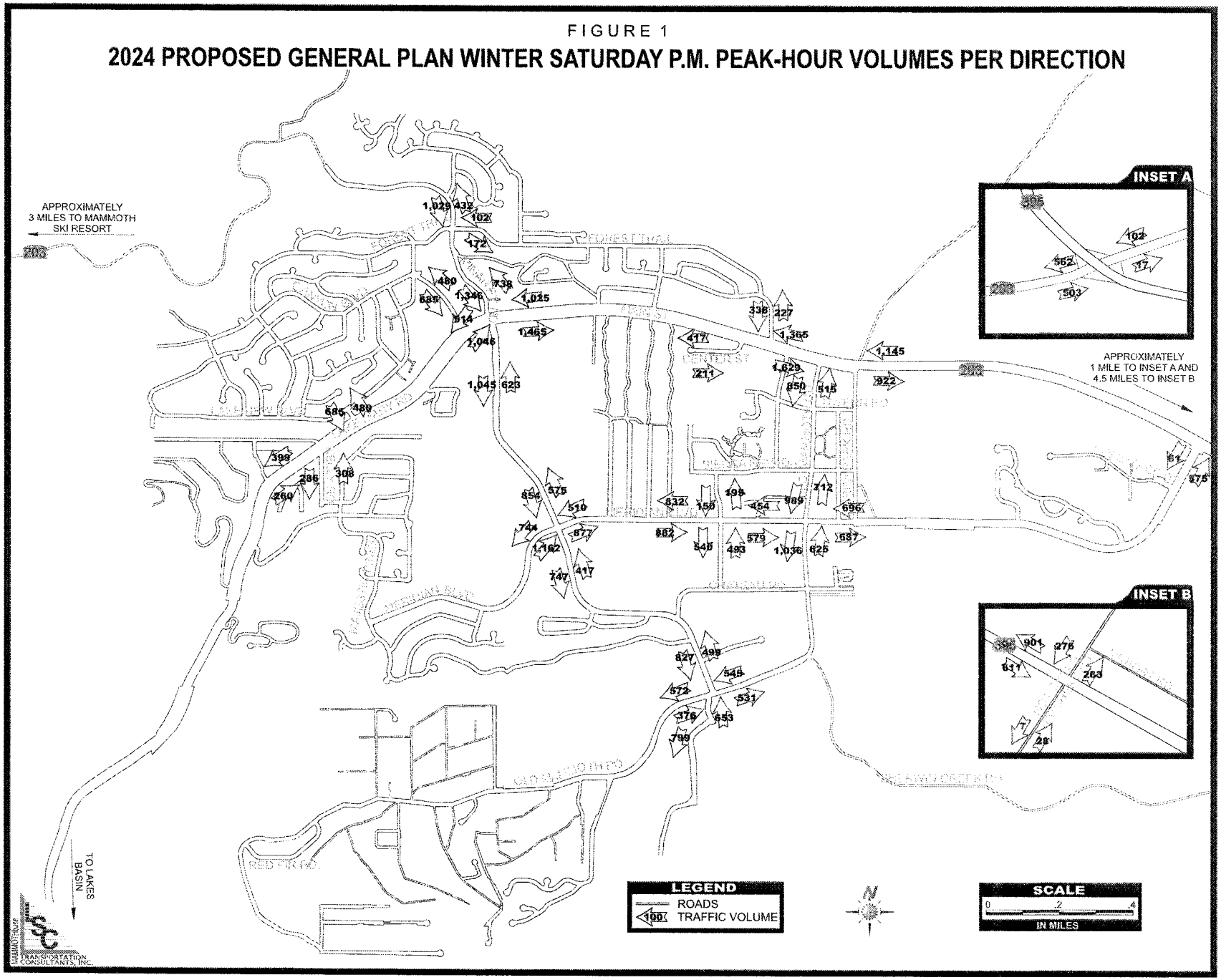
TABLE A: 2024 Alternative 5 Winter Saturday P.M. Peak-Hour Design Turning-Movement Volumes

Node	North/South	East/West	Northbound			Southbound			Eastbound			Westbound			Total
			LT	T	RT	LT	T	RT	LT	T	RT	LT	T	RT	
2276	Kelly	Lake Mary	82	0	226	0	0	0	0	203	57	229	317	0	1,114
2256	Lakeview	Lake Mary	0	0	.0	228	0	366	293	136	0	0	180	190	1,393
2162	Canyon	Lake Mary	0	0	0	648	0	37	25	398	0	0	459	455	2,022
2163	Center	Main	137	9	65	46	4	38	79	1068	316	97	1025	30	2,914
2151	Minaret	Main	155	296	172	719	451	176	101	574	415	179	505	341	4,084
2168	Forest Trail	Main	21	3	37	295	5	38	43	1297	33	22	1162	181	3,137
2179	Old Mammoth	Main	365	0	150	0	0	0	0	711	698	160	689	0	2,773
2184	Sierra Park	Main	11	0	136	0	0	0	0	786	7	201	944	0	2,085
2264	Meridian	Main WB	521	0	0	0	0	0	0	0	0	50	512	0	1,083
2273	Meridian	Main EB	0	521	73	0	50	0	0	430	375	0	0	0	1,449
2291	US 395 NB	Main/SR 203	281	0	0	0	0	0	165	17	0	0	102	0	565
2314	US 395 SB	Main/SR 203	0	0	0	0	0	179	0	182	321	0	383	0	1,065
2195	Majestic Pines	Meridian	0	0	0	175	0	101	142	740	0	0	341	206	1,705
2349	Old Mammoth	Meridian	30	405	190	224	608	157	149	273	157	271	267	158	2,889
2347	Sierra Park	Meridian	0	1	0	35	0	6	20	351	0	0	526	8	947
2028	Minaret	Forest Trail	312	248	33	10	663	356	180	129	335	31	63	8	2,368
2450	Minaret	Old Mammoth	62	357	234	98	469	260	123	199	54	276	250	19	2,401
2364	Minaret	Meridian	154	241	22	219	460	175	252	636	274	13	415	82	2,943
none	US 395 NB	Hot Creek Fish Hatchery	2	683	112	0	0	0	20	151	0	0	78	198	1,244
none	US 395 SB	Hot Creek Fish Hatchery	0	0	0	151	455	5	0	20	8	78	2	0	719
2350	Azimuth	Meridian	296	85	112	21	82	47	83	481	318	140	489	27	2,181

Mammoth Model TM Volumes.wb3

FIGURE 1

2024 PROPOSED GENERAL PLAN WINTER SATURDAY P.M. PEAK-HOUR VOLUMES PER DIRECTION



- For Unsignalized Intersections: Approach intersection LOS D or better must be maintained. For example, if the minor street approach at an unsignalized two-way stop-controlled intersection operates at LOS E or F, then mitigation is required.

  However, under this policy, the LOS threshold at unsignalized intersections can be easily exceeded when only a few vehicles experience a delay greater than 50 seconds (such as at a driveway serving a few homes that accesses onto a busy street). Furthermore, application of this threshold would substantially increase the frequency that failure of intersections is identified, along with the need for intersection improvements. Many jurisdictions (particularly resort communities where peak conditions occur over a relatively small proportion of the entire year) have chosen to adopt unsignalized intersection LOS standards that allow greater delay on low-volume approaches. Therefore, for purposes of this analysis, a LOS deficiency is assumed to occur at an unsignalized intersection only if an individual minor street movement operates at LOS E or F and total minor approach delay exceeds 4 vehicle-hours for a single lane approach and 5 vehicle-hours for a multi-lane approach.

The Manual of Uniform Traffic Control Devices (MUTCD) (Federal Highways Administration, 2003), the most recent MUTCD document, is commonly used as the guide to the appropriate installation of traffic signals. Eight warrants for traffic signals are cited in Section 4-C of the MUTCD. Table C indicates the degree to which those unsignalized intersections with worst movement LOS exceeding LOS standards meet the MUTCD peak-hour signal warrant (Warrant 3). This evaluation was conducted using the Traffix Software Package. The peak-hour signal warrant is typically the first warrant to be met as traffic activity levels increase. If the peak-hour warrant is not met, it is unlikely that any of the seven other warrants are met. Therefore, in the case that the peak-hour signal warrant is not met, a traffic signal is not usually recommended, unless high pedestrian activity or accident rates exist at the intersection. While a similar formal "warrant" system has not been established for roundabouts, roundabouts are generally not considered to be appropriate unless traffic signal warrants are met.

Table B: Roadway Capacity Summary

#	Roadway Segment		2024 Proposed Action Alternative		
		Capacity (Vehicles per Hour per Peak Direction)	Vehicles Per Hour Per Lane	Volume/ Capacity (Note 1)	Capacity Exceeded?
1	Main Street Immediately East of Sierra Park Road	2,600	1,145	0.44	No
2	Main Street Immediately West of Old Mammoth Road	2,600	1,629	0.63	No
3	Main Street Immediately East of Minaret Road	2,600	1,465	0.56	No
4	Lake Mary Road Immediately West of Canyon Boulevard	1,600	496	0.31	No
5	Lake Mary Road Immediately West of Kelly Road	1,600	399	0.25	No
6	Minaret Road Immediately North of Forest Trail	1,600	1,029	0.64	No
7	Minaret Road – Main Street to Forest Trail	1,300	1,346	**1.04**	**Yes**
8	Minaret Road Immediately South of Main Street	1,600	1,045	0.65	No
9	Minaret Road Immediately North of Meridian Boulevard	1,600	854	0.53	No
10	Minaret Road Immediately South of Meridian Boulevard	1,600	747	0.47	No
11	Minaret Road Immediately North of Old Mammoth Road	1,600	827	0.52	No
12	Old Mammoth Road Immediately South of Main Street	1,600	858	0.54	No
13	Old Mammoth Road Immediately South of Meridian Boulevard	1,600	1,036	0.65	No
14	Old Mammoth Road Immediately East of Minaret Road	1,300	545	0.42	No
15	Old Mammoth Road Immediately West of Minaret Road	1,300	572	0.44	No
16	Meridian Boulevard Immediately South of Main Street	1,600	575	0.36	No
17	Meridian Boulevard Immediately East of Minaret Road	2,600	877	0.34	No
18	Meridian Boulevard Immediately West of Minaret Road	2,600	1,162	0.45	No

Table B: Roadway Capacity Summary (continued)					
#	Roadway Segment		2024 Proposed Action Alternative		
		Capacity (Vehicles per Hour per Peak Direction)	Vehicles Per Hour Per Lane	Volume/ Capacity (Note 1)	Capacity Exceeded?
19	Forest Trail Immediately North of Main Street	800	338	0.42	No
20	Forest Trail Immediately East of Minaret Road	800	172	0.22	No
21	Fairway Drive Immediately South of Old Mammoth Road	1,000	799	0.80	No
22	Lakeview Drive Immediately North of Lake Mary Road	800	685	0.86	No
23	Kelly Road Immediately South of Lake Mary Road	800	308	0.39	No
24	Center Street Immediately South of Main Street	800	417	0.52	No
25	Canyon Boulevard Immediately North of Lake Mary Road	1,000	685	0.69	No
26	Azimuth Road Immediately North of Meridian Boulevard	800	195	0.24	No
27	Azimuth Road Immediately South of Meridian Boulevard	800	540	0.68	No
28	US 395 Immediately South of SR 203	2,700	901	0.33	No
29	SR 203 Immediately West of US 395	2,700	562	0.21	No
30	Hot Creek Hatchery Road Immediately West of US 395	1,600	28	0.02	No
31	Hot Creek Hatchery Road Immediately East of US 395	1,600	276	0.17	No
32	SR 203 Immediately East of US 395	1,000	102	0.10	No

Table C: Peak-Hour Signal Warrant Analysis

Bold Text Indicates Peak-Hour Signal Warrant is Met				
	Intersection		**Unmitigated Traffic Control**	
#	**North/South**	**East/West**	**Control**	**2024 Proposed Action Alternative**
1	Kelly	Lake Mary	Two-Way Stop Controlled	No
2	Lakeview	Lake Mary	Two-Way Stop Controlled	**Yes**
4	Center	Main	Two-Way Stop Controlled	**Yes**
6	Forest Trail	Main	Two-Way Stop Controlled	**Yes**
9	Meridian	Main WB	Two-Way Stop Controlled	**Yes**
10	Meridian	Main EB	Two-Way Stop Controlled	**Yes**
11	US 395 NB	Main/SR 203	Two-Way Stop Controlled	No
13	Majestic Pines	Meridian	Two-Way Stop Controlled	**Yes**
16	Minaret	Forest Trail	Two-Way Stop Controlled	**Yes**
17	Minaret	Old Mammoth	Two-Way Stop Controlled	**Yes**
19	US 395 NB	Hot Creek Fish Hatchery	Two-Way Stop Controlled	No
21	Azimuth	Meridian	Two-Way Stop Controlled	**Yes**

** Based upon weekday analysis.

2024 Intersection LOS Impacts

The intersection LOS was calculated using the Traffix Software Package (Version 7.6). Roundabout LOS is analyzed using the aaSIDRA Software Package. The winter Saturday peak-hour LOS is summarized in Table D.

Under the Proposed Action Alternative, the following intersections were identified to exceed LOS thresholds:

- Lake Mary Road/Lakeview Road
- Main Street/Center Street
- Minaret Road/Main Street
- Main Street/Forest Trail
- Main Street Westbound/Meridian Boulevard
- Main Street Eastbound/Meridian Boulevard
- Meridian Boulevard/Majestic Pines Drive
- Minaret Road/Forest Trail
- Minaret Road/Old Mammoth Road
- Azimuth Road/Meridian Boulevard

Table D: Winter Saturday Intersection LOS Summary

Bold Text Indicates LOS Threshold Exceeded					
#	Intersection		Unmitigated Traffic Control	Approach	2024 Proposed Action Alternative
1	Kelly	Lake Mary	Two-Way Stop Controlled	Northbound Westbound	E A
2	Lakeview	Lake Mary	Two-Way Stop Controlled	Southbound Eastbound	**F** A
3	Canyon	Lake Mary	Traffic Signal	Total Intersection	B
4	Center	Main	Two-Way Stop Controlled	Northbound Southbound Eastbound Westbound	**F** F B C
5	Minaret	Main	Traffic Signal	Total Intersection	**F**
6	Forest Trail	Main	Two-Way Stop Controlled	Northbound Southbound Eastbound Westbound	D **F** C B
7	Old Mammoth	Main	Traffic Signal	Total Intersection	B
8	Sierra Park	Main	Two-Way Stop Controlled	Northbound Westbound	C B
9	Meridian	Main WB	Two-Way Stop Controlled	Northbound Westbound	**F** A
10	Meridian	Main EB	Two-Way Stop Controlled	Northbound Southbound	**F** C
11	US 395 NB	Main/SR 203	Two-Way Stop Controlled	Northbound Eastbound	D A
12	US 395 SB	Main/SR 203	Two-Way Stop Controlled	Southbound	B
13	Majestic Pines	Meridian	Two-Way Stop Controlled	Southbound Eastbound	**F** A
14	Old Mammoth	Meridian	Traffic Signal	Total Intersection	C
15	Sierra Park	Meridian	4-Way Stop-Controlled	Northbound Southbound Eastbound Westbound	A A B B

Table D: Winter Saturday Intersection LOS Summary (continued)

#	Intersection		Unmitigated Traffic Control	Approach	2024 Proposed Action Alternative
16	Minaret	Forest Trail	Two-Way Stop Controlled	Northbound	C
				Southbound	A
				Eastbound	**F**
				Westbound	**F**
17	Minaret	Old Mammoth	Two-Way Stop Controlled	Northbound	**F**
				Southbound	**F**
				Eastbound	A
				Westbound	A
18	Minaret	Meridian	Traffic Signal	Total Intersection	D
19	US 395 NB	Hot Creek Fish Hatchery	Two-Way Stop Controlled	Northbound	A
				Eastbound	E
				Westbound	C
20	US 395 SB	Hot Creek Fish Hatchery	Two-Way Stop Controlled	Southbound	A
				Eastbound	C
				Westbound	C
21	Azimuth	Meridian	Two-Way Stop Controlled	Northbound	**F**
				Southbound	**F**
				Eastbound	A
				Westbound	B

Roadway Capacity Impacts

As Table B indicates, the roadway capacity of Minaret Road between Main Street and Forest Trail would be exceeded under the Proposed Action Alternative. The capacity of no other roadways are forecast to be exceeded.

Mitigation Measures

Potential mitigation measures for each intersection are described below. LSC's recommended improvement for each is also provided.

Lakeview Road/Lake Mary Road

The southbound approach to this intersection exceeds LOS thresholds under the Proposed Action Alternative. Provision of separate southbound left and right-turn lanes and a westbound acceleration lane along Lake Mary Road (to accommodate two-stage left turns from Lakeview Drive to Lake Mary Road) would mitigate the southbound approach LOS to LOS D.

Main Street/Center Street

The northbound approach at this intersection exceeds the LOS thresholds under the Proposed Action Alternative. The provision of additional northbound turn lanes does not improve LOS such that LOS thresholds are no longer exceeded. In order to avoid future LOS deficiencies, a traffic signal or roundabout could be constructed. A traffic signal would be warranted and would operate at LOS C under build out of the Proposed Action Alternative at this location. Alternatively, a dual lane roundabout with single-lane northbound and southbound approaches, a 75-foot island diameter, a 32-foot circulating width, and a 139-foot inscribed circle diameter would operate at LOS B under all alternatives. In addition to addressing the LOS deficiency, provision of a signal or a roundabout would greatly improve Main Street pedestrian crossing conditions.

Minaret Road/Main Street Intersection

This signalized intersection falls from an adequate LOS C condition in 2004 to operate at a LOS F under the Proposed Action Alternative. The provision of protected left-turn phasing on all approaches and eastbound right-turn overlap signal phasing at the existing signal would mitigate LOS impacts at this intersection. With these improvements, the intersection would operate at LOS D.

Main Street/Forest Trail Intersection

While operating acceptably under 2004 conditions, the southbound approach at the Main Street/Forest Trail intersection exceeds the LOS thresholds in 2004 under the Proposed Action Alternative. The provision of additional lanes, however, would not

mitigate the LOS deficiencies. Therefore, there are three primary potential mitigation measures for this LOS deficiency: construct a roundabout, construct a traffic signal, or prohibit left turns out of the southbound minor street approach.

While prohibiting left turns at this intersection would inconvenience drivers, constructing a roundabout or traffic signal would actually encourage drivers to use Forest Trail as a cut-through route, as the delay of the southbound approach would be greatly reduced. Prohibiting southbound left-turns, on the other hand, would only slightly inconvenience drivers by requiring them to drive to the Center Street intersection to turn around (which could potentially be aided through the provision of a roundabout at Center Street). However, this inconvenience may work to lessen the exiting Forest Trail cut-through problem, thereby having a beneficial impact to Town-wide circulation. The prohibition of southbound left-turn movements at the intersection would result in a worst approach LOS of D upon build out of the Proposed Action Plan.

Main Street/Meridian Boulevard

Because Main Street is a divided roadway at its intersection with Meridian Boulevard with a substantial median, the intersection of Main Street and Meridian Boulevard operates as two separate intersections. While operating at a relatively good LOS B in 2004, the northbound approach at the Main Street Eastbound/Meridian Boulevard intersection and the northbound approach at the Main Street Westbound/Meridian Boulevard intersection exceeds LOS thresholds in 2024 under the Proposed Action Alternative.

In the case that a traffic signal is built at both intersections, they would need to be coordinated in order to ensure that queues at the northern intersection would not form back into the southern intersection. Traffic signals would operate at a LOS B. Alternatively, one roundabout could be constructed that combined the two intersections. A dual-lane roundabout with single-lane northbound and southbound approaches, an 85-foot island diameter, a 32-foot circulating width, and a 149-foot inscribed circle diameter would operate at LOS A upon build out of the Proposed Action Alternative.

Majestic Pines/Meridian Boulevard Intersection

While it operates at a relatively good LOS B under 2004 conditions, the southbound approach at the Majestic Pines/Meridian Boulevard intersection exceeds LOS standards in 2024 under the Proposed Action Alternative. The provision of additional turns lanes would not mitigate LOS impacts at this intersection. If a traffic signal was constructed at this intersection, it would operate at LOS B or better. Meridian Boulevard could also be reduced to one lane in each direction in addition to constructing a single-lane roundabout with a 60-foot island diameter and a 20-foot circulating width. This roundabout would operate at LOS A. The installation of a traffic signal would not require any widening of the roadway.

Minaret Road/Forest Trail Intersection

This intersection will exceed LOS thresholds under build out of the Proposed Action Alternative. However, as the current plan is to construct a roundabout at the intersection, the construction of a roundabout is considered the preferable mitigation. If the roundabout is constructed as currently designed in the PSR, the intersection would operate at a LOS B upon build out of the Proposed Action Alternative, as evaluated by aaSIDRA.

Minaret Road/Old Mammoth Road Intersection

While this intersection provides adequate LOS in 2004 conditions, it fails significantly under the Proposed Action Alternative. Due to the high volume of traffic that is expected on all four approaches upon build out of any of the General Plan alternatives, a roundabout or traffic signal is recommended. If a traffic signal is installed, the following improvements would be required for the Proposed Action Alternative, which would result in an intersection LOS D:

- Construct a traffic signal with protected left-turn phasing.
- Construct a separate northbound left-turn lane and a northbound through/right shared lane (remove left/through and right-turn lanes).
- Construct separate southbound left, through, and right-turn lanes (remove left/through/right shared).

Alternatively, if a roundabout with a 75-foot island diameter, 20-foot circulating width, and 16-foot entry width is constructed, it would operate at LOS C.

Meridian Boulevard/Azimuth Drive

This intersection is forecast to exceed LOS thresholds on the northbound and southbound approaches upon build out of the Proposed Action Alternative. This impact can be mitigated by constructing a traffic signal or roundabout. If a roundabout with a 60-foot island diameter, 20-foot circulating width, and 15-foot entry lanes was constructed, the intersection would operate at a LOS B or better under all 2024 scenarios. The intersection would operate at LOS D if a traffic signal with split phasing on all approaches was built in addition to a separate northbound left-turn lane.

Roadway Capacity Impact Mitigation

The only roadway segment that is forecast to exceed its capacity upon build out of the Proposed Action Alternative is Minaret Road between Main Street and Forest Trail. By 2024 traffic levels are forecast to exceed capacity by approximately 4 percent. This condition could be mitigated by effectively increasing the capacity of the roadway through elimination of on-street parking, provision of traffic control for pedestrian crossing activity during peak periods, or both. Another option would be to reduce the density of land uses developed adjacent to the roadway segment.

Mammoth Lakes Transportation Model
Level of Service (LOS) Analysis

The purpose of this memorandum is to present the results of a preliminary LOS analysis for use in the Mammoth Lakes General Plan EIR and the development of the Town of Mammoth Lakes Capital Improvement Program. This LOS analysis analyzes intersection LOS resulting at 20 key intersections under 2004 conditions and upon build out of the four General Plan Land Use alternatives. This analysis also compares the existing and forecasted peak-hour volumes along key roadway segments to each segments estimated capacity to identify any future roadway link deficiencies. First, the LOS that would result upon implementation of Mammoth Lakes General Plan Alternative 1, 2, or 4 without any future roadway improvements is presented. Each intersection or roadway segment that has been identified to exceed LOS thresholds upon build out of any of this alternatives is then identified and potential mitigation measures are discussed. We have provided our recommendations but would encourage the Town to review the potential mitigation measures and provide comments as to which mitigation measures they think are most appropriate.

LOS Analysis Assumptions

The following assumptions were used in the LOS analysis:

1. All LOS and capacity analyses presented in this memorandum are based upon Winter Saturday P.M. peak-hour conditions.

2. The lane configuration assumed in the intersection LOS analysis is shown in Figure 1.

3. Available turning-movement count data within the Town of Mammoth Lakes is relatively limited. In addition, adjustments were made to the actual count data, where available, to develop a set of design volumes. Therefore, as using actual count data to estimate peak hour factors is not appropriate in this circumstance and some general assumptions regarding appropriate peak-hour factors were required. Based upon a review of available count data, it was assumed that the peak-hour factor along Main Street from Old Mammoth Road to Lake Mary Road and along Old Mammoth Road from Main Street to Meridian is 0.95. A peak-hour factor of 0.90 was assumed for all other intersections.

4. The capacity of the roadways within Mammoth Lakes were estimated as follows:

    - A base saturation flow rate of 1,600 vehicles per hour was assumed.

    - For roadways with more than one lane in each direction, it was assumed that one lane would carry 60 percent of the directional traffic, while the second lane would carry 40 percent.

- Reductions to each capacity were made to account for the presence of pedestrian crossings, on street parking maneuvers, vehicles searching for parking spaces, and conflicting driveway turning movements.

- The resulting roadway capacities are shown in Table 1. Please note, however, that the roadway capacities applied in this study are for planning purposes only and are only based upon estimated effects of pedestrians, parking maneuvers, and driveway turning-movement conflicts.

UNMITIGATED LOS RESULTS

The unmitigted intersection LOS was calculated using the Traffix Software Package (Version 7.6) and is summarized in Table 2. Consistent with the Mammoth Lake-Yosemite Valley Airport Traffic Impact Study (LSA, August, 2001), the Town of Mammoth Lakes staff has directed us to apply the following LOS thresholds:

- For Signalized Intersections: Total intersection LOS D or better must be maintained. Therefore, if a signalized intersection is found to operate at a total intersection LOS E or F, it is assumed mitigation is required. *It is assumed that this same threshold applies to roundabouts.*

- For Unsignalized Intersections: Approach intersection LOS D or better must be maintained. For example, if the minor street approach at an unsignalized two-way stop-controlled intersection operates at LOS E or F, then mitigation is required.

However, under this policy, the LOS threshold at unsignalized intersections can be easily exceeded when only a few vehicles experience a delay greater than 50 seconds. Furthermore, application of this threshold would substantially increase the frequency that failure of intersections is identified, along with the need for intersection improvements. Similar to the LOS policy the Town of Truckee is planning to adopt as a part of their General Plan update, we suggest that the Town of Mammoth Lakes revise their thresholds of significance to only find a deficiency if an individual minor street movement operates at LOS E or F and total minor approach delay exceeds 4 vehicle-hours for a single lane approach and 5 vehicle-hours for a multi-lane approach. This policy has the advantage of being relatively easy to calculate, as well as to explain to the public. For example it could be summarized as "A deficiency is only found for a side street with two approach lanes when the average number of cars waiting at the stop sign exceeds five over the peak hour".

The Manual of Uniform Traffic Control Devices (MUTCD) (Federal Highways Administration, 2003) is the most recent MUTCD document published by the Federal Highway Administration. Eight warrants for traffic signals are cited in Section 4-C of the MUTCD. Table 3 indicates the degree to which unsignalized intersections with worst movement LOS exceeding LOS standards meet the MUTCD peak-hour signal warrant (Warrant 3), which was evaluated using the Traffix Software Package. The peak-hour signal warrant is typically the first warrant to be met as traffic activity levels increase. If the peak-hour warrant is not met, it is unlikely that any of the seven other warrants are met. Therefore, in the case that the peak-hour signal warrant is not met, a traffic signal

is not usually recommended, unless high pedestrian activity or accident rates exist at the intersection.

2004 Conditions

As shown in Table 2, under the 2004 conditions, only the Minaret Road/Forest Trail intersection is identified to exceed LOS thresholds. A roundabout is currently proposed for this intersection, which, if constructed as currently proposed, would operate at LOS A under the 2004 condition. In addition, as shown in Table 1, all roadways are operating below capacity.

2024 Conditions

Intersection LOS

Under **all** 2024 alternative conditions, the following intersections were identified to exceed LOS thresholds:

- Lake Mary Road/Lakeview Road
- Main Street/Center Street
- Minaret Road/Main Street
- Main Street/Forest Trail
- Main Street Eastbound/Meridian Boulevard
- Minaret Road/Forest Trail
- Minaret Road/Old Mammoth Road

Under Alternative 1, LOS thresholds are also exceeded at the following intersections:

- Lake Mary Road/Kelly Road
- Main Street Westbound/Meridian Boulevard
- US 395 Northbound/SR 203
- Meridian Boulevard/Majestic Pines Drive

Under Alternative 2, LOS thresholds are also exceeded at the following intersections:

- Lake Mary Road/Kelly Road
- Main Street Westbound/Meridian Boulevard
- Meridian Boulevard/Majestic Pines Drive

Under Alternative 4, LOS thresholds are also exceeded at the following intersections:

- Minaret Road/Meridian Boulevard

The comparison of the LOS impacts resulting from each alternative indicates that Alternative 4 results in the least intersection LOS impact.

2024 Roadway Capacity Impacts

As Table 1 indicates, the roadway capacity of Minaret Road immediately north of Main Street would be exceed under Alternative 2 and the peak-hour volume along Minaret Road north of Forest Trail will be approaching the roadway capacity. However, the peak-hour volumes along this section of roadway would be approaching the roadway capacity under Alternatives 1. No other roadway capacities are forecast to be exceeded.

POTENTIAL MITIGATION MEASURES TO 2024 INTERSECTION LOS IMPACTS

The potential mitigation measures for each intersection are described below. LSC's recommended improvement is also provided.

Kelly Road/Lake Mary Road

The northbound approach at this intersection is forecast to exceed LOS thresholds upon build out of Alternatives 1, and 2. However, by providing a separate northbound right turn lane, the approach LOS would improve to a LOS D or better under Alternatives 1 and 2, thereby mitigating LOS impacts.

Recommended Mitigation: Provide separate northbound left-turn and right-turn lanes along the Kelly Road approach.

Lakeview Road/Lake Mary Road

The southbound approach to this intersection exceeds LOS thresholds under Alternatives 1, 2, and 4. Provision of separate southbound left and right-turn lanes, separate eastbound left-turn lanes, and a westbound acceleration lane along Lake Mary Road (to accommodate two-stage left turns from Lakeview Drive to Lake Mary Road) would mitigate intersection LOS impacts for Alternative 1, 2, and 4.

Recommended Mitigation: Convert Lakeview Road to a one-way northbound roadway.

Main Street/Center Street

The northbound approach at this intersection exceeds the LOS thresholds under Alternatives 1, 2, and 4. The provision of additional northbound turn lanes does not improve LOS under any of the alternatives such that LOS thresholds are no longer exceeded. In order to avoid future LOS deficiencies, a traffic signal or roundabout could be constructed. A traffic signal would operate at LOS C or better under build out of all alternatives at this location. A dual lane roundabout with single-lane northbound and southbound approaches, an 86-foot island diameter, a 32-foot circulating width, and a 150-foot inscribed circle diameter would operate at LOS A under all alternatives.

A roundabout at this location would have many advantages over a traffic signal, such as:

- A roundabout would result in shorter traffic queues on all approach streets.
- During off-peak hours, the roundabout would be more able to adapt to changing traffic volumes, thereby significantly reducing off peak delays and air pollutant emissions.
- Studies have shown that roundabouts reduce injury crashes at intersections that were previously signalized.
- Southbound left-turn movements at the Main Street/Forest Trail intersection could be prohibited if a roundabout is provided at the Main Street/Center Street intersection as U-turns would be easy to make at the roundabout. Of course, U-turns could be made at a traffic signal, if provided, although the presence of U-turns have more impact on a signal's capacity than a roundabouts.

The primary disadvantage associated with constructing a roundabout at this location is that it would require Caltrans approval. Given the Town's past and current difficulty in acquiring Caltrans approval at the Minaret Road/Forest Trail roundabout, the Town may decide not to pursue roundabouts on state highways.

Recommended Mitigation: Construct traffic signal or roundabout at Main Street/Center Street intersection.

Minaret Road/Main Street Intersection

This signalized intersection operates at a LOS E under Alternative 1 and LOS F under Alternative 2, and 4. The following improvements would be required under each alternative in order to mitigate LOS impacts:

- Alternative 1 - Provide eastbound right-turn overlap signal phasing.
- Alternative 2 - Provide protected left-turn phasing on all approaches.
- Alternative 4 - Provide protected left-turn phasing on all approaches and eastbound right-turn overlap signal phasing.

With these improvements, the intersection would operate at LOS D or better under all alternatives.

Recommended Mitigation: Change signal phasing to provide protected left-turn phasing and/or overlap right-turn phasing.

Main Street/Forest Trail Intersection

The southbound approach at the Main Street/Forest Trail intersection exceeds the LOS thresholds under all alternatives. The provision of additional lanes, however, will not mitigate the LOS deficiencies. Therefore, there are three primary potential mitigation measures for this LOS deficiency: construct a roundabout, construct a traffic signal, or prohibit left turns out of the southbound minor street approach.

A traffic signal would operate at LOS C or better under all alternatives. A dual lane roundabout with single-lane northbound and southbound approaches, an 86-foot island diameter, a 32-foot circulating width, and a 150-foot inscribed circle diameter

would operate at LOS B or better under all alternatives. Prohibiting southbound left turns at this intersection would result in a southbound approach LOS of C or better under all alternatives.

While prohibiting left turns at this intersection would inconvenience drivers, constructing a roundabout or traffic signal would actually encourage drivers to use Forest Trail as a cut-through route, as the delay of the southbound approach would be greatly reduced. Prohibiting southbound left-turns, on the other hand, would only slightly inconvenience drivers by requiring them to drive the College Street intersection to turn around. However, this inconvenience may work to lessen the exiting Forest Trail cut-through problem, thereby having a beneficial impact to Town-wide circulation.

Recommended Mitigation: Prohibit southbound left turns out of Forest Trail onto Main Street.

Main Street/Meridian Boulevard

Because Main Street is a divided roadway at its intersection with Meridian Boulevard, the intersection of Main Street and Meridian Boulevard operates as two separate intersections. However, the northbound approach at the Main Street Eastbound/Meridian Boulevard intersection exceeds LOS thresholds under all 2024 alternatives. In addition, the northbound approach at the Main Street Westbound/Meridian Boulevard intersection exceeds LOS thresholds under Alternatives 1 and 2. Peak-hour signal warrants are met at both intersections under Alternatives 1 and 2, but only at the southern intersection under Alternative 4.

There are two primary mitigation measures to the LOS impacts at this intersection: construct a roundabout or construct a traffic signal, both of which would essentially combine the two intersections into one. A traffic signal with protected westbound phasing would operate at LOS C or better under all alternatives. A dual lane roundabout with single-lane northbound and southbound approaches, an 86-foot island diameter, a 32-foot circulating width, and a 150-foot inscribed circle diameter would operate at LOS B under all alternatives.

Recommended Mitigation: Construct a roundabout or traffic signal.

Majestic Pines/Meridian Boulevard Intersection

The southbound approach at the Majestic Pines/Meridian Boulevard intersection exceeds LOS standards under Alternatives 1 and 2, although it operates at adequate LOS under Alternative 4. One potential mitigation to this intersection is to construct at traffic signal or roundabout, as the MUTCD peak-hour signal warrant is met under Alternatives 1 and 2. However, a potentially more cost effective mitigation would be to widen the roadway to provide a two-way left-turn lane along Meridian Boulevard to provide for two-stage southbound left turns out of Majestic Pines onto Meridian Boulevard. Under Alternative 2, separate southbound left-turn and right-turn lanes would also need to be provided in order to mitigate LOS impacts.

The installation of a traffic signal would not require any widening of the roadway. If a traffic signal was constructed at this intersection, it would operate at LOS B or better.

Recommended Mitigation: Construct two-way left-turn lane along Meridian Boulevard.

Minaret Road/Forest Trail Intersection

This intersection will exceed LOS thresholds under all existing and future alternatives. However, as the current plan its to construct a roundabout at the intersection, the construction of a roundabout is considered the preferable mitigation. If the roundabout is built as is currently designed, the intersection would operate at a LOS E under Alternatives 1 and 4, although it would operate at a LOS E under Alternative 2. However, if an additional southbound right-turn lane is added to the roundabout, as currently designed, such that the northwestern quadrant of the roundabout contains 2 circulating lanes, the roundabout will operate at LOS D.

Recommended Mitigation: Construct roundabout with additional southbound right-turn lane under Alternative 2.

Minaret Road/Old Mammoth Road Intersection

This intersection fails under all of the 2024 alternatives. In addition, the peak-hour signal warrant is met under all alternatives. Due to the high volume of traffic that is expected on all four approaches upon build out of any of the General Plan alternatives, a roundabout or traffic signal is recommended. If a traffic signal is installed, the following improvements would be required for each alternative, which would result in an intersection LOS D:

- Alternative 1 - Construct traffic signal with protected left-turn phasing, construct a separate northbound left-turn lane, a northbound through/right shared lane, and separate southbound left, through, and right-turn lanes.
- Alternative 2 - Construct traffic signal with protected left-turn phasing, construct a separate northbound left-turn lane, a northbound through/right shared lane, a separate southbound left-turn lane, and a southbound through/right shared lane.
- Alternative 4 - Construct traffic signal with protected left-turn phasing, construct a separate northbound left turn lane, a northbound through/right shared lane, and separate southbound left, through, and right-turn lanes.

A single-lane roundabout with a 20-foot circulating width and 75-foot island diameter would operate at LOS D or better under all alternatives. A smaller roundabout could be accommodated under Alternatives 1 and 2.

Recommended Mitigation: Construct roundabout or traffic signal.

Meridian Boulevard/Minaret Road

This intersection will operate at LOS E upon build out of Alternative 4. However, this LOS impact can be mitigated by constructing a separate southbound right-turn lane on Minaret Road. With this improvement, the intersection would operate at LOS D under Alternative 4.

Recommended Mitigation: Construct southbound right-turn lane on Minaret Road under Alternative 4.

POTENTIAL MITIGATION MEASURES TO ROADWAY CAPACITY IMPACTS

The only roadway segment that is forecast to exceed its capacity in 2024 is Minaret Road between Main Street and Forest Trail under Alternative 2. One mitigation for this impact is to increase the capacity of the roadway by eliminating on-street parking. Another mitigation measure could be to improve transit service to the Village area. Finally, the roadway could be widened.

TABLE 1: Roadway Capacity Summary

#	Roadway Segment	Capacity (Vehicles per Hour per Peak Direction)	Existing (2004)			2024 Alternative 1			2024 Alternative 2			2024 Alternative 4		
			Vehicles Per Direction	Volume/ Capacity (Note 1)	Capacity Exceeded?	Vehicles Per Hour Per Lane	Volume/ Capacity (Note 1)	Capacity Exceeded?	Vehicles Per Hour Per Lane	Volume/ Capacity (Note 1)	Capacity Exceeded?	Vehicles Per Hour Per Lane	Volume/ Capacity (Note 1)	Capacity Exceeded?
1	Main Street Immediately East of Sierra Park Road	2,600	577	0.22	No	1,097	0.42	No	1,079	0.42	No	974	0.37	No
2	Main Street Immediately West of Old Mammoth Road	2,600	1,105	0.43	No	1,366	0.53	No	1,524	0.59	No	1,475	0.57	No
3	Main Street Immediately East of Minaret Road	2,600	1,100	0.42	No	1,385	0.53	No	1,548	0.60	No	1,340	0.52	No
4	Lake Mary Road Immediately West of Canyon Boulevard	1,600	364	0.23	No	455	0.28	No	494	0.31	No	543	0.34	No
5	Lake Mary Road Immediately West of Kelly Road	1,600	215	0.13	No	442	0.28	No	437	0.27	No	357	0.22	No
6	Minaret Road Immediately North of Forest Trail	1,600	621	0.39	No	946	0.59	No	1,251	0.78	No	908	0.57	No
7	Minaret Road – Main Street to Forest Trail	1,300	915	0.70	No	1,247	0.96	No	1,405	1.08	**Yes**	1,148	0.88	No
8	Minaret Road Immediately South of Main Street	1,600	528	0.33	No	1,008	0.63	No	1,062	0.66	No	1,126	0.70	No
9	Minaret Road Immediately North of Meridian Boulevard	1,600	484	0.30	No	802	0.50	No	747	0.47	No	943	0.59	No
10	Minaret Road Immediately South of Meridian Boulevard	1,600	258	0.16	No	732	0.46	No	824	0.52	No	758	0.47	No
11	Minaret Road Immediately North of Old Mammoth Road	1,600	339	0.21	No	823	0.51	No	792	0.50	No	972	0.61	No
12	Immediately South of Main Street	1,600	815	0.51	No	950	0.59	No	1,016	0.64	No	1,180	0.74	No
13	Immediately South of Meridian Boulevard	1,600	571	0.36	No	1,022	0.64	No	907	0.57	No	850	0.53	No
14	Immediately East of Minaret Road	1,300	251	0.19	No	564	0.43	No	519	0.40	No	558	0.43	No
15	Immediately West of Minaret Road	1,300	318	0.24	No	553	0.43	No	589	0.45	No	566	0.44	No
16	Meridian Boulevard Immediately South of Main Street	1,600	141	0.09	No	532	0.33	No	606	0.38	No	758	0.47	No
17	Meridian Boulevard Immediately East of Minaret Road	2,600	510	0.20	No	857	0.33	No	911	0.35	No	788	0.30	No
18	Meridian Boulevard Immediately West of Minaret Road	2,600	448	0.17	No	1,146	0.44	No	1,202	0.46	No	1,068	0.41	No
19	Forest Trail Immediately North of Main Street	800	186	0.23	No	356	0.45	No	327	0.41	No	315	0.39	No
20	Forest Trail Immediately East of Minaret Road	800	57	0.07	No	120	0.15	No	178	0.22	No	182	0.23	No
21	Fairway Drive Immediately South of Old Mammoth Road	1,000	64	0.06	No	814	0.81	No	787	0.79	No	940	0.94	No
22	Lakeview Drive Immediately North of Lake Mary Road	800	468	0.59	No	619	0.77	No	666	0.83	No	566	0.71	No
23	Kelly Road Immediately South of Lake Mary Road	800	143	0.18	No	316	0.40	No	307	0.38	No	212	0.27	No
24	Center Street Immediately South of Main Street	800	129	0.16	No	387	0.48	No	313	0.39	No	236	0.30	No
25	Canyon Boulevard Immediately North of Lake Mary Road	1,000	345	0.35	No	669	0.67	No	754	0.75	No	649	0.65	No
26	Azimuth Road Immediately North of Meridian Boulevard	800	115	0.14	No	223	0.28	No	177	0.22	No	190	0.24	No
27	Azimuth Road Immediately South of Meridian Boulevard	800	321	0.40	No	522	0.65	No	544	0.68	No	657	0.82	No
28	US 395 Immediately South of SR 203	2,700	560	0.21	No	901	0.33	No	901	0.33	No	768	0.28	No
29	SR 203 Immediately West of US 395	2,700	482	0.18	No	676	0.25	No	564	0.21	No	554	0.21	No
30	Hot Creek Hatchery Road Immediately West of US 395	1,600	0	0.00	No	28	0.02	No	28	0.02	No	28	0.02	No
31	Hot Creek Hatchery Road Immediately East of US 395	1,600	19	0.01	No	276	0.17	No	276	0.17	No	148	0.09	No
32	SR 203 Immediately East of US 395	1,000	94	0.09	No	101	0.10	No	103	0.10	No	102	0.10	No

Note 1: Yellow Shading indicates Volume/Capacity Ratio is greater than or equal to 0.90.

TABLE 2: Unmitigated Winter Saturday P.M. Peak-Hour Intersection LOS Summary

Bold Text Indicates LOS Threshold Exceeded

#	Intersection		Unmitigated Traffic Control	Approach	Winter PM Peak-Hour LOS Existing (2004)	2024 Alt. 1	2024 Alt. 2	2024 Alt. 3
1	Kelly	Lake Mary	Two-Way Stop Controlled	Northbound	B	E	F	F
				Westbound	A	A	A	A
2	Lakeview	Lake Mary	Two-Way Stop Controlled	Southbound	D	F	F	F
				Eastbound	A	A	A	A
3	Canyon	Lake Mary	Traffic Signal	Total Intersection	A	B	B	B
4	Center	Main	Two-Way Stop Controlled	Northbound	F	F	F	F
				Southbound	C	F	F	F
				Eastbound	A	B	B	B
				Westbound	B	B	C	B
5	Minaret	Main	Traffic Signal	Total Intersection	C	E	F	F
6	Forest Trail	Main	Two-Way Stop Controlled	Northbound	D	D	E	E
				Southbound	F	F	F	F
				Eastbound	A	B	B	C
				Westbound	B	B	B	B
7	Old Mammoth	Main	Traffic Signal	Total Intersection	C	D	C	C
8	Sierra Park	Main	Two-Way Stop Controlled	Northbound	B	C	C	C
				Westbound	A	B	B	B
9	Meridian	Main WB	Two-Way Stop Controlled	Northbound	B	E	F	F
				Westbound	A	A	A	A
10	Meridian	Main EB	Two-Way Stop Controlled	Northbound	B	F	F	F
				Southbound	B	C	C	C
11	US 395 NB	Main/SR 203	Two-Way Stop Controlled	Northbound	C	F	D	D
				Eastbound	A	A	A	A
12	US 395 SB	Main/SR 203	Two-Way Stop Controlled	Southbound	B	C	B	B
13	Majestic Pines	Meridian	Two-Way Stop Controlled	Southbound	B	F	F	F
				Eastbound	A	A	A	A
14	Old Mammoth	Meridian	Traffic Signal	Total Intersection	B	C	C	D
15	Sierra Park	Meridian	4-Way Stop-Controlled	Northbound	A	A	A	A
				Southbound	A	A	A	A
				Eastbound	A	A	A	B
				Westbound	A	B	B	B
16	Minaret	Forest Trail	Two-Way Stop Controlled	Northbound	B	C	E	C
				Southbound	A	A	A	A
				Eastbound	F	F	F	F
				Westbound	F	F	F	F
17	Minaret	Old Mammoth	Two-Way Stop Controlled	Northbound	B	F	F	F
				Southbound	C	F	F	F
				Eastbound	A	A	A	A
				Westbound	A	A	A	A
18	Minaret	Meridian	Traffic Signal	Total Intersection	C	D	D	E
19	US 395 NB	Hot Creek Fish Hatchery	Two-Way Stop Controlled	Northbound	--	A	A	A
				Eastbound	B	E	E	E
				Westbound	B	C	C	C
20	US 395 SB	Hot Creek Fish Hatchery	Two-Way Stop Controlled	Southbound	A	A	A	A
				Eastbound	--	C	C	C
				Westbound	A	C	C	C
21	Azimuth	Meridian	Two-Way Stop Controlled	Northbound	F	F	F	F
				Southbound	E	F	F	F
				Eastbound	A	A	A	A
				Westbound	A	B	B	B
22	Mountain	Main	Two-Way Stop Controlled	Northbound	E	F	--	--
				Southbound	E	F	--	--
				Eastbound	A	B	--	--
				Westbound	B	B	--	--

TABLE 3: Peak-Hour Signal Warrant Summary

Bold Text Indicates Peak-Hour Signal Warrant is Met

#	Intersection		Unmitigated Traffic Control	Peak Hour Signal Warrant Met?			
	North/South	East/West		Existing (2004)	2024 Alt 1	2024 Alt 2	2024 Alt 4
1	Kelly	Lake Mary	Two-Way Stop Controlled	No	**Yes**	**Yes**	No
2	Lakeview	Lake Mary	Two-Way Stop Controlled	**Yes**	**Yes**	**Yes**	**Yes**
4	Center	Main	Two-Way Stop Controlled	No	**Yes**	**Yes**	**Yes**
6	Forest Trail	Main	Two-Way Stop Controlled	No	**Yes**	**Yes**	**Yes**
9	Meridian	Main WB	Two-Way Stop Controlled	No	**Yes**	**Yes**	No
10	Meridian	Main EB	Two-Way Stop Controlled	No	**Yes**	**Yes**	**Yes**
11	US 395 NB	Main/SR 203	Two-Way Stop Controlled	No	**Yes**	No	No
13	Majestic Pines	Meridian	Two-Way Stop Controlled	No	**Yes**	**Yes**	No
16	Minaret	Forest Trail	Two-Way Stop Controlled	**Yes**	**Yes**	**Yes**	**Yes**
17	Minaret	Old Mammoth	Two-Way Stop Controlled	No	**Yes**	**Yes**	**Yes**
19	US 395 NB	Hot Creek Fish Hatchery	Two-Way Stop Controlled	No	No	No	No
21	Azimuth	Meridian	Two-Way Stop Controlled	**Yes**	**Yes**	**Yes**	**Yes**
22	Mountain	Main	Two-Way Stop Controlled	No	**Yes**	--	--
22 **	Sierra Park	Meridian	4-Way Stop-Controlled	No	**Yes**	--	--

** Based upon weekday analysis.

LOS Summary.xls

FIGURE 1

TOWN OF MAMMOTH LAKES STUDY INTERSECTIONS

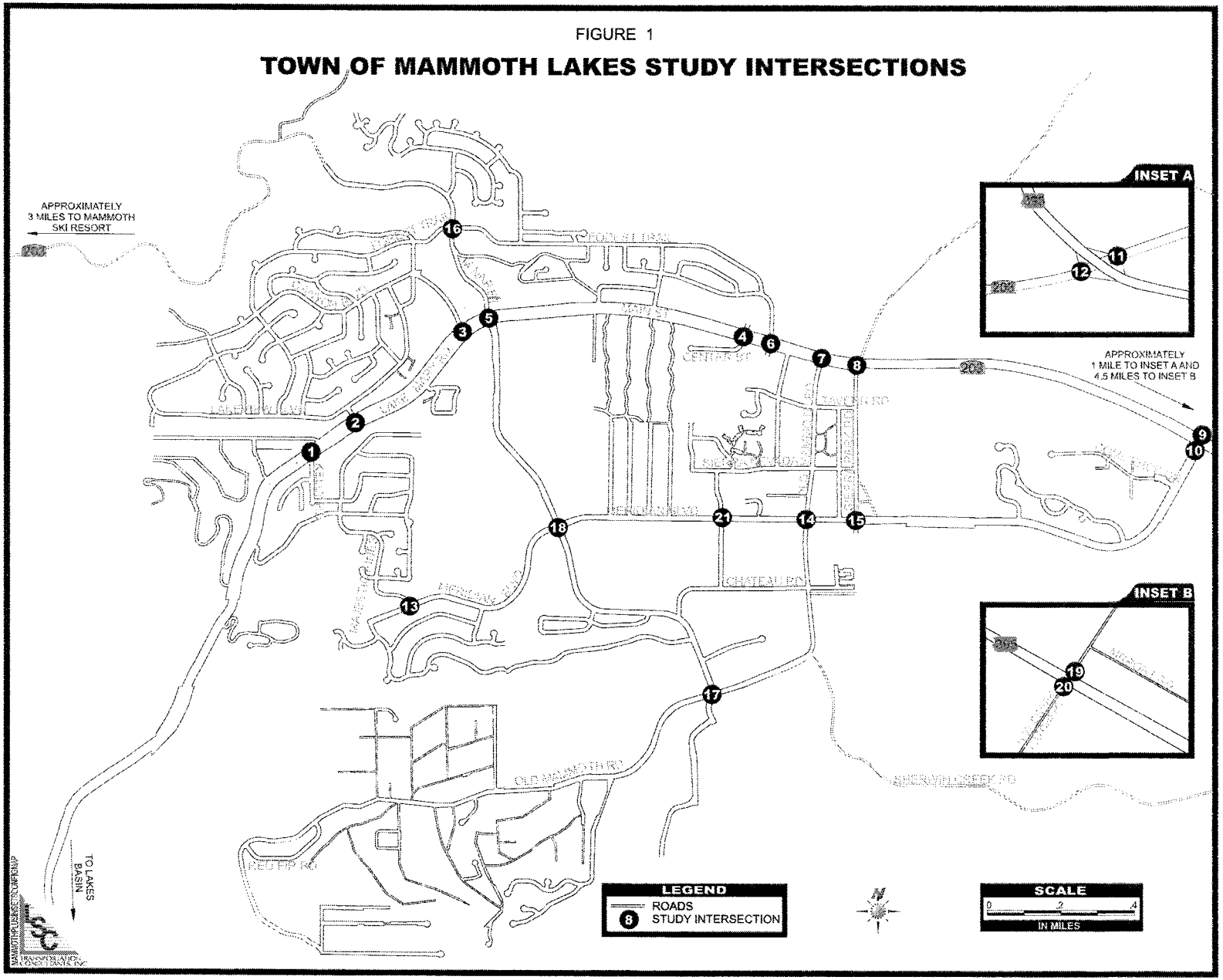
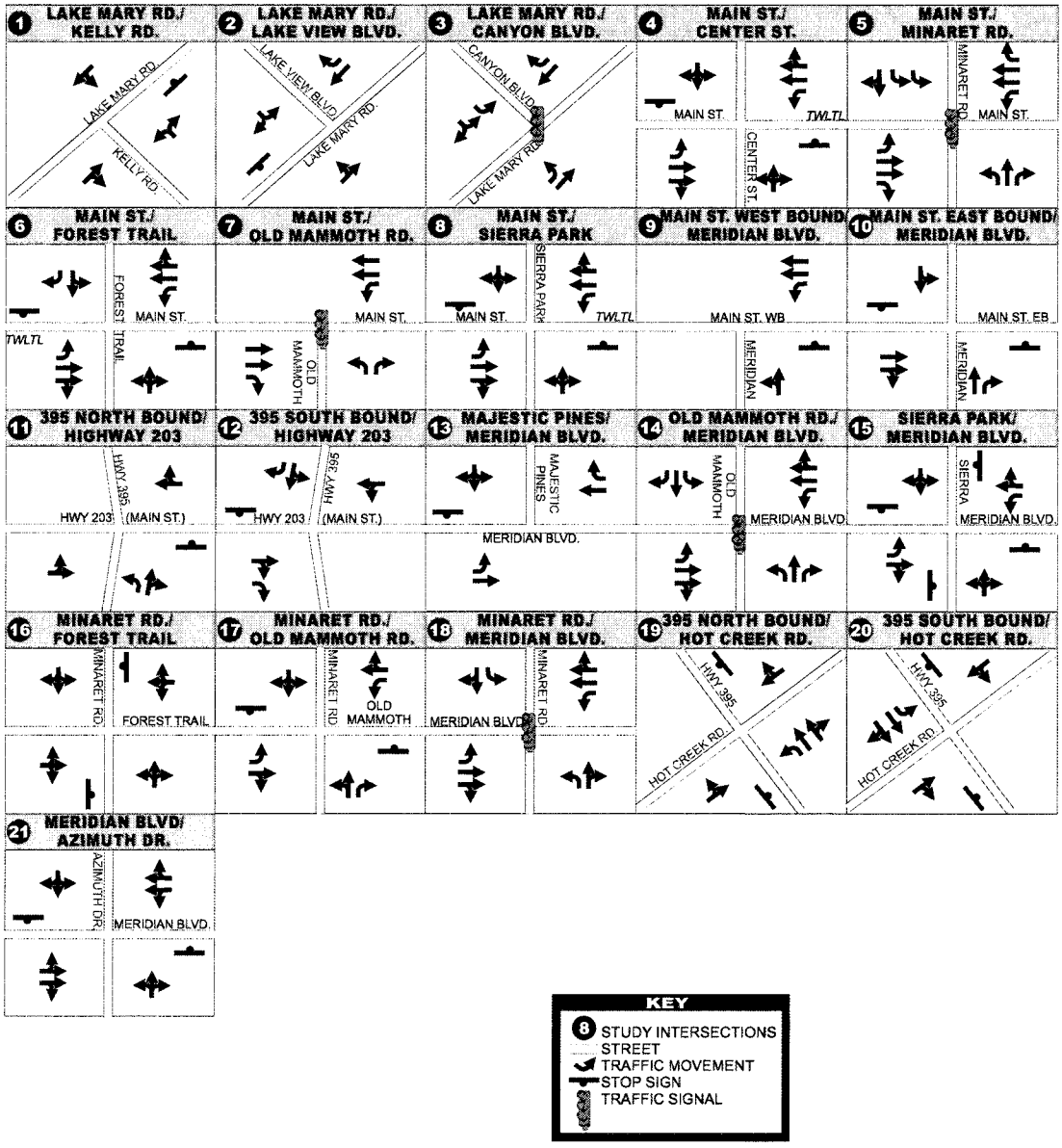


FIGURE 2

TOWN OF MAMMOTH LAKES STUDY INTERSECTIONS LANE CONFIGURATION AND TRAFFIC CONTROL



Mammoth Lakes Transportation Model and LOS Analysis Methodology Background Paper

LSC Transportation Consultants, Inc.
May 13, 2005

This paper is intended to provide a concise summary of the procedures and assumptions used in evaluating traffic conditions in Mammoth Lakes, specifically for the General Plan update and Capital Improvement Programs. First, a general discussion of Level Of Service (LOS) concepts is presented as applied in Mammoth Lakes , followed by a discussion of the transportation modeling process.

LEVEL OF SERVICE

Definition of LOS

The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers. A level-of-service definition generally describes these conditions in terms of such factors as 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 facility. They are given letter designations, from A to F, with Level of Service A representing the best operating conditions and Level of Service F the worst.

In general, the various levels of service are defined as follows for roadways (away from intersections):

- **Level of Service A** represents free flow. Individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high. The general level of comfort and convenience provided to the motorist, passenger, or pedestrian is excellent.

- **Level of Service B** is in the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A. The level of comfort and convenience provided is somewhat less than at LOS A, because the presence of others in the traffic stream begins to affect individual behavior.

- **Level of Service C** is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual drivers becomes significantly affected by interactions with others in the traffic stream. The selection of speed is now affected by the presence of others, and maneuvering within the traffic stream requires substantial vigilance on the part of the user. The general level of comfort and convenience declines noticeably at this level.

- **Level of Service D** represents high-density, but stable, flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience. Small increases in traffic flow will generally cause operational problems at this level.

- **Level of Service E** represents operating conditions at or near the capacity level. All speeds are reduced to a low, but relatively uniform value. Freedom to maneuver within the traffic stream is extremely difficult, and it is generally accomplished by forcing a vehicle or pedestrian to "give way" to accommodate such maneuvers. Comfort and convenience levels are extremely poor, and driver or pedestrian frustration is generally high. Operations at this level are usually unstable, because small increases in flow or minor perturbations within the traffic stream will cause breakdowns.

- **Level of Service F** is used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount which can traverse the point. Queues form behind such locations. Operations within the queue are characterized by stop-and-go waves, and they are extremely unstable. Vehicles may progress at reasonable speeds for several hundred feet or more, then be required to stop in a cyclic fashion. Level of Service F is used to describe the operating conditions within the queue, as well as the point of the breakdown. It should be noted, however, that in many cases operating conditions of vehicles or pedestrians discharged from the queue may be quite good. Nevertheless, it is the point at which arrival flow exceeds discharge flow which causes the queue to form, and Level of Service F is an appropriate designation for such points.

The LOS resulting from different levels of vehicle control delay, as identified in the Highway Capacity Manual, are shown in Table 1. Control delay is the total time that elapses between the vehicle joining the queue and its departure from the head of the queue plus the time required to decelerate to a stop and to accelerate to free-flow speed. The delays identified in the table relate the perception of the driver in the amount they are delayed at an intersection to LOS.

LOS Standards

The Town of Mammoth Lakes General Plan Transportation Element, adopted in 2001, currently contains the following Policy:

> ***Policy 1.7:*** *Establish and maintain a Level of Service D or better on a typical winter Saturday peak-hour for signalized intersections and for primary through movements for unsignalized intersections along arterial and collector roads. This standard is expressly not applied to absolute peak conditions, as it would result in construction of roadway improvements that are warranted only a limited number of days per year and that would unduly impact pedestrian and visual conditions.*

Therefore, the following LOS thresholds were applied in the General Plan traffic analysis:

1. *For Signalized Intersections:* Total intersection LOS D or better must be maintained. Therefore, if a signalized intersection is found to operate at a total intersection LOS E or F, mitigation is required. It is assumed that this same threshold applies to roundabouts.

2. *For Unsignalized Intersections:* In order to avoid intersection the identification of a LOS failure for intersections that result in only a few vehicles experience a delay greater than 50 seconds (such as at a driveway serving a few homes that accesses onto a busy street), a LOS deficiency is not identified for all intersections with approach LOS E or F. Instead, a LOS deficiency is assumed to occur at an unsignalized intersection only if an individual minor street movement operates at LOS E or F and total minor approach delay exceeds 4

vehicle hours for a single lane approach and 5 vehicle hours for a multi lane approach. In other words, a deficiency is found to occur if the average number of vehicles queued over the peak-hour exceeds 4 at a single lane approach, or exceeds 5 at a multilane approach.

Comparison with Other Jurisdiction LOS Standards

As shown in Table 2, Mammoth Lakes LOS policy is in line with many jurisdictions within California. Some more rural areas (such have Amador and Siskiyou Counties) have a "higher" LOS C standard, while other areas have a lower LOS E standard in some areas. The Town of Mammoth Lakes is probably most comparable to the Town of Truckee in its population and its high level of tourist visitation during both the summer and winter: Mammoth Lake's LOS D thresholds are more stringent than the Town of Truckee's in that a LOS E is permitted in the Truckee downtown area.

Impacts Associated with a More Restrictive (Higher) LOS

In considering an appropriate LOS standard, it is useful to identify how changing the standard would impact the need for roadway improvements (with the attendant impacts on community character). The impact of the Town changing their LOS policy to a more restrictive (higher) LOS would be that more intersections and roadways would require improvements by 2025, and those already identified as needing improvements by 2025 would require improvements sooner. For comparison purposes, assume the Town adopted a LOS B standard. The following intersections, which are currently identified to operate at adequate LOS under 2004 conditions, would need to be expanded to attain a LOS B standard:

- Lakeview Road/Lake Mary Road
- Minaret Road/Main Street
- Old Mammoth Road/Main Street
- US 395 Northbound/Main Street (SR 203)
- Minaret Road/Old Mammoth Road
- Minaret Road/Meridian Road

In addition, the following intersections, which are currently forecast to operate at adequate LOS by 2025, would need to be expanded to attain a LOS B standard:

- Old Mammoth Road/Main Street
- Sierra Park Road/Main Street
- US 395 Northbound/Main Street (SR 203)
- Old Mammoth Road/Meridian Boulevard
- US 395 Southbound/Hot Creek Fish Hatchery Road

As for those intersections that have already been identified as requiring mitigation by 2025, additional improvements would be required to maintain a LOS B over the next 20 years. For example, the Minaret Road/Main Street intersection would need the following additional lanes by 2024 if the LOS B standard were adopted:

- Northbound Approach: Add Second Through Lane.
- Southbound Approach: Add Two Through Lanes and Separate Right-Turn Lane and Remove Shared Through/Right Lane.

- Eastbound Approach: Add Second Left-Turn Lane and Second Through Lane.
- Westbound Approach: Add Second Left-Turn Lane and Second Through Lane.

In total, Main Street through this intersection would need to be expanded by one through lane in each direction, and Minaret Road expanded by one though lane in each direction.

As another example, the Minaret Road/Meridian Boulevard intersection would need the following additional lanes by 2024 if the LOS B standard were adopted:

- Northbound Approach: Add Two Through Lanes and a Separate Right-Turn Lane and Remove Through/Right Shared Lane.
- Southbound Approach: Add Two Through Lanes and a Separate Right-Turn Lane and Remove Through/Right Shared Lane.
- Eastbound Approach: Add Second Left-Turn Lane, Second Through Lane, Separate Right-Turn Lane and Remove Through/Right Shared Lane.
- Westbound Approach: Add Second Through Lane, Separate Right-Turn Lane and Remove Through/Right Shared Lane.

This would add a total of one through lane in each direction on Minaret Road. Furthermore, Minaret Road through the Village area would need to be widened to a total of four lanes (two lanes in each direction).

The level of improvements that would be required by more restrictive LOS standards would result in wider roads, more pavement, and would not fit within the existing character of the Town. Not only would these improvements create an urban environment, but wider roads make for a less pedestrian-friendly environment. The substantial impacts of roadway improvements needed to attain a high LOS is the reason why the majority of urban and resort communities have adopted LOS standards at or near D.

TRAFFIC MODEL

Model Design Day

A crucial step in development of a traffic model is collecting and refining a comprehensive set of existing design volumes. The existing Town of Mammoth Lakes Transportation Demand Model is based upon a typical winter Saturday P.M. peak-hour design period, defined as the average winter Saturday peak hour. The traffic volumes throughout the Town of Mammoth Lakes vary greatly by time of day, day of week and, more importantly, by season. Particularly in areas with these high variation in traffic levels, it is important to decide what hourly traffic volumes should be used as the basis of design.

To avoid the development of facilities that are only needed a relatively few days per year, the traffic engineering profession has adopted a standard procedure of basing roadway design on volumes slightly below the absolute peak volumes. For this reason the Town of Mammoth Lakes, for example, has focused most of its design policies on a typical Winter Saturday peak hour, rather than the highest winter peak hour. A Policy on Geometric Design of Highways and Streets (American Association of State Highway and Transportation Officials, 2001) indicates *"The design hourly volume for rural highways ... should generally be the 30th highest volume of the future year chosen for design."* (P 61). It is true that during winter peak periods, traffic volumes

occasionally exceed the intersection and roadway capacity. However, to avoid the development of facilities that are only needed a relatively few days per year, the typical winter Saturday peak hour was analyzed, which is consistent with standard engineering design practice.

The use of a 10th or 30th highest design hour is common practice in many resort communities. For example, in the Town of Truckee the 10th highest summer peak hour is used. In addition, in Truckee, peak ski traffic volumes occurring during the winter are not designed for at all. In Placer County, the winter design day represents the 30th highest winter peak hour. As part of a recent traffic analysis prepared the development of Kings Beach, the 10th highest summer peak hour was used, which was determined appropriate by Caltrans, Placer County, and the Tahoe Regional Planning Agency.

Figure 1 depicts the variation of traffic volumes along Main Street east of Minaret by day of the week. As the figure indicate, Saturdays consistently represent the day during which the peak traffic conditions occur. Of course, on some holiday weekends high traffic volumes may occur on days other than Saturday. As shown in Table 3, for example, the highest traffic volumes usually occur around the Christmas, New Years, President's Day, and Martin Luther King Jr. holidays. Figure 2 presents the hourly traffic volume variation along Main Street east of Minaret Road on the day in the 2003/2004 winter season which most closely reflects the design day traffic volume. As the figure indicates, the P.M. peak-hour traffic volumes are usually significantly higher than the A.M. peak-hour traffic volumes. This is mostly attributed to the fact that skiers generally leave the ski area during a smaller time frame than they arrive. Therefore, it can be concluded that designing for the P.M. peak hour is appropriate.

According to 2003 peak-hour count data provided by Caltrans, some summer days also result in very high traffic volumes throughout Mammoth Lakes. In fact, the following days ranked within the 30 highest peak-hour traffic volume days along Main Street East of Minaret Road:

- July 5, 2003 (three peak hours: 12:00 P.M., 2:00 P.M., and 4:00 P.M.)
- August 8, 2003 (two peak hours: 11:00 A.M. and 4:00 P.M.)
- August 15, 2003 (4:00 P.M.)
- August 30, 2003 (two peak hours: 11:00 A.M. and 12:00 P.M.)

However, in general, traffic volumes are generally highest Townwide during the winter season.

It can be assumed that approximately 10 of the highest peak-hour volumes on Main Street in Mammoth Lakes occur during the summer. It is also assumed that during the winter the P.M. peak-hour traffic volume is significantly higher than any other hour of the day. Referring to Table 3 and Figure 3, it can be seen that the design day roughly represents the day during which the 16th highest winter peak-hour traffic volumes occur. Taking into account summer traffic volumes, the design day roughly represents the day during which the 26th highest peak-hour traffic volumes occur. Therefore, the Town of Mammoth Lakes' use of a typical winter Saturday is consistent with but more conservative (i.e., results in higher design volumes) than AASHTO's recommended 30th highest hour.

In addition, it can be said that during approximately 25 hours per year, the design day traffic volumes are exceeded, and LOS may drop below the Town standards. These 25 hours represent 0.3 percent of the hours in a year. Therefore, although the capacity of the roadway may be

exceeded for 0.3 percent of the time during the year, traffic volumes will be accommodated by the roadway capacity 99.7 percent of the time.

It should also be noted that, consistent with standard analysis procedures elsewhere, Level of Service and capacity was not adjusted to account for snow conditions. The occurrence of stormy/snowy weather conditions and snow on the roadways actually occurs over a relatively small proportion of the winter (though the last winter might make it seem otherwise). Furthermore, as traffic capacity varies with the specific conditions of a storm as well as "incidences" such as drivers stopping in travel lanes to adjust chains, identifying a "design condition" to reflect winter storms would largely be conjecture. This approach is consistent with other traffic analyses that LSC has prepared in areas with high annual snowfall, such as the Lake Tahoe region, Park City Utah, and Aspen Colorado.

Overview of Traffic Model

A transportation demand model is a computerized representation of a transportation system. A model is useful for comparing the impacts of various growth assumptions and for evaluating alternative transportation improvement programs. Although it would also be possible to use growth factors based on the recent trends to project future traffic volumes, a model allows the use of better projections of growth within the region, accounting for subarea development. Computerized transportation models are also the best means by which to evaluate the interchange of traffic between various land uses and to consider the effects of traffic congestion on travel times and driver route choice.

Transportation models, by definition, are representations of travel choices made by individuals across a geographic area, impacting physical structures such as roads, bridges, parking areas, and intersections. Each model should rely on sound behavioral theory of how individuals make travel choices. The structure of choice sequences suggested by the model and the variables used in the model should reflect a logical process of decision-making followed by travelers in deciding when, where, and how to travel.

The travel choices of individuals are most commonly represented in the United States by what is referred to as the "four-step process." These four steps represent the thought processes of the individual. The individual makes four travel decisions, as follows: (1) the decision that a trip is necessary to fulfill some need or purpose (generation), (2) the decision where that need/purpose is best fulfilled (distribution), (3) the decision of which means is best to get there (mode choice), and (4) the decision of which route to take (trip assignment).

Geographic patterns are represented in the model by data considered to be at the heart of individual travel decisions: where people live, where people work, and where people recreate, shop, or otherwise interact. Land use quantities are represented in a series of Traffic Analysis Zones (TAZs), that together encompass the entire traffic model area. A total of 152 TAZs were defined to encompass the model area. TAZs were generally defined to follow property lines and to accurately reflect vehicular access to/from the roadway network. As discussed in detail below, land use quantities were developed to reflect existing uses within each TAZ.

The physical structures of travel are represented through a combination of links (paths) and nodes (intersections or transfer points). Zone centroids are special types of nodes associated with both the TAZ data mentioned above and the origins and destinations of an individual's trips.

The links typically have a travel time associated with them, either explicitly given or inferred from speed and distance information.

Trip Generation

Trip ends are classified as being either a production (defined as either end of a home-based trip or origin of a non-home based trip) or an attraction (the non-home end of a home-based trip or the destination end of a non-home based trip). Separate models are typically used to predict productions and attractions. Variables used as predictors of trip productions usually include information regarding household income, auto ownership, number of workers per household, residential density, and distance of zone from the central business district. Trip attraction predictors usually include zonal employment levels, zonal floor space, and/or accessibility to the work force.

Trip Distribution

Trip distribution is the process of connecting the trip ends which have been generated for each of the analysis areas or TAZs. It is during this step that the linkage is made between all the trip productions and attractions. Trip distribution is a significant element of the process because the trips between zones (trip interchanges) must eventually be accommodated by the transportation system. The distribution of trips is essential to estimating the traffic volumes on individual links and determining a level of service.

Mode Split

Mode split is the process that converts person trips into different modes. The Mammoth Lake Traffic Model mode split is used to turn person trips into vehicle or transit trips. The mode split estimates by the model is shown in Table 4. As the table indicates, 8 to 11 percent of the model-generated trips are assumed to occur on transit over the course of a typical winter Saturday. Note that mode split for skiers traveling to and from the Mammoth Mountain portals is substantially higher – on the order of 30 percent – which is also reflected in the model.

Trip Assignment

Trip assignment models are used to estimate traffic flow on the network, using the origin-destination pairs generated in trip distribution. The assignment of trips to the network relies on the determination of routes through the network based on the impedance or travel time of each link.

Model Validation

As with any representation of a real system, there are associated limitations. To minimize the effects of these limitations, the updated model has been "validated" so that it matches reality for all critical links in the system. In other words, adjustments were made until the modeled traffic volumes approximated existing traffic volumes, often referred to as "ground counts." Once the model was validated, then and only then can the model be used to estimate future travel patterns and volumes.

To validate the model, the results of the model traffic assignments were compared to the observed traffic volumes. The approach to the validation process is to conduct a point

validation analysis. Point validation represents a higher standard for calibration than is typically used. Not only are overall flows of traffic volumes compared, but also site-specific volumes. A calibrated model should provide results which are reasonably close for major links in the street network. Table 5 shows the two-way volume error range which was used in validating the model. For low-volume links, a larger error range is acceptable because of the lack of congestion. A difference of 100 percent for volumes less than 100 vehicles per hour has little effect on congestion because less roadway capacity is being used. For higher volume roadways, the percentage error must be much smaller. The traffic model was validated for all 36 locations evaluated.

Caltrans has established several standards for the validation of traffic models, as established in Travel Forecasting Guidelines (California Department of Transportation, November 1992). Two examples of these standards are applied to the Mammoth Lakes Model as follows:

- A minimum of 75 percent of the roadway links should be within their maximum desirable deviation, which ranges from approximately 5 to 60 percent depending on total volume. As the Caltrans standards are meant to be applied to models which generally do not contain local collectors, such as the Mammoth Model does, the maximum percent desirable deviation identified in Table 5 was assumed to be more appropriate than those identified in the Caltrans model. *Using these percent deviations, the Mammoth Lakes Model results indicate that 100 percent of the link volumes evaluated are within the acceptable error ranges, substantially exceeding Caltrans' 75 percent standard.*

- The model-wide correlation coefficient should be greater than 0.88. *The Mammoth Lakes Model traffic model results indicate a correlation coefficient of 0.99, substantially exceeding Caltrans' standard.*

- The maximum acceptable Root Mean Square Error (RMSE) should not exceed 40 percent. *The Mammoth Lakes Model model results in a RSME equal to 11 percent, substantially exceeding Caltrans's 40 percent standard.*

Future Model Assumptions

The land uses assumptions that were used in the model runs were developed by Mammoth Lakes Transportation Planning Staff. Four 2024 land use alternatives were evaluated. No new roadways were assumed to be built between 2004 and 2024.

It should be noted that any community-wide traffic model is a planning level "tool" and necessarily reflects a simplification of the roadway network, individual property access, and land uses. Detailed evaluation of individual roadway elements based upon specific project site plans, therefore, may yield differing results. The model, however, is more than adequate for purposes of overall planning for Mammoth Lakes transportation network, and meets or exceeds the standards of the traffic engineering profession.

Table 1: Level of Service Delay Criteria for Signalized and Unsignalized Intersections

Level Of Service	Control Delay per Vehicle (seconds)	
	Signalized Intersections	Unsignalized Intersections
A	<= 10	<= 10
B	> 10 and <= 20	> 10 and <= 15
C	> 20 and <= 35	> 15 and <= 25
D	> 35 and <= 55	> 25 and <= 35
E	> 55 and <= 80	> 35 and <= 50
F	> 80	> 50

Shading indicates Town of Mammoth Lakes LOS Standard

Source: 2000 Highway Capacity Manual.

Table 2: Level of Service Standards for Rural Jurisdictions by Roadway Classification

Roadway Classification	Minimum Level of Service Standard								
	Mammoth Lakes	Tuolumne County	Amador County [1]	Lake County	Siskiyou County	El Dorado County	Nevada County	Town of Truckee	TRPA [3]
State Highways	D	E	C/D	C	C	E (urban) D (rural)	D (urban) C (rural)	D, except E within Downtown area.	D
Arterial	D	C [2]	C/D	C	C	E (urban) D (rural)	D (urban) C (rural)	D, except E within Downtown area.	D
Collector	D	B [2]	C	C	C	E (urban) D (rural)	D (urban) C (rural)	D, except E within Downtown area.	D
Local Roads	D	B [2]	C	C	C	E (urban) D (rural)	D (urban) C (rural)	D, except E within Downtown area.	D

Note 1: Major intersections with a 15 minute peak period of LOS D is allowed. Certain state highway road segments are also allowed LOS D.

Note 2: One LOS standard lower is allowed within 1/2 mile of intersections with major collectors and arterial highways. For example, in Tuolumne County LOS B is required along all collectors, excepting those within 1/2 mile of a major collector or arterial highway, for which a LOS C must be maintained.

Note 3: LOS E is allowed at signalized intersections for no more than 4 hours per day.

Source: County planning documents.

Table 3: 2003/2004 Winter Daily Traffic Volumes Along Main Street East of Minaret Sorted from Highest to Lowest

Winter Rank	Day of Week	Date	Daily Traffic Volume			
			Eastbound	Westbound	Total	
1	Saturday	14-Feb-04	8,743	9,042	17,785	
2	Wednesday	31-Dec-03	8,842	8,804	17,646	
3	Sunday	15-Feb-04	8,969	8,054	17,023	
4	Saturday	17-Jan-04	8,293	8,614	16,907	
5	Saturday	24-Jan-04	8,163	8,269	16,432	
6	Sunday	28-Dec-03	8,493	7,913	16,406	
7	Saturday	27-Dec-03	8,192	8,203	16,395	
8	Saturday	28-Feb-04	8,018	8,118	16,136	
9	Friday	13-Feb-04	7,458	8,593	16,051	
10	Saturday	31-Jan-04	7,868	7,890	15,758	
11	Monday	22-Dec-03	8,051	7,702	15,753	
12	Sunday	18-Jan-04	8,370	7,200	15,570	
13	Tuesday	30-Dec-03	7,985	7,434	15,419	
14	Friday	30-Jan-04	7,379	8,012	15,391	
15	Friday	23-Jan-04	7,229	8,157	15,386	
16	Saturday	06-Mar-04	7,690	7,557	15,247	<--"Design Day"
17	Saturday	13-Mar-04	7,650	7,567	15,217	
18	Saturday	21-Feb-04	7,631	7,500	15,131	
19	Monday	16-Feb-04	8,517	6,596	15,113	
20	Sunday	25-Jan-04	8,405	6,615	15,020	
21	Friday	05-Mar-04	7,185	7,789	14,974	
22	Saturday	07-Feb-04	7,354	7,473	14,827	
23	Friday	26-Dec-03	7,207	7,585	14,792	
24	Friday	09-Jan-04	7,187	7,574	14,761	
25	Sunday	29-Feb-04	8,552	6,196	14,748	
26	Saturday	20-Mar-04	7,393	7,342	14,735	
27	Saturday	10-Jan-04	7,382	7,337	14,719	
28	Friday	06-Feb-04	6,833	7,812	14,645	
29	Friday	16-Jan-04	6,694	7,829	14,523	
30	Sunday	08-Feb-04	8,143	6,252	14,395	
31	Saturday	27-Mar-04	7,105	7,181	14,286	
32	Monday	29-Dec-03	7,341	6,889	14,230	
33	Sunday	07-Mar-04	8,137	6,073	14,210	
34	Friday	12-Mar-04	8,755	7,353	14,108	
35	Friday	20-Feb-04	6,909	7,198	14,107	
36	Saturday	03-Jan-04	7,572	6,414	13,986	
37	Tuesday	23-Dec-03	7,212	6,743	13,955	
38	Friday	27-Feb-04	6,542	7,393	13,935	
39	Friday	02-Jan-04	7,249	6,355	13,604	
40	Friday	19-Mar-04	6,476	7,080	13,556	
41	Sunday	14-Mar-04	7,616	5,767	13,383	
42	Sunday	01-Feb-04	7,650	5,708	13,358	
43	Saturday	20-Dec-03	6,409	6,909	13,318	
44	Thursday	08-Jan-04	6,688	6,629	13,317	
45	Monday	19-Jan-04	7,712	5,556	13,268	
46	Sunday	28-Mar-04	7,405	5,880	13,285	
47	Sunday	04-Jan-04	7,326	5,939	13,265	
48	Thursday	19-Feb-04	6,584	6,677	13,261	
49	Sunday	21-Dec-03	6,700	6,556	13,256	
50	Friday	26-Mar-04	6,329	6,910	13,239	
51	Sunday	11-Jan-04	7,255	5,804	13,059	
52	Sunday	21-Mar-04	7,338	5,502	12,840	
53	Friday	19-Dec-03	6,089	6,553	12,642	
54	Monday	05-Jan-04	6,329	5,982	12,311	
55	Tuesday	06-Jan-04	6,133	5,876	12,009	
56	Thursday	29-Jan-04	5,699	6,219	11,918	
57	Thursday	12-Feb-04	5,773	6,035	11,808	
58	Sunday	22-Feb-04	6,774	5,016	11,790	
59	Wednesday	07-Jan-04	6,030	5,714	11,744	
60	Thursday	04-Mar-04	5,637	5,928	11,565	
61	Thursday	11-Mar-04	5,570	5,864	11,534	
62	Thursday	22-Jan-04	5,480	5,945	11,425	
63	Wednesday	24-Dec-03	5,670	5,689	11,359	
64	Monday	02-Feb-04	6,011	5,244	11,255	
65	Thursday	05-Feb-04	5,475	5,769	11,244	
66	Monday	29-Mar-04	5,888	5,354	11,242	
67	Monday	26-Jan-04	5,994	5,243	11,237	
68	Thursday	18-Mar-04	5,579	5,637	11,216	
69	Thursday	18-Dec-03	5,531	5,515	11,046	
70	Thursday	15-Jan-04	5,499	5,519	11,018	
71	Monday	09-Feb-04	5,917	5,094	11,011	
72	Monday	08-Mar-04	5,762	5,126	10,888	
73	Wednesday	14-Jan-04	5,503	5,245	10,748	
74	Monday	15-Mar-04	5,620	5,085	10,705	
75	Tuesday	17-Feb-04	5,409	5,264	10,673	
76	Wednesday	31-Mar-04	5,420	5,163	10,583	
77	Thursday	25-Mar-04	5,243	5,314	10,557	
78	Tuesday	09-Mar-04	5,364	5,049	10,413	
79	Wednesday	17-Dec-03	5,293	5,102	10,395	
80	Monday	12-Jan-04	5,430	4,953	10,392	
81	Tuesday	16-Dec-03	5,287	5,090	10,357	
82	Tuesday	13-Jan-04	5,295	5,037	10,332	
83	Wednesday	11-Feb-04	5,254	5,070	10,324	
84	Wednesday	17-Mar-04	5,234	5,071	10,305	
85	Monday	22-Mar-04	5,416	4,833	10,249	
86	Monday	15-Dec-03	5,197	5,031	10,228	
87	Wednesday	18-Feb-04	5,153	5,054	10,207	
88	Tuesday	30-Mar-04	5,299	4,906	10,205	
89	Tuesday	10-Feb-04	5,233	4,950	10,183	
90	Wednesday	10-Mar-04	5,223	4,917	10,140	
91	Monday	23-Feb-04	5,327	4,777	10,104	
92	Tuesday	24-Feb-04	5,168	4,751	9,919	
93	Wednesday	03-Mar-04	5,025	4,671	9,696	
94	Wednesday	21-Jan-04	4,988	4,894	9,882	
95	Tuesday	16-Mar-04	5,078	4,755	9,833	
96	Monday	01-Mar-04	5,211	4,593	9,804	
97	Wednesday	28-Jan-04	4,925	4,787	9,712	
98	Wednesday	04-Feb-04	4,941	4,729	9,670	
99	Tuesday	23-Mar-04	5,010	4,626	9,636	
100	Wednesday	24-Mar-04	4,768	4,548	9,316	
101	Tuesday	20-Jan-04	4,681	4,502	9,183	
102	Thursday	01-Jan-04	4,864	4,225	9,089	
103	Tuesday	27-Jan-04	4,582	4,336	8,918	
104	Tuesday	03-Feb-04	4,554	4,128	8,682	
105	Tuesday	02-Mar-04	4,264	4,178	8,442	
106	Thursday	25-Dec-03	3,961	4,297	8,258	
107	Thursday	26-Feb-04	3,922	4,049	7,971	
108	Wednesday	25-Feb-04	3,512	3,339	6,851	

Percent Difference Between Design Day and Peak Day Traffic Volume **98%**

Table 4: Transit Mode Split Estimated by Mammoth Model by Land Use Alternative

Alternative	Off-Peak Transit Trips	Peak-Hour Transit Trips	Total Daily		
			Bus Person Trips	Total Person Trips	Mode Split (% Using Bus)
2004	10,988	1,680	12,668	165,626	7.65%
2025 Build Out of Alternative 1	20,620	3,328	23,948	295,360	8.11%
2025 Build Out of Alternative 2	28,209	4,845	33,054	316,288	10.45%
2025 Build Out of Alternative 3	22,509	3,619	26,128	315,401	8.28%
2025 Build Out of Alternative 4	18,913	3,040	21,953	267,040	8.22%

Note: This mode split represents the mode split for all trips in the Mammoth Transportation Demand Model and not just skier trips.

Mode Split.wb3

Table 5
Point Validation Error Range

Peak Hour Two-Way Traffic Volumes	Error Range + (-)
<100	100%
100-399	50%
400-999	25%
1,000-1,500	15%
>1,500	10%

Figure 1: Daily Variation in Traffic Volumes Along Main East of Minaret

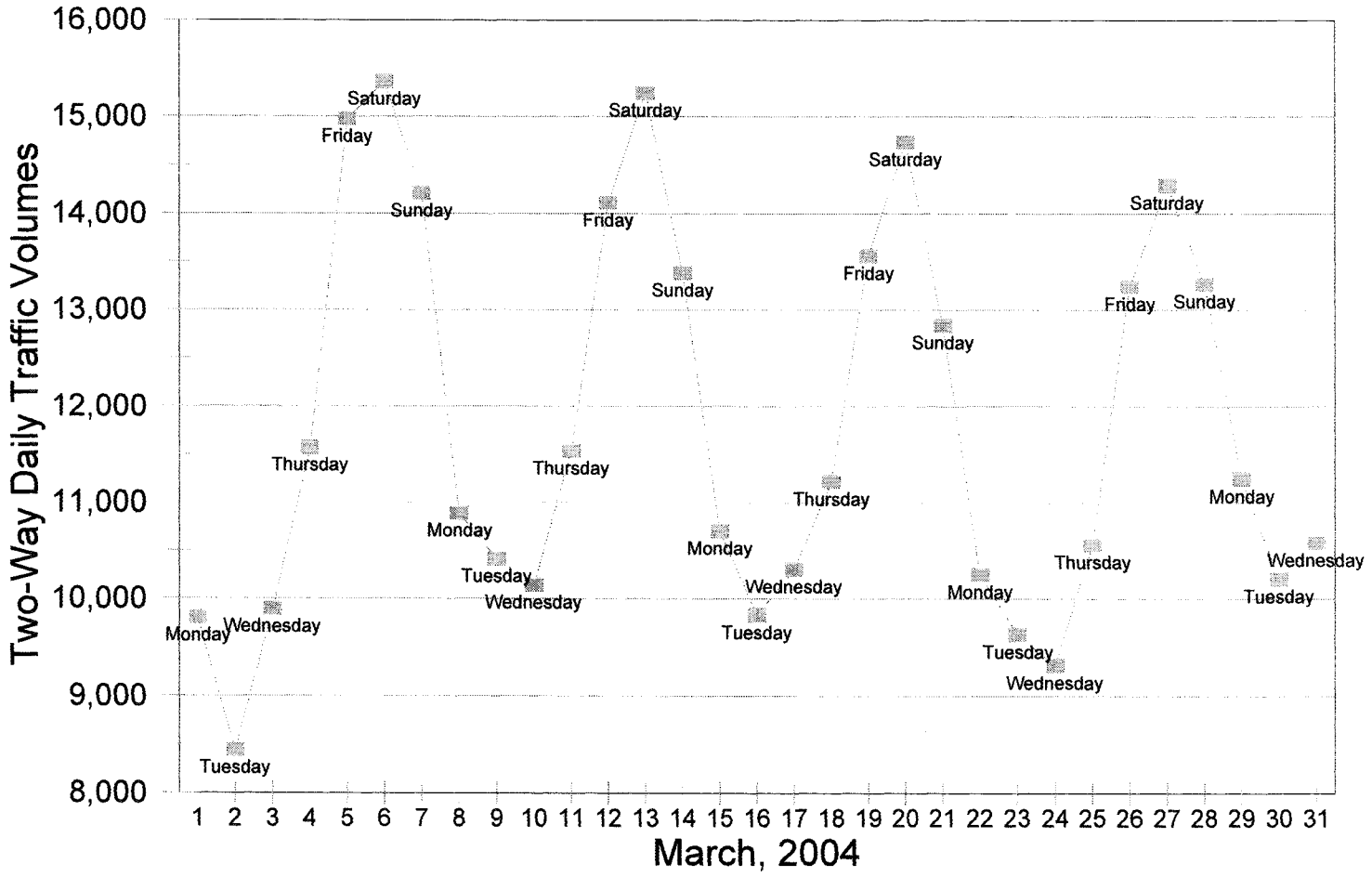


Figure 2: Peak-Hour Traffic Volumes
Main East of Minaret (March 6, 2004)

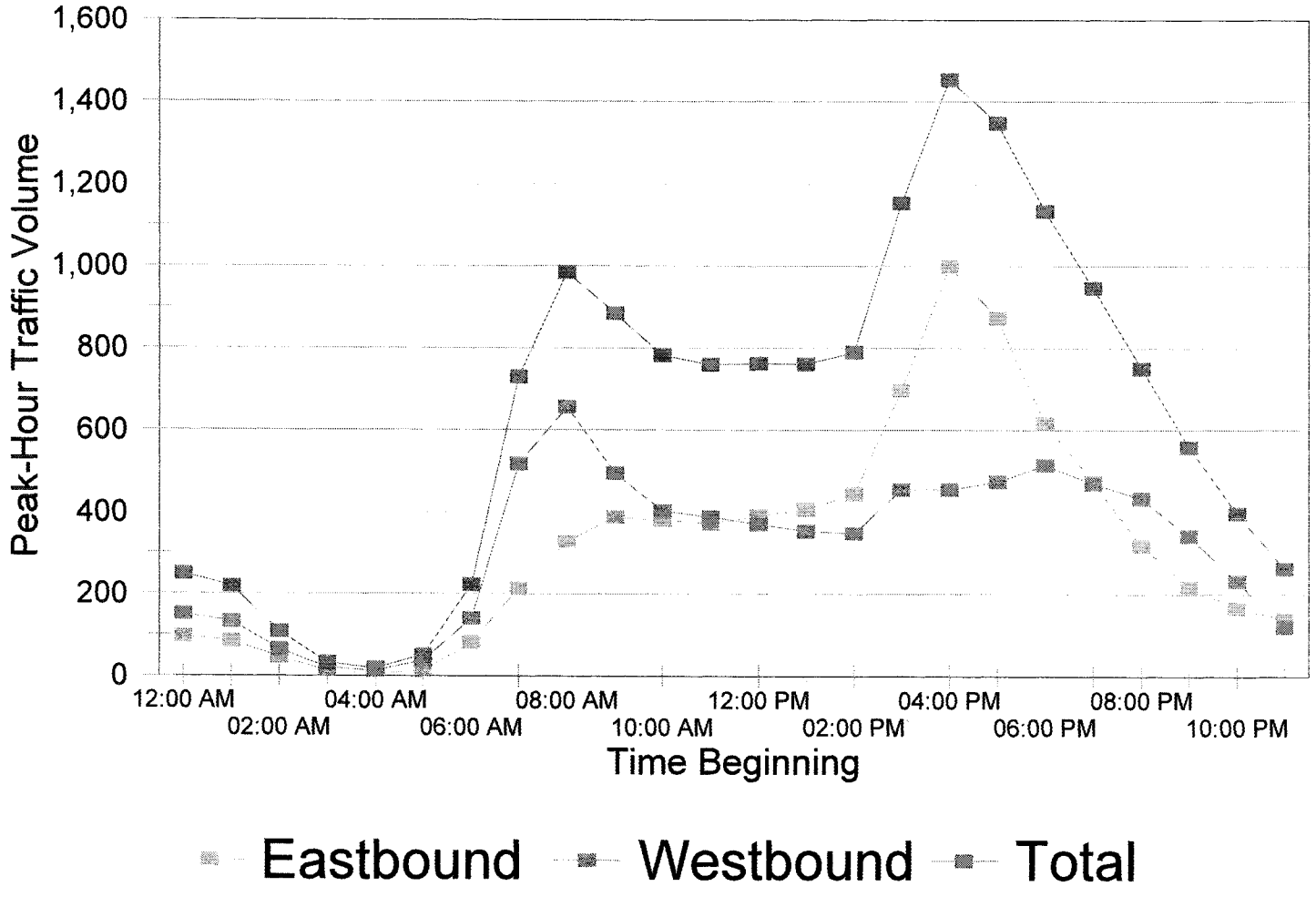
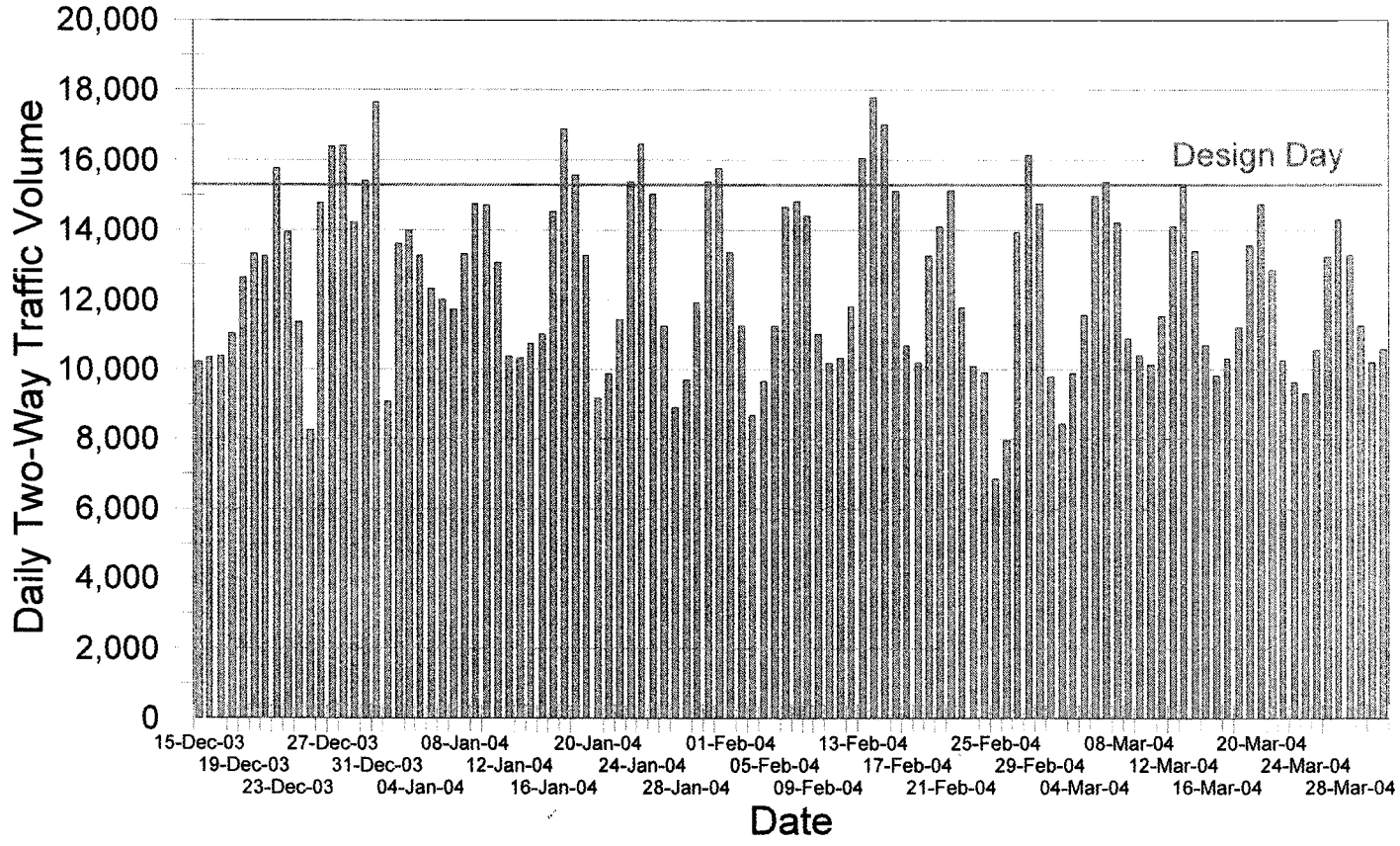


Figure 3: Daily Traffic Volumes Along Main East of Minaret (December 15, 2003 - March 31, 2004)



Mammoth Lakes Transportation Model Validation Report

LSC Transportation Consultants, Inc.
November 11, 2004

INTRODUCTION

The Town of Mammoth Lakes contracted with LSC Transportation Consultants, Inc. to update the travel demand model for the community, which was first developed in 1995. This report documents the methodology used to update the computer-based transportation model for the Town of Mammoth Lakes. The update of the model will allow the Town of Mammoth Lakes to identify the transportation improvements that are needed between now and the year 2024, as part of the General Plan update process.

This report first discusses the study area, existing network, network updates, existing land uses, and trip generation per Traffic Analysis Zone. Next, an in-depth overview of the network validation process is provided for the existing conditions of the loaded network based upon the existing land uses within the study area. The results of the existing conditions model run are also reported for the auto trips and transit trips. More information on modal split will be detailed in later documents and the Final Report.

Overview of the Modeling Process

A transportation demand model is a computerized representation of a transportation system. A model is useful for comparing the impacts of various growth assumptions and for evaluating alternative transportation improvement programs. Although it would also be possible to use growth factors based on the recent trends to project future traffic volumes, a model allows the use of better projections of growth within the region, accounting for subarea development. Computerized transportation models are also the best means by which to evaluate the interchange of traffic between various land uses and to consider the effects of traffic congestion on travel times and driver route choice.

Transportation models, by definition, are representations of travel choices made by individuals across a geographic area, impacting physical structures such as roads, bridges, parking areas, and intersections. Each model should rely on sound behavioral theory of how individuals make travel choices. The structure of choice sequences suggested by the model and the variables used in the model should reflect a logical process of decision-making followed by travelers in deciding when, where, and how to travel.

The travel choices of individuals are most commonly represented in the United States by what is referred to as the "four-step process." These four steps represent the thought processes of the individual. The individual makes four travel decisions, as follows: (1) the decision that a trip is necessary to fulfill some need or purpose (generation), (2) the decision where that need/purpose is best fulfilled (distribution), (3) the decision of which means is best to get there (mode choice), and (4) the decision of which route to take (trip assignment).

Geographic patterns are represented in the model by data considered to be at the heart of individual travel decisions: where people live, where people work, and where people recreate, shop, or otherwise interact. The specific data proposed for use in this project are discussed more fully below.

Land use quantities are represented in a series of Traffic Analysis Zones (TAZs), that together encompass the entire traffic model area. A total of 152 TAZs were defined to encompass the model area. TAZs were generally defined to follow property lines and to accurately reflect vehicular access to/from the roadway network. As discussed in detail below, land use quantities were developed to reflect existing uses within each TAZ.

The physical structures of travel are represented through a combination of links (paths) and nodes (intersections or transfer points). Zone centroids are special types of nodes associated with both the TAZ data mentioned above and the origins and destinations of an individual's trips. The links typically have a travel time associated with them, either explicitly given or inferred from speed and distance information.

As with any representation of a real system, there are associated limitations. To minimize the effects of these limitations, the updated model has been "validated" so that it matches reality for all critical links in the system. In other words, adjustments were made until the modeled traffic volumes approximated existing traffic volumes, often referred to as "ground counts." Once the model was validated, then and only then can the model be used to estimate future travel patterns and volumes.

PREVIOUS PLANS AND STUDIES

The Town of Mammoth Lake's travel demand model was originally prepared in 1995 and subsequently revised in February 1997. The modeling documents prepared in 1995 and 1997 covered such topics as study area, analysis of methodologies, existing conditions, general plan without redevelopment conditions, and general plan with redevelopment conditions. The 1997 model evaluated the transportation impacts associated with the two land use alternatives: build out of the Town General Plan without redevelopment and build out of the Town General Plan with redevelopment. The model results found that build out of the General Plan without redevelopment would result in typical winter Saturday traffic conditions that were within the capacity levels of the transportation system. However, under the General Plan build out with redevelopment, the model found that eight segments moved from a "D or better" level of service to a "failure."

The model's output for the 1997 general plan without redevelopment was as follows:

- Total daily production / attractions 516,044
- Daily vehicle-trips 117,264
- P.M. transit trips 7,187
- Off-peak transit trips 36,524

- Daily transit trips 43,711
- Daily vehicle-miles traveled 215,614
- Daily vehicle-hours traveled 7,086
- PM 10 Emissions (lbs) 17,100

The model's output for the 1997 general plan with redevelopment was as follows:

- Total daily production / attractions 531,782
- Daily vehicle-trips 118,981
- PM transit trips 7,307
- Off-peak transit trips 37,267
- Daily transit trips 44,574
- Daily vehicle-miles traveled 216,220
- Daily vehicle-hours traveled 7,125
- PM 10 Emissions (lbs) 17,200

NETWORK ELEMENT AND EXISTING CONDITIONS

Existing Model and Updates

The first step in updating the Town of Mammoth Lakes' travel demand model was to review the existing model network and Traffic Analysis Zones (TAZ). The model network was last updated in 1997. Thus, a review was warranted to assure the current accuracy of the network input within the modeling process. The LSC team worked with the Town of Mammoth Lakes' planning staff to determine the network revisions required in order to match the current network conditions. The only major network change was the modification to reflect the realignment of Canyon Boulevard in the Village area.

The *Tranplan* software was used as the program platform in the development and operation of the travel demand model for Mammoth Lakes. The code file, input file, and output file were also analyzed in *Tranplan*. The LSC team used the *Viper* software as the interface program for the editing of model files, including editing the network, coding the job stream, and reviewing the output. The land use input files and production and attraction estimates were developed in *Excel* and converted into text files so that they could be read by *Tranplan*.

The existing network includes 152 centroid nodes that correspond to 152 TAZs. All of the socioeconomic and land use data is attached to the centroid nodes. There are 4,761 additional nodes where roadway segments connect to each other at intersections, turns, and access points from the adjacent land use developments (centroid nodes). The nodes are connected by 1,545 links that represent the roadway segments within the network. Each link has corresponding attributes which define the roadway in terms of distance, speed, number of lanes, and segment capacity.

Updating the Network

The parcel map was examined to determine if any of the TAZ boundaries required adjustment based upon recent development patterns that have occurred in the Town of Mammoth Lakes over the past ten years. As a result of this review, the following centroid nodes were deleted per Town direction in order to update the network for the current development patterns:

- 91
- 93
- 94
- 235

The centroid nodes of these TAZs were deleted in order to realign the TAZ boundaries based upon the existing and future development patterns and roadway alignments. All of the above TAZs had to be combined with other TAZs as follows:

- TAZ 90 consists of old TAZ 91, 92, and 235
- TAZ 92 consists of old TAZ 91, 92, and 235
- TAZ 95 consists of old TAZ 94, 95, 96, 210, and 211
- TAZ 96 consists of old TAZ 95, 96, and 211
- TAZ 237 consists of old TAZ 93 and 237

For comparison, the TAZ boundaries used in the 1997 model update may be found in Appendix A, as well as a brief discussion regarding adjustments that were made to the model network. Figure 1 presents the updated TAZ map for Mammoth Lakes, which was used to update the travel demand model.

Capacity

Figure 2 resents the capacity of the Town of Mammoth Lakes' model roadway network. These values are based upon standard values employed by the traffic engineering profession and are consistent with the values used in the previous versions of the model. The roadway with the greatest capacity (25,000 vehicles per day per direction) is US Highway 395. The second highest capacity roadways are Meridian Boulevard and State Highway 203, which are coded to have capacities equal to 7,200 vehicles per day per direction. The third highest capacity roadways are Old Mammoth Road and Minaret Road, which are assumed to have capacities between 4,500 and 7,200 vehicles per day per direction. The remaining roadways are coded to have capacities that are less than 4,500 vehicles per day per direction. Most of the lower capacity roadways are collectors or local streets. The centroid links are shown in gray on Figure 2. The capacity on the centroid links is considered to be unlimited.

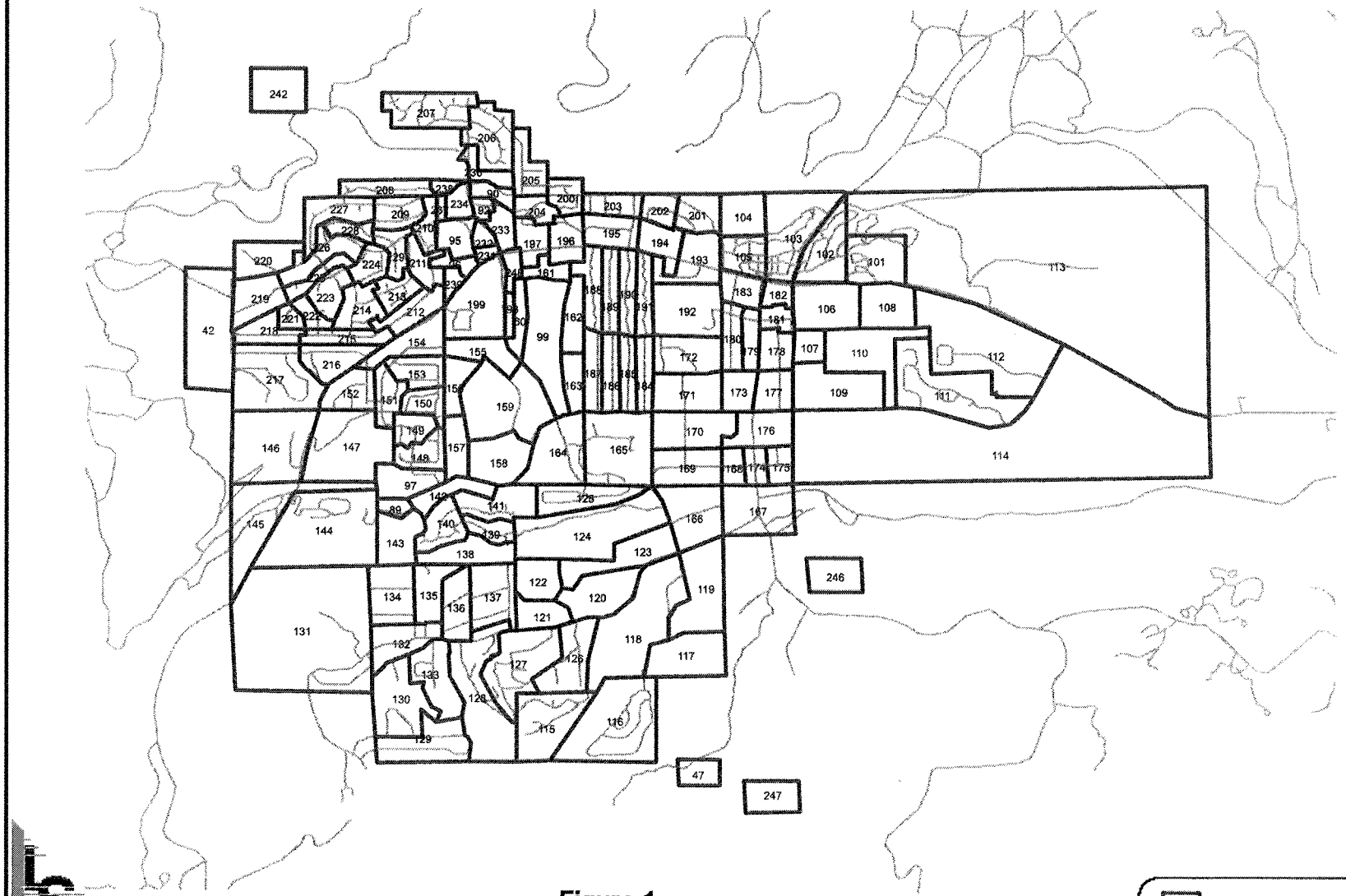


Figure 1
Updated Mammoth Lakes Traffic Analysis Zones

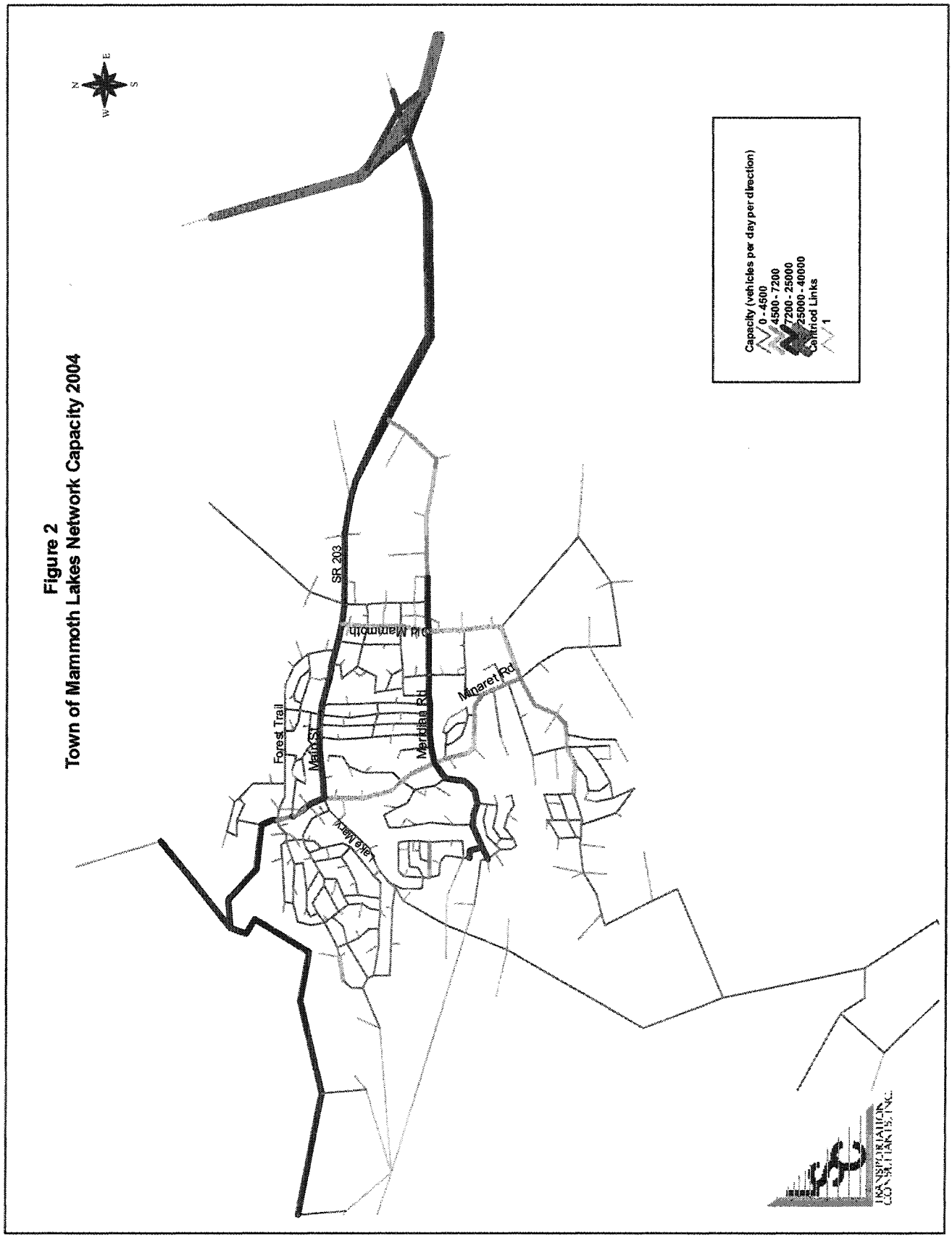


Figure 2
Town of Mammoth Lakes Network Capacity 2004

Transit Network

Figure 3 presents the existing transit network for the Town of Mammoth Lakes. The model's transit network consists of three routes (Blue, Red, and Green) that link together at the Village. In order to model transit, the transit routes shown in Figure 3 were translated into transit paths in the model network, onto which the model can load transit person-trips. The 2004 condition model transit output is detailed below.

Existing Land Use and Trip Generation

One of the most important elements of a travel demand model is the land use data. The land use data drives the trip generation and determines the amount of trips generated by each TAZ or centroid node in the model network. The Town of Mammoth Lakes provided LSC the land use data by TAZ and land use type. Each land use category has a certain trip rate, defined to be the number of daily person trips generated by every unit of land use within a TAZ. This trip rate varies by land use category. There are 24 different land use types used in the Town of Mammoth Lakes traffic model.

Table 1 presents the land use types and daily person trip-end rates. As the table indicates, residential land uses are measured by dwelling units, while retail and commercial land uses are measured by acres. Several of the land uses are considered to be "special generators" and are measured by employees, students, or rooms. A special generator represents a unique land use that creates a significant amount of trips (such as that caused by a school, college, sporting event, or special event).

The total number of trips by land use code was then broken down into the type of trips (produced or attracted) for each of the land use codes. The calculation was done for each of the 152 TAZs in the model. The total number of trips generated by the 2004 land uses was 302,685, which consisted of 152,779 production trips and 149,906 attraction trips. The production and attraction trips for each TAZ were then broken down into the following five trip purposes:

- Home to Recreational Trips
- Home to Shopping Trips
- Home to Work Trips
- Home to Other Trips
- Non-Home Based Other Trips

Table 2 presents the distribution of trips rates by land use codes and by trip purpose. In other words, Table 2 indicates the number of trips that each land use type generates and the percentage of each trip rate that is distributed across the five trip types (purposes), identified above. The calculations are then utilized to generate the total number of person trips by trip purpose. The percentage of each trip is used in the balancing process, which equalizes the total number of production trips and attraction trips. The model can only function accurately if the production and attraction trips are balanced within five percent of each other, which occurred in this model.

FIGURE 3

TOWN OF MAMMOTH LAKE BUS ROUTES

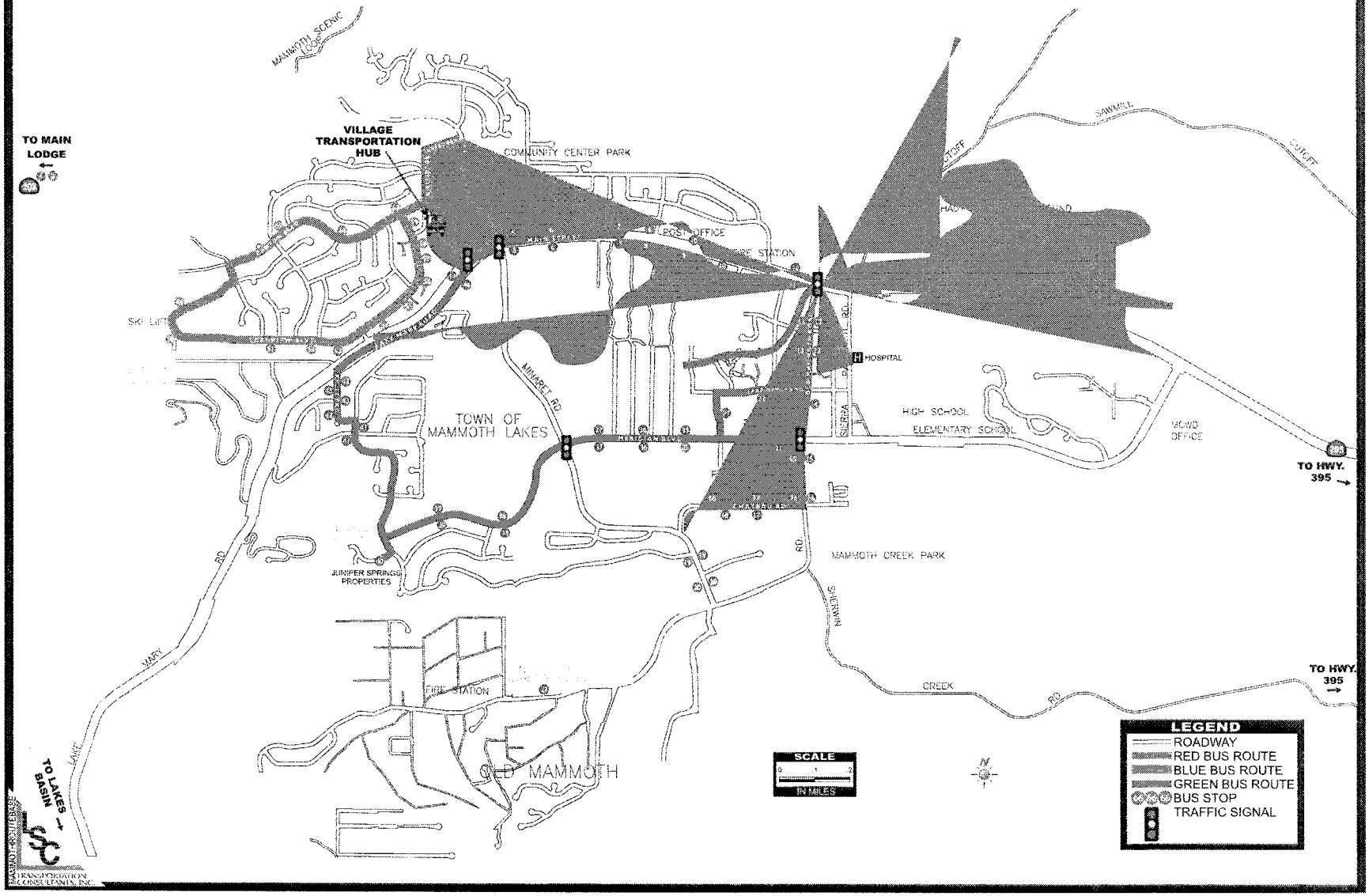


Table 1
Land Use Codes

CODE	DESCRIPTION	UNITS	Daily Vehicle Trip-End Rate
1	Residential Low Density (SF) - Resident	DUs	12.0
2	Residential Medium Density (SF) - Resident	DUs	10.0
3	Residential High Density (MF) - Resident	DUs	8.0
4	Mobile Home Park - Resident	DUs	5.0
5	Residential Low Density (SF) - Visitor	DUs	4.9
6	Residential Medium Density (SF) - Visitor	DUs	4.4
7	Residential High Density (MF) - Visitor	DUs	3.9
10	Lodging (Hotel) - Visitor	Room	8.0
11	Resort Hotel - Visitor	Room	8.0
12	Retail/Commercial & Town Offices	Acres	1220
13	Retail/Commercial	KSF	78.71
21	Light Industrial	Acres	9.0
31	Public School	Acres	33.0
32	High School	Acres	71.0
33	College	Student	56.0
34	Hospital	Bed	9.0
36	Post Office	PRS	0.23
37	Church	Acres	97.0
39	Downhill Skiing-Employees	Employee	5.5
40	Downhill Skiing-Skiers	SAOTS	2.05
41	Cross-country Skiing/Snowmobiling	SAOTS	2.3

Source: Town of Mammoth Lakes, 2004

Table 2
Daily Person Trip-End Production/Attraction Proportions by Trip Purpose

CODE	Land Use Type	Daily Person Trip-End Rate	PRODUCTIONS					ATTRACTION					TOTAL
			H-REC	H-S	H-W	H-O	O-O	H-REC	H-S	H-W	H-O	O-O	
1	Residential Low Density (SF) - Resident	19.00	8.6%	13.0%	17.0%	29.0%	12.3%	0.0%	2.0%	3.0%	9.5%	5.6%	100.0%
2	Residential Medium Density (SF) - Resident	16.00	9.7%	13.0%	17.0%	29.0%	9.0%	0.0%	1.9%	3.0%	9.3%	8.1%	100.0%
3	Residential High Density (MF) - Resident	12.00	10.3%	15.0%	18.0%	29.0%	9.0%	0.0%	4.3%	2.5%	9.0%	2.9%	100.0%
4	Mobile Home Park - Resident	7.00	11.1%	14.0%	20.0%	27.5%	6.5%	0.0%	4.0%	2.0%	8.7%	6.2%	100.0%
5	Residential Low Density (SF) - Visitor	21.00	30.0%	19.0%	0.0%	19.0%	11.7%	2.3%	5.3%	1.1%	5.5%	6.1%	100.0%
6	Residential Medium Density (SF) - Visitor	19.00	30.0%	19.0%	0.0%	19.0%	11.7%	2.3%	4.3%	1.1%	6.5%	6.1%	100.0%
7	Residential High Density (MF) - Visitor	17.00	31.0%	19.0%	0.0%	19.0%	10.4%	2.2%	3.7%	1.2%	6.1%	7.4%	100.0%
10	Lodging (Hotel) - Visitor	16.00	35.1%	18.0%	0.0%	18.5%	8.0%	0.0%	3.5%	1.2%	5.7%	10.0%	100.0%
11	Resort Hotel - Visitor	16.00	35.2%	18.0%	0.0%	18.5%	8.0%	0.0%	4.5%	1.2%	5.7%	8.9%	100.0%
12	Retail/Comm'l & Town Offices (ACRES)	1220.00	0.0%	0.0%	0.0%	0.0%	24.3%	10.0%	22.0%	3.0%	10.0%	30.7%	100.0%
13	Retail/Commercial (1,000 square feet)	78.71	0.0%	0.0%	0.0%	0.0%	24.3%	10.0%	22.0%	3.0%	10.0%	30.7%	100.0%
21	Light Industrial	14.60	0.0%	0.0%	0.0%	0.0%	25.3%	0.0%	0.0%	23.2%	10.9%	40.6%	100.0%
23	Public Utility	0.00	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
31	Public School	71.00	0.0%	0.0%	0.0%	0.0%	7.4%	0.0%	0.0%	2.3%	83.1%	7.2%	100.0%
32	High School	71.00	0.0%	0.0%	0.0%	0.0%	7.4%	0.0%	0.0%	2.3%	83.1%	7.2%	100.0%
33	College	76.00	0.0%	0.0%	0.0%	0.0%	11.6%	0.0%	0.0%	7.1%	78.4%	2.9%	100.0%
34	Hospital	18.00	0.0%	0.0%	0.0%	0.0%	23.0%	0.0%	0.0%	10.4%	44.4%	22.2%	100.0%
36	Post Office	0.501	0.0%	0.0%	0.0%	0.0%	28.5%	0.0%	0.0%	2.9%	39.0%	29.6%	100.0%
37	Church	182.00	0.0%	0.0%	0.0%	0.0%	21.1%	0.0%	0.0%	0.0%	43.8%	35.1%	100.0%
39	Downhill Skiing-Employees	6.10	0.0%	0.0%	0.0%	0.0%	31.0%	0.0%	0.0%	30.0%	8.0%	31.0%	100.0%
40	Downhill Skiing-Skiers	2.30	0.0%	0.0%	0.0%	0.0%	13.0%	75.0%	0.0%	0.0%	2.0%	10.0%	100.0%
41	Cross-country Skiing/Snowmobiling	2.50	0.0%	0.0%	0.0%	0.0%	14.0%	73.0%	0.0%	4.0%	1.0%	8.0%	100.0%

KEY
H-REC = Home to Recreational
H-S = Home to School
H-W = Home to Work
H-O = Home to Other
O-O = Other to Other Non-Home Based

Source: Town of Mammoth Lakes, LSC 2004

Table 3 presents the number of trips by trip purpose for both production and attraction totals. A breakdown of trips by TAZ is contained in Appendix B. The greatest number of trips are generated as "non-home based other to other trips." In fact, 92,264 daily person "other to other" trips were generated out of the 302,685 total trips, which equates to 30 percent of the total trip generation. The next greatest trip purpose was "home to recreational trips," for which 76,420 daily person trips were generated. The smallest portion of trips were "home to work" trips, which comprised only 5 percent of the total daily person trips generated by the model area. These totals do not include external station trip production and attraction from locations along US Highway 395. The external stations add 26,120 daily person trips, which results in a total daily person trip generation of 328,805. The trip purpose totals represent the person-trip travel volumes that are traveling to and from the TAZs within the Town of Mammoth Lakes on a typical winter Saturday.

Table 3
Trip Purpose

Trips Purpose	Production	Attraction	Total
Home Based Recreational	38,307	38,113	76,420
Home Based Shopping	26,489	25,405	51,894
Home Based Work	8,101	7,885	15,986
Home Based Other	33,558	32,563	66,121
Non-Home Based Other	46,324	45,940	92,264
Total	**152,779**	**149,906**	**302,685**

Source: LSC 2004

The information discussed above provides the foundation for the modeling process. At this point in the update process, there has been significant review and analysis of the input data (land use types by TAZ) provided by the Town of Mammoth. Each of the iterations was discounted due to changes in the land use input data by the Town of Mammoth Lakes and the LSC team. Once the correct land used data was developed the information was used in the final model run. This information is presented in the above tables.

Once a loaded network (model run) was found to be based upon acceptable land use data, the validation process was conducted. The validation process that the LSC team conducted in order to obtain a model that functioned as close as possible to the actual travel patterns is described later in this memorandum.

2004 Model Results

The first section below reviews the points or traffic counts that the LSC team utilized to validate the model to the existing transportation system conditions. The next section below reviews the overall results of the validation run for the base transportation system model.

Traffic Counts

A crucial step in development of a traffic model is collecting and refining a comprehensive set of existing design volumes. The existing Town of Mammoth Lakes Transportation Demand Model is based upon a typical winter Saturday PM peak-hour design period. Developing appropriate design volumes is a relatively involved step in Mammoth Lakes due to the substantial day-to-day variations in traffic activity associated with visitor traffic. For analysis it is therefore necessary to adjust the counts conducted on various days to reflect a consistent design period. Existing winter 2004 design volumes for the study were developed in the following steps:

1. Available count data was gathered from three key sources: Caltrans, the Town of Mammoth Lakes, LSA Associates, Inc, and LSC Transportation Consultants, Inc.

2. Caltrans hourly count data along SR 203 (Main Street) at the permanent count location immediately east of Minaret Road was tabulated for each Saturday between December 15, 2004 and March 31, 2004. The peak-hour volumes occurring on each Saturday were averaged to establish the average winter Saturday PM peak-hour design volume.

3. The link volume counts at all the count locations were adjusted to represent the average winter Saturday PM peak-hour design volume. This adjustment was largely made based upon hourly Caltrans counts conducted on SR 203 immediately east of Minaret Road. The ratio of the design day peak-hour volume to the peak-hour volume observed on the day of the individual intersection counts was then used to factor the observed intersection count data. For instance, if the traffic volume on SR 203 on the day of a specific intersection count was exceeded by the SR 203 design volume by 20 percent, the intersection volumes were increased by a factor of 1.2. Extensive count data along SR 203 in 2003 was not available. Therefore, the 2003 counts were adjusted using the factor for a similar type of day (for example, the third Saturday in March) in 2004. No growth rate was applied to the 2003 count data, as a comparison of 2003 and 2004 count data along SR 203 indicates no significant growth.

4. Finally, the adjusted volumes were compared to Caltrans count data and the link volumes at nearby intersections to check for reasonableness.

Table 4 presents the locations, dates, and traffic counts during the model peak design period (which is defined as the afternoon and evening hours on Saturdays during the

Table 4
Summary of Mammoth Lakes Traffic Data

#	Location	Source of Data	Count	Week	Unadjusted PM Peak-Hour Volumes NB/EB	SB/WB	Total	ADT Volumes	Design PM Peak-Hour Volumes NB/EB	SB/WB	Total
1	SR 203 Immediately East of Minaret Road	Caltrans	03/06/04	Saturday	998	456	1,454	15,362	1,001	458	1,459
2	SR 203 Immediately West of Old Mammoth Road	Caltrans	03/06/04	Saturday	955	589	1,544	17,546	958	591	1,549
3	SR 203 Immediately West of Meridian Boulevard	Caltrans	03/06/04	Saturday	324	311	635	6,917	325	312	637
4	SR 203 Immediately West of US 395	Caltrans	03/06/04	Saturday	375	370	745	7,728	376	371	747
5	Old Mammoth Road Immediately North of Meridian Blvd.	LSA	02/22/03	Saturday	458	664	1,122	NA	495	718	1,213
6	Old Mammoth Road Immediately South of Meridian Blvd.	LSA	02/22/03	Saturday	369	544	913	NA	399	588	987
7	Meridian Boulevard Immediately East of Old Mammoth Road	LSA	02/22/03	Saturday	404	281	685	NA	437	304	741
8	Meridian Boulevard Immediately West of Old Mammoth Road	LSA	02/22/03	Saturday	356	264	620	NA	385	285	670
9	Minaret Road Immediately North of Meridian Blvd.	LSA	02/22/03	Saturday	302	461	763	NA	327	498	825
10	Minaret Road Immediately South of Meridian Blvd.	LSA	02/22/03	Saturday	99	246	345	NA	107	266	373
11	Meridian Boulevard Immediately East of Minaret Road	LSA	02/22/03	Saturday	486	255	741	NA	525	276	801
12	Meridian Boulevard Immediately West of Minaret Road	LSA	02/22/03	Saturday	418	208	626	NA	452	225	677
13	Minaret Road Immediately North of Lake Mary Road	LSA	02/22/03	Saturday	263	872	1,135	NA	284	943	1,227
14	Minaret Road Immediately South of Main Street	LSA	02/22/03	Saturday	311	503	814	NA	336	544	880
15	Main Street Immediately East of Minaret Road	LSA	02/22/03	Saturday	1,048	478	1,526	NA	1,133	517	1,650
16	Lake Mary Road Immediately West of Minaret Road	LSA	02/22/03	Saturday	690	537	1,227	NA	746	581	1,327
17	Old Mammoth Road Immediately South of Main Street	LSA	02/22/03	Saturday	417	776	1,193	NA	451	839	1,290
18	Main Street Immediately East of Old Mammoth Road	LSA	02/22/03	Saturday	496	374	870	NA	536	404	940
19	Main Street Immediately West of Old Mammoth Road	LSA	02/22/03	Saturday	1,052	571	1,623	NA	1,137	617	1,754
20	Minaret Road Immediately North of Old Mammoth Road	LSA	02/22/03	Saturday	121	323	444	NA	131	349	480
21	Minaret Road Immediately South of Old Mammoth Road	LSA	02/22/03	Saturday	28	61	89	NA	30	66	96
22	Old Mammoth Road Immediately East of Minaret Road	LSA	02/22/03	Saturday	239	194	433	NA	258	210	468
23	Old Mammoth Road Immediately West of Minaret Road	LSA	02/22/03	Saturday	169	303	472	NA	183	328	511
24	Sierra Park Road North of Meridian Boulevard	LSA	02/22/03	Saturday	22	28	50	NA	24	30	54
25	Meridian Boulevard Immediately East of Sierra Park Road	LSA	02/22/03	Saturday	99	74	173	NA	107	80	187
26	Meridian Boulevard Immediately West of Sierra Park Road	LSA	02/22/03	Saturday	112	93	205	NA	121	101	222
27	Mountain Boulevard Immediately North of Main Street	LSA	02/22/03	Saturday	69	83	152	NA	75	90	165
28	Mountain Boulevard Immediately South of Main Street	LSA	02/22/03	Saturday	15	71	86	NA	16	77	93
29	Main Street Immediately East of Mountain Boulevard	LSA	02/22/03	Saturday	1,223	547	1,770	NA	1,322	591	1,913
30	Main Street Immediately West of Mountain Boulevard	LSA	02/22/03	Saturday	1,239	557	1,796	NA	1,340	602	1,942
31	Canyon Boulevard Immediately East of Lakeview Boulevard	Town of Mammoth Lakes	02/23/02	Saturday	NA	NA	443	4,765	NA	NA	493
32	Forest Trail Immediately East of Minaret Road	Town of Mammoth Lakes	03/06/04	Saturday	24	82	106	716	24	82	106
33	Forest Trail Immediately East of Pinecrest Avenue	Town of Mammoth Lakes	03/06/04	Saturday	27	86	113	836	27	86	113
34	Bemer Street Immediately East of Minaret	Town of Mammoth Lakes	03/06/04	Saturday	18	24	42	438	18	24	42
35	Hillside Immediately West of Forest Trail	Town of Mammoth Lakes	03/05/04	Friday	18	24	42	438	20	26	46
36	Laurel Mountain Road Immediately South of Main Street	LSC	02/22/03	Saturday	123	230	353	NA	133	249	382
37	Main Street Immediately West of Laurel Mountain Road	LSC	02/22/03	Saturday	1,182	668	1,850	NA	1,278	722	2,000
38	Main Street Immediately East of Laurel Mountain Road	LSC	02/22/03	Saturday	623	1,030	1,653	NA	674	1,114	1,787
39	Forest Trail Immediately North of Main Street	LSC	02/22/03	Saturday	110	178	288	NA	119	192	311
40	Main Street Immediately East of Forest Trail	LSC	02/22/03	Saturday	1,321	771	2,092	NA	1,428	834	2,262
41	Main Street Immediately West of Forest Trail	LSC	02/22/03	Saturday	1,202	720	1,922	NA	1,300	778	2,078
42	Center Street Immediately South of Main Street	LSC	02/22/03	Saturday	111	124	235	NA	120	134	254
43	Main Street Immediately East of Center Street	LSC	02/22/03	Saturday	1,017	654	1,671	NA	1,100	707	1,807
44	Main Street Immediately West of Center Street	LSC	02/22/03	Saturday	1,087	682	1,769	NA	1,175	737	1,913
45	Sierra Street North of Main Street	LSC	02/22/03	Saturday	75	68	143	NA	81	74	155

NA = Not Available

winter months). The last column on the right-hand side of Table 4 contains the counts used in the validation of the model. Figure 4 indicates the traffic count locations throughout the Town of Mammoth Lakes study area.

Transit Baseline

Based upon the information provided by the Town of Mammoth Lakes, the total number of daily one-way transit passenger-trips occurring in Mammoth on a typical winter Saturday is 13,118. The transit route trip totals were utilized in the validation of the transit/ modal choice portion of the travel demand model. The total number of daily trips assigned by the model onto each transit route is as follows:

- Red Route 6,774
- Blue Route 4,303
- Green / Yellow Route 1,686
- Night Routes 355

VALIDATION PROCESS

To validate the model, the results of the model traffic assignments were compared to the observed traffic volumes presented in Table 4. The approach to the validation process is to conduct a point validation analysis. Point validation represents a higher standard for calibration than is typically used. Not only are overall flows of traffic volumes compared, but also site-specific volumes. A calibrated model should provide results which are reasonably close for major links in the street network. Table 5 shows the two-way volume error range which was used in validating the model. For low-volume links, a larger error range is acceptable because of the lack of congestion. A difference of 100 percent for volumes less than 100 vehicles per hour has little effect on congestion because less roadway capacity is being used. For higher volume roadways, the percentage error must be much smaller.

During the validation process, seven model runs were made and evaluated. The sixth model run identified 19 links with non-validating traffic counts. The non-validating links were then adjusted by changing the link impedance. These adjustments are detailed below.

Lines of Code

Table 6 presents the changes that the LSC team made in the coding of the travel demand model. In order to have the model accurately represent the actual travel patterns of the Town of Mammoth Lakes, the LSC team made adjustments to the impedances of the model network. The LSC team adjusted the travel time of certain links in order to have the model assignment more closely match the actual traffic counts. The section below shows the lines of code that were used in the model to improve the model's representation of the travel patterns. Each link adjustment is made up of two lines of code – one for each direction of the link. In order to identify all of the links that needed to be adjusted, 92 model runs were conducted.

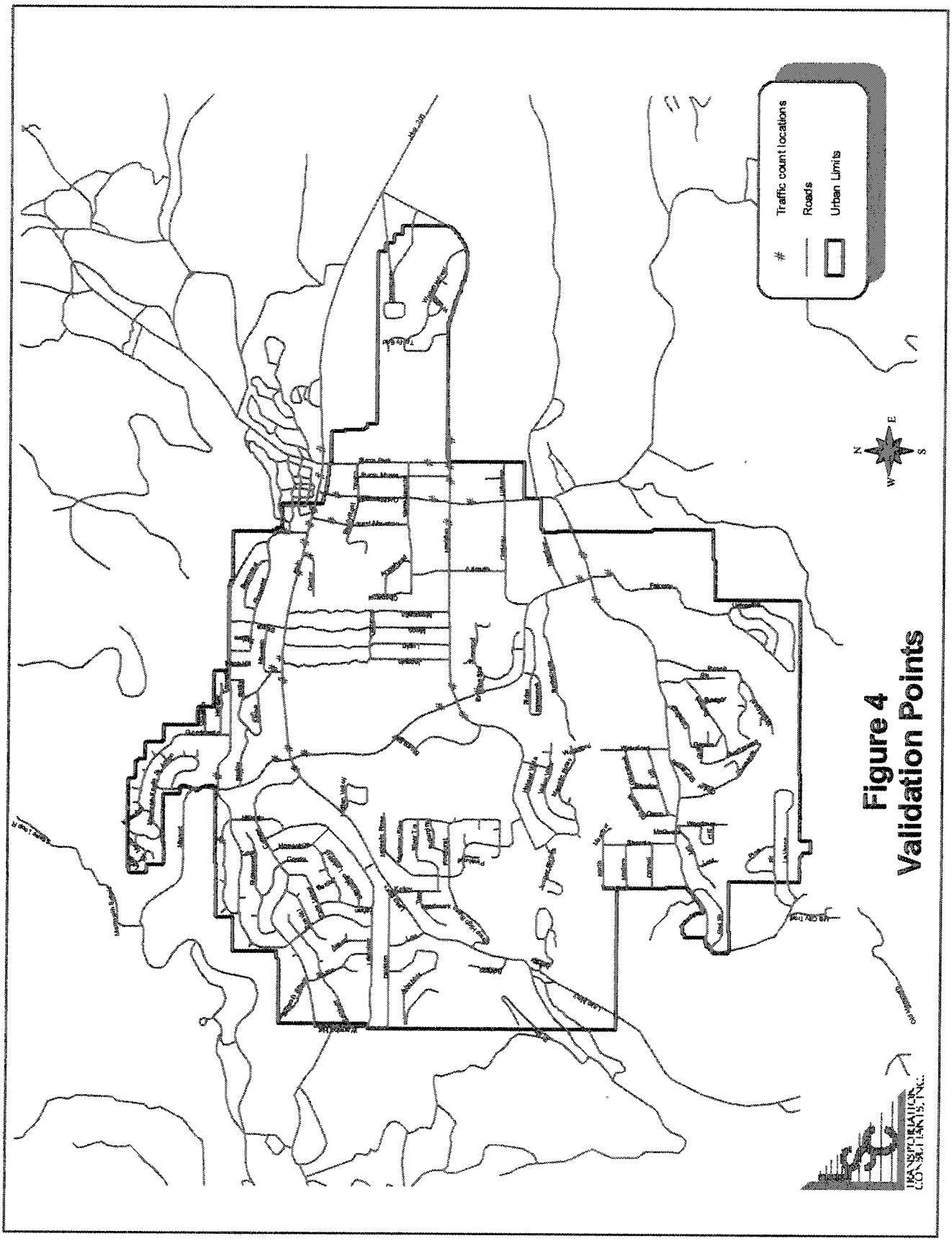


Figure 4
Validation Points

Table 5 Point Validation Error Range	
Peak-Hour Two-Way Traffic Volumes	**Error Range + (-)**
<100	100%
100-399	50%
400-999	25%
1,000-1,500	15%
>1,500	10%

Table 6

Validation Coding

Node A	Node B	New Time
2264	2273	60
2273	2310	60
2310	2366	60
2362	2366	60
2342	2362	60
2342	2343	60
2343	2346	60
2346	2347	83
2348	2347	60
2349	2348	20
2350	2349	60
2352	2350	60
2184	2210	30
2179	2201	30
2170	2192	40
2163	2220	0.5
2349	2367	30
2121	2130	85
2137	2364	100
2179	2201	26
2439	2450	20
2450	2458	200
2433	2450	90
2321	2347	100
2041	2056	30
2107	2139	12
2115	2139	70
2131	2139	7
2458	2473	200
2473	2493	200
2107	2153	10
2181	2194	20
2174	2194	60
2151	5005	85
2170	2179	43
2028	2030	110
2124	2364	75
2042	2043	20
2040	2041	46
2168	2170	15
2041	2056	35
2364	2375	25
2151	5004	25
2151	5003	12
2319	2364	20
2240	2249	5
2153	2168	30
2163	2168	5
2143	2190	19
2163	2190	30
2302	2325	10
2131	2141	25
2143	2152	25
2232	2240	5

Source: LSC 2004

Once adjustments were made to the lines of code in the model, the model traffic volumes more closely matched the traffic counts in Table 4. Table 7 presents the final traffic counts and model volumes, which verify that the LSC team has validated the auto trips for the travel demand model for the Town of Mammoth Lakes.

Friction Factors

The last step involved running the validated model in order to generate the transit person-trip estimates. In order to validate the transit portion of the model, the LSC team adjusted the friction factor of the S Curves within the run-stream (model code). The friction factor affects the distance that a transit user would be allowed to travel on the transit system. By reducing the friction factor, the final 2004 condition model run generated the following output for transit trips:

- Red Route 8,312
- Blue Route 2,993
- Green / Yellow Route 2,129

The total number of daily person trips generated by the 2004 condition model on transit was 13,434 trips. The difference between the model-generated transit ridership and the actual transit ridership is 316 trips, or less than a 2.4 percent difference.

VALIDATION MODEL RESULTS

Once the model was run with the validation lines of code entered into the run-stream, the model generated several files. The output from the run was a 24-hour traffic volume loaded network and a PM peak-hour loaded network. Details of the output from the validation model run are contained in Appendix C, which provides a line-by-line output of the *Tranplan* result directly from the run-stream code. The following is a summary of the model results:

- Total Trips 70,563
- Daily Vehicle-Miles Traveled (VMT) 620,286
- Daily Vehicle-Hours Traveled (VHT) 17,112
- Average Vehicle Speed (mph) 36.25
- Congestion Index (no units) .2199

The above results are a key base line for comparison of the different transportation scenarios. When the number of trips is divided into the VMT, the average trip distance is 8.79 miles. When the number of trips is divided into the VHT, the average trip time is 14.5 minutes. The congestion index can be used to determine the level of congestion across the entire transportation network. Figure 5 presents the level of congestion of the loaded network based upon the existing base-year land use input data. The network roadways that are shown in red (in Figure 5) are the links that are at or over 100 percent traffic volume capacity.

Table 7
Validation Model Counts

Location	Observed PM Peak-Hour Two-Way Volumes	Model-Generated PM Peak-Hour Two-Way Volumes	Acceptable Range	
			Min	Max
SR 203 Immediately West of US 395	747	890	934	560
Old Mammoth Road Immediately North of Meridian Blvd.	1,178	1286	1,355	1,001
Meridian Boulevard Immediately East of Old Mammoth Road	719	857	899	539
Meridian Boulevard Immediately West of Old Mammoth Road	651	798	814	488
Minaret Road Immediately North of Meridian Blvd.	801	751	1,001	601
Minaret Road Immediately South of Meridian Blvd.	362	496	543	181
Meridian Boulevard Immediately East of Minaret Road	778	768	973	584
Meridian Boulevard Immediately West of Minaret Road	657	809	821	493
Minaret Road Immediately North of Lake Mary Road	1,191	1,314	1,370	1,012
Minaret Road Immediately South of Main Street	854	821	1,068	641
Lake Mary Road Immediately West of Minaret Road	1,288	1,352	1,481	1,095
Old Mammoth Road Immediately South of Main Street	1,253	1,307	1,441	1,065
Main Street Immediately East of Old Mammoth Road	914	961	1,143	686
Main Street Immediately West of Old Mammoth Road	1,703	1,717	1,873	1,533
Minaret Road Immediately North of Old Mammoth Road	466	379	583	350
Fairway Road Immediately South of Old Mammoth Road	93	148	186	0
Old Mammoth Road Immediately East of Minaret Road	455	366	569	341
Old Mammoth Road Immediately West of Minaret Road	495	490	619	371
Sierra Park Road North of Meridian Boulevard	52	9	104	0
Meridian Boulevard Immediately East of Sierra Park Road	182	273	273	91
Meridian Boulevard Immediately West of Sierra Park Road	216	265	324	108
Mountain Boulevard Immediately North of Main Street	159	177	239	80
Main Street Immediately East of Mountain Boulevard	1,858	1,754	2,044	1,672
Main Street Immediately West of Mountain Boulevard	1,886	1,824	2,075	1,697
Canyon Boulevard Immediately East of Lakeview Boulevard	465	367	581	349
Forest Trail Immediately East of Minaret Road	106	67	159	53
Forest Trail Immediately East of Pinecrest Avenue	113	114	170	57
Berner Street Immediately East of Minaret	42	62	84	0
Hillside Immediately West of Forest Trail	46	83	92	0
Laurel Mountain Road Immediately South of Main Street	371	288	557	186
Main Street Immediately West of Laurel Mountain Road	1,942	2,008	2,136	1,748
Main Street Immediately East of Laurel Mountain Road	1,735	1,717	1,909	1,562
Forest Trail Immediately North of Main Street	302	422	453	151
Main Street Immediately East of Forest Trail	2,196	2,005	2,416	1,976
Main Street Immediately East of Center Street	1,754	1,615	1,929	1,579
Sierra Street North of Main Street	150	94	225	75

Source: LSC 2004

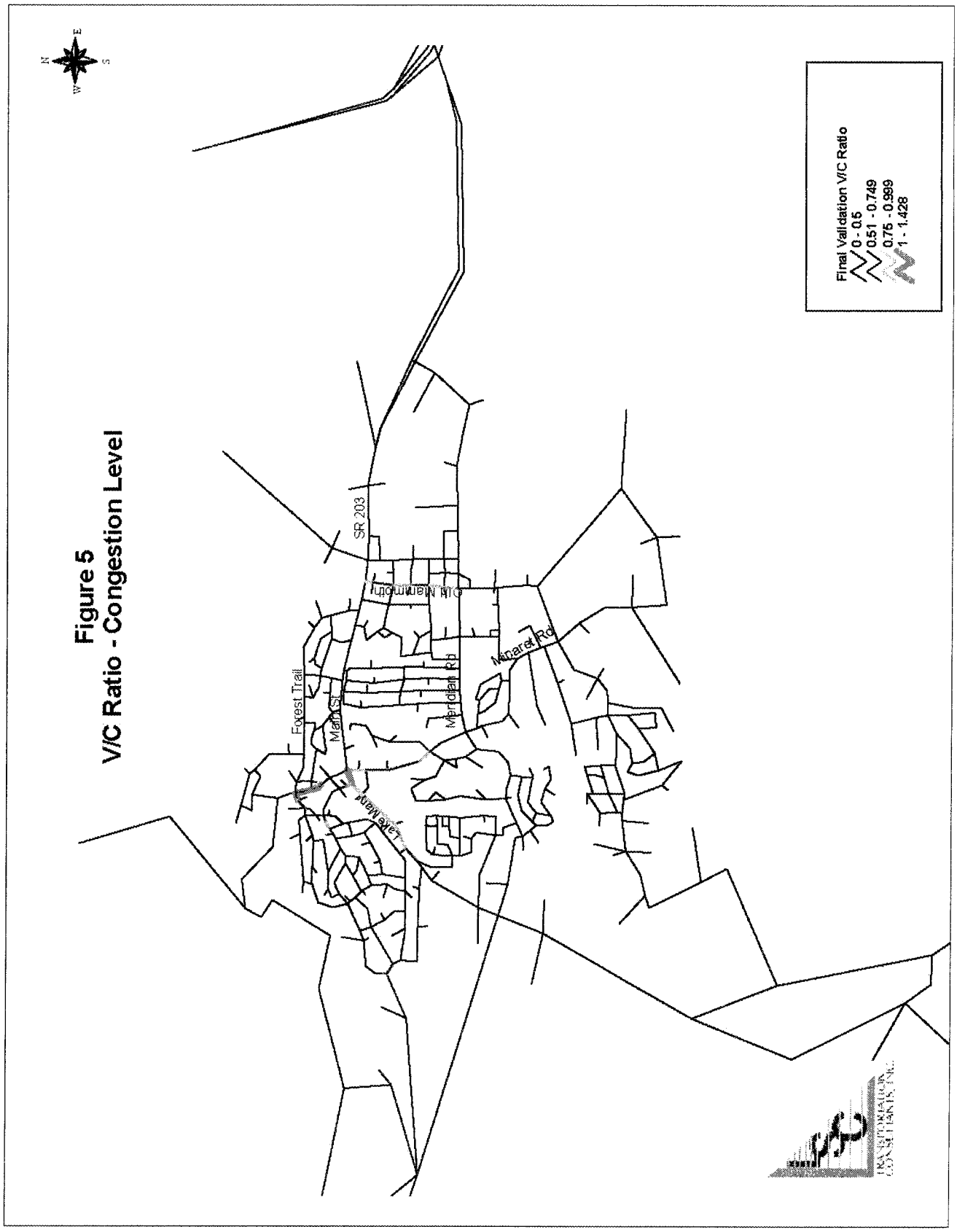


Figure 5
V/C Ratio - Congestion Level
Final Validation V/C Ratio
0 - 0.5
0.51 - 0.749
0.75 - 0.999
1 - 1.428
SR 203
Old Mammoth Rd
Meridian Rd
Minaret Rd
Main St
Forest Trail
Main St
Lake Mary

Figure 6 presents the traffic volume along all the network links as compared to each other. As the traffic volume increases on a link, the bandwidth or thickness of the link increases. Hence, the greater the bandwidth, the greater the volume on the link. The bandwidth graphically reflects the travel patterns on the transportation system. As Figure 6 indicates, most traffic uses Main Street, Meridian Boulevard, Old Mammoth Road, and Minaret Road.

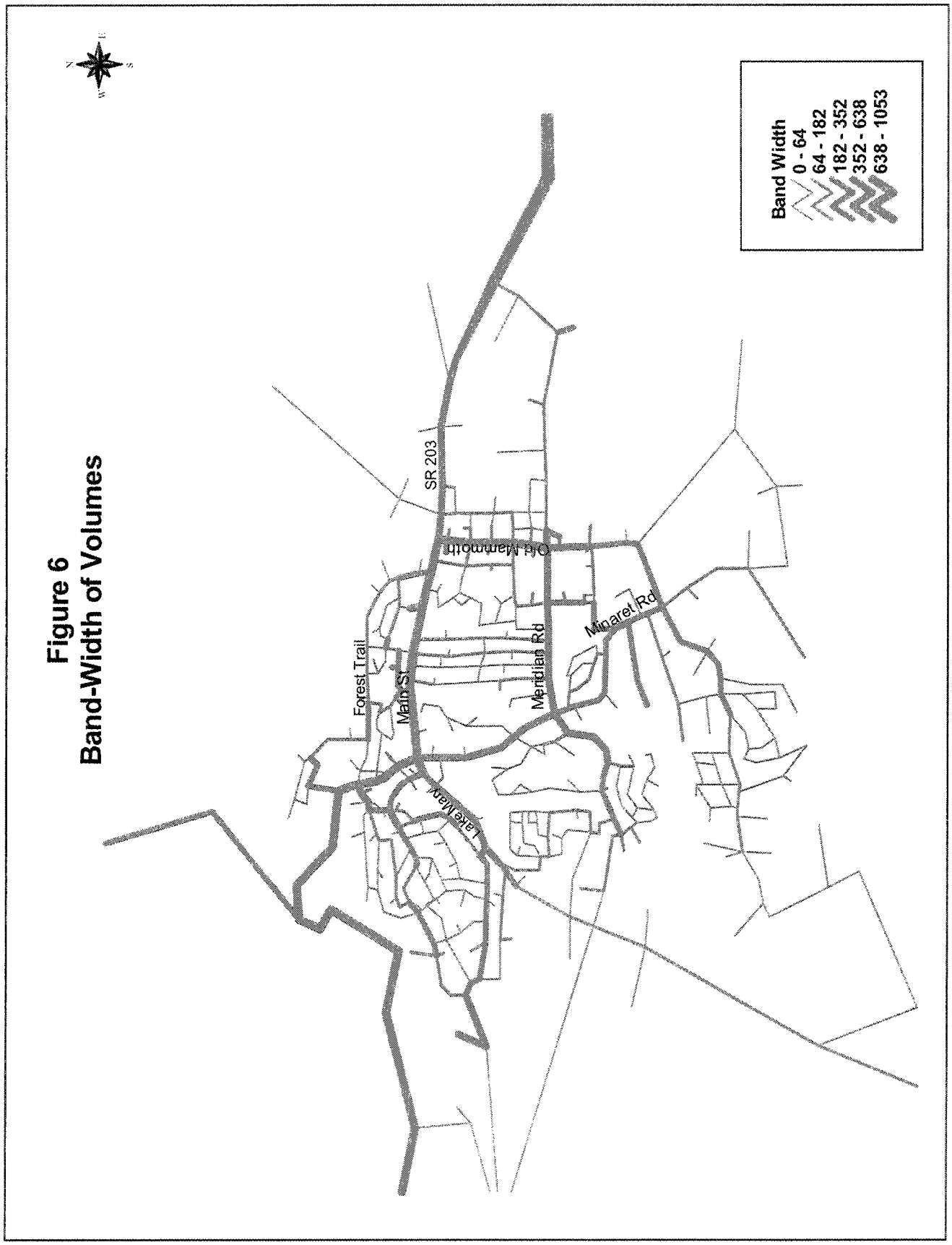


Figure 6
Band-Width of Volumes

Appendix A

Model Update Adjustments

The following adjustments were made in order to match the model network to the actual roadway system:

1. Add centroid link from TAZ 234 to node 2072
2. Move centroid 198 to the eastside of Minaret Road
3. Move centroid 160 south along Minaret Road
4. Realign Canyon Road so that it links with Lake Mary Road at node 2162, rather than Minaret Road

Appendix B

2004 Model Production and Attraction Data

		Trip Type				
Production	TAZ	Home-Rec	Home Shopping	Home-Work	Home Other	Non-Home-Other
GP	2	0	0	0	0	525
GP	3	503	165	600	1700	995
GP	4	1250	335	600	1800	2237
GP	5	0	0	0	0	277
GP	42	0	0	0	0	1991
GP	47	0	0	0	0	0
GP	89	943	593	0	593	316
GP	90	0	0	0	0	0
GP	91	0	0	0	0	0
GP	92	0	0	0	0	38
GP	93	0	0	0	0	0
GP	94	0	0	0	0	0
GP	95	0	0	0	0	515
GP	96	0	0	0	0	0
GP	97	0	0	0	0	482
GP	98	62	80	111	162	520
GP	99	0	0	0	0	0
GP	106	985	620	0	620	446
GP	107	0	0	0	0	406
GP	109	0	0	0	0	163
GP	110	0	0	0	0	131
GP	111	173	193	204	385	146
GP	112	0	0	0	0	203
GP	114	0	0	0	0	897
GP	115	144	115	48	160	82
GP	116	1113	788	163	942	484
GP	117	0	0	0	0	0
GP	118	0	0	0	0	0
GP	119	0	0	0	0	0
GP	120	0	0	0	0	0
GP	121	109	146	190	325	101
GP	122	826	580	109	682	355
GP	124	1522	1064	190	1244	652
GP	125	200	151	52	199	94
GP	126	183	185	160	308	229
GP	127	161	136	80	204	87
GP	128	142	130	89	214	94
GP	129	79	66	32	96	48
GP	130	26	28	26	52	24
GP	131	89	80	52	129	62
GP	132	92	74	32	104	53
GP	133	73	60	39	97	44
GP	134	26	40	52	88	37
GP	135	13	20	26	44	19
GP	136	97	76	36	109	53
GP	137	138	121	74	191	89
GP	138	0	0	0	0	0
GP	139	115	83	22	104	52
GP	140	425	340	165	485	199

GP	141	210	154	46	195	93
GP	142	950	643	95	717	348
GP	143	588	376	14	388	202
GP	144	79	83	79	157	55
GP	145	0	0	0	0	0
GP	146	179	137	52	178	77
GP	148	209	147	27	172	90
GP	149	92	76	41	114	48
GP	150	155	121	52	170	76
GP	151	96	89	68	153	58
GP	152	419	324	129	433	188
GP	153	148	120	60	176	76
GP	154	355	296	154	418	169
GP	155	0	0	0	0	0
GP	156	0	0	0	0	0
GP	157	242	152	0	152	81
GP	158	195	127	9	133	68
GP	159	0	0	0	0	105
GP	160	0	0	0	0	0
GP	161	41	59	71	115	36
GP	162	0	0	0	0	0
GP	163	0	0	0	0	0
GP	164	11	17	23	39	16
GP	165	169	111	4	114	64
GP	166	108	139	151	257	83
GP	168	406	286	65	336	156
GP	169	744	517	104	598	282
GP	170	875	641	205	794	347
GP	171	1251	889	216	1057	486
GP	172	396	320	149	436	179
GP	173	870	630	175	766	346
GP	174	270	138	0	142	1247
GP	175	131	145	130	246	976
GP	176	0	0	0	0	3854
GP	177	37	54	65	104	2108
GP	178	925	628	97	704	340
GP	179	899	461	0	474	1391
GP	180	467	358	130	459	799
GP	181	37	54	65	104	922
GP	182	417	225	22	248	992
GP	183	37	54	65	104	1811
GP	184	137	148	138	264	90
GP	185	186	152	77	216	87
GP	186	144	148	132	263	91
GP	187	380	340	216	515	198
GP	188	128	133	114	225	79
GP	189	147	137	100	220	81
GP	190	168	159	119	258	94
GP	191	143	139	111	233	83
GP	192	60	72	74	142	63
GP	193	180	92	0	95	41
GP	194	421	216	0	222	4710

GP	195	2067	1118	108	1231	1104
GP	196	339	191	32	221	682
GP	197	648	400	35	430	508
GP	198	7	11	13	21	6
GP	199	365	277	107	370	461
GP	200	104	81	33	111	51
GP	201	147	118	57	172	75
GP	202	85	79	60	135	52
GP	203	185	165	114	273	107
GP	204	67	82	98	174	56
GP	205	160	132	71	198	84
GP	206	305	248	125	365	157
GP	207	291	236	120	349	150
GP	208	186	144	57	197	90
GP	209	196	144	44	185	90
GP	210	171	125	40	158	70
GP	211	510	381	127	480	210
GP	212	575	485	259	686	273
GP	213	123	105	65	167	68
GP	214	120	101	60	158	65
GP	215	490	366	122	463	205
GP	216	431	317	97	398	185
GP	217	628	493	217	696	320
GP	218	828	543	48	582	293
GP	219	1516	948	26	970	500
GP	220	913	593	39	623	318
GP	221	103	71	11	82	44
GP	222	153	107	19	125	66
GP	223	116	93	44	134	59
GP	224	174	127	35	160	79
GP	225	204	143	27	169	88
GP	226	109	103	82	180	68
GP	227	188	141	49	187	88
GP	228	116	88	33	119	55
GP	229	125	100	49	147	64
GP	230	183	135	43	169	75
GP	231	0	0	0	0	593
GP	232	228	154	22	171	227
GP	233	394	202	0	207	1000
GP	234	935	478	0	491	1360
GP	235	0	0	0	0	0
GP	236	0	0	0	0	38
GP	237	0	0	0	0	0
GP	238	188	135	35	162	83
GP	239	0	0	0	0	0
GP	240	0	0	0	0	0
GP	241	0	0	0	0	0
GP	242	1200	613	0	630	3595
GP	244	0	0	0	0	0
GP	246	0	0	0	0	0
GP	247	0	0	0	0	0

		Trip Type				
Attraction	TAZ	Home-Rec	Home Shopping	Home-Work	Home Other	Non-Home-Other
GA	2	2564	0	167	31	314
GA	3	717	53	42	1837	1058
GA	4	1353	481	62	2756	2352
GA	5	1353	0	88	16	166
GA	42	8867	0	439	354	1636
GA	47	0	0	0	0	0
GA	89	67	97	37	170	225
GA	90	0	0	0	0	0
GA	91	0	0	0	0	0
GA	92	16	35	5	16	48
GA	93	0	0	0	0	0
GA	94	0	0	0	0	0
GA	95	2294	0	113	91	423
GA	96	0	0	0	0	0
GA	97	2105	0	113	86	398
GA	98	197	453	72	248	643
GA	99	0	0	0	0	0
GA	106	70	102	38	417	427
GA	107	142	312	71	262	495
GA	109	0	0	51	1829	158
GA	110	0	0	41	1475	128
GA	111	4	30	52	130	134
GA	112	0	0	186	88	326
GA	114	0	0	544	6135	236
GA	115	9	25	13	47	40
GA	116	78	147	66	293	285
GA	117	0	0	0	0	0
GA	118	0	0	0	0	0
GA	119	0	0	0	0	0
GA	120	0	0	0	0	0
GA	121	0	21	34	104	91
GA	122	59	109	47	212	207
GA	124	108	200	85	387	378
GA	125	13	27	15	62	59
GA	126	7	47	25	333	250
GA	127	7	31	17	62	45
GA	128	7	25	19	65	55
GA	129	5	14	8	29	23
GA	130	1	5	5	17	11
GA	131	5	16	11	39	30
GA	132	6	16	8	31	26
GA	133	2	11	9	30	26
GA	134	0	6	9	29	17
GA	135	0	3	5	14	9
GA	136	4	15	9	33	30
GA	137	8	24	17	58	47
GA	138	0	0	0	0	0
GA	139	8	15	8	32	31
GA	140	24	62	39	148	136

GA	141	14	29	14	60	57
GA	142	64	115	48	209	229
GA	143	41	63	25	112	141
GA	144	3	13	15	50	45
GA	145	0	0	0	0	0
GA	146	11	28	13	53	43
GA	148	15	28	12	54	52
GA	149	5	13	10	36	33
GA	150	10	22	14	53	50
GA	151	4	15	14	49	44
GA	152	25	63	33	132	116
GA	153	9	21	15	56	52
GA	154	19	64	32	127	91
GA	155	0	0	0	0	0
GA	156	0	0	0	0	0
GA	157	17	25	9	44	58
GA	158	13	22	9	39	47
GA	159	548	0	30	8	60
GA	160	0	0	0	0	0
GA	161	0	17	10	36	11
GA	162	0	0	0	0	0
GA	163	0	0	0	0	0
GA	164	0	3	4	13	7
GA	165	12	21	7	34	36
GA	166	1	38	22	79	29
GA	168	26	54	23	99	99
GA	169	49	95	41	176	180
GA	170	54	125	56	236	223
GA	171	80	168	74	312	304
GA	172	22	68	33	131	98
GA	173	55	121	54	226	212
GA	174	488	1100	156	532	1575
GA	175	370	843	130	442	1156
GA	176	1586	3489	476	1586	4869
GA	177	854	1894	265	886	2632
GA	178	62	113	47	206	223
GA	179	488	1163	177	634	1754
GA	180	273	612	106	383	858
GA	181	366	821	119	398	1134
GA	182	366	851	127	442	1242
GA	183	732	1626	229	764	2258
GA	184	4	32	23	82	52
GA	185	10	30	17	65	55
GA	186	5	29	24	82	62
GA	187	18	74	42	157	108
GA	188	4	30	19	70	42
GA	189	6	29	19	68	48
GA	190	7	33	22	79	56
GA	191	6	29	20	72	51
GA	192	2	12	14	46	29
GA	193	0	18	6	29	51
GA	194	1464	3263	561	2978	5712

GA	195	244	763	157	624	1338
GA	196	244	576	89	312	846
GA	197	151	345	64	252	535
GA	198	0	3	2	6	2
GA	199	144	318	66	234	479
GA	200	7	14	9	35	33
GA	201	9	21	14	54	50
GA	202	4	13	12	43	39
GA	203	9	28	25	86	79
GA	204	1	12	18	56	49
GA	205	9	23	17	63	58
GA	206	18	44	31	115	107
GA	207	17	42	29	110	102
GA	208	12	26	16	62	59
GA	209	13	27	14	58	56
GA	210	11	23	12	47	46
GA	211	31	76	35	143	125
GA	212	30	106	53	207	144
GA	213	7	18	15	53	48
GA	214	7	18	14	50	46
GA	215	30	72	34	138	122
GA	216	27	59	29	120	110
GA	217	38	87	57	216	198
GA	218	57	93	38	169	202
GA	219	96	161	61	281	369
GA	220	63	101	40	180	219
GA	221	7	13	5	25	25
GA	222	11	20	9	39	38
GA	223	7	16	11	42	39
GA	224	12	23	12	50	48
GA	225	14	27	12	53	51
GA	226	5	17	17	57	52
GA	227	12	26	14	59	56
GA	228	7	16	9	37	35
GA	229	7	18	12	46	43
GA	230	11	27	12	50	45
GA	231	244	537	73	244	749
GA	232	74	157	29	109	236
GA	233	375	874	126	438	1250
GA	234	472	1158	174	624	1686
GA	235	0	0	0	0	0
GA	236	0	0	0	80	64
GA	237	0	0	0	0	0
GA	238	16	34	13	52	58
GA	239	0	0	0	0	0
GA	240	0	0	0	0	0
GA	241	0	0	0	0	0
GA	242	13438	153	1002	809	3088
GA	244	0	0	0	0	0
GA	246	0	0	0	0	0
GA	247	0	0	0	0	0

Appendix C

2004 Model Run Stream

```
$MACRO HIGHWAY NETWORK UPDATE
~  File: = MTM19.IN  REV. DATE: 08/13/98       cdw
~                                                0534-98-02
~   Added Sierra Star @ Meridian (2375) as a Save Turns Location.
~   Added Old Mammoth @ Chateau St (2395) as a Save Turns Location.
~   Added Berner St @ Forest Trail (2030) as a Save Turns Location.
~   Added Old Mammoth @ Chateau St (2350) as a Save Turns Location.
~
~  File: = MTM17.IN  REV. DATE: 12/30/96       cdw
~                                                003-96-002
~   Added Lake Mary Rd @ Kelly Rd (2276) as a Save Turns Location.
~   Added Lake Mary Rd @ Lakeview Bl. Cutoff (2256)
~   as a Save Turns Location.
~
~
~  File: = MTM16.IN  REV. DATE: 12/02/96       cdw
~                                                534-94-001
~   Added Main Street @ Center Street (2190) as a Save Turns Location.
~
~
~  File: = MTM15.IN  LAST REV. DATE:  4/28/95       cdw
~  (See Below for explanation of changes)         534-94-001
~   This jobstream was created for the Town of Mammoth Lakes Model
~
~
~  The five trip purposes were:
~
~        1.  Home-to-Recreation
~        2.  Home-to-Shop
~        3.  Home-to-Work
~        4.  Home-to-Other
~        5.  Other-to-Other
~
~    Person Trips are generated for a Daily analysis and factored
~  for peak hour (PM) forecasts
~
~
~   KEY INPUT FILES (should be in the subdirectory called \INPUT):
~       DAILY HIGHWAY NETWORK        = MAMMOTH.NET
~       PM TRANSIT NETWORK           = PMTRAN.NET
~       OFF PEAK TRANSIT NETWORK     = OPTRAN.NET
~       GRAVITY MODEL DATA           = ALL.PA
~       FRICTION FACTOR FILE         = FRIC.FAC
~       PARKING LOT CAPACITIES       = PARKING.CAP
~       GENERAL HWY NETWORK UPDATES  = UPDATE.HWY
~       PM PEAK HWY UPDATES          = SPEEDCAP.PM
~       OFF PEAK HWY UPDATES         = SPEEDCAP.OP
~       HEADER TEXT                  = HEADER
~
~   KEY OUTPUT FILES (should be in a subdirectory called \OUTPUT):
~       AUTO OFF-PEAK LOADED HIGHWAY NETWORK = AUTOOP.LHN
~       AUTO PM PEAK LOADED HIGHWAY NETWORK  = AUTOPM.LHN
~       TRANSIT OFF-PEAK LOADED NETWORK      = TROP.LTN
~       TRANSIT PM PEAK LOADED NETWORK       = TRPM.LTN
~
~
~
~   JN:  534-94-001          cdw          1/30/95
~
~  2/22/95 - ADDED A NETWORK UPDATE TO ACCOUNT FOR PARKING UTIL. RATES
~            UPDATED MODE CHOICE DIVERSION CURVE
~
~  3/7/95 -  TRIED TO INCREASE THE AUTO PCT. FOR H-REC TRIPS TO 80%
~            BY FURTHER ADJUSTING THE MODE CHOICE CURVES.
~            ALSO TRIED TO INCREASE THE PATRONAGE TO MAIN LODGE BY
~            ADJUSTING THE ASSIGNMENT CURVE.
~
~  3/8/95 -  USED A NEW NETWORK THAT HAS INCREASED CAPACITY FOR MINARET RD.
~            FURTHER ADJUSTED THE ASSIGNMENT CURVE.
~            DID A MATRIX TRANSPOSE FOR THE H-REC SKIM TIME TO REFLEC THE
~            DESIRED A-P TRAVEL TIME INSTEAD OF THE P-A TRAVEL TIME.
~
~  3/9/95 -  PLAYED WITH THE MODE SPLIT CURVES SOME MORE
~            UPDATED THE PKG LOT DISTANCES EXCEPT FOR MAIN LODGE
```

```
~
~
~  3/10/95 - MTMRUN08.IN
~            REVISED SKIM PROCEDURE TO OBTAIN CONGESTED TRAVEL TIMES
~
~  3/13/95 - MTMRUN09.IN
~            UPDATED THE N-REC MODE CHOICE CURVE TO ELIMINATE THE NEGATIVE
~            TRANSIT TRIPS.  DID THIS BY ELIMINATING ONE POINT ON THE CURVE
~            (1.1,.10)
~
~ 3/14/95 -  MTMRUN10.IN
~            UPDATED THE H-REC MC CURVE TO TRY TO BUMP UP THE LOOP 1 AUTO
~            PERCENTAGE.  ELONGATED THE PARKING LOT LINKS TO TRY TO ACHIEVE
~            A V/C RATIO OF 1.0-1.2 ON ALL LINKS.  UPDATED THE FREE FLOW SPEEDS.
~
~ 3/14/95 -  MTMRUN11.IN
~            UPDATED THE SPEEDS OF THE DIVIDED & UNDIVIDED COLLECTORS.
~            ADDED A MATRIX TRANSPOSE OF THE LOOP 1 SKIM TABLES TO BE
~            USED FOR MODE CHOICE (FILE NAME = HRECA-P.SK1).
~
~ 3/28/95 -  MTMRUN12.IN
~            REVISED JOBSTREAM FOR COSMETIC PURPOSES.  NO MODEL CHANGES.
~
~ 3/30/95 -  MTMRUN13.IN
~            REVISED MODE SPLIT CURVES BASED ON TEST RUN A.
~            REPRESENTS LOW BUS SERVICE LEVEL EXPECTED SPLIT.
~
~ 4/03/95 -  MTM14.IN
~            REVISED (LOWERED) PEAK HOUR SPLITS BASED ON TEST RUN G.
~            ALSO REVISED PM PEAK HOUR PARKING UTILIZATION
~            (BACK TO 50%), TO GO WITH LOWER PEAK TRIPS.
~
~ 4/28/95 -  MTM14A.IN                  cdw
~            MODIFIED JOBSTREAM TO PUT OUT OF VEHICLE TIME WEIGHTING
~            FACTOR INTO THE BUILD TRANSIT PATH SET, INSTEAD OF
~            IN MODE CHOICE - HOPING TO GET SAME MODE CHOICE RESULTS,
~            BUT AVOID EXCESSIVE TRANSFERS FROM RED AND PURPLE LINES
~            TO THE BLUE LINE (THUS TRADING A 3.5 MILE TRIP TO MAIN
~            LODGE FOR A 1 MILE TRIP TO WARMING HUT II)
~
~ 4/28/95 -  MTM15.IN                 cdw
~            MODIFIED JOBSTREAM TO INCLUDE A TRANSFER PENALTY FOR
~            BUS TO BUS TRANSFERS ONLY. - HOPING TO GET SAME MODE
~            CHOICE RESULTS, BUT AVOID EXCESSIVE TRANSFERS FROM RED
~            AND PURPLE LINES TO THE BLUE LINE (THUS TRADING A 3.5
~            MILE TRIP TO MAIN LODGE FOR A 1 MILE TRIP TO WARMING HUT II)
~
~
~
$FILES
      INPUT  FILE = MACIN,  USER ID = $INPUT\MAMMOTH.NET$
      OUTPUT FILE = MACOUT, USER ID = $OUTPUT\SPEEDDIS.NET$
$HEADERS
MTM Run ID: TP_1A: Mammoth Master Trans. Plan  cdw 0534-98-02
  GENERAL SPEED AND CAPACITY UPDATES
$OPTIONS
        NO LIMIT CHECK
$DATA
~   File:  Update.Hwy
~   PARKING LOT DISTANCE UPDATE (CALIBRATION PARAMETER - DO NOT CHANGE!)
~   MAIN LODGE
    ANODE = 2100, BNODE = 2206, CHANGE, DISTANCE =R50
    ANODE = 2206, BNODE = 2100, CHANGE, DISTANCE =R50
~   CHAIR 2
    ANODE = 2079, BNODE = 2204, CHANGE, DISTANCE =R75
    ANODE = 2204, BNODE = 2079, CHANGE, DISTANCE =R75
~   CHAIR 10
    ANODE = 2203, BNODE = 2145, CHANGE, DISTANCE =R75
    ANODE = 2145, BNODE = 2203, CHANGE, DISTANCE =R75
~   HUT 2
    ANODE = 2196, BNODE = 2232, CHANGE, DISTANCE =R60
    ANODE = 2232, BNODE = 2196, CHANGE, DISTANCE =R60
~   CHAIR 15
    ANODE = 2044, BNODE = 2209, CHANGE, DISTANCE =R75
    ANODE = 2209, BNODE = 2044, CHANGE, DISTANCE =R75
```

```
~   SHERWIN
    ANODE = 2037, BNODE = 2215, CHANGE, DISTANCE =R60
    ANODE = 2215, BNODE = 2037, CHANGE, DISTANCE =R60
    ANODE = 2512, BNODE = 2215, CHANGE, DISTANCE =R60
    ANODE = 2215, BNODE = 2512, CHANGE, DISTANCE =R60
~   CORDON DISTANCE UPDATE (CALIBRATION PARAMETER - DO NOT CHANGE!)
    NODE = 1, CHANGE, DISTANCE = R400
    NODE = 2, CHANGE, DISTANCE = R400
    NODE = 3, CHANGE, DISTANCE = R1500
    NODE = 4, CHANGE, DISTANCE = R4000
    NODE = 5, CHANGE, DISTANCE = R1500
~   MMSA DISTANCE UPDATE (CALIBRATION PARAMETER - DO NOT CHANGE!)
    ANODE = 242, BNODE = 2196, CHANGE, DISTANCE = R10
    ANODE = 242, BNODE = 2203, CHANGE, DISTANCE = R10
    ANODE = 242, BNODE = 2204, CHANGE, DISTANCE = R10
    ANODE = 242, BNODE = 2206, CHANGE, DISTANCE = R10
    ANODE = 242, BNODE = 2209, CHANGE, DISTANCE = R10
    ANODE = 2196, BNODE = 242, CHANGE, DISTANCE = R10
    ANODE = 2203, BNODE = 242, CHANGE, DISTANCE = R10
    ANODE = 2204, BNODE = 242, CHANGE, DISTANCE = R10
    ANODE = 2206, BNODE = 242, CHANGE, DISTANCE = R10
    ANODE = 2209, BNODE = 242, CHANGE, DISTANCE = R10
~   FREE FLOW SPEEDS (CALIBRATION PARAMETER - DO NOT CHANGE!)
  ASSIGNMENT GROUP = 0, CHANGE, SPEED 1 =R5500
  ASSIGNMENT GROUP = 1, CHANGE, SPEED 1 =R3500
  ASSIGNMENT GROUP = 2, CHANGE, SPEED 1 =R3000
  ASSIGNMENT GROUP = 3, CHANGE, SPEED 1 =R3500
  ASSIGNMENT GROUP = 4, CHANGE, SPEED 1 =R3500
  ASSIGNMENT GROUP = 5, CHANGE, SPEED 1 =R3000
  ASSIGNMENT GROUP = 6, CHANGE, SPEED 1 =R3000
  ASSIGNMENT GROUP = 7, CHANGE, SPEED 1 =R2500
  ASSIGNMENT GROUP = 8, CHANGE, SPEED 1 =R1500
  ASSIGNMENT GROUP = 9, CHANGE, SPEED 1 =R1500
$END TP FUNCTION
```

INPUT FILE NAME ---------- MACIN

FILE CHARACTERISTICS

USER FILE IDENTIFICATION - C:\Mammoth1\baseyear\INPUT\MAMMO

FILE HEADER ----------

GENERATING FUNCTION ------ VIPER

TYPE OF FILE ---------- HWYNET

GENERATION FILE NAME ----- HWYNET

GENERATION DATE ---------- 30SEP04
CURRENT DATE ---------- 14OCT04

GENERATION TIME ---------- 14:15:26
CURRENT TIME ---------- 12:21:36

FILE SIZE ---------- MAXIMUM ZONE = 247

MAXIMUM NODE NO. = 5013

NUMBER OF LINKS = 1547

```
$MACRO HIGHWAY NETWORK UPDATE
$FILES
      INPUT  FILE = MACIN,  USER ID = $OUTPUT\SPEEDDIS.NET$
      OUTPUT FILE = MACOUT, USER ID = $OUTPUT\ADDPRKNG.HNT$
$HEADERS
MTM Run ID: TP_1A: Mammoth Master Trans. Plan  cdw 0534-98-02
  AUTOMATED CODING OF PARKING LOT CAPACITIES FOR SKI AREAS
$OPTIONS
        NO LIMIT CHECK
$DATA
~   File:  Parking1.Cap  Note: Each number = TOTAL PARKING SPACES
~                              INCLUDING NEARBY ON STREET PARKING
~   MAIN LODGE
    ANODE = 2100, BNODE = 2206, CHANGE, CAPACITY 1 =+1700
    ANODE = 2206, BNODE = 2100, CHANGE, CAPACITY 1 =+1700
~   CHAIR 2
    ANODE = 2079, BNODE = 2204, CHANGE, CAPACITY 1 =+100
    ANODE = 2204, BNODE = 2079, CHANGE, CAPACITY 1 =+100
~   CHAIR 10
    ANODE = 2203, BNODE = 2145, CHANGE, CAPACITY 1 =+300
    ANODE = 2145, BNODE = 2203, CHANGE, CAPACITY 1 =+300
~   HUT 2
    ANODE = 2196, BNODE = 2232, CHANGE, CAPACITY 1 =+1700
    ANODE = 2232, BNODE = 2196, CHANGE, CAPACITY 1 =+1700
~   CHAIR 15
    ANODE = 2044, BNODE = 2209, CHANGE, CAPACITY 1 =+500
    ANODE = 2209, BNODE = 2044, CHANGE, CAPACITY 1 =+500
~   SHERWIN
    ANODE = 2037, BNODE = 2215, CHANGE, CAPACITY 1 =+1000
    ANODE = 2215, BNODE = 2037, CHANGE, CAPACITY 1 =+1000
    ANODE = 2512, BNODE = 2215, CHANGE, CAPACITY 1 =+1000
    ANODE = 2215, BNODE = 2512, CHANGE, CAPACITY 1 =+1000
$END TP FUNCTION
```

INPUT FILE NAME ---------- MACIN

FILE CHARACTERISTICS

USER FILE IDENTIFICATION - OUTPUT\SPEEDDIS.NET

FILE HEADER -------------- MTM Run ID: TP_1A: Mammoth Master Trans. Plan cdw 0534-98-02
GENERAL SPEED AND CAPACITY UPDATES

GENERATING FUNCTION ------ MACRO NETWORK UPDATE

TYPE OF FILE ------------- HWYNET

GENERATION FILE NAME ----- MACOUT

GENERATION DATE ---------- 14OCT04
CURRENT DATE ---------- 14OCT04

GENERATION TIME ---------- 12:21:36
CURRENT TIME ---------- 12:21:36

FILE SIZE ---------------- MAXIMUM ZONE = 247

MAXIMUM NODE NO. = 5013

NUMBER OF LINKS = 1547

Mammoth Lakes Transportation Model
2004 and 2024 Traffic Volume Results
-Revised 12/7/04-

The purpose of this report is to document the traffic data output from the Town of Mammoth Lakes' transportation demand model, for each of the General Plan land use alternatives. This report describes how the 2004 and 2024 turning-movement volumes resulting from each general plan alternative were estimated and presents the traffic-volume data. Additional details of the future model runs and the results of LOS analysis and required improvements resulting from the implementation of each alternative will be provided in a later report.

DEVELOPMENT OF 2004 AND 2024 DESIGN VOLUMES

Development of 2004 Design Volumes

The existing Town of Mammoth Lakes Transportation Demand Model is based upon a typical winter Saturday P.M. peak-hour design period. Developing appropriate design volumes is a relatively involved step in Mammoth Lakes, due to the substantial seasonal and day-to-day variations in traffic activity associated with visitor traffic. For analysis of conditions during the Town's adopted design period (a typical winter Saturday), it is therefore necessary to adjust the counts conducted on various days to reflect a consistent design period. Existing winter 2004 turning-movement design volumes for the study were developed in the following steps:

1. Available count data was gathered from four key sources: Caltrans, the Town of Mammoth Lakes, LSA Associates, Inc, and LSC Transportation Consultants, Inc. Turning-movement count data was available at only a few of the key study intersections, as shown in Table 1.

2. Caltrans hourly count data along SR 203 (Main Street) at the permanent count location immediately east of Minaret Road was tabulated for each Saturday between December 15, 2004 and March 31, 2004. The peak-hour volumes occurring on each Saturday were averaged to establish the average winter Saturday PM peak-hour design volume.

3. The turning-movement counts identified in Table 1 were adjusted to represent the average winter Saturday PM peak-hour design volumes. This adjustment was largely made based upon hourly Caltrans counts conducted on SR 203 immediately east of Minaret Road. The ratio of the design day peak-hour volume to the peak-hour volume observed on the day of the individual intersection counts was then used to factor the observed intersection count data. For instance, if the traffic volume on SR 203 on the day of a specific intersection count was exceeded by the SR 203 design volume by 20 percent, the intersection counts were multiplied by a factor of 1.2.

4. Traffic volumes at the intersection of US 395 and Hot Creek Fish Hatchery Road were estimated based upon the traffic volumes presented in the Mammoth Lakes Yosemite Valley Airport Traffic Impact Study (LSA Associates, Inc., August, 2001).

5. For those intersections where actual count data was not available, the 2004 model run was used to estimate turning-movement volumes.

Table 2 presents the 2004 winter Saturday P.M. peak-hour design turning-movement volumes at all the study intersections. Figure 1 presents 2004 P.M. peak-hour volumes on several key roadways.

Development of 2024 Design Volumes for Each General Plan Alternative

The 2024 traffic volumes at all the study intersections were analyzed using the Mammoth transportation demand model. Where possible due to the availability of adequate count data, the model-generated turning-movement volumes were converted to design volumes using the following formula:

2024 Design Traffic Volumes = 2024 Model-Generated Traffic Volumes
-2004 Model-Generated Traffic Volumes
+2004 Design Traffic Volumes

However, for those intersections where actual count data is not available, the 2024 turning-movement volumes generated by the calibrated model were used without any adjustments. As the airport area is outside the model boundaries, the turning-movement volumes at the US 395/Hot Creek Hatchery Road intersections were estimated as follows:

1. The growth in trip generation generated by the following developments located along US 395 south of SR 203 was estimated as follows:

   - **Sierra Business Park** - The traffic generated by this development, not located within the Town boundaries, was estimated based upon the Mammoth traffic model trip rates and the land uses identified in the Mammoth Lakes - Yosemite Valley Airport Traffic Impact Analysis.

   - **Mammoth Yosemite Airport Expansion** - The traffic generated by the expansion of the airport was based upon the trip rates and land uses identified in the Mammoth Lakes - Yosemite Valley Airport Traffic Impact Analysis. The trips generated by the additional 15 airplane hangers expected to be built at the airport by 2024 were assumed to be included in the trips per passenger trip rate identified in the LSA traffic study.

- **Remaining Development in Airport Area** - The level of development adjacent to the airport varies by Mammoth General Plan Alternative as follows:

  - **Alternatives 1-3**: 250 dwelling units, 100 RV campsites, 30,000 square feet of commercial uses.

  - **Alternative 4**: 25 acres of light industrial, 30,000 square feet of commercial uses.

  The trip generation of these land uses were estimated using the Mammoth traffic model trip rates.

2. The trip distribution of the traffic generated by the development described above was estimated based upon the distribution identified in the Mammoth Lakes - Yosemite Valley Airport Traffic Impact Analysis.

The 2024 turning-movement volumes resulting for General Plan Alternatives 1, 2, and 4 are shown in Tables 3, 4, and 5, respectively. Figures 2, 3, and 4 present P.M. peak-hour volumes key roadways resulting from the build out of General Plan Alternatives 1, 2, and 4, respectively.

TABLE 1: Available Winter Saturday P.M. Peak-Hour Turning-Movement Data

Date of Count	North/South Roadway	East/West Roadway	Northbound			Southbound			Eastbound			Westbound			Total
			LT	T	RT	LT	T	RT	LT	T	RT	LT	T	RT	
02/22/03	Center	Main	71	9	31	44	4	36	75	942	70	50	575	29	1,936
02/22/03	Minaret	Main	116	96	99	511	241	120	69	438	183	79	301	98	2,351
02/22/03	Forest Trail	Main	20	3	35	147	5	26	32	1139	31	21	674	76	2,209
02/22/03	Old Mammoth	Main	317	0	100	0	0	0	0	396	656	120	254	0	1,843
02/22/03	Old Mammoth	Meridian	59	237	73	184	369	111	110	147	99	76	94	111	1,670
02/22/03	Sierra Park	Meridian	0	1	0	22	0	6	19	93	0	0	71	3	215
02/22/03	Minaret	Old Mammoth	3	19	16	106	38	179	48	117	4	19	121	34	704
02/22/03	Minaret	Meridian	12	70	17	226	174	61	122	243	62	10	135	110	1,242

Mammoth Model TM Volumes.wb3

TABLE 2: 2004 Winter Saturday P.M. Peak-Hour Design Turning-Movement Volumes

Node #	North/South Roadway	East/West Roadway	Northbound			Southbound			Eastbound			Westbound			Total
			LT	T	RT	LT	T	RT	LT	T	RT	LT	T	RT	
2276	Kelly	Lake Mary	31	0	61	0	0	0	0	111	34	109	184	0	530
2256	Lakeview	Lake Mary	0	0	0	294	0	174	116	56	0	0	120	213	973
2162	Canyon	Lake Mary	0	0	0	327	0	18	12	352	0	0	334	307	1,350
2163	Center	Main	75	9	33	46	4	38	79	989	73	52	604	30	2,032
2151	Minaret	Main	122	101	104	536	253	126	72	460	192	83	316	103	2,468
2168	Forest Trail	Main	21	3	37	154	5	27	34	1196	33	22	707	80	2,319
2179	Old Mammoth	Main	333	0	105	0	0	0	0	416	689	126	267	0	1,936
2184	Sierra Park	Main	29	0	76	0	0	0	0	414	39	108	469	0	1,135
2264	Meridian	Main WB	97	0	0	0	0	0	0	0	0	22	460	0	579
2273	Meridian	Main EB	0	97	44	0	22	0	0	370	68	0	0	0	601
2291	US 395 NB	Main/SR 203	216	0	0	0	0	0	164	16	0	0	94	0	490
2314	US 395 SB	Main/SR 203	0	0	0	0	0	172	0	180	234	0	310	0	896
2195	Majestic Pines	Meridian	0	0	0	117	0	30	44	219	0	0	218	75	703
2349	Old Mammoth	Meridian	62	249	77	193	387	117	115	154	104	80	99	117	1,754
2347	Sierra Park	Meridian	0	1	0	23	0	6	20	98	0	0	75	3	226
2028	Minaret	Forest Trail	246	81	2	1	442	178	78	54	265	1	17	0	1,365
2450	Minaret	Old Mammoth	3	20	17	111	40	188	50	123	4	20	127	36	739
2364	Minaret	Meridian	13	73	18	237	183	64	128	255	65	10	142	115	1,303
none	US 395 NB	Hot Creek Fish Hatchery	0	546	5	0	0	0	0	12	0	0	5	14	582
none	US 395 SB	Hot Creek Fish Hatchery	0	0	0	12	364	0	0	0	0	5	0	0	381
2350	Azimuth	Meridian	113	22	86	22	26	35	64	300	187	108	343	29	1,335

Mammoth Model TM Volumes.wb3

TABLE 3: 2024 Alternative 1 Winter Saturday P.M. Peak-Hour Design Turning-Movement Volumes

Node #	North/South Roadway	East/West Roadway	Northbound			Southbound			Eastbound			Westbound			Total
			LT	T	RT	LT	T	RT	LT	T	RT	LT	T	RT	
2276	Kelly	Lake Mary	82	0	234	0	0	0	0	202	61	219	360	0	1,158
2256	Lakeview	Lake Mary	0	0	0	226	0	393	307	129	0	0	186	179	1,420
2162	Canyon	Lake Mary	0	0	0	639	0	30	25	367	0	0	425	499	1,985
2163	Center	Main	119	9	64	46	4	38	79	1009	285	98	899	30	2,680
2151	Minaret	Main	183	275	170	664	420	163	97	551	403	185	500	298	3,909
2168	Forest Trail	Main	21	3	37	306	5	45	47	1233	33	22	1030	218	3,000
2179	Old Mammoth	Main	418	0	167	0	0	0	0	595	771	179	589	0	2,719
2184	Sierra Park	Main	9	0	170	0	0	0	0	686	9	233	864	0	1,971
2264	Meridian	Main WB	449	0	0	0	0	0	0	0	0	52	624	0	1,125
2273	Meridian	Main EB	0	449	83	0	52	0	0	547	261	0	0	0	1,392
2291	US 395 NB	Main/SR 203	316	0	0	0	0	0	257	12	0	0	101	0	686
2314	US 395 SB	Main/SR 203	0	0	0	0	0	259	0	269	361	0	417	0	1,306
2195	Majestic Pines	Meridian	0	0	0	207	0	70	131	690	0	0	229	217	1,544
2349	Old Mammoth	Meridian	26	406	172	225	607	142	136	254	155	260	259	149	2,791
2347	Sierra Park	Meridian	0	1	0	32	0	6	20	280	0	0	461	7	807
2028	Minaret	Forest Trail	315	207	17	1	609	336	183	102	343	7	69	0	2,189
2450	Minaret	Old Mammoth	58	353	227	96	476	251	129	196	59	279	244	41	2,409
2364	Minaret	Meridian	150	248	20	210	443	149	241	627	278	11	363	72	2,812
none	US 395 NB	Hot Creek Fish Hatchery	2	683	112	0	0	0	20	151	0	0	78	198	1,244
none	US 395 SB	Hot Creek Fish Hatchery	0	0	0	151	455	5	0	20	8	78	2	0	719
2350	Azimuth	Meridian	282	95	97	20	81	49	97	463	309	132	466	31	2,122

Mammoth Model TM Volumes.wb3

TABLE 4: 2024 Alternative 2 Winter Saturday P.M. Peak-Hour Design Turning-Movement Volumes

Node #	North/South Roadway	East/West Roadway	Northbound			Southbound			Eastbound			Westbound			Total
			LT	T	RT	LT	T	RT	LT	T	RT	LT	T	RT	
2276	Kelly	Lake Mary	78	0	229	0	0	0	0	235	52	235	359	0	1,188
2256	Lakeview	Lake Mary	0	0	0	232	0	434	335	129	0	0	159	304	1,593
2162	Canyon	Lake Mary	0	0	0	725	0	29	16	338	0	0	465	528	2,101
2163	Center	Main	162	9	74	46	4	38	79	1224	210	99	867	30	2,842
2151	Minaret	Main	159	330	164	732	525	148	85	652	371	166	608	324	4,264
2168	Forest Trail	Main	21	3	37	280	5	42	46	1458	33	22	1002	197	3,146
2179	Old Mammoth	Main	359	0	222	0	0	0	0	764	760	256	658	0	3,019
2184	Sierra Park	Main	38	0	44	0	0	0	0	887	31	98	981	0	2,079
2264	Meridian	Main WB	527	0	0	0	0	0	0	0	0	61	503	0	1,091
2273	Meridian	Main EB	0	527	79	0	61	0	0	416	407	0	0	0	1,490
2291	US 395 NB	Main/SR 203	282	0	0	0	0	0	157	19	0	0	103	0	561
2314	US 395 SB	Main/SR 203	0	0	0	0	0	179	0	176	319	0	385	0	1,059
2195	Majestic Pines	Meridian	0	0	0	231	0	71	142	662	0	0	238	215	1,559
2349	Old Mammoth	Meridian	97	370	210	193	551	121	151	291	107	249	324	78	2,742
2347	Sierra Park	Meridian	0	1	0	36	0	6	20	341	0	0	472	14	890
2028	Minaret	Forest Trail	367	267	21	15	859	377	134	142	293	19	62	4	2,560
2450	Minaret	Old Mammoth	79	379	207	80	486	226	119	218	74	227	284	8	2,387
2364	Minaret	Meridian	194	256	27	244	466	37	220	640	342	16	343	133	2,918
none	US 395 NB	Hot Creek Fish Hatchery	2	683	112	0	0	0	20	151	0	0	78	198	1,244
none	US 395 SB	Hot Creek Fish Hatchery	0	0	0	151	455	5	0	20	8	78	2	0	719
2350	Azimuth	Meridian	258	65	109	22	62	49	80	453	291	191	521	32	2,133

Mammoth Model TM Volumes.wb3

TABLE 5: 2024 Alternative 4 Winter Saturday P.M. Peak-Hour Design Turning-Movement Volumes

Node	North/South	East/West	Northbound			Southbound			Eastbound			Westbound			Total
			LT	T	RT	LT	T	RT	LT	T	RT	LT	T	RT	
2276	Kelly	Lake Mary	58	0	154	0	0	0	0	180	41	121	299	0	853
2256	Lakeview	Lake Mary	0	0	0	337	0	229	187	147	0	0	191	210	1,301
2162	Canyon	Lake Mary	0	0	0	634	0	15	20	523	0	0	491	461	2,144
2163	Center	Main	116	9	74	46	4	38	79	1196	110	122	920	30	2,744
2151	Minaret	Main	230	266	178	574	421	153	98	588	515	190	490	267	3,970
2168	Forest Trail	Main	21	3	37	263	5	47	46	1431	33	22	1074	175	3,157
2179	Old Mammoth	Main	566	0	199	0	0	0	0	542	933	247	533	0	3,020
2184	Sierra Park	Main	16	0	64	0	0	0	0	663	10	105	869	0	1,727
2264	Meridian	Main WB	439	0	0	0	0	0	0	0	0	41	513	0	993
2273	Meridian	Main EB	0	439	72	0	41	0	0	387	304	0	0	0	1,243
2291	US 395 NB	Main/SR 203	273	0	0	0	0	0	170	18	0	0	102	0	563
2314	US 395 SB	Main/SR 203	0	0	0	0	0	179	0	188	271	0	375	0	1,013
2195	Majestic Pines	Meridian	0	0	0	102	0	50	115	705	0	0	266	122	1,360
2349	Old Mammoth	Meridian	28	444	162	245	592	218	194	153	53	205	216	178	2,688
2347	Sierra Park	Meridian	0	1	0	27	0	6	20	271	0	0	497	2	824
2028	Minaret	Forest Trail	242	273	8	0	633	275	128	174	217	9	97	0	2,056
2450	Minaret	Old Mammoth	72	421	274	99	585	288	98	185	63	292	206	15	2,598
2364	Minaret	Meridian	155	283	16	232	508	203	286	540	242	8	259	77	2,809
none	US 395 NB	Hot Creek Fish Hatchery	2	644	61	0	0	0	20	85	0	0	44	104	960
none	US 395 SB	Hot Creek Fish Hatchery	0	0	0	85	430	5	0	20	8	44	2	0	594
2350	Azimuth	Meridian	183	76	94	13	103	47	85	329	356	198	437	29	1,950

Mammoth Model TM Volumes.wb3

FIGURE 1

2004 WINTER SATURDAY P.M. PEAK-HOUR VOLUMES PER DIRECTION

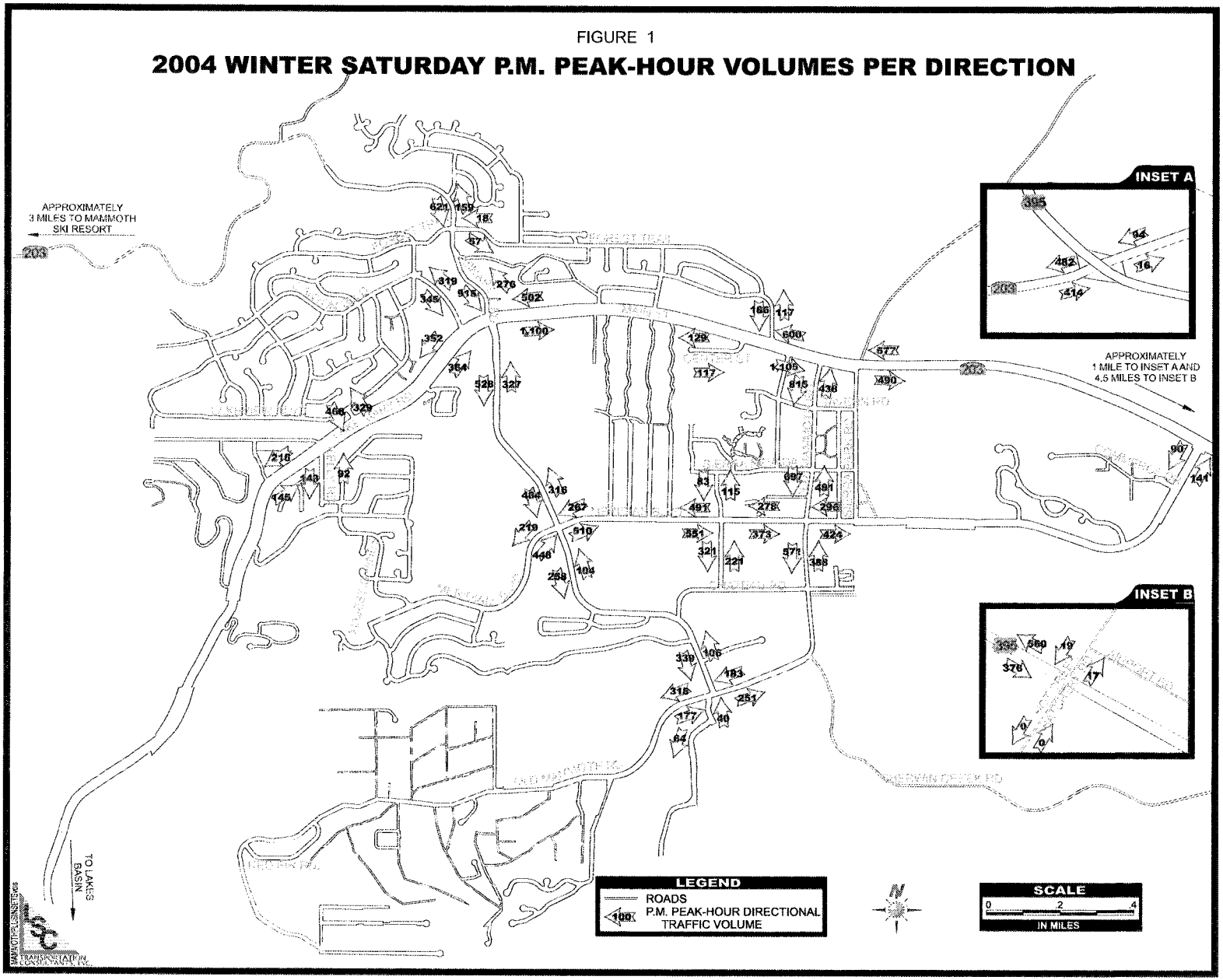


FIGURE 2

2024 ALTERNATIVE 1 WINTER SATURDAY P.M. PEAK-HOUR VOLUMES PER DIRECTION

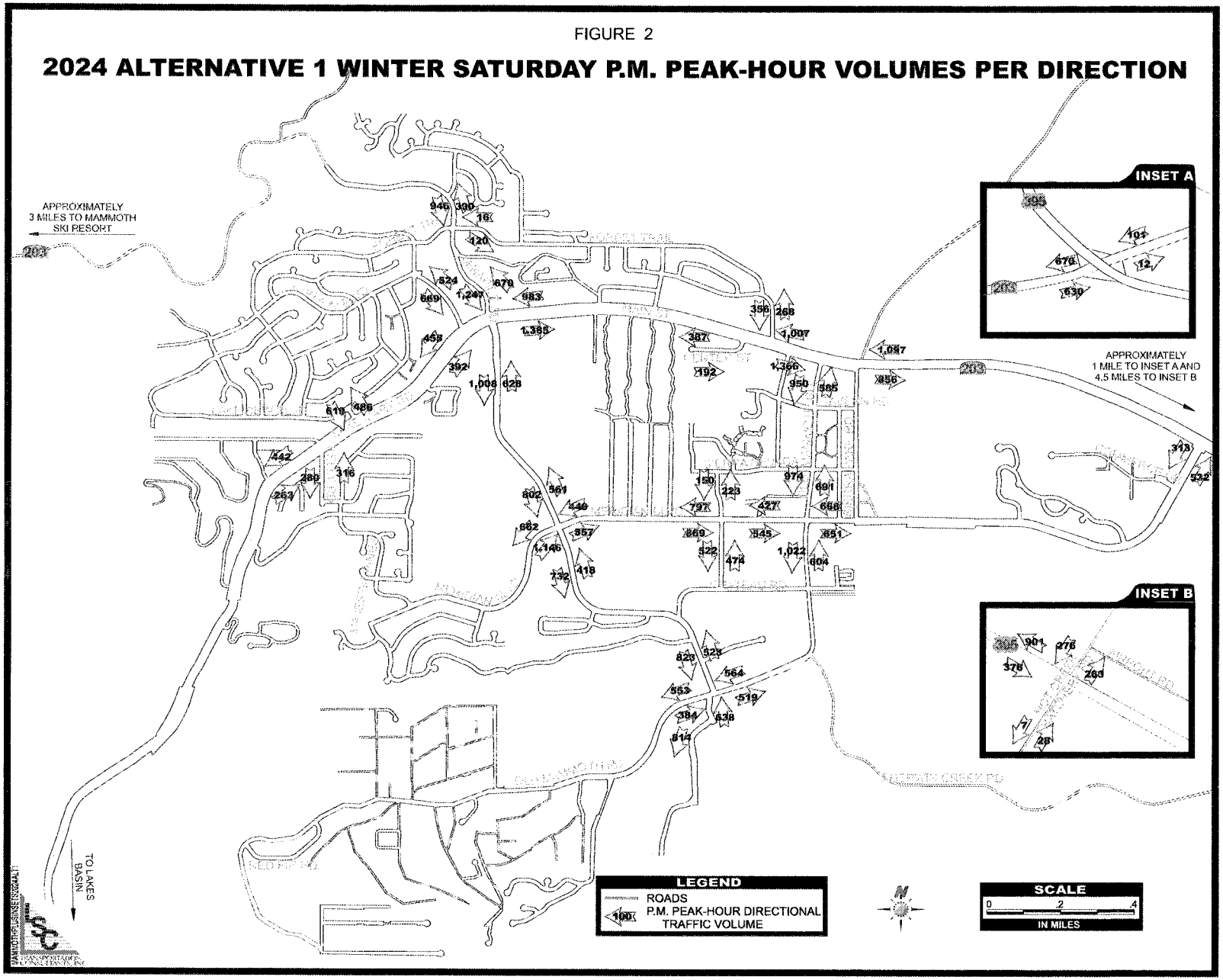


FIGURE 3

2024 ALTERNATIVE 2 WINTER SATURDAY P.M. PEAK-HOUR VOLUMES PER DIRECTION

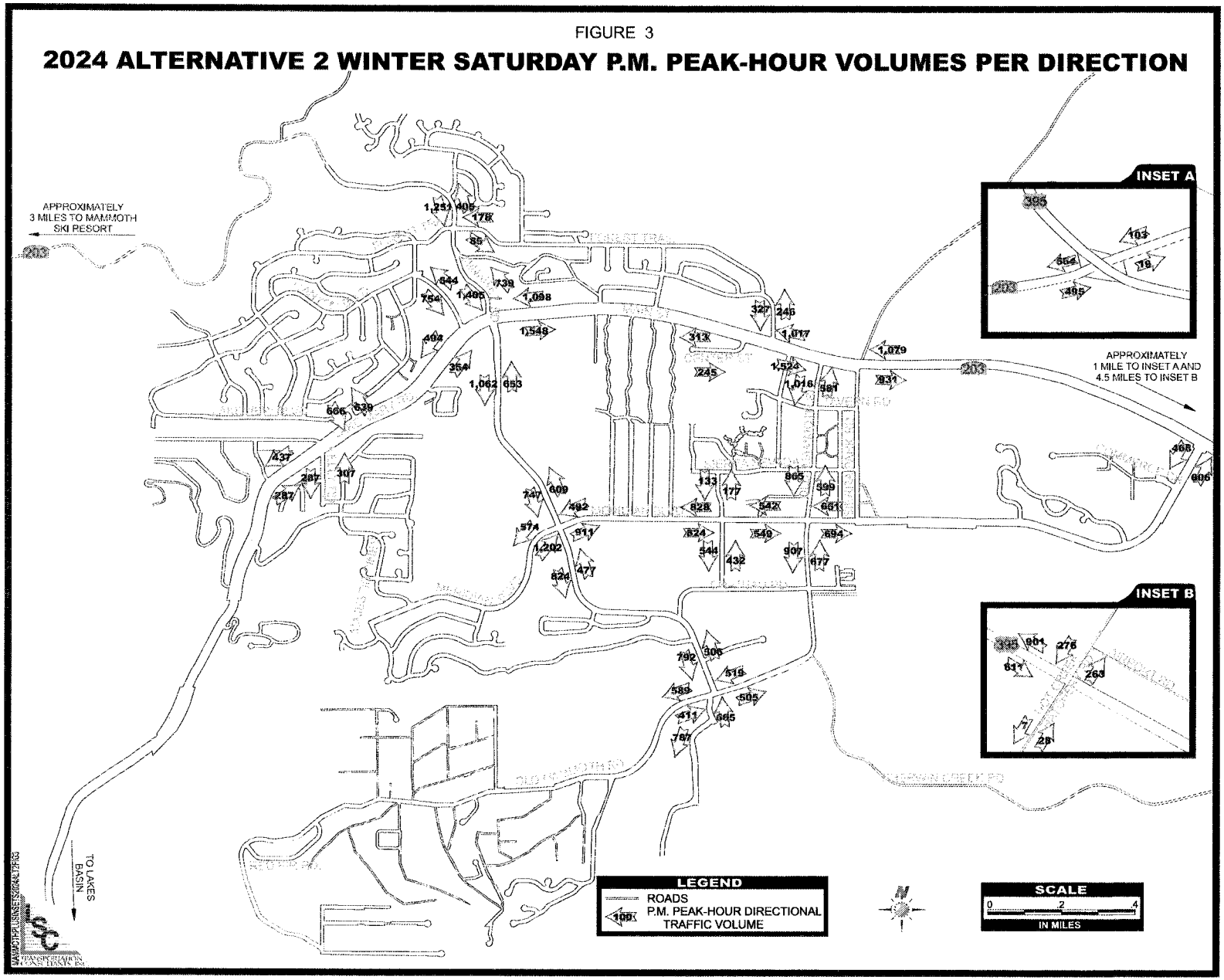
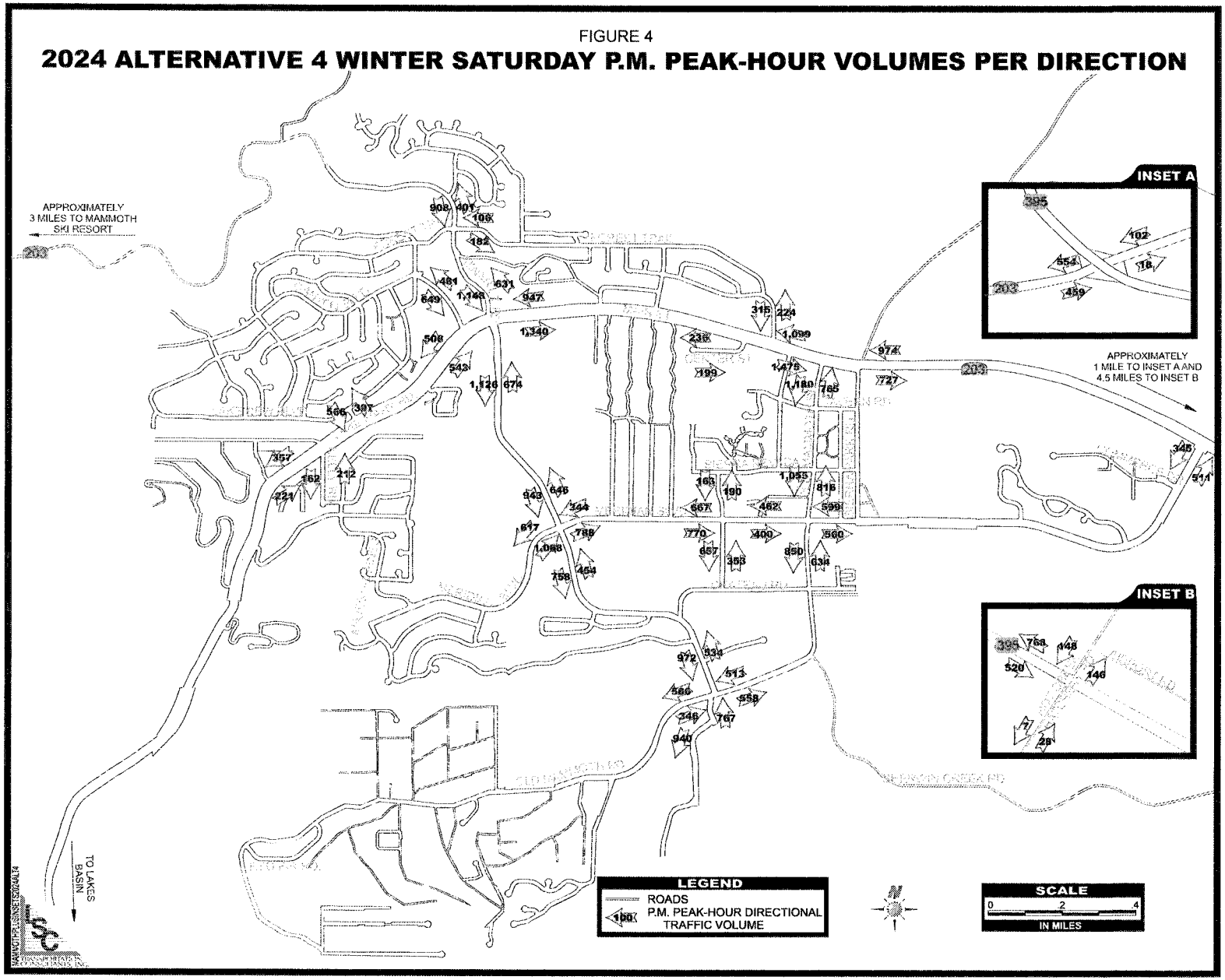


FIGURE 4

2024 ALTERNATIVE 4 WINTER SATURDAY P.M. PEAK-HOUR VOLUMES PER DIRECTION



Mammoth Lakes Intersection

LOS Calculations

The calculation sheets are on file at Town Hall