

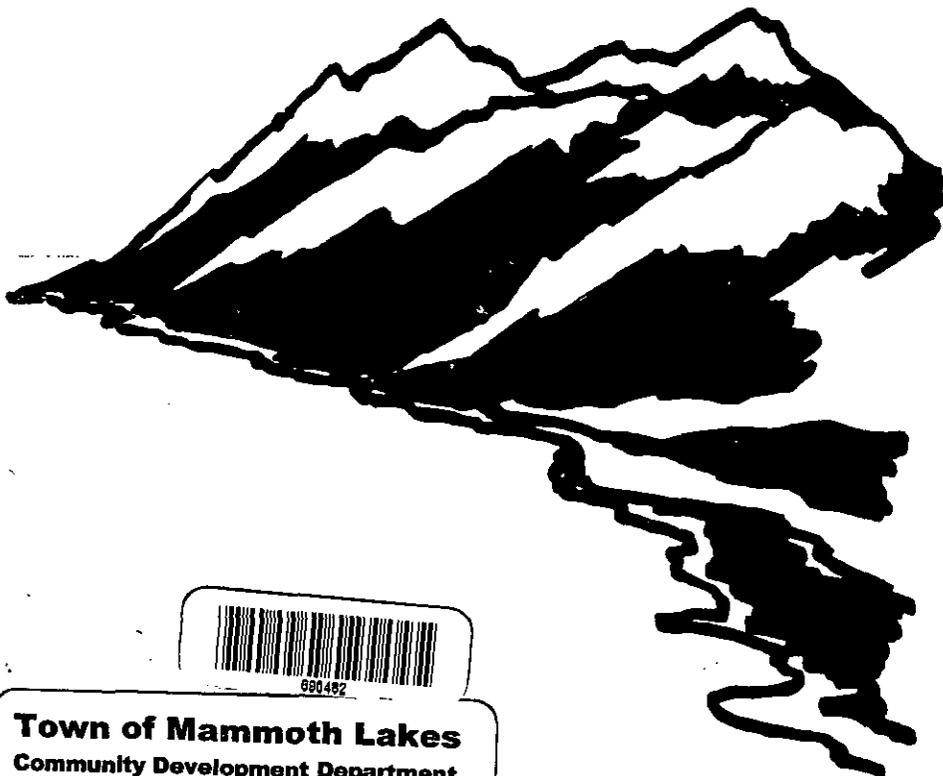


FINAL ENVIRONMENTAL IMPACT REPORT VOL. III APPENDICES

EIP ASSOCIATES

FEBRUARY 1991

Counter Copy



Town of Mammoth Lakes Community Development Department Planning Division Library

Catalogue Number 260

PREPARED FOR THE TOWN OF MAMMOTH LAKES, CALIFORNIA

NORTH VILLAGE

SPECIFIC PLAN
MAMMOTH LAKES, CALIFORNIA

APPENDIX A.
Biotic Resources

APPENDIX A

COMMON, POTENTIAL AND OBSERVED PLANT & WILDLIFE SPECIES IN THE NORTH VILLAGE PROJECT AREA, MONO COUNTY, CALIFORNIA

<u>Common Name</u>	<u>Scientific Name</u>
 PLANTS	
 MAMMALS	
Mt. Lyell Shrew	<i>Sorex lyelli</i>
Dusky Shrew	<i>S. monticolus</i>
Water Shrew	<i>S. palustris</i>
California Mole*	<i>Scapanus latamanus</i>
California Myotis	<i>Myotis californicus</i>
Silver-Haired Bat	<i>Lasionycteris noctivagans</i>
Big Brown Bat	<i>Eptesicus fuscus</i>
Hoary Bat	<i>Lasiurus cinereus</i>
Black Bear*	<i>Ursus americanus</i>
Ringtail	<i>Bassariscus astutus</i>
Raccoon	<i>Procyon lotor</i>
Mountain Lion	<i>Felis concolor</i>
Bobcat	<i>Lynx rufus</i>
Feral House Cat*	<i>Felis domesticus</i>
Gray Fox	<i>Urocyon cinereoagenteus</i>
Coyote*	<i>Canis latrans</i>
Red Fox	<i>Vulpes vulpes</i>
Marten	<i>Marten americana</i>
Fisher	<i>M. pennanti</i>
Ermine	<i>Mustela erminea</i>
Longtail Weasel*	<i>M. frenata</i>
Mink	<i>M. vison</i>
Wolverine	<i>Gulo gulo</i>
Badger	<i>Taxidea taxus</i>
Striped Skunk	<i>Mephitis mephitis</i>
Spotted Skunk	<i>Spilogale putorius</i>
Mountain Beaver	<i>Aplodontia rufa</i>
Yellow-Bellied Marmot	<i>Marmota flaviventris</i>
River Otter	<i>Lontra canadensis</i>
Yellow-Pine Chipmunk	<i>Tamias amoenus</i>
Allen's Chipmunk	<i>T. senex</i>
Least Chipmunk	<i>T. minimus</i>
Lodgepole Chipmunk*	<i>T. speciosus</i>
California Ground Squirrel	<i>Spermophilus beecheyi</i>
Belding's Ground Squirrel*	<i>S. beldingi</i>
Golden-mantled Ground Squirrel*	<i>S. lateralis</i>

Douglas's Squirrel*
Mountain Pocket Gopher*
Beaver
Western Harvest Mouse
Deer Mouse*
Pinon Mouse
Bush-Tailed Wood Rat
Heather Vole
Montane Vole
Long-Tailed Vole
House Mouse
Western Jumping Mouse
Porcupine
Blacktail Jackrabbit
Snowshoe Hare
White-Tailed Jackrabbit
Pika
Nuttall Cottontail
Mule Deer*

Tamiasciurus douglassii
Thomomys monticola
Castor canadensis
Reithrodontomys megalotis
Peromyscus maniculatus
P. truei
Neotoma cinerea
Phenacomys intermedius
Microtus montanus
M. longicaudus
Mus musculus
Zapus princeps
Erethizon dorsatum
Lepus californicus
L. americanus
L. townsendii
Ochotona princeps
Sylvilagus nuttallii
Odocoileus hemionus

REPTILES AND AMPHIBIANS

Mount Lyell Salamander
Western Toad
Yosemite Toad
Pacific Treefrog
Mountain Yellow-Legged Frog
Western Fence Lizard*
Sagebrush Lizard
Northern Alligator Lizard
Rubber Boa
Pacific Gopher Snake
Common Kingsnake
Western Terrestrial Garter Snake
Western Aquatic Garter Snake
Western Rattlesnake

Hydromantes plarycephalus
Bufo boreas
B. canorus
Hyla regilla
Rana muscosa
Sceloporus occidentalis
S. graciosus
Gerrhonotus coeruleus
Charina bottae
Pituophis melanoleucus
Lampropeltis getulus
Thamnophis elegans
T. couchi
Crotalus viridis

BIRDS

Turkey Vulture
Cooper's Hawk
Sharp-Shinned Hawk
Northern Goshawk
Northern Harrier (w)
Ferruginous Hawk (w)
Red-Tailed Hawk
Swainson's Hawk
Golden Eagle (w)
American Kestrel
Prairie Falcon

Cathartes aura
Accipiter cooperi
A. striatus
A. gentilis
Circus cyaneus
B. regalis
B. jamaicensis
B. swainsoni
Haliaeetus leucocephalus
Falco sparverius
F. mexicanus

<u>Common Name</u>	<u>Scientific Name</u>
Blue Grouse*	<i>Dendragapus obscurus</i>
White-Tailed Ptarmigan	<i>Lagopus leucurus</i>
California Quail	<i>Callipepla californicus</i>
Mountain Quail*	<i>Oreortyx pictus</i>
Chukar	<i>Alectoris chukar</i>
Band-Tailed Pigeon (s)	<i>Columba faciata</i>
Killdeer	<i>Charadrius vociferus</i>
Spotted Sandpiper	<i>Actitus macularia</i>
Barn Owl	<i>Tyto alba</i>
Flammulated Owl (s)	<i>Otus flammeolus</i>
Great Horned Owl*	<i>Bubo virginianus</i>
Great Gray Owl	<i>Strix nebulosa</i>
Long-Eared Owl	<i>Asio otus</i>
Northern Pygmy-Owl	<i>Glaucidium gnoma</i>
Common Nighthawk (s)	<i>Chordeilus minor</i>
Poor-Will	<i>Phalaenoptilus nuttallii</i>
Black Swift (s)	<i>Cypseloides niger</i>
Vaux's Swift (s)	<i>Chaetura vauxi</i>
White-Throated Swift (s)	<i>Aeronautes saxatalis</i>
Broad-Tailed Hummingbird (s)	<i>Seasphorus platycercus</i>
Calliope Hummingbird	<i>Stellula calliope</i>
Belted Kingfisher	<i>Ceryle alcyon</i>
Northern Flicker*	<i>Colaptes auratus</i>
Pileated Woodpecker	<i>Dryocopus pileatus</i>
Lewis' Woodpecker	<i>Melanerpes lewis</i>
"Red-Breasted" Sapsucker	<i>Sphyrapicus varius daggetti</i>
Williamson's Sapsucker	<i>S. thyroideus</i>
White-Headed Woodpecker*	<i>Picoides albolarvatus</i>
Black-Backed Woodpecker	<i>P. arcticus</i>
Hairy Woodpecker	<i>P. villosus</i>
Hammond's Flycatcher (s)	<i>Empidonax hammondi</i>
Willow Flycatcher (s)	<i>E. traillii</i>
Dusky Flycatcher (s)*	<i>E. oberholseri</i>
Horned Lark	<i>Eremphila alpestris</i>
Barn Swallow (s)	<i>Hirundo rustica</i>
Violet-Green Swallow (s)	<i>Tachycineta thalassina</i>
Tree Swallow (s)	<i>Iridoprocne bicolor</i>
Stellar's Jay*	<i>Cyanocitta stelleri</i>
Pinyon Jay	<i>Gymnorhinus cyanocephalus</i>
Clark's Nutcracker*	<i>Nucifraga columbiana</i>
Black-Billed Magpie	<i>Pica pica</i>
Common Raven*	<i>C. corax</i>
Mountain Chickadee*	<i>Parus gambeli</i>
White-Breasted Nuthatch	<i>S. canadensis</i>
Pygmy Nuthatch*	<i>S. pygmaea</i>
Brown Creeper*	<i>Certhia familiaris</i>

<u>Common Name</u>	<u>Scientific Name</u>
American Dipper	<i>Cinclus mexicanus</i>
Rock Wren	<i>Salpinctes obsoletus</i>
Canyon Wren	<i>Catherpes mexicanus</i>
House Wren (s)	<i>Troglodytes aedon</i>
Winter Wren (w)	<i>T. troglodytes</i>
Robin*	<i>Turdus migratorius</i>
Hermit Thrush (s)	<i>Catharus guttata</i>
Swainson's Thrush (s)	<i>C. ustulata</i>
Mountain Bluebird	<i>Sialia currucoides</i>
Townsend's Solitaire	<i>Myadestes townsendi</i>
Ruby-Crowned Kinglet (s)	<i>Regulus calendula</i>
Golden-Crowned Kinglet	<i>R. satrapa</i>
Starling	<i>Sturnus vulgaris</i>
Solitary Vireo (s)	<i>Vireo solitarius</i>
Warbling Vireo (s)	<i>V. gilvus</i>
Yellow-Rumped Warbler (s)*	<i>Dendroica coronata</i>
MacGillivray's Warbler (s)	<i>Oporornis tolmiei</i>
House Sparrow	<i>Passer domesticus</i>
Redwinged Blackbird	<i>Agelaius phoeniceus</i>
Yellow-Headed Blackbirds (s)	<i>Xanthocephalus xanthocephalus</i>
Brewer's Blackbird*	<i>Euphagus cyanocephalus</i>
Brown-Headed Cowbird (s)*	<i>Molothrus ater</i>
Western Tanager*	<i>Piranga ludoviciana</i>
Western Meadowlark	<i>Sturnella neglecta</i>
Indigo Bunting	<i>Passerina cyanea</i>
Lazuli Bunting (s0)	<i>P. amoena</i>
Rosy Finch	<i>Leucosticte arctoa</i>
Purple Finch (s)*	<i>Carpodacus purpureus</i>
Cassin's Finch	<i>C. cassini</i>
House Finch (s)	<i>C. mexicanus</i>
Pine Grosbeak	<i>Pinicola enucleator</i>
Red Crossbill	<i>Loxia recurvirostra</i>
Evening Grosbeak	<i>Coccothraustes vespertinus</i>
Pine Siskin	<i>Spinus pinus</i>
Green-Tailed Towhee (s)	<i>Pipilo chlorurus</i>
Savannah Sparrow (s)	<i>Passerculus sandwichensis</i>
Dark-Eyed Junco*	<i>Junco hyemnalis</i>
Chipping Sparrow (s)*	<i>Spizella passerina</i>
White-Crowned Sparrow (s)*	<i>Zonotrichia leucophrys oriantha</i>
Golden-Crowned Sparrow (w)	<i>Z. atricappilla</i>
Fox Sparrow	<i>Passerella iliaca</i>
Lincoln's Sparrow (s)	<i>Melospiza lincolni</i>

Wildlife species observed during field survey June 16-18, 1990 or () reliably reported during surveys April 7-28 and May 6-27, 1990

(w) = Winter range only

(s) = Summer range only

All plant species recorded during field survey _____, 1990.

Sources: California Department of Fish and Game, 1983, California Wildlife/Habitat Relationships Program. The distribution of California mammals, reptiles and amphibians.

Grenfell, W.E., Jr. and W.F. Laudenslayer, Jr., eds. 1983. the distribution of California birds. California Wildlife/Habitat Relationships Program. Publ. #4. Calif. Dept. Fish and Game, Sacramento, and USDA For. Serv., San Francisco, CA.

E.W. Jameson, Jr. and H.J. Peeters, Mammals of California, University of California Press, Berkeley, California, 1988.

R.T. Peterson, 1969, A Field Guide to Western Birds, Houghton Mifflin Company, Boston.

R.C. Stebbins, 1985, A Field Guide to Western Reptiles and Amphibians, Houghton Mifflin Company, Boston.

Taylor, T.J., 1990, North Village Wildlife Study Parcels 1, 2, 10, 12, 14, 15, a report to the Town of Mammoth Lakes.

APPENDIX B.
CNDDDB Summary

APPENDIX B

RARE, ENDANGERED OR THREATENED SPECIES
KNOWN TO OCCUR IN THE PROJECT REGION¹

<u>Taxa</u>	<u>Status²</u>	<u>Notes</u>
PLANTS		
Hoary Draba (<i>Draba cana</i>)	// List 2	A low herbaceous perennial herb occurring in rocky areas. Last observed in 1978 at the timberline on a north facing talus slope above a Whitebank Pine forest north of Lake Geneva.
Kobresia (<i>Kobresia myosuroides</i>)	// List 2	This mountain sedge is known to occur in moist habitats between 9,700 and 10,600 feet elevations. In California known only from Convict Basin.
Mono Lake Lupin (<i>Lupinus duranii</i>)	/C2/List 1B	A habaceous perennial found only in disturbed areas of volcanic sand or gravel between 6500 -8500 feet. Seattered plants of this species observed in 1981 between Mammoth Mountain and the highway to Minovet Summit from Mammoth Lakes.
Mono Milk Vetch (<i>Astragalus monoensis</i>)	R/CI/List 1B	A perennial legume found in gravelly or sandy flats, sometimes sheltered under and scrambling through low sage at the 7,500 to 7,900 evaluations on the east slope of the Sierra Nevada. Known principally in the Lookout Mountain and Antelope Valley areas of Mono County.
BIRDS		
Northern Goshawk (<i>Accipiter gentilis</i>)	CSC3/ /	Known to breed throughout the Sierra Nevada Mountains at mid to higher elevations. Key habitats on north facing slopes near water. Known to nest in Mammoth Lakes area as

<u>Taxa</u>	<u>Status²</u>	<u>Notes</u>
		recently as 1983. Locational information suppressed.
Great Grey Owl (<i>Strix nebulosa</i>)	E/FSS2/	Forages in wet meadows and nests and roosts in nearby coniferous forests. Both old-growth and second-growth forest is used. Year around resident species. Active at times during day light hours. One owl observed in 1975 at Valentine Camp near Old Mammoth Lakes. Probable breeding habitat nearby, but no recent surveys have been done to evaluate breeding status.
Spotted Owl (<i>Strix occidentalis</i>)	C5C2/T/	Resident in conifer, dense Redwood, old growth, multilayered mixed and Douglas Fir habitats from sea level to approximately 7,600 ft. elevations. Known to occur in Crystal Crag and Mammoth Mountain areas. Locational information suppressed
Yellow Warbler (<i>Dendroica petechia brewsteri</i>)	C5C2/ /	Known to occur in montane chaparral, in open Ponderosa Pine and mixed conifer habitats. Last known from area near Mammoth in 1923.
MAMMALS		
Pacific Fisher (<i>Martes pennanti pacifica</i>)	CSC3/FSS2/	Species preys on a variety of small to medium sized mammals in heavy stands of mixed species of native timber. Most recently seen 3.5 miles WNW of Mammoth Lakes in the vicinity of Mammoth Lodge in the 1970s.
Wolverine (<i>Gulo gulo</i>)	T/C2/	A large predator in high alpine habitats. Usually in open areas above timber line. Most sightings in California at the 8000 ft. level. Last observed in 1947 near Clover Leaf Lake.

¹Source:

California Natural Diversity Data Base (CNDDDB). Computer printout for four surrounding 7.5 minute quadrangle USGS maps in the project region (Old Mammoth, Bloody Mountain, Mammoth Mountain, Crystal Crag). June 30, 1990.

California Department of Fish and Game, Bird Species of Special Concern in California No. 78-1 (June 1978).

_____, Mammalian Species of Special Concern in California, Report 86-1 (June 1986).

_____, Special Animals List, April 1990.

²State/Federal/Other:

State:

California Endangered Species Act (1984), Native Plant Protection Act (1977), and the California Environmental Quality Act.

R = Rare. Plants that although not currently Threatened are in such small numbers or restricted habitats that they may become Threatened or Endangered if present conditions continue.

T = Threatened. Plants or animals likely to become Endangered in the foreseeable future in the absence of protection action(s).

E = Endangered. Seriously in danger of becoming extinct.

CCE = California Candidate for listing as Endangered.

CCT = California Candidate for listing as Threatened.

CSC = California Department of Fish and Game Species of Special Concern.

CFP = A California Department of Fish and Game "fully protected" species, as described in Section 4700 of Chapter 8, Section 5050 of Chapter 2, Division 6, Chapter 1, Section 5515.

Federal:

Federal Endangered Species Act of 1973, as amended.

E = Taxa formally listed as Endangered.

T = Taxa formally listed as Threatened

C1 = Candidate taxa for which there is enough information to support the biological appropriateness of proposing to list as Threatened or Endangered.

C2 = Candidate taxa for which there is biological information that indicates that proposing to list the taxa as Threatened or Endangered is possibly appropriate, but for which substantial data on biological vulnerability and threat(s) are not currently known or on file to support the immediate listing.

C3 = Taxa that are no longer under consideration for listing. There are three subcategories, depending on reason(s) for removal from consideration:

3A = Taxa believed to be extinct.

3B = Taxa with taxonomic problems that do not meet the Endangered Species Act definition of a "species."

3C = Taxa that are too common or widespread and/or those not subject to any identifiable threat(s).

PE = Proposed Endangered.

FSS = Federal (BLM and USFS) Sensitive Species.

1 = Category 1 Candidate for Federal listing. (Taxa for which the U.S. Fish and Wildlife Service has sufficient biological information to support a proposal to list as Endangered or Threatened.)

2 = Category 2 Candidate for Federal list. (Taxa which existing information indicates may warrant listing, but for which substantial biological information to support a proposed rule is lacking.)

W = Watch list. Location information for these taxa is not computerized. The NDDDB is currently collecting distribution information but maintains manual files only.

Other:

Section 15380 of the California Environmental Quality Act [CEQA (September, 1983)] has a discussion regarding non-listed (State) taxa. This section states that a plant (or animal) must be treated as Rare or Endangered even if it is not officially listed as such. If a person (or organization) provides information showing that a taxa meets the State's definitions and criteria, then the taxa should be treated as such in an EIR.

The California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants (1985).

List 1 = Plants of Highest Priority.

List 1A = Plants presumed Extinct in California.

List 1B = Plants Rare or Endangered in California and elsewhere.

List 2 = Plants Rare or Endangered in California, more common elsewhere.

List 3 = Plants for which more information is needed.

List 4 = Plants of limited distribution (a watch list).

CSC# Species of Special Concern to California Department of Fish and Game.

Priority:

1. Face immediate extirpation in California.
2. Definitely in decline.
3. Vulnerable to extirpation due to small natural range.

³Suitable habitat for species maintenance and/or reproduction exists within project boundaries.

APPENDIX C.
Erosion Guidelines

GUIDELINES FOR EROSION CONTROL

IN THE MAMMOTH LAKES AREA

Erosion control guidelines have been adopted by the Regional Board to establish standards for the control of erosion and drainage from developments in the Mammoth Creek Watershed, above elevation 7,000 feet. Such standards are necessary to provide developers with a uniform approach for the design and installation of an adequate system to control erosion and storm runoff. The guidelines are designed to prevent the degradation of Mammoth and Hot Creeks by minimizing the impacts on the creeks of the drainage from the community of Mammoth Lakes.

I. GENERAL POLICY

The Regional Board will request a report of waste discharge from the developers of a proposed project and will establish waste discharge requirements to ensure that proper control measures for the protection of water quality are taken during all phases of a proposed development. The report of waste discharge and the adopted waste discharge requirements will be in conformance with the erosion control guidelines which are listed below:

II. WASTE DISCHARGE REPORTS

- A. The submittal of a report of waste discharge shall be required according to the following criteria:
1. A new development involving either (a) six or more dwelling units, or (b) commercial developments that involve soil disturbance on $\frac{1}{2}$ acre or more shall file a complete report of waste discharge not less than 90 days before the intended commencement of construction activities.
 2. Existing developments and new developments involving five or less dwelling units shall file a report of waste discharge only at the request of the Regional Board. Such filing shall be no more than 60 days from the date of request, or sooner, if so stated in the initial request.
- B. Reports of waste discharge for projects in the Mammoth Creek Watershed that involve the disturbance of soil shall contain the following elements:
1. A description of the interim erosion control measures to be applied during the period in which the project is under construction.
 2. Details of the short-term and long-term erosion and drainage control measures to be employed following the completion of the construction phase of the project.
 3. A time schedule delineating the sequence by which the above erosion and drainage control measures will be applied and are expected to become effective.

Details of all erosion control measures shall be shown on suitable-scale engineering drawings. The report shall also include engineering criteria and design calculations for erosion control facilities.

III. GUIDELINES

The following guidelines are necessary for the protection of water quality within the Mammoth Lakes area.

1. Drainage collection, retention, and infiltration facilities shall be constructed and maintained to prevent transport of the runoff from a 20-year, 1-hour design storm from the project site.a/
2. Surplus or waste material shall not be placed in drainage ways or within the 100-year flood plain of surface waters.
3. All loose piles of soil, silt, clay, sand, debris, or earthen materials shall be protected in a reasonable manner to prevent any discharge to waters of the State.
4. Dewatering shall be done in a manner so as to prevent the discharge of earthen material from the site.
5. All disturbed areas shall be stabilized by appropriate soil stabilization measures by October 15th of each year.
6. All work performed between October 15th and May 1st of each year shall be conducted in such a manner that the project can be winterized within 48 hours.
7. Where possible, existing drainage patterns shall not be significantly modified.
8. After completion of a construction project, all surplus or waste earthen material shall be removed from the site and deposited at a legal point of disposal.
9. Drainage swales disturbed by construction activities shall be stabilized by the addition of crushed rock or riprap as necessary or other appropriate stabilization methods.
10. All nonconstruction areas shall be protected by fencing or other means to prevent unnecessary disturbance.

a/ The 20-year, 1-hour design storm for the Mammoth Lakes area is equal to 1.0 inch (2.5 cm).

11. During construction, temporary erosion control facilities (e.g. impermeable dikes, filter fences, hay bales, etc.) shall be used as necessary to prevent discharge of earthen materials from the site during periods of precipitation or runoff.
12. Revegetated areas shall be continually maintained in order to assure adequate growth and root development. Physical erosion control facilities shall be placed on a routine maintenance and inspection program to provide continued erosion control integrity.
13. Where construction activities involve the crossing and/or alteration of a stream channel, such activities shall be timed to occur during the period in which streamflow is expected to be lowest for the year.

IV. IMPLEMENTATION

1. The responsibility for the timely submittal of information necessary for the Regional Board to determine compliance with these guidelines rests with persons submitting proposals for development. The Porter-Cologne Water Quality Control Act provides that no person shall initiate any new discharge of wastes prior to filing a complete report of waste discharge and prior to issuance of waste discharge requirements, the expiration of 120 days after submittal of a complete report of waste discharge, or the waiver of waste discharge requirements.
2. The Regional Board may pursue enforcement action should these erosion control guidelines not be adhered to.

APPENDIX D.
Traffic Study

NORTH VILLAGE SPECIFIC PLAN EIR
TRAFFIC STUDY

Prepared for:

EIP ASSOCIATES

and the

TOWN OF MAMMOTH LAKES

Prepared by:

TRANSTECH
TRANSPORTATION ENGINEERS

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION AND SUMMARY	1
1.1 Introduction and Project Description	1
2.0 EXISTING CONDITIONS	9
2.1 Study Intersections	12
2.2 Evaluation of Existing Conditions	14
2.3 Existing Levels of Service	16
3.0 FUTURE ROADWAY IMPROVEMENTS	19
3.1 Town of Mammoth Lakes Programmed Improvements	19
3.2 North Village Specific Plan Circulation Improvements	19
4.0 DETERMINING FUTURE TRAFFIC IMPACTS	21
4.1 Background Information - Project Related Trip Generation, Distribution and Assignment	21
4.2 Cumulative Base Traffic Projections	21
4.3 North Village Specific Plan Traffic Generation	25
4.4 Cumulative and Project Related Distribution and Assignment	29

5.0	ANALYSIS OF FUTURE TRAFFIC IMPACTS	34
5.1	Traffic Impact Measure of Significance	34
5.2	Cumulative (No Project) Conditions	35
5.3	Cumulative Plus Project Conditions	37
6.0	MITIGATION MEASURES	42
6.1	Roadway Improvements	42
6.2	Intersection Improvements	43
6.3	Transportation Demand Management	44
6.4	Effect of Mitigation Measures	46
6.5	Project Contribution	49
7.0	EVALUATION OF THE PROPOSED SPECIFIC PLAN CIRCULATION SYSTEM AND SITE ACCESS	52
7.1	Overview of the Circulation Plan	52
7.2	Vehicular Circulation	52
7.3	Pedestrian Circulation and Public Transit	55
7.4	Specific Plan Circulation and Site Access Mitigation Measures	56

TECHNICAL APPENDIX

- Intersection Configurations
(Existing with Programmed Improvements, with North Village Circulation Improvement and with Ultimate Mitigations)
- Level of Service Descriptions (Signalized Intersections)
- Level of Service Definitions (Two-Way Stop Controlled Intersection)
- Trip Generation Methodology Town of Mammoth Lakes

TRAFFIC APPENDIX A

- Intersection Capacity Calculations

LIST OF FIGURES

<u>Figure</u>	<u>Description</u>	<u>Page</u>
1	Vicinity Map	2
2	North Village Development Plan	3
3	Proposed Vehicular Circulation	6
4	Roadway Network Improvements	7
5	Existing Winter Saturday ADT Circulation	10
6	Circulation Element	13
7	Cumulative Projects	24
8	Cumulative Winter Saturday ADT	32
9	Cumulative Plus Project Winter Saturday ADT	33
10	Pedestrian Circulation	56
11	Shuttle System	57

LIST OF TABLES

<u>Table</u>	<u>Description</u>	<u>Page</u>
1	Existing Daily Winter Weekend Roadways Level of Service	17
2	Existing PM Peak Hour Level of Service Summary	18
3	Mammoth Mountain Ski Area Expansion Plan	23
4	Winter Saturday Trip Generation Rates	26-27
5	Net Winter Weekend Vehicular Trip Generation for Cumulative Projects	28
6	North Village Specific Plan Winter Weekend Vehicular Trip Generation	30
7	Cumulative Base Daily Winter Weekend Roadway Levels of Service	36
8	Cumulative PM Peak Hour Level of Service Summary Town of Mammoth Lakes Programmed Improvement	38
9	Cumulative Plus Project Daily Winter Weekend Roadways Levels of Service	40
10	Cumulative Plus Project PM Peak Hour Level of Service Summary North Village Specific Plan Improvements	41
11	Cumulative Plus Project Daily Winter Weekend Roadway Levels of Service with Mitigation Measures	47
12	Cumulative Plus Project PM Peak Hour Level of Service Summary Mitigation Improvements	48

LIST OF TABLES (Continued)

13	Percent Contribution of Project Traffic to Cumulative Daily Traffic	50
14	Percent Contribution of Project Traffic to Cumulative PM Peak Hour Traffic	51

1.0 INTRODUCTION AND SUMMARY

1.1 Introduction and Project Description

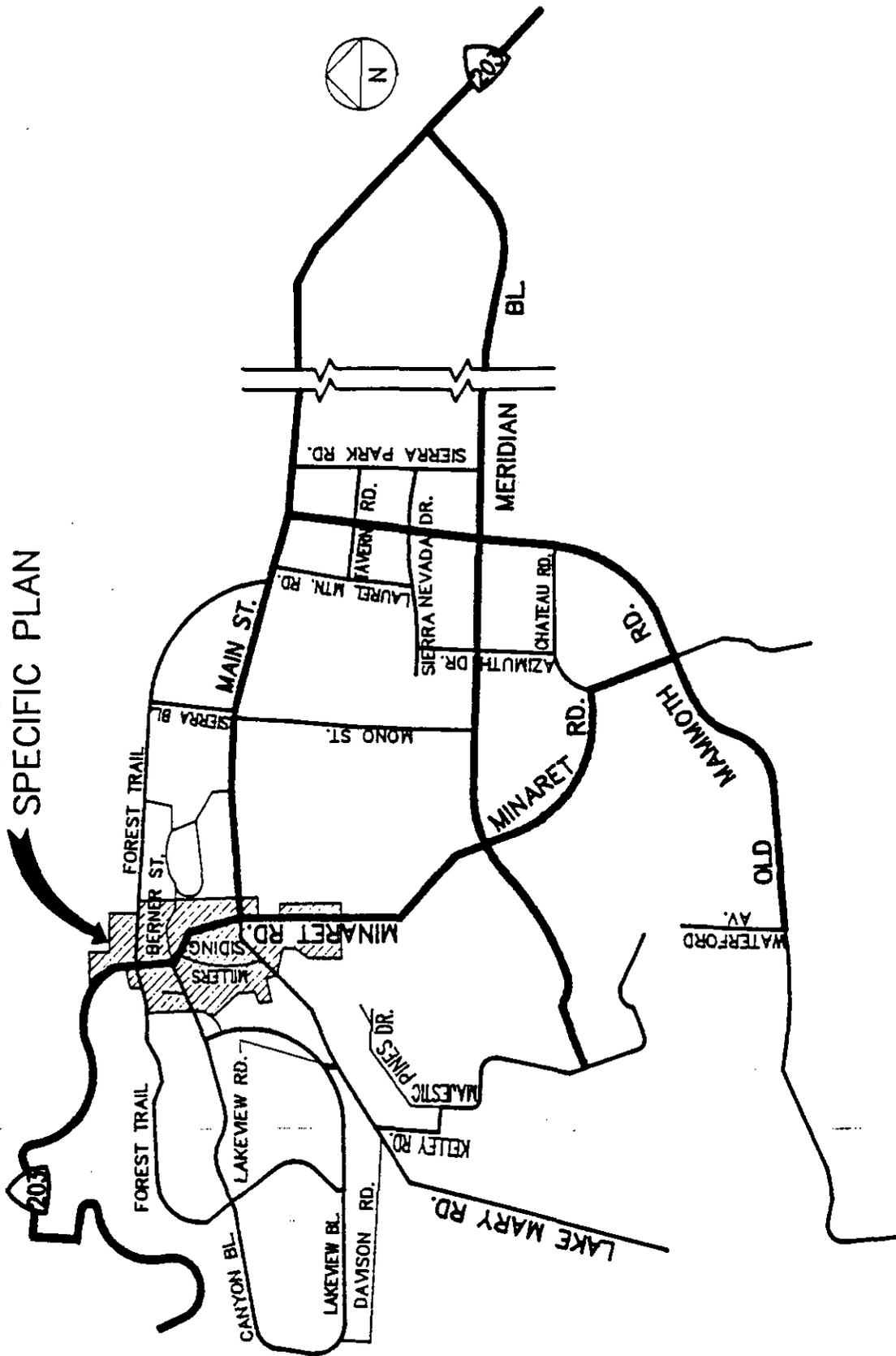
This study has been prepared to analyze and evaluate the transportation and traffic circulation of the proposed North Village Specific Plan and assess the impacts of the proposed development in the Town of Mammoth Lakes, California. The information provided is a part of a comprehensive Environmental Impact Report prepared for the project by EIP Associates in conformance with the California Environmental Quality Act (CEQA).

The North Village Specific Plan is a master plan for developing approximately 64 acres. The specific plan area is located along Minaret Road north and south of Lake Mary Road/Main Street. Ultimate build-out of North Village could include approximately 2,000 new hotel/motel lodging units and 400 condominium lodging units. Added to approximately 250 existing hotel/motel units and 30 existing condominium units, build-out of the project would bring the total lodging for the area to 2,250 hotel/motel units and 430 condominium units. In addition, approximately 227,000 square feet of new commercial (retail shops and eating establishments) and employee housing units are planned. The Specific Plan does not identify the number of employee housing units that will be provided. The number of units is a subject specifically being addressed by the Jobs/Housing section of the EIR.

Figure 1 shows the location of the North Village Specific Plan in relationship to the existing roadway system. The master plan for North Village which is presented in Figure 2 incorporates the following major features that will influence the project's transportation and circulation impacts:

Plaza Resort: A pedestrian plaza resort area has been designed for approximately 15.2 acres which will serve as the "core" of the North Village development and will contain a Mammoth Mountain Ski Area (MMSA) lift to Warming Hut II facilities. Due to the lift's importance as a focal part of the North Village development, it is described separately below. Also proposed for development in the pedestrian plaza will be three hotels totalling 800 rooms, and approximately 60,000 square feet of new commercial space not including support commercial and convention facilities within the confines of the full service hotels. Commercial facilities within the plaza area will be focused toward the visitor and will include specialty retail shops and eating establishments. Also planned are approximately 120 condominium units.

NORTH VILLAGE
SPECIFIC PLAN



TOWN OF MAMMOTH LAKES

VICINITY MAP

FIGURE 1

transtech

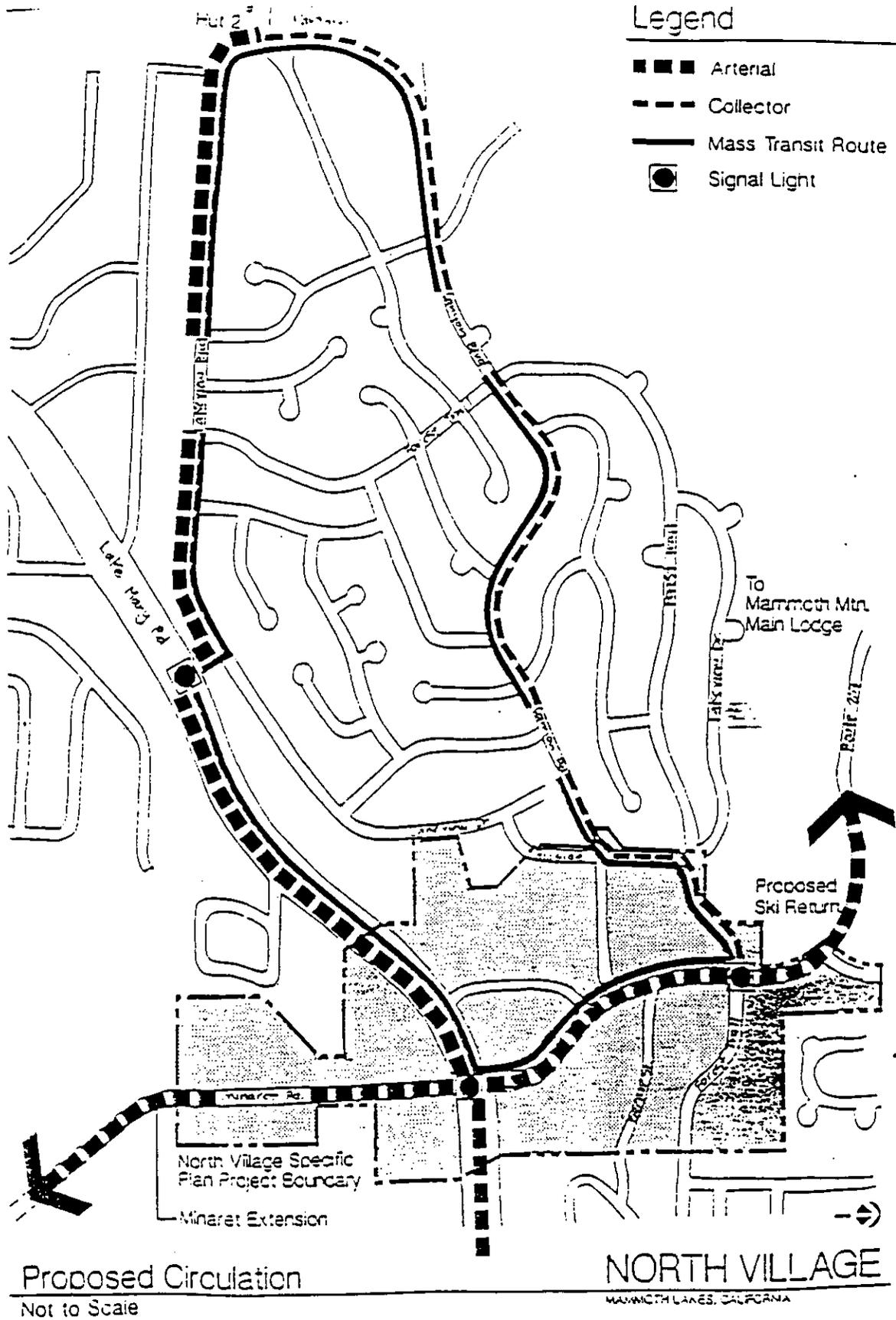
As indicated in Figure 2, the plaza resort will be located on both sides of Minaret Road. Access to and travel between the two parts will be provided by an overhead walkway across Minaret Road.

Resort General: This area, adjacent to the plaza resort, will provide visitor-oriented resort services similar to the plaza resort. The resort general will include 1,200 new hotel/motel lodging units, 280 new condominium units, and 167,000 square feet of new commercial space. Limited vehicle access may be permitted in this area to provide a transition between the pedestrian oriented plaza resort and the remaining development.

Ski Lift: Included within the confines of the plaza resort is the base of a planned ski lift facility which will transport skiers from the North Village Area to MMSA's base facilities. The lift is proposed to be a high-speed enclosed gondola with a design capacity of 2,500 skiers per hour. No day-use skier parking will be provided at the ski lift. The lift will be oriented toward those skiers staying in accommodations in North Village or other facilities within walking distance and those accessing the facility via public transit shuttle.

Ski Back: A ski back trail will be provided to enable skiers from MMSA to return to the lodging facilities or meeting places in North Village without use of private or public vehicles. The majority of the ski-back trail will be located outside the Specific Plan Area, between MMSA and North Village. The trail will end at the northwest corner of State Route 203 and Forest Trail Road. Access from the ski-back to the marshalling area/bus stop on the northeastern corner of the intersection will be provided via a pedestrian undercrossing.

Pedestrian Circulation System: An integral part to the North Village Plan is the emphasis on pedestrian orientation and accessibility. Major features of the pedestrian circulation system include over three miles of sidewalks and walkways. Controlled pedestrian access across Forest Trail Road linking the skier marshalling area with North Village, and pedestrian access by an overhead walkway across Minaret Road to connect the westerly and easterly portions of the plaza, are also proposed.



Roadway System: The proposed vehicular circulation for the Specific Plan is illustrated in Figure 3. This roadway network includes improvements to the existing roadway system which are depicted in Figure 4. They include:

1. Abandon lower Canyon Boulevard east of Hillside Drive and elimination of the Canyon Boulevard and Minaret Road intersection.
2. Reroute skier traffic from Warming Hut II to Lake Mary Road to relieve congestion at the Forest Trail-Minaret Road intersection and enable traffic from MMSA Main Lodge and Warming Hut II to meet at controlled conditions at the Lake Mary Road/Main Street-Minaret Road intersection.
3. Physical improvements, including modification of grades and/or widening of streets on Lakeview Road, Lakeview Boulevard, Lake Mary Road, Millers Siding Road, and Minaret Road to safely accommodate projected traffic flows.
4. Closure of the westerly portion of Berner Street and elimination of the Berner Street-Minaret Road intersection, rerouting of Berner Street to connect with Forest Trail to reduce traffic flow on Berner Street.

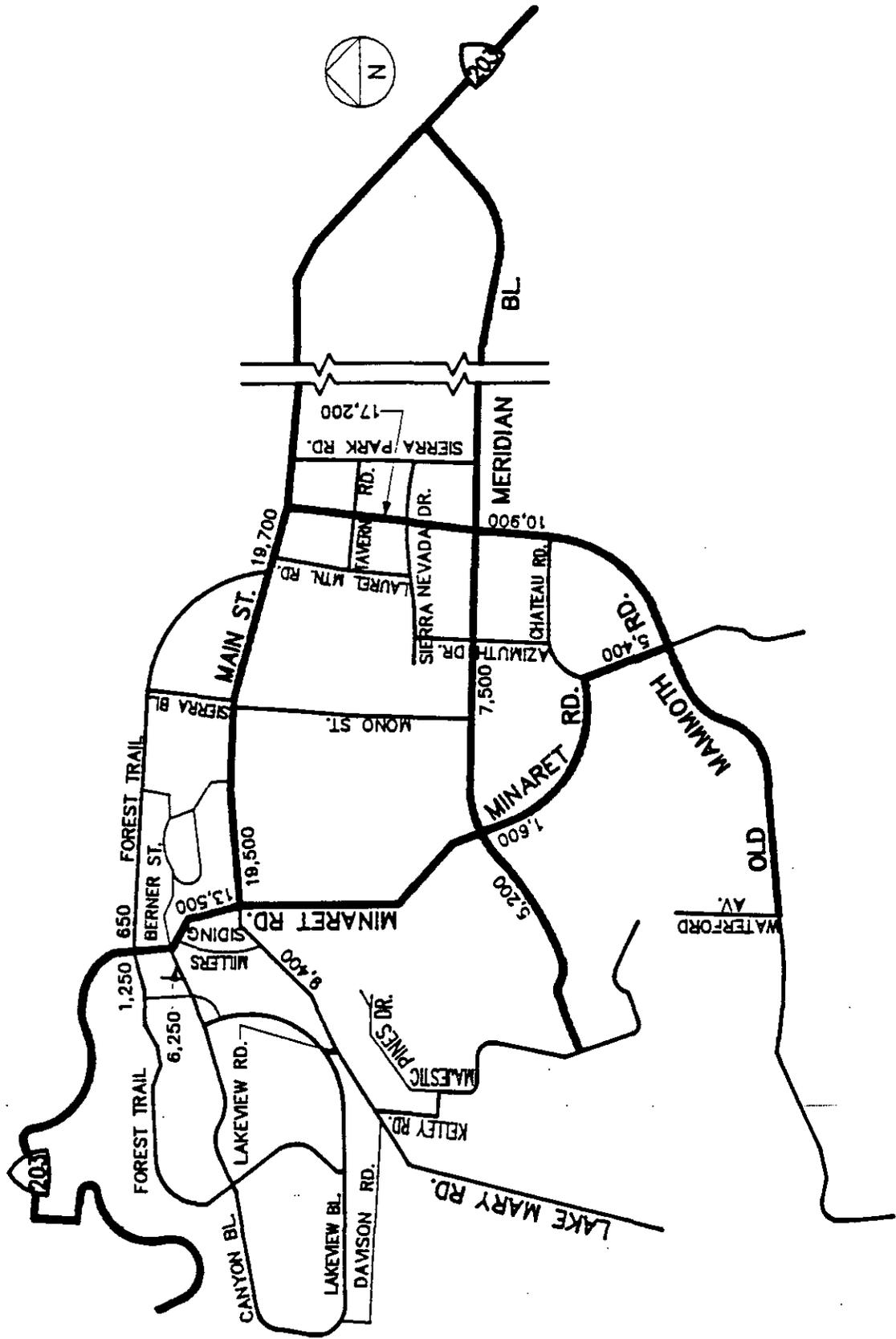
2.0 EXISTING CONDITIONS

A comprehensive data collection effort was used to identify the traffic related conditions on the roadways that will be impacted by the proposed North Village Specific Plan. The data collection included identifying current traffic volumes, the physical features of the streets and arterial highways and operational conditions of the roadway network. Streets in Mammoth Lakes are classified in the Town of Mammoth Lakes General Plan according to the following definitions:

- o Arterials - Main traffic-carrying facilities which accommodate relatively high volumes of traffic at speeds up to 40 miles per hour.
- o Collectors - Provide access from major residential, industrial, recreational and commercial areas to arterial streets.
- o Local Roads - Provide access from primarily residential areas to collector or arterial streets.
- o Rural Roads - Provide access to remote scenic or recreational areas.

The following paragraphs describe the current classification of each of the important roadways in the study area and compares these ultimate classifications to current conditions. Relevant circulation features and Average Daily Traffic (ADT) volumes in the study area are summarized in Figure 5.

- o Main Street/Lake Mary Road - West of Minaret Road, this facility is known as Lake Mary Road and is a two-lane collector street. East of Minaret Road, this facility is known as Main Street and is also designated as State Route 203. Main Street is a major east/west arterial in the Town. Main Street/State Route 203 also provides the primary access into and out of the Mammoth Lakes area, connecting with U.S. 395 approximately three miles to the east of the Town. Main Street provides four travel lanes east of Minaret Road. A two-way continuous left-turn lane is provided between Mono Street/Sierra Boulevard and Sierra Park Boulevard. The intersections with Minaret Road and Old Mammoth Road are signalized.



TOWN OF MAMMOTH LAKES

transtech

**EXISTING
WINTER SATURDAY
ADT**

FIGURE 5

- o Meridian Boulevard - Meridian Boulevard is a four-lane arterial between its western terminus at Majestic Pines Drive and Sierra Park Road east of Old Mammoth Road. East of Sierra Park Road, Meridian Boulevard is striped for two lanes and connects with State Route 203, providing an alternative route into and out of Mammoth Lakes. The intersection with Old Mammoth Road is signalized.
- o Minaret Road - Minaret Road is designated as State Route 203 between Main Street and the Mammoth Mountain Ski Area and is classified as an Arterial in the Town General Plan. From Canyon Road to the Mammoth Mountain Ski Area, Minaret Road is a two-lane rural highway. Minaret Road provides two through travel lanes from Canyon Boulevard to Old Mammoth Road. The intersection with Main Street/Lake Mary Road is signalized.
- o Old Mammoth Road - Old Mammoth Road is classified as an Arterial. Between its northern terminus at Main Street and south of Chateau Road, Old Mammoth Road has two travel lanes and a two-way continuous left-turn lane. Two lanes are provided from south of Chateau Road to the western terminus. West of this point to Lake Mary Road, Old Mammoth Road is narrow, unpaved, and closed during winter months. The intersections of Old Mammoth Road with Meridian Boulevard and Main Street are signalized.
- o Kelley Road - Kelley Road is a two-lane local road which connects Majestic Pines Drive with Lake Mary Road.
- o Forest Trail - Forest Trail is a two-lane collector serving residential areas to the east and west of Minaret Road. To the east it terminates at Main Street and to the west at Lakeview Boulevard.
- o Lakeview Boulevard - Lakeview Boulevard is classified as a collector. It provides two travel lanes and provides access between Warming Hut II and residential areas and Lake Mary Road (via Lakeview Road) and Minaret Road (via Canyon Boulevard).
- o Lakeview Road - Lakeview Road is a short, two-lane local road which connects Lakeview Boulevard with Lake Mary Road. Traffic travelling from Lake Mary Road to Warming Hut II must use Lakeview Road to access Lakeview Boulevard.

- o Canyon Boulevard - Canyon Boulevard is an east/west, two-lane collector. Near Warming Hut II at the western end of Canyon Boulevard it turns south and becomes Lakeview Boulevard. It provides access between Warming Hut II and residential areas and Minaret Road.
- o Millers Siding - This short two-lane local street provides a connection between Minaret Road and Lake Mary Road.
- o Sierra Boulevard - Sierra Boulevard is a north/south, two-lane collector that connects Forest Trail with Main Street.

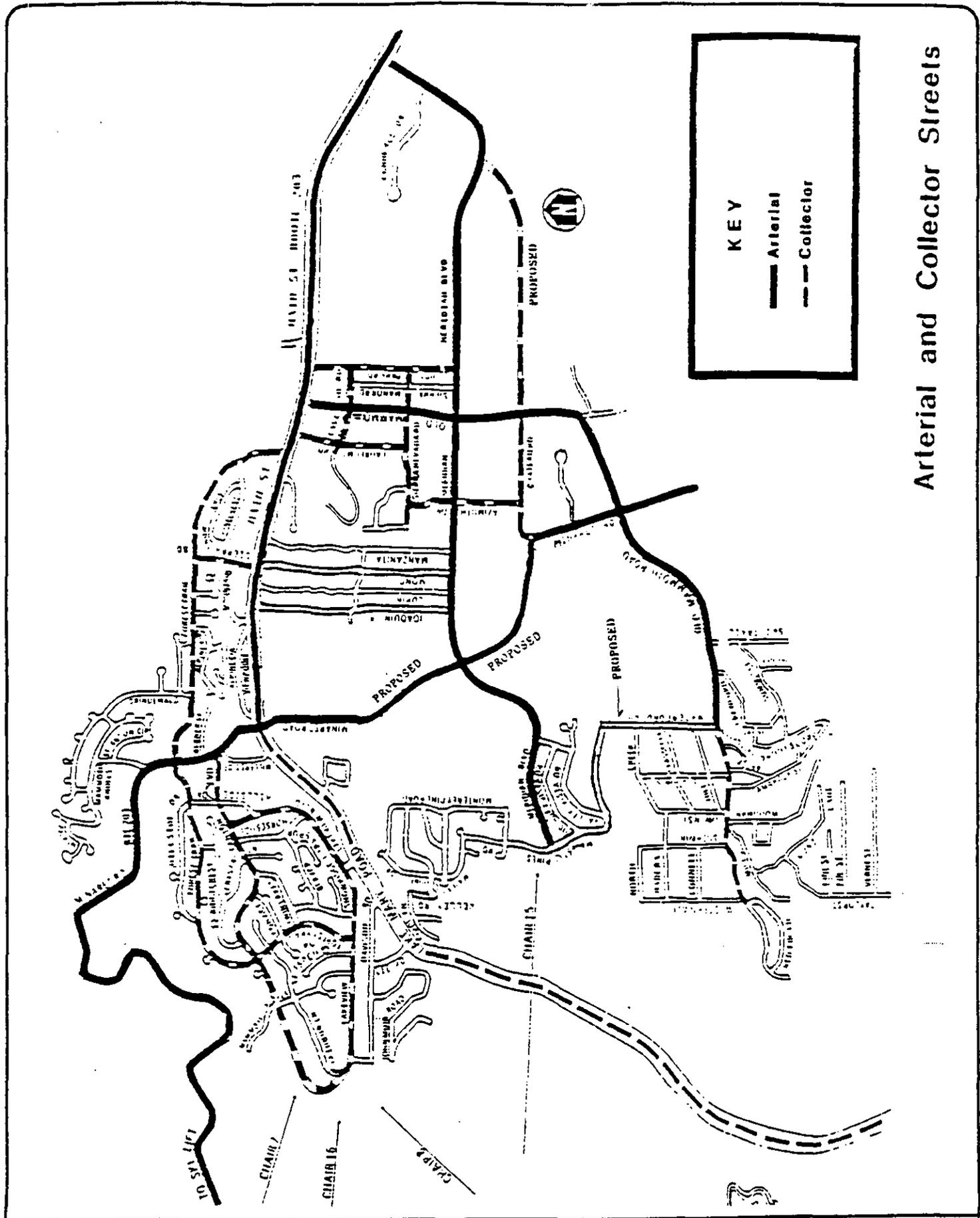
The Town of Mammoth Lakes Circulation Element that identifies the roadway classifications of the roadways previously discussed is provided in Figure 6.

2.1 Study Intersections

Ten intersections in the study area can expect to be measurably impacted by the proposed project and for that reason were evaluated throughout the study. The intersections were:

- Minaret Road & Main Street/Lake Mary Road
- Minaret Road & Canyon Boulevard
- Minaret Road & Forest Trail
- Kelley Road & Lake Mary Road
- Lakeview Road & Lake Mary Road
- Sierra Boulevard & Main Street
- Old Mammoth Road & Main Street
- Minaret Road & Meridian Boulevard
- Old Mammoth Road & Meridian Boulevard
- Minaret Road & Old Mammoth Road

The traffic lane configurations on the approaches to these intersections and estimated traffic volumes for a typical PM peak winter ski weekend Saturday are summarized with the capacity calculations provided in the Technical Appendix.



TOWN OF MAMMOTH LAKES
transtech

CIRCULATION
 ELEMENT

FIGURE 6

Arterial and Collector Streets

2.2 Evaluation of Existing Conditions

The ability of a circulation network to accommodate vehicular traffic can be measured by dividing the actual or projected volume of a roadway or intersection by its theoretical capacity. This can be done with daily and/or peak period volumes. Peak hour volume/capacity analysis, particularly at intersections, give the most accurate picture of the relative level of congestion experienced by a motorist. Midblock ADT capacity evaluations are used in determining long range (10 to 20 years) roadway capacity needs for large or moderately sized study areas. Both midblock ADT and intersection analyses were used throughout the study to evaluate the impacts of the proposed North Village Specific Plan.

To go along with the quantitative analysis, the qualitative description known as "Level of Service" (LOS) was used to express traffic flow conditions identified by volume/capacity ratios. A LOS "C" during peak hour conditions is most often considered the lowest acceptable LOS in a rural setting and is typically used as a design standard for roadway improvements where capacity is a major consideration. It's the Town of Mammoth Lakes' policy to maintain Level of Service C or better. A detailed breakdown explanation of the LOS concept for signalized and unsignalized intersections is provided in the Technical Appendix.

Estimated PM peak winter weekend Saturday turning volumes were used along with estimated Average Daily Traffic (ADT) volumes for a winter Saturday to document existing conditions in the study area and as a basis for the analysis of future conditions. This traffic data was taken from previous traffic studies conducted for the North Village Specific Plan¹ and other proposed projects² in the area.

The Town of Mammoth Lakes has identified Saturday mid-winter a representative "worst case" traffic conditions. These conditions occur from 10 to 20 days per year, or 3% to 6% of the time at the height of the winter ski season. The remainder of the year traffic conditions can expect to be substantially better. However, the analysis performed throughout this study will be representative of the Saturday mid-winter traffic conditions.

¹ Letter Report (to David Laverty; Triad Engineering Corporation) regarding the North Village Specific Plan Traffic Impacts, BSI Consultants Inc., March 23, 1990.

² Draft Lodestar Master Plan EIR, EIP Associates, September 1990.

The traffic data was used to calculate Volume to Capacity (V/C) and to determine Levels of Service (LOS) for the intersections studied.

The "Critical Movement Analysis - Planning"³ (CMA) method of intersection capacity analysis was used to determine the intersection volume to capacity (V/C) ratio and corresponding Level of Service at each of the signalized intersections in the study area. The CMA methodology normally uses a volume of 1,500 vehicles per lane per hour of green time as the capacity for the sum of the critical movements at two-phase traffic signal, with critical capacities of 1,425 for signals with three to six phases and 1,375 vehicles per hour for eight phase signals. However, adverse weather and street surface conditions experienced in Mammoth Lakes during winter months substantially reduce street and intersection capacities. To present a "worst case" analysis a reduced capacity value of 1,275 vehicles per lane per hour of green was used in this study for two phase signals (15% lower than the standard capacity value), with corresponding 15% reductions in capacity for multi-phased signals.

The "Two-Way Stop Control"⁴ method presented in the 1985 Highway Capacity Manual was used to conduct intersection capacity analyses for the unsignalized intersections. This methodology provides an estimate of the "available reserve capacity" and corresponding level of service for each of the constrained movements at the intersection. Under existing conditions, all but three of the analyzed intersections (Minaret Road/Main Street, Old Mammoth Road/Meridian Boulevard and Old Mammoth Road/Main Street) are unsignalized.

The mid-block roadways Level of Services were determined using Average Daily Traffic (ADT) evaluation criteria using procedures similar to the analysis used to prepare the Circulation Element for the Mammoth Lakes General Plan. These procedures are based on estimated two-way daily roadway capacity values of 12,500 vehicles per day (vpd) for a two-lane street; 17,500 vpd for two through lanes plus a two-way continuous left-turn lane; 25,000 vpd for a four-lane arterial and 30,000 vpd for four through lanes plus a two-way continuous left-turn lane. These values are lower than typical daily capacity values used for rural and suburban streets. This approach takes into account the reduced capacities often experienced in Mammoth

³ "Interim Materials on Highway Capacity - Circular 213;" Transportation Research Board; January 1980.

⁴ 1985 Highway Capacity Manual; Transportation Research Board; Washington, D.C.

Lakes during winter months due to adverse weather, street surface conditions and rural/mountain conditions that affect roadway design.

2.3 Existing Levels of Service

Table 1 shows the estimated existing daily Levels of Service on major streets in Mammoth Lakes for a typical winter Saturday. As shown, all but two street segments are currently operating at acceptable Levels of Service (LOS C or better). Old Mammoth Road is operating at LOS E between Meridian Boulevard and Main Street, and Minaret Road is operating at LOS F between Canyon Boulevard and Forest Trail.

Table 2 summarizes the estimated existing afternoon peak hour V/C ratio or available reserve capacity and corresponding level of service at each of the ten analyzed intersections for a typical winter Saturday. As indicated in the table, under estimated existing conditions, five of the ten analyzed intersections are currently operating at unacceptable Levels of Service (i.e. LOS D, E or F) during the PM peak hour. The signalized intersection of Old Mammoth Road/Meridian Boulevard and the unsignalized intersection of Minaret Road/Forest Trail operate at LOS D. The unsignalized intersections of Sierra Boulevard/ Main Street, Lakeview Road/Lake Mary Road, and Minaret Road/Canyon Boulevard operate at LOS E.

It should be recognized that the poor operating conditions indicated for the four unsignalized intersections reflect conditions only for the stop-controlled vehicles waiting to turn from the side street onto the major street. They do not represent conditions for the intersection as a whole. Traffic on the major street is for the most part unrestricted and free flowing.

It is interesting to note that the estimated existing traffic volumes at two of the five unsignalized intersections currently operating at poor Levels of Service (Minaret Road/Canyon Boulevard and Lakeview Road/Lake Mary Road) are sufficiently heavy to satisfy standard traffic signal warrants. Traffic signals at these two locations would improve conditions to acceptable levels. However, circulation improvements proposed as part of the North Village Specific Plan, if implemented, would eliminate the Minaret Road/Canyon Boulevard intersection.

The existing Level of Service was also determined on the major roadway segments analyzed. The roadway segment on Old Mammoth Road from Meridian Boulevard to Main Street currently operates at LOS "E". The segment on Minaret Road from

Canyon Boulevard to Forest Trail operates at LOS "F". All other segments studied operate at LOS "C" or better.

TABLE 1
EXISTING DAILY WINTER WEEKEND
ROADWAYS LEVELS OF SERVICE

<u>ROADWAY</u>	<u>SEGMENT</u>	<u>EXISTING TRAVEL LANES</u>	<u>DAILY CAPACITY</u>	<u>Existing ADT</u>	<u>Condition V/C</u>	<u>Level</u>
Mary Road	Lakeview Rd. to Minaret Rd.	2-und	12,500	9,400	0.75	C
n Street	Minaret Rd. to Sierra Blvd.	4-und	25,000	19,500	0.78	C
n Street	Forest Trail to Old Mammoth Rd.	4-lt	30,000	19,700	0.66	I
Indian Boulevard	Majestic Pines Dr. to Minaret Rd.	4-und	25,000	5,200	0.21	A
Indian Boulevard	Minaret Rd. to Old Mammoth Rd.	4-und	25,000	7,500	0.30	A
Minaret Road	Old Mammoth Rd. to Chateau Rd.	2-und	12,500	5,400	0.43	A
Minaret Road	Chateau Rd. to Meridian Blvd.	2-und	12,500	1,600	0.12	A
Minaret Road	Main Blvd. to Forest Trail	2-und	12,500	13,500	1.08	I
Mammoth Road	Chateau Rd. to Meridian Blvd.	2-lt	17,500	10,900	0.62	I
Mammoth Road	Meridian Blvd. to Main St.	2-lt	17,500	17,200	0.98	I
Forest Trail Road	E/O Minaret Rd.	2-und	12,500	650	0.05	A
Forest Trail Road	W/O Minaret Rd.	2-und	12,500	1,250	0.10	A
Sierra Blvd.	W/O Minaret Rd.	2-und	12,500	6,250	0.50	A

- Left-Turn channelization for all major segments.
- Undivided, little or no left turn channelization.

TABLE 2
EXISTING PM PEAK HOUR LEVEL OF SERVICE SUMMARY

<u>Unsignalized Intersections</u>	<u>Reserve Capacity^a</u>	<u>LOS^b</u>
Minaret Rd. & Forest Trail	+111	D
Minaret Rd. & Canyon Blvd.	+ 60	E
Kelley Rd. & Lake Mary Rd.	+525	A
Lakeview Rd. & Lake Mary Rd.	+ 41	E
Sierra Blvd. & Main Street	+ 12	E
Minaret Rd. & Meridian Blvd.	+292	C
Minaret Rd. & Old Mammoth Rd.	+226	C
<u>Signalized Intersections</u>	<u>V/C Ratio^c</u>	<u>LOS^b</u>
Minaret Rd. & Main St.	0.60	B
Old Mammoth Rd & Main St.	0.72	C
Old Mammoth Rd. & Meridian Blvd.	0.85	D

Notes:

^a Reserve Capacity - Available reserve capacity for the most constrained intersection movement.

^b LOS - Level of Service Description (See Appendix).

^c V/C - Volume to Capacity (percent of intersection capacity utilized).

3.0 FUTURE ROADWAY IMPROVEMENTS

In order to properly analyze the impacts of the proposed North Village Specific Plan on circulation in the area, assessments of future traffic conditions both with and without the project were made. There are a series of improvements, identified by the Mammoth Lakes General Plan, that are in the process of being implemented. These circulation measures, which are referred to as "Programmed Improvements" throughout the study are for the most part separate and independent of the proposed North Village Specific Plan. In addition, the Specific Plan identifies a series of transportation and roadway improvements that are an integral part of the overall development plan. The following summarizes the future programmed and project-related roadway improvements considered as part of this study.

3.1 Town of Mammoth Lakes Programmed Improvements

The following roadway improvements are programmed for implementation by the Town of Mammoth Lakes:

- o Minaret Road/Main Street/Lake Mary Road - The following localized intersection improvements are planned: widen and/or restripe the southbound Minaret approach to provide a left-turn lane, a through/left-turn lane, and a through/right-turn lane; widen and/or restripe the northbound Minaret approach to provide a left-turn lane, a through lane, and a through/right-turn lane.
- o Minaret Road/Meridian Boulevard - Stripe all four approaches to provide the following configurations: one left-turn lane, one through lane, and one through/right-turn lane on the westbound and eastbound Meridian approaches; one left-turn lane and one through/right-turn lane on the northbound Minaret approach; one left-turn lane, one through lane, and one right-turn lane on the southbound Minaret approach. Install an eight-phase signal with protected left-turn phasing for all four approaches.

3.2 North Village Specific Plan Circulation Improvements

The following modifications to the roadway system within the North Village Specific Plan area are included as part of the North Village Specific Plan:

- o Minaret Road - Widen Minaret Road between Main Street and a point just north of Forest Trail to provide four travel lanes and a continuous left-turn lane. The two northbound lanes would merge into one lane just north of Forest Trail, while the second southbound lane would begin just south of Forest Trail. The improvements along Minaret Road would also include installation of a signal at the Minaret Road/Forest Trail intersection.
- o Lakeview Road/Lake Mary Road - Modify grades at the intersections of Lakeview Road/Lake Mary Road and Lakeview Road/Lakeview Boulevard. Also, install a traffic signal.
- o Canyon Boulevard - Abandon Canyon Boulevard between Hillside Drive and Minaret Road (eliminating intersections with Spring Lane and Minaret Road), with traffic rerouted to Forest Trail. Reconstruct the intersection of Hillside Drive/Canyon Boulevard. Realign the intersection of Hillside Drive and Forest Trail.
- o Millers Siding - Abandon Millers Siding as a public road and lower grades to provide better access to the underground parking garage which is planned to be constructed as part of the North Village West Plaza.
- o Berner Street - Closure of a portion of Berner Street just east of Minaret Road, with traffic re-routed to Forest Trail.

4.0 DETERMINING FUTURE TRAFFIC IMPACTS

4.1 Background Information - Project Related Trip Generation, Distribution and Assignment

A three-step process is used to estimate project-related traffic volumes that will be added to the street network by one or more developments. First, the trips which will be generated by future land uses are determined. Second, the traffic volumes are geographically distributed toward major attractors of trips, such as the home, work place and recreation centers. Finally, the trips are assigned to specific roadways and the projected-related traffic volumes are determined on route-by-route basis.

As a part of this study the methodology described above was followed in order to identify traffic in the future without the project (Cumulative Traffic or the "No Project" Alternative, and then with the cumulative traffic and the land uses associated with the North Village Specific Plan. This approach was taken in order to fulfill the requirements of CEQA of analyzing project impacts, cumulative conditions and the No Project Alternative.

4.2 Cumulative Base Traffic Projections

The Cumulative traffic projections that represent the No Project Alternative include traffic expected to be generated by the following sources: proposed expansion of the Mammoth Mountain Ski Area (MMSA) to 24,000 skiers-at-one-time (SAOT); construction of the proposed Sherwin Ski Area at a capacity of 8,000 SAOT; and a number of residential/lodging/commercial projects proposed for development throughout the Town. Information regarding these projects was obtained from the Mammoth Lakes General Plan and from previous traffic and environmental studies conducted in the Town. They represent the most up to date information on future development available from the Town of Mammoth Lakes Planning Department. The projects are described below. Their locations are identified in Figure 7.

- o Mammoth Mountain Ski Area Expansion - The proposed MMSA expansion plan would increase the skier capacity from an estimated current capacity of approximately 19,000 SAOT to an ultimate 24,000 SAOT. This capacity is consistent with the Mammoth Lakes General Plan. Table 3 summarizes the estimated existing and ultimate SAOT by base facility. The expansion plan provides for a substantial

increase in skier capacity at Bases 4 and 7, with slight decreases at Bases 1 and 2. New overhead lifts are anticipated which would carry skiers between the proposed North Village Specific Plan development and Base 2, and between the proposed Lodestar Master Plan development and Base 7.

- o Lodestar Master Plan - Proposed resort development located on both sides of Minaret Road in the vicinity of Meridian Boulevard. The development would consist of: 600 resort hotel/motel rooms; 825 condominiums; 100 single family residential units; 100 units for employee housing; and approximately 80,000 square feet of commercial use.
- o Sherwin Ski Area (Alternative #6 - Preferred Alternative) - Eight thousand SAOT design capacity with a base lodge located adjacent to and east of Snowcreek Village. Parking would be provided for 2,000 automobiles and 30 buses, with access obtained via extensions of Minaret Road and Sherwin Creek Road.
- o Snowcreek Master Plan (future development) - Proposed future phases of the Snowcreek resort development include a total of up to: 1,200 resort hotel rooms, 574 condominium units and 150,000 square feet of commercial space in the Snowcreek Village area; 288 condominiums in Snowcreek V; 212 condominiums in The Ranch; and an additional 357 condominiums near Old Mammoth Road.
- o Juniper Ridge - Resort development consisting of 120 condominiums, 44 single-family dwelling units, a 250 room resort hotel and 35,000 square feet of resort commercial space.
- o Deer Creek - 195 room hotel.
- o Shady Rest - 120 condominiums.
- o Bluffs - 60 single-family dwelling units.
- o Gateway - 75 single-family dwelling units.

TABLE 3
MAMMOTH MOUNTAIN SKI AREA EXPANSION PLAN

<u>Base Facility</u>	<u>Estimated Current SAOT^a</u>	<u>Ultimate SAOT^a</u>
Base 1 (Main Lodge)	8,000	7,500
Base 2 (Warming Hut II)	7,000	6,500 ^b
Base 4	500	2,100
Base 7 (Chair 15)	3,500	7,900 ^c
 Total	<hr/> 19,000	<hr/> 24,000

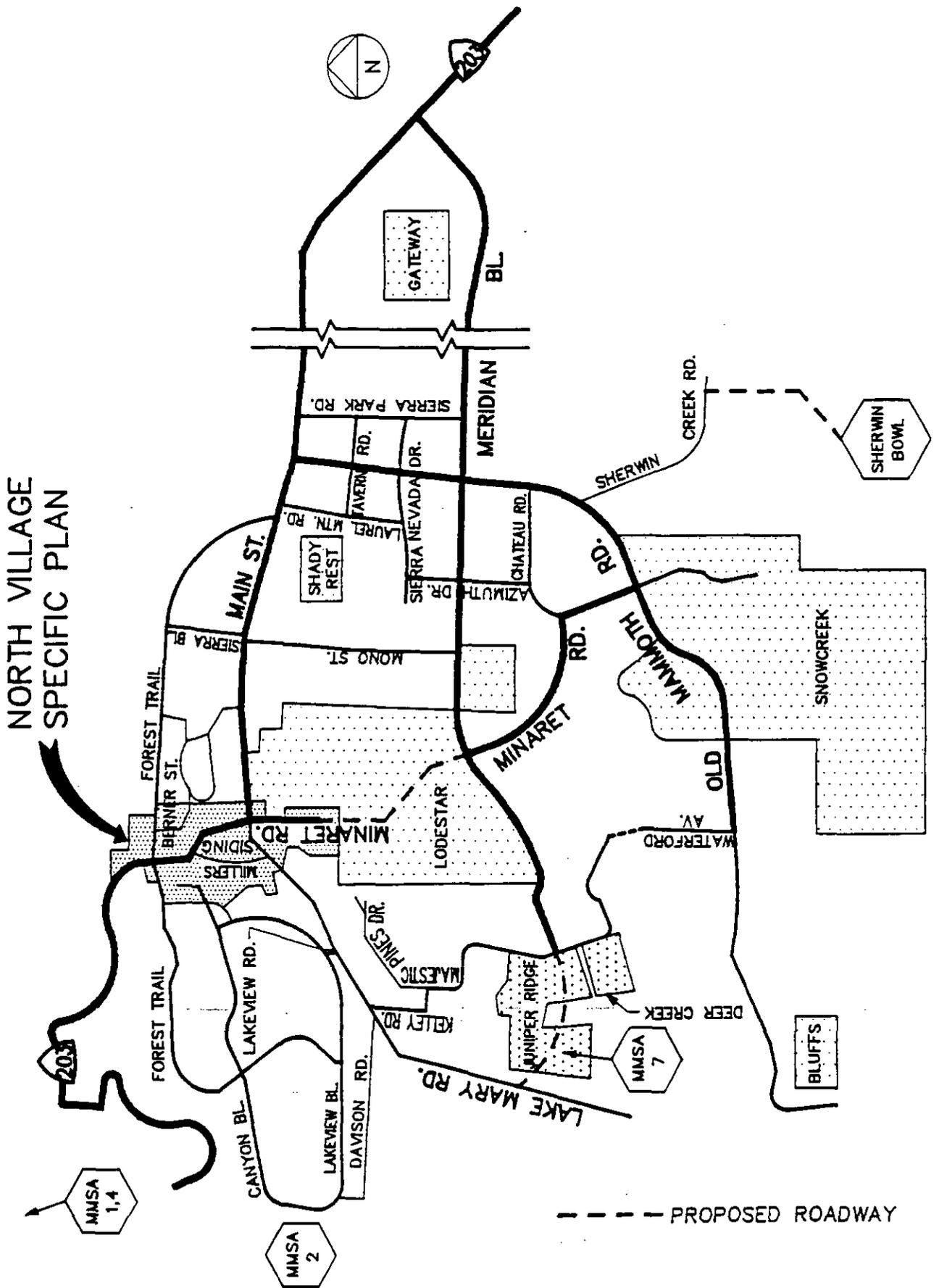
Notes:

- a. Peak winter Saturday.
- b. Ultimate Base 2 SAOT includes skiers riding proposed overhead lift from North Village Specific Plan development.
- c. Ultimate Base 7 SAOT includes skiers riding proposed overhead lift from Lodestar Master Plan development.

Sources:

- o Town of Mammoth Lakes General Plan.
- o Kaku Associates, Transportation Study for the Proposed Sherwin Ski Area, January 1986.

**NORTH VILLAGE
SPECIFIC PLAN**



TOWN OF MAMMOTH LAKES

transtech

**CUMULATIVE
PROJECTS**

FIGURE 7

Future traffic generation was estimated for the cumulative developments through a methodology developed specifically for use in Mammoth Lakes.⁵ This methodology was designed to take into account the unique trip-making characteristics associated with the ski resorts and the resort lodging developments, and the interrelationships between the two. The basis for the methodology is provided in the Technical Appendix.

The trip rates used as a part of this study are summarized in Table 4. The resulting estimates of net vehicular trip generation for each of the cumulative development projects is summarized on Table 5. The seven cumulative development projects are projected to generate a net total of approximately 42,280 daily vehicle trips on a peak winter Saturday, of which approximately 4,645 would be during the afternoon peak hour. These projections include future trips generated to and from the MMSA expansion and the Sherwin Ski Area since the cumulative projects include ski-related trips.

A quarter-mile walk-in zone was established to assist in analyzing the impacts of base facilities and overhead lifts. The majority of the skiers lodging within the quarter-mile zone would be expected to walk to the nearby base facility or lift. Those outside of the walk-in zones are expected to drive or use the transit service to reach the skiing destinations. Two basic generation rates for lodging were therefore used; one rate within the walk-in zone and another rate for lodging outside of the walk-in zone.

4.3 North Village Specific Plan Traffic Generation

Traffic generation estimates for the proposed North Village Specific Plan were developed using the same methodology, assumptions and trip generation rates developed for use in the cumulative projects analysis. Table 4 summarizes the trip rates that were used. For this analysis, 1,800 of the new resort new hotel rooms and 360 of the new resort condominium units proposed in the Specific Plan were assumed to be within the one-quarter mile walk-in zone surrounding the proposed overhead lift from the commercial village to Warming Hut II. The remaining proposed 200 hotel rooms and 40 condominiums were assumed to be outside of the one-quarter mile walk-in zone surrounding the proposed overhead lift.

⁵

Draft Lodestar Master Plan EIR, EIP Associates, September 1990.

TABLE 4

WINTER SATURDAY TRIP GENERATION RATES

<u>Land Use</u>	<u>Average Daily Rate</u>	<u>PM Peak Hour</u>		
		<u>Rate</u>	<u>% In</u>	<u>% Out</u>
<u>RESORT HOTEL</u>				
Base Rate: Outside Walk-In Zone ^a (trips per room)	8.0	0.56	60%	40%
Effective Rate: Within Walk-In Zone ^b (trips per room)	7.2	0.36	51%	49%
<u>RESORT CONDOMINIUM</u>				
Base Rate: Outside Walk-In Zone ^c (trips per DU)	5.6	1.18	60%	40%
Effective Rate: Within Walk-In Zone ^b (trips per DU)	4.4	0.87	54%	46%
<u>OTHER USES</u>				
Single-Family Residential ^d (trips per DU)	10.1	1.01	63%	37%
Employee Housing (apartment) ^{d,e} (trips per DU)	6.1	0.67	68%	32%
Commercial ^d	[f]	[f]	49%	51%

Notes:

- a. Source: San Diego Association of Governments, San Diego Traffic Generators, January 1990 update.
- b. Modified rate for resort lodging within one-quarter mile walk-in zone surrounding ski base facilities or overhead lifts.

TABLE 4 (Continued)

WINTER SATURDAY TRIP GENERATION RATES

Notes (continued):

- c. Trip generation rates for resort condominiums not available from standard sources. Resort condominium rate derived assuming 1.6 ski and 4 non-ski vehicle trips per day per condominium unit, based on condominium visitor occupancy, skier to total visitor ratio, PAOT to SAOT ratio, mode split and peak percent factors as described in text.
- d. Source: Institute of Transportation Engineers, Trip Generation, 4th Edition, 1987.
- e. Trip rates used for the Lodestar Project only.
- f. Trip generation rates for retail/commercial uses vary according to the size of the development. Trip generation calculated using the following formulas:

Daily Trips:	$\text{Ln}(T) = 0.65 \times \text{Ln}(A) + 5.92$
PM Peak Hour Trips:	$\text{Ln}(T) = 0.52 \times \text{Ln}(A) + 4.04$

where:

Ln = Natural logarithm,

T = Two-way volume of traffic (total trip-ends), and

A = Area in 1,000 gross square feet of leasable area.

TABLE 5

NET WINTER WEEKEND
VEHICULAR TRIP GENERATION FOR CUMULATIVE PROJECTS

Name/Location	Land Use	Size	Daily Trips	PM Peak Hour		Total
				In	Out	
Lodestar	Resort Hotel (walk-in)	550 rms	3,970	100	95	195
	Motel	50 du	400	20	10	30
	Condominiums (walk-in)	300 du	1,320	140	120	260
	Condominiums (non-walk-in)	525 du	2,940	370	250	620
	Single Family	100 du	1,010	65	35	100
	Employee Housing	100 du	620	50	20	70
	Commercial Village	80,000 sf	<u>3,210</u>	<u>135</u>	<u>140</u>	<u>275</u>
Total			13,470	880	670	1550
Snowcreek	Resort Hotel (walk-in)	1,200 rms	8,660	220	210	430
	Condominiums (walk-in)	575 du	2,430	270	230	500
	Condominiums (non-walk-in)	856 du	4,790	605	405	1,010
	Commercial	150,000 sf	<u>4,840</u>	<u>190</u>	<u>195</u>	<u>385</u>
Total			20,720	1,285	1,040	2,325
Juniper Ridge	Resort Hotel (walk-in)	250 rms	1,810	45	45	90
	Condominiums (walk-in)	120 du	510	55	50	105
	Commercial	35,000 sf	1,880	90	90	180
	Single Family	44 du	<u>440</u>	<u>30</u>	<u>15</u>	<u>45</u>
Total			4,640	220	200	420
Deer Creek	Resort Hotel (walk-in)	195 rms	1,410	35	35	90
Shady Rest	Condominiums	120 du	670	85	55	140
Bluffs	Single Family	60 du	610	40	20	60
Gateway	Single Family	75 du	760	50	30	80
Net Total			<u>42,280</u>	<u>2,595</u>	<u>2,050</u>	<u>4,645</u>

Notes:

Daily trips rounded to the nearest ten vehicles.

Peak hour trips rounded to the nearest five vehicles.

The trips generated by the commercial uses were reduced to account for internal and pass-by trips. Internal trips are those trips generated by the lodging units in the project which use the project commercial sites. These trips are already accounted for in the lodging generation and are deducted from the commercially-generated trips to eliminate double counting. Pass-by trips result from traffic already on the adjacent street which stops at the site while on its way to another destination. The project commercial sites can be expected to draw a significant portion of pass-by trips from Minaret Road since they are on their way to or from MMSAs 1 and 4.

The resulting estimates of net vehicular trip generation for the North Village Specific Plan are summarized on Table 6. As indicated on the table, the project is projected to generate a net total of approximately 24,230 daily vehicle trips on a peak winter Saturday, of which approximately 1,760 would be during the afternoon peak hour.

4.4 Cumulative and Project Related Distribution and Assignment

Trip distribution is the process of determining the general direction taken by traffic generated from land use. It is based on the geographical location of commercial, business, residential and recreational opportunities.

Trip assignment is selecting the specific route that project-related traffic will take once the general traffic distribution is determined. The major factors affecting route selection are the minimum time path and the minimum distance path. Often the minimum time path and the minimum distance path are one and the same. When the two paths are different, the minimum time path will usually take precedence, assuming all other factors are equal. Other considerations in route selection might be aesthetic quality of routes, safety, and so forth. It should be noted that the minimum time path is cognizant of congestion. As a roadway approaches capacity, prevailing speeds decrease. Ultimately, congestion on the minimum distance path will increase travel time until an alternative route becomes the minimum time path.

Trip distribution and assignment as it applies to this study are significantly influenced by the recreational nature of the trip making. Ski-related traffic generated by the resort hotel, motel and condominium elements of both the North Village Specific Plan and cumulative projects was distributed to the various ski base facilities (MMSA and Sherwin). Non-ski-related traffic generated by the resort hotel, motel and condominium elements were distributed to commercial areas throughout the Town as well as to the resort commercial uses proposed within future development. Traffic

TABLE 6

NORTH VILLAGE SPECIFIC PLAN WINTER WEEKEND
VEHICULAR TRIP GENERATION

<u>Land Use</u>	<u>Size</u>	<u>Daily Trips</u>	<u>PM Peak Hour</u>		
			<u>In</u>	<u>Out</u>	<u>Total</u>
Hotel/Motel (non-walk-in)	200 rms	1,600	70	40	110
Hotel/Motel (walk-in)	1,800 rms	12,960	330	315	645
Condominiums (non-walk-in)	40 du	220	25	20	45
Condominiums (walk-in)	360 du	1,590	170	145	315
Plaza Commercial	60,000 sf	2,670	115	120	235
Other Commercial	167,000 sf	5,190	200	210	410
Employee Housing	(a)	<u>600^(b)</u>	<u>(c)</u>	<u>(c)</u>	<u>(c)</u>
Total		24,830	910	850	1,760

Notes:

Daily trips rounded to the nearest ten vehicles.

Peak hour trips rounded to the nearest five vehicles.

(a) Accommodations for 800 employees. (See Jobs Housing section for discussion).

(b) Net increase in trips to existing uses. Total vehicle trips are reflected in rates for all other project and cumulative uses.

(c) Vehicle trips are reflected in the rates for all other project and cumulative land uses with a negligible peak hour trips to existing uses.

generated by the employee housing element of the project are reflected in the trip rates for all other project and cumulative land uses with a negligible number of new daily and peak vehicle trips going to existing non-ski facility uses. The net external traffic generated by future commercial uses was distributed primarily to residential areas throughout the Town.

Figure 8 provides the results of assigning the cumulative ADT traffic to the roadway network. Figure 9 provides the results of assigning the cumulative plus project related ADT traffic to the roadway network. PM peak traffic projections for the same two scenarios were also developed. The PM peak volumes are summarized in the capacity calculations found in the Traffic Appendix A.

APPENDIX E.
Initial Study

E. INITIAL STUDY



PLANNING DEPARTMENT

P.O. Box 1609, Mammoth Lakes, California 93546
619-934-8983

INITIAL STUDY

This form and the descriptive information supplied by the applicant constitute the initial study pursuant to section 15063 of the state EIR Guidelines.

II. BACKGROUND

Project Title: District Zoning Amendment
88-1, North Village Specific
Plan; General Plan Amendment
90-3; and Use Permit
Application 90-4, Gondola

Assessor's Parcel Number: See attached maps

Zoning: C-G, General Commercial; C-L,
Commercial Lodging; PS, Public
and Quasi-Public;
RMF-2, Multiple Family
Residential; RSF,
Residential Single Family

General Plan: Commercial, High
Density Residential, Low
Density Residential,
Institutional/Public

Project Applicant: North Village Group

Project Characteristics: Construction of a hotel and
commercial resort development
on 65 acres. Construction of
a high-speed gondola.
Rerouting traffic and changing
circulation patterns through
the site.

Existing Site Conditions: Miscellaneous commercial and
residential uses with large
underutilized parcels and
vacant lands

Surrounding Land Uses: Residential land uses exist
to the west, east and

northeast of the site. Vacant lands exist to the northwest and south of the site.

Surrounding Zoning: N. RSF; E. RSF, CL, R
S. R, RMF-2; W. RSF and
RMF-2

II. ENVIRONMENTAL IMPACTS

Does the proposal have the potential to result in a significant adverse impact on one or more of the environmental components listed below? A "YES" indicates a potential for a significant impact. A "NO" indicates no apparent significant adverse environmental impact.

1. YES SOILS/TOPOGRAPHY - The project will involve large amounts of grading to accommodate new buildings, an above-ground pedestrian plaza, underground parking garages, a gondola and rerouting of streets. Erosion impacts are possible during and subsequent to construction.
2. NO GEOLOGY/SEISMIC - The project is not located within an Alquist-Priolo zone. However, Mammoth Lakes is in an area subject to seismic activity and therefore will be subject to some seismic disturbance.
3. YES WATER QUALITY - The project will result in increased surface runoff due to greater impervious surface area.
4. YES WATER SUPPLY - Need more information from the MCWD to determine if the project can be adequately served and that groundwaters will not be depleted or disturbed.
5. NO STREAMS AND LAKES - The nearest creek is one half mile to the south and no significant impacts are expected.
6. YES PLANT AND ANIMAL POPULATIONS AND HABITAT - A sensitive plant and animal survey has been prepared to determine if there are any rare or endangered species or if the diversity or quantity of plant or animal populations will be significantly disturbed. The reports will be available by August 13, 1990.
7. YES AIR QUALITY - The project applicants indicate that the project will not result in an increase in

particulate emissions because wood stoves are not planned for individual hotel/residential units or large commercial uses. However, vehicle miles travelled may increase and may result in increased particulate matter in the local environment.

8. YES TRANSPORTATION - The project may increase traffic in some areas up to 30% and will reroute and reconstruct streets within the project site. Changes to levels of service and to traffic patterns must be evaluated based on traffic studies.
9. YES NATURAL RESOURCES - The project will result in removal of significant numbers of trees from approximately 25 acres.
10. YES LAND USE AND PLANNING CONSIDERATIONS - The project will cause a change in the character of the North Village area and will affect surrounding properties because of an increased intensity of use and visual impacts.
11. YES HOUSING - The project will increase the demand for housing for employees of businesses in the North Village area.
12. YES POPULATION - The population will increase and the distribution of population will change as a result of the project.
13. YES PUBLIC SERVICES - UTILITIES - The project intensity will result in a greater need for water, fire, police, snow removal and road maintenance services.
14. YES HEALTH-SAFETY-NUISANCE - The project will not involve the use of hazardous substances or expose people to such substances. The project must be analyzed for fire, police and traffic safety.
15. YES NOISE - The plaza area will contain more outdoor activity and will increase noise levels in the single-family residential areas to the west, north and east.
16. YES LIGHT OR GLARE - The plaza area will require extensive outdoor lighting. In addition, security lighting, parking garage lighting and lighting within buildings will change the nighttime character of the area.
17. YES AESTHETICS - The proposed project will change the entire visual character of the area. Tall

buildings and a more urban appearance will be visible within the project, driving through the site, and from surrounding single-family and multiple-family residential areas.

18. YES CULTURAL RESOURCES - The project area has been surveyed for cultural resources. Two archaeological sites were identified and mitigation must be implemented. The report is attached.
19. NO ENERGY & SCARCE RESOURCES - The project places no unusual demands on energy resources or other scarce resources.
20. NO RECREATION - The project will increase the range of recreational opportunities.
21. YES OTHER - Cumulative Impacts - This project combined with other planned and existing projects will result in greater demands for public services, depletion of trees and habitat, increased traffic, increased noise and light, increased runoff, decreased air quality, changes in population distribution and a need for more water.

REMARKS: Reference documents:

General Plan Environmental Impact Report for the Town of Mammoth Lakes, October 1987.

III. MANDATORY FINDINGS OF SIGNIFICANCE

1. YES Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.
2. YES Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals? (A short-term impact on the environment is one which occurs in a relatively brief, definitive period of time while long-term impacts will endure well into the future.)
3. YES Does the project have impacts which are individually limited, but cumulatively

considerable. (A project may impact on two or more separate resources where the impact on each resource is relatively small, but the effect of the total of those impacts on the environment is significant.

4. YES Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly.

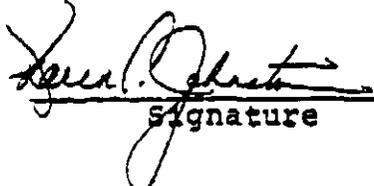
IV. ENVIRONMENTAL DETERMINATION

I find that the proposed project could not have a significant effect on the environment, and a Negative Declaration will be prepared.

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the project. A Negative Declaration will be prepared.

XXX I find that the proposed project may have a significant effect on the environment, and an Environmental Impact Report is required.

8/6/96
Date


Signature

EXISTING CONDITIONS

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v (pcph)	POTEN-	ACTUAL	SHARED		RESERVE		LOS				
		TIAL CAPACITY c (pcph) P	MOVEMENT CAPACITY c (pcph) M	CAPACITY c (pcph) SH	CAPACITY c (pcph) SH	c = c - v R SH						
MINOR STREET												
EB LEFT	2	148	128	>	152	128	>	142	126	>	D	D
THROUGH	8	184	161	>		161	>		153	>	D	D
RIGHT	64	428	428			428			364		B	
MINOR STREET												
WB LEFT	22	137	106	>		106	>		84	>	E	
THROUGH	2	185	162	>	145	162	>	111	160	>	D	D
RIGHT	10	718	718	>		718	>		709	>	A	
MAJOR STREET												
SB LEFT	26	800	800			800			773		A	
NB LEFT	78	497	497			497			419		A	

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... FOREST TRAIL
 NAME OF THE NORTH/SOUTH STREET.... MINARET
 DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 OTHER INFORMATION.... EXISTING CONDITIONS

CAPACITY AND LEVEL-OF-SERVICE

Page-3

MOVEMENT	FLOW- RATE v (pcph)	POTEN- TIAL CAPACITY	ACTUAL MOVEMENT CAPACITY	SHARED CAPACITY	RESERVE CAPACITY	LOS
		c (pcph) p	c (pcph) M	c (pcph) SH	c = c - v R SH	
MINOR STREET						
EB LEFT	70	190	130	130	60	E
RIGHT	406	472	472	472	66	E
MAJOR STREET						
NB LEFT	201	525	525	525	323	B

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... CANYON BLVD.
NAME OF THE NORTH/SOUTH STREET..... MINARET
DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
OTHER INFORMATION.... EXISTING CONDITIONS

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v (pcph)	POTENTIAL CAPACITY c (pcph) P	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
NB LEFT	24	575	549	549	525	A
RIGHT	100	908	908	908	808	A
MAJOR STREET						
WB LEFT	73	973	973	973	900	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... LAKE MARY
 NAME OF THE NORTH/SOUTH STREET..... KELLEY
 DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 OTHER INFORMATION.... EXISTING CONDITIONS

CAPACITY AND LEVEL-OF-SERVICE

Page-3

MOVEMENT	FLOW- RATE v (pcph)	POTEN- TIAL CAPACITY	ACTUAL MOVEMENT CAPACITY	SHARED CAPACITY	RESERVE CAPACITY	LOS
		c (pcph) p	c (pcph) M	c (pcph) SH	c = c - v R SH	
MINOR STREET						
SB LEFT	235	293	277	277	41	E
RIGHT	69	695	695	695	626	A
MAJOR STREET						
EB LEFT	69	736	736	736	666	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... LAKE MARY
NAME OF THE NORTH/SOUTH STREET.... LAKEVIEW ROAD
DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
OTHER INFORMATION.... EXISTING CONDITIONS

FLOW-RATE v (pcph)	POTENTIAL CAPACITY c (pcph) P	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
-----------------------	--	---	--------------------------------------	--	-----

RESERVE CAPACITY c - v SH	LOS
------------------------------------	-----

STREET

53	66	64	>	64	>	11	>	E
11	714	714	>	76	>	12	>	E
				714	>	703	>	A

292	C
853	A

STREET

26	478	478		478		452		A
----	-----	-----	--	-----	--	-----	--	---

696	A
-----	---

ING INFORMATION

THE EAST/WEST STREET..... MAIN STREET
 THE NORTH/SOUTH STREET..... SIERRA
 TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 FORMATION.... EXISTING CONDITIONS

MOVEMENT	FLOW- RATE v (pcph)	POTEN- TIAL CAPACITY c (pcph) P	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
NB LEFT	69	338	306	306	236	C
THROUGH	3	406	381	381	378	B
RIGHT	89	847	847	847	758	A
MINOR STREET						
SB LEFT	14	275	241	241	226	C
THROUGH	12	359	338	> 338	> 326	> B
RIGHT	29	958	958	> 620 958	> 579 930	> A A
MAJOR STREET						
EB LEFT	29	887	887	887	858	A
WB LEFT	46	676	676	676	630	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... OLD MAMMOTH
NAME OF THE NORTH/SOUTH STREET..... MINARET
DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
OTHER INFORMATION.... EXISTING CONDITIONS

EXISTING CONDITIONS

Level Of Service Computation Report
Circular 212 Planning Method

* Base Volume Alternative *

Intersection #3 MINARET RD. & MAIN

Cycle (sec): 47 Critical Vol./Cap. (X): 0.60
Cycle Time (sec): 0 Average Delay (sec/vehicle): 7.4
Cycle Length (sec): 47 Level Of Service: B

Approach:	North Bound			South Bound			East Bound			West Bound		
Control:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Split Phase No			Split Phase No			No Left Phase No			No Left Phase Aux		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Yellow:	0	1	0	1	1	0	1	0	2	1	0	2

Volume Module:

Total Vol.:	2	2	19	881	24	141	59	427	11	15	255	376
Volume/Segment:	1.00	1.00	1.00	1.00	1.00	1.00	1.85	1.00	1.00	2.95	1.00	1.00
Peak Hour Vol.:	2	2	19	881	24	141	109	427	11	43	255	376

Saturation Flow Module:

Lane:	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210
Volume/Segment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Ratio:	0.50	0.50	1.00	1.95	0.05	1.00	1.00	2.00	1.00	1.00	2.00	1.00
Peak Sat.:	605	605	1210	2356	64	1210	1210	2420	1210	1210	2420	1210

Capacity Analysis Module:

Peak Sat.:	0.00	0.00	0.02	0.37	0.37	0.12	0.09	0.18	0.01	0.04	0.11	0.31
Queue Moves:			****	****			****			****		
Queue Length/Cycle:	0.03	0.03	0.03	0.62	0.62	0.62	0.16	0.29	0.29	0.06	0.19	0.81
Queue Length/Capacity:	0.13	0.13	0.60	0.60	0.60	0.19	0.56	0.60	0.03	0.60	0.56	0.38

Level Of Service Module:

Delay/Veh:	17.4	17.4	35.1	4.6	18.8	2.9	16.5	12.0	9.1	25.6	14.4	1.1
Delay Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/veh:	17.4	17.4	35.1	4.6	18.8	2.9	16.5	12.0	9.1	25.6	14.4	1.1
Level of Service:	0	0	0	7	0	1	1	5	0	0	3	1

EXISTING CONDITIONS

Level Of Service Computation Report
Circular 212 Planning Method

* Base Volume Alternative *

Intersection #55 OLD MAMMOTH RD. & MAIN ST.

Green Time (sec): 90 Critical Vol./Cap. (X): 0.72
Yellow Time (sec): 0 Average Delay (sec/vehicle): 17.9
Red Time (sec): 67 Level Of Service: C

Approach: North Bound South Bound East Bound West Bound

Phase:	L - T - R	L - T - R	L - T - R	L - T - R
Control:	No Left Phase	No Left Phase	Left Phase	Left Phase
Green:	0 0 0	0 0 0	0 0 0	0 0 0
Yellow:	1 0 0 0 1	0 0 0 0 0	0 0 2 0 1	1 0 2 0 0

Volume Module:

Approach	L	T	R	L	T	R	L	T	R	L	T	R
Critical Vol:	429	0	75	0	0	0	0	177	341	103	207	0
Saturation:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Volume:	429	0	75	0	0	0	0	177	341	103	207	0

Capacity Flow Module:

Approach	L	T	R	L	T	R	L	T	R	L	T	R
Capacity:	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210
Saturation:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Volume:	1210	0	1210	0	0	0	0	2420	1210	1210	2420	0

Capacity Analysis Module:

Approach	L	T	R	L	T	R	L	T	R	L	T	R
Capacity/Sat:	0.35	0.00	0.06	0.00	0.00	0.00	0.00	0.07	0.28	0.09	0.09	0.00
Moves:	****			****				****	****	****		
Capacity/Cycle:	0.49	0.00	0.49	0.00	0.00	0.00	0.00	0.39	0.39	0.12	0.51	0.51
Capacity/Cap:	0.72	0.00	0.13	0.00	0.00	0.00	0.00	0.19	0.72	0.72	0.17	0.00

Level Of Service Module:

Approach	L	T	R	L	T	R	L	T	R	L	T	R
Delay/Veh:	16.9	0.0	9.6	0.0	0.0	0.0	0.0	13.9	21.6	40.2	9.2	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	16.9	0.0	9.6	0.0	0.0	0.0	0.0	13.9	21.6	40.2	9.2	0.0
Queue:	9	0	1	0	0	0	0	3	8	3	3	0

(1) ACTUAL VOLUME = 770
RTOR REDUCTION

EXISTING CONDITIONS

Level of Service Computation Report
Circular 212 Planning Method

* Base Volume Alternative *

Intersection #54 OLD MAMMOTH RD. & MERIDIAN BL.

Green Time (sec): 100 Critical Vol./Cap. (X): 0.85
Yellow Time (sec): 0 Average Delay (sec/vehicle): 26.1
Total Cycle: 100 Level of Service: D

Approach:	North Bound			South Bound			East Bound			West Bound		
Phase:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Left Phase			Left Phase			Left Phase			Left Phase		
	No			No			No			No		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Yell:	1	0	1	1	0	1	1	0	1	1	0	1

Queue Module:

Initial Vol.:	110	326	93	271	641	229	56	71	127	113	178	29
Reduction:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	110	326	93	271	641	229	56	71	127	113	178	29

Saturation Flow Module:

Flow Rate:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
Reduction:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.72	0.28
Final Sat.:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	2012	328

Capacity Analysis Module:

Flow Sat.:	0.09	0.28	0.08	0.23	0.55	0.20	0.05	0.06	0.11	0.10	0.09	0.09
Moves:	****			****			****			****		
Flow/Cycle:	0.11	0.41	0.41	0.34	0.65	0.65	0.09	0.13	0.13	0.11	0.16	0.16
Flow/Cap.:	0.85	0.67	0.19	0.67	0.85	0.30	0.56	0.47	0.85	0.85	0.56	0.56

Level of Service Module:

Delay/Veh.:	59.0	20.9	14.4	24.6	16.9	6.0	39.0	32.9	55.7	58.4	31.7	39.2
Adj.:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Del/Veh.:	59.0	20.9	14.4	24.6	16.9	6.0	39.0	32.9	55.7	58.4	31.7	39.2
Level:	4	8	2	7	16	3	2	2	5	4	5	1

(1) ACTUAL VOLUME = 300
RTOR REDUCTION

**CUMULATIVE CONDITIONS
(WITH TOWN OF MAMMOTH LAKES
PROGRAMMED IMPROVEMENTS)**

MOVEMENT	FLOW-RATE v (pcph)	POTENTIAL CAPACITY c (pcph) P	ACTUAL MOVEMENT CAPACITY c (pcph) M		SHARED CAPACITY c (pcph) SH		RESERVE CAPACITY c = c - v R SH		LOS
MINOR STREET									
EB LEFT	2	95	77	>	90	77	>	80	75 > E E
THROUGH	8	115	95	>		95	>		87 > E
RIGHT	66	329	329			329			263 > C
MINOR STREET									
WB LEFT	22	95	65	>		65	>		43 > E
THROUGH	2	115	95	>	90	95	>	55	93 > E E
RIGHT	10	546	546	>		546	>		536 > A
MAJOR STREET									
SB LEFT	40	611	611			611			571 > A
NB LEFT	78	390	390			390			312 > B

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... FOREST TRAIL
NAME OF THE NORTH/SOUTH STREET..... MINARET
DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
OTHER INFORMATION.... CUMULATIVE TRAFFIC - PROGRAMMED IMPROVEMENTS]

CAPACITY AND LEVEL-OF-SERVICE

Page-3

MOVEMENT	FLOW- RATE v (pcph)	POTEN- TIAL CAPACITY	ACTUAL MOVEMENT CAPACITY	SHARED CAPACITY	RESERVE CAPACITY	LOS
		c (pcph) P	c (pcph) M	c (pcph) SH	c = c - v R SH	
MINOR STREET						
EB LEFT	70	95	55	55	-16	F
RIGHT	421	350	350	350	-71	F
MAJOR STREET						
NB LEFT	201	399	399	399	198	D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... CANYON
NAME OF THE NORTH/SOUTH STREET..... MINARET
DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
OTHER INFORMATION..... CUMULATIVE TRAFFIC - PROGRAMMED IMPROVEMENTS

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v (pcph)	POTENTIAL CAPACITY c (pcph) P	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
NB LEFT	135	66	0	0	-135	F
THROUGH	444	93	0	0	-444	F
RIGHT	541	768	768	768	227	C
MINOR STREET						
SB LEFT	14	66	0	0	-14	F
THROUGH	626	84	0	0	-626	F
RIGHT	190	828	828	0 828	-816 638	F A
MAJOR STREET						
EB LEFT	100	647	647	647	547	A
WB LEFT	570	556	556	556	-14	F

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... OLD MAMMOTH
 NAME OF THE NORTH/SOUTH STREET.... MINARET
 DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 OTHER INFORMATION.... CUMULATIVE TRAFFIC - PROGRAMMED IMPROVEMENTS

MOVEMENT	FLOW-RATE v (pcph)	POTEN-	ACTUAL	SHARED		RESERVE		LOS
		TIAL CAPACITY c (pcph) P	MOVEMENT CAPACITY c (pcph) M	CAPACITY c (pcph) SH	CAPACITY c (pcph) SH	c = c - v R SH		
MINOR STREET								
SB LEFT	53	66	62	>	62	>	9	> E
				>	73	>	10	> E
RIGHT	11	557	557	>	557	>	546	> A
MAJOR STREET								
EB LEFT	26	277	277		277		251	C

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... MAIN STREET
 NAME OF THE NORTH/SOUTH STREET..... SIERRA
 DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 OTHER INFORMATION.... CUMULATIVE TRAFFIC - PROGRAMMED IMPROVEMENTS

CAPACITY AND LEVEL-OF-SERVICE

Page-3

MOVEMENT	FLOW-RATE v (pcph)	POTEN-	ACTUAL	SHARED	RESERVE	LOS
		TIAL CAPACITY c (pcph) P	MOVEMENT CAPACITY c (pcph) M	CAPACITY c (pcph) SH	CAPACITY c = c - v R SH	
MINOR STREET						
NB LEFT	34	522	493	493	459	A
RIGHT	121	880	880	880	759	A
MAJOR STREET						
WB LEFT	88	949	949	949	861	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... LAKE MARY ROAD
NAME OF THE NORTH/SOUTH STREE..... KELLEY
DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
OTHER INFORMATION.... CUMULATIVE TRAFFIC - PROGRAMMED IMPROVEMENTS

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v (pcph)	POTEN-	ACTUAL	SHARED CAPACITY c (pcph) SH	RESERVE	LOS
		TIAL CAPACITY c (pcph) P	MOVEMENT CAPACITY c (pcph) M		CAPACITY c = c - v R SH	
MINOR STREET						
SB LEFT	384	263	246	246	-137	F
RIGHT	69	652	652	652	582	A
MAJOR STREET						
EB LEFT	69	669	669	669	600	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... LAKE MARY ROAD
 NAME OF THE NORTH/SOUTH STREET.... LAKEVIEW
 DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 OTHER INFORMATION.... CUMULATIVE TRAFFIC - PROGRAMMED IMPROVEMENTS

CUMULATIVE TRAFFIC
TOWN OF MAMMOTH LAKES
PROGRAMMED IMPROVEMENTS

Level of Service Computation Report
Circular 212 Planning Method

* Future Volume Alternative *

Intersection #3 MAIN AND MINARET

Delay (sec): 100 Critical Vol./Cap. (X): 1.12
Start Time (sec): 0 Average Delay (sec/vehicle): 68.2
Signal Cycle: 100 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Left Phase			Left Phase			Left Phase			Left Phase		
Phase:	No			No			No			Aux		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Reds:	1	0	1	1	1	0	1	0	2	1	0	2

Time Module:

Initial Vol.:	17	276	246	987	468	114	31	531	44	258	407	526
Assignment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	17	276	246	987	468	114	31	531	44	258	407	526

Integration Flow Module:

Flow/Lane:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
Assignment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Losses:	1.00	1.06	0.94	1.89	0.89	0.22	1.00	2.00	1.00	1.00	2.00	1.00
Final Sat.:	1170	1237	1103	2208	1046	255	1170	2340	1170	1170	2340	1170

Capacity Analysis Module:

Sat:	0.01	0.22	0.22	0.45	0.45	0.45	0.03	0.23	0.04	0.22	0.17	0.45
Moves:	****			****			****			****		
Len/Cycle:	0.02	0.20	0.20	0.40	0.58	0.58	0.05	0.20	0.20	0.20	0.35	0.75
Time/Cap:	0.77	1.12	1.12	1.12	0.77	0.77	0.50	1.12	0.18	1.12	0.50	0.60

Level Of Service Module:

Delay/Veh:	93.5	120	123.6	90.2	16.4	26.5	40.6	106	25.5	122	20.3	5.3
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	93.5	120	123.6	90.2	16.4	26.5	40.6	106	25.5	122	20.3	5.3
Queue:	1	16	14	50	11	3	1	28	1	15	9	7

 CUMULATIVE TRAFFIC
 TOWN OF MAMMOTH LAKES
 PROGRAMMED IMPROVEMENTS

Level Of Service Computation Report
 Circular 212 Planning Method

 * Future Volume Alternative *

Section #29 MINARET AND MERIDIAN

Cycle (sec): 100 Critical Vol./Cap. (X): 0.90
 Time (sec): 0 Average Delay (sec/vehicle): 35.1
 Signal Cycle: 100 Level Of Service: E

	North Bound	South Bound	East Bound	West Bound
Phase:	L - T - R	L - T - R	L - T - R	L - T - R

	Left Phase			Left Phase			Left Phase			Left Phase		
	No			No			No			No		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Reds:	1	0	0	1	0	1	1	0	1	1	0	1

Green:	0	0	0	0	0	0	0	0	0	0	0	0
Reds:	1	0	0	1	0	1	1	0	1	1	0	1

Volume Module:

Total Vol:	192	351	52	99	422	37	65	501	300	42	378	131
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adjusted Vol.:	192	351	52	99	422	37	65	501	300	42	378	131

Saturation Flow Module:

Flow Lane:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rate:	1.00	0.87	0.13	1.00	1.00	1.00	1.00	1.25	0.75	1.00	1.48	0.52
Flow Sat.:	1170	1019	151	1170	1170	1170	1170	1464	976	1170	1736	604

Capacity Analysis Module:

Flow Sat:	0.16	0.34	0.34	0.08	0.36	0.03	0.06	0.34	0.34	0.04	0.22	0.22
Flow Moves:	****			****			****			****		
Flow Len/Cycle:	0.18	0.47	0.47	0.11	0.40	0.40	0.08	0.38	0.38	0.04	0.33	0.33
Flow Len/Cap:	0.90	0.74	0.74	0.74	0.90	0.08	0.65	0.90	0.90	0.90	0.65	0.65

Level Of Service Module:

Flow Delay/Veh:	56.3	20.9	37.9	45.6	36.4	14.4	43.5	35.4	41.3	103	23.6	26.8
Flow Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Delay/Veh:	56.3	20.9	37.9	45.6	36.4	14.4	43.5	35.4	41.3	103	23.6	26.8
Flow Delay:	7	9	2	3	13	1	2	16	10	2	9	3

CUMULATIVE TRAFFIC
TOWN OF MAMMOTH LAKES
PROGRAMMED IMPROVEMENTS

Level Of Service Computation Report
Circular 212 Planning Method

* Future Volume Alternative *

Section #54 OLD MAMMOTH AND MERIDIAN

le (sec): 100 Critical Vol./Cap. (X): 1.41
Time (sec): 0 Average Delay (sec/vehicle): 184.7
nal Cycle: 100 Level Of Service: F

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Approach, Phases, Green, and Red times.

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Sat, Sat, and Sat values.

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Lane, Sat, and Sat values.

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Sat, Moves, and Sat values.

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Sat, Sat, and Sat values.

(1) ACTUAL VOLUME = 309
ETOR REDUCTION

CUMULATIVE TRAFFIC
 TOWN OF MAMMOTH LAKES
 PROGRAMMED IMPROVEMENTS

Level Of Service Computation Report
 Circular 212 Planning Method

 * Future Volume Alternative *

 Intersection #55 OLD MAMMOTH AND MAIN

Green Time (sec): 100 Critical Vol./Cap. (X): 0.91
 Yellow Time (sec): 0 Average Delay (sec/vehicle): 28.2
 Total Cycle: 100 Level Of Service: E

 Approach: North Bound South Bound East Bound West Bound

Phase:	L - T - R			L - T - R			L - T - R			L - T - R		
Control:	No Left Phase			No Left Phase			Left Phase			Left Phase		
Priority:	No			Free			No			No		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Yell:	1	0	0	0	0	0	0	0	2	1	0	2

Time Module:

Critical Vol.:	676	0	80	0	0	0	0	272	313	108	323	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vol.:	676	0	80	0	0	0	0	272	313	108	323	0

Duration Flow Module:

Lane:	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vol.:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Sat.:	1210	0	1210	0	0	0	0	2420	1210	1210	2420	0

Capacity Analysis Module:

Vol/Sat:	0.56	0.00	0.07	0.00	0.00	0.00	0.00	0.11	0.26	0.09	0.13	0.00
Vol Moves:	****			****			****			****		
Vol/Cycle:	0.62	0.00	0.62	0.00	0.00	1.00	0.00	0.29	0.29	0.10	0.38	0.38
Vol/Cap:	0.91	0.00	0.11	0.00	0.00	0.00	0.00	0.39	0.91	0.91	0.35	0.00

Level Of Service Module:

Delay/Veh:	23.5	0.0	6.1	0.0	0.0	0.0	0.0	22.3	45.4	72.6	17.0	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	23.5	0.0	6.1	0.0	0.0	0.0	0.0	22.3	45.4	72.6	17.0	0.0
Delay:	19	0	1	0	0	0	0	6	11	5	6	0

 (!) ACTUAL VOLUME = 989
 REDUCED FOR 2702

**CUMULATIVE + PROJECT CONDITIONS
(WITH NORTH VILLAGE SPECIFIC
PLAN IMPROVEMENTS)**

MOVEMENT	FLOW-RATE v (pcph)	POTENTIAL CAPACITY c (pcph) p	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
NB LEFT	34	504	464	464	430	A
RIGHT	153	880	880	880	727	A
MAJOR STREET						
WB LEFT	118	949	949	949	831	A

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... LAKE MARY ROAD
 NAME OF THE NORTH/SOUTH STREET.... KELLEY
 DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 OTHER INFORMATION.... CUMULATIVE + PROJECT - NVSP IMPROVEMENTS

MOVEMENT	FLOW-RATE v (pcph)	POTENTIAL CAPACITY c (pcph) P	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
SB LEFT	85	66	60	> 60	> -25	F
RIGHT	14	490	490	> 69 490	> -30 476	F A
MAJOR STREET						
EB LEFT	30	210	210	210	180	D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... MAIN STREET
 NAME OF THE NORTH/SOUTH STREET..... SIERRA
 DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 OTHER INFORMATION.... CUMULATIVE+PROJECT TRAFFIC - NVSP IMPROVEMENTS

MOVEMENT	FLOW-RATE v (pcph)	POTEN-	ACTUAL	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY		LOS
		TIAL CAPACITY c (pcph) p	MOVEMENT CAPACITY c (pcph) M		c = c	- v	

MINOR STREET							
NB LEFT	135	66	0	0		-135	F
THROUGH	508	83	0	0		-508	F
RIGHT	541	768	768	768		227	C
MINOR STREET							
SB LEFT	57	66	0	0		-57	F
THROUGH	684	83	0	0	>	-684	> F
RIGHT	243	807	807	0 807	>	-927 564	> F A
MAJOR STREET							
EB LEFT	155	616	616	616		461	A
WB LEFT	570	556	556	556		-14	F

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... OLD MAMMOTH
NAME OF THE NORTH/SOUTH STREET.... MINARET
DATE AND TIME OF THE ANALYSIS..... 10-19-90 : PM PEAK
OTHER INFORMATION.... CUMULATIVE + PROJECT TRAFFI - NVSP IMPROVEMENT

CUMULATIVE + PROJECT TRAFFIC
 NORTH VILLAGE SPECIFIC PLAN
 CIRCULATION IMPROVEMENTS

Level of Service Computation Report
 Circular 212 Planning Method

 * Future Volume Alternative *

 Intersection #1 MINARET AND FOREST TRAIL

Green Time (sec): 52 Critical Vol./Cap. (X): 1.29
 Yellow Time (sec): 0 Average Delay (sec/vehicle): 130.5
 Signal Cycle: 100 Level of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Phase:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Left Phase			Left Phase			No Left Phase			No Left Phase		
	No			No			Free			No		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Reds:	1	0	1	1	0	0	0	1	0	0	0	1

Flow Module:	North Bound			South Bound			East Bound			West Bound		
Critical Vol:	217	733	70	48	1032	75	60	43	352	58	41	20
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.14	1.00	1.00	1.14	1.00	1.00
Adj. Vol.:	217	733	70	48	1032	75	68	43	352	67	41	20

Capacity Flow Module:	North Bound			South Bound			East Bound			West Bound		
Vol./Lane:	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vol.:	1.00	1.83	0.17	1.00	0.93	0.07	0.51	0.39	1.00	0.52	0.32	0.16
Adj. Sat.:	1210	2208	212	1210	1128	82	741	469	1210	628	388	193

Capacity Analysis Module:	North Bound			South Bound			East Bound			West Bound		
Vol./Sat:	0.18	0.33	0.33	0.04	0.92	0.92	0.09	0.09	0.29	0.11	0.11	0.11
Moves:	****			****			****			****		
Vol./Cycle:	0.14	0.76	0.76	0.09	0.71	0.71	0.07	0.07	1.00	0.08	0.08	0.08
Time/Cap:	1.29	0.44	0.44	0.44	1.29	1.29	1.29	1.29	0.29	1.29	1.29	1.29

Level of Service Module:	North Bound			South Bound			East Bound			West Bound		
Vol./Veh:	235	1.9	3.0	19.1	202	297.3	304	347	0.0	306	352	445.3
Vol. Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Del/Veh:	235	1.9	3.0	19.1	202	297.3	304	347	0.0	306	352	445.3
Del.:	16	4	0	1	104	10	6	5	0	6	4	3

CUMULATIVE + PROJECT TRAFFIC
 NORTH VILLAGE SPECIFIC PLAN
 CIRCULATION IMPROVEMENTS

Level Of Service Computation Report
 Circular 212 Planning Method

 * Future Volume Alternative *

 Section #3 MAIN AND MINARET

Time (sec): 100 Critical Vol./Cap. (X): 1.14
 Time (sec): 0 Average Delay (sec/vehicle): 74.7
 Initial Cycle: 100 Level Of Service: F

 Approach: North Bound South Bound East Bound West Bound

Phase:	North Bound			South Bound			East Bound			West Bound		
Phase:	L	T	R	L	T	R	L	T	R	L	T	R
Phase:	Left Phase			Left Phase			Left Phase			Left Phase		
Phase:	No			No			No			Aux		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Red:	1	0	1	1	1	0	1	0	2	2	0	2

Time Module:

Initial Vol:	88	439	127	1045	632	150	66	574	115	316	453	587
Assignment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vol.:	88	439	127	1045	632	150	66	574	115	316	453	587

Capacity Flow Module:

Phase:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
Assignment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Losses:	1.00	1.55	0.45	1.72	1.04	0.25	1.00	2.00	1.00	2.00	2.00	1.00
Sat.:	1170	1816	524	2008	1213	289	1170	2340	1170	2340	2340	1170

Capacity Analysis Module:

Lat:	0.08	0.24	0.24	0.52	0.52	0.52	0.06	0.25	0.10	0.13	0.19	0.50
Moves:			****	****			****			****		
/Cycle:	0.08	0.21	0.21	0.46	0.58	0.58	0.08	0.21	0.21	0.12	0.26	0.71
/Cap:	0.89	1.14	1.14	1.14	0.99	0.99	0.75	1.14	0.46	1.14	0.75	0.70

Level Of Service Module:

Delay/Veh:	74.8	123	161.1	101	23.8	42.2	54.1	118	27.3	133	29.9	8.2
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	74.8	123	161.1	101	23.8	42.2	54.1	118	27.3	133	29.9	8.2
Count:	4	25	9	59	18	5	2	32	3	19	12	10

CUMULATIVE + PROJECT TRAFFIC
 NORTH VILLAGE SPECIFIC PLAN
 CIRCULATION IMPROVEMENTS

Level Of Service Computation Report
 Circular 212 Planning Method

 * Future Volume Alternative *

 Section #29 MINARET AND MERIDIAN

le (sec): 100 Critical Vol./Cap. (X): 1.02
 Time (sec): 0 Average Delay (sec/vehicle): 57.1
 Cycle: 100 Level Of Service: F

 Approach: North Bound South Bound East Bound West Bound

Movement:	North Bound			South Bound			East Bound			West Bound		
	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Left Phase			Left Phase			Left Phase			Left Phase		
	No			No			No			No		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Phases:	1	0	0	1	0	1	0	1	1	0	1	0

Time Module:

Total Vol.:	192	503	52	114	562	94	130	501	300	42	378	148
Assignment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	192	503	52	114	562	94	130	501	300	42	378	148

Capacity Flow Module:

Capacity:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
Assignment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delays:	1.00	0.91	0.09	1.00	1.00	1.00	1.00	1.25	0.75	1.00	1.44	0.56
Final Sat.:	1170	1060	110	1170	1170	1170	1170	1464	876	1170	1681	659

Capacity Analysis Module:

Sat:	0.16	0.47	0.47	0.10	0.48	0.08	0.11	0.34	0.34	0.04	0.22	0.22
Moves:	****			****			****			****		
Del/Cycle:	0.16	0.52	0.52	0.11	0.47	0.47	0.12	0.33	0.33	0.04	0.25	0.25
Del/Cap:	1.02	0.91	0.91	0.91	1.02	0.17	0.91	1.02	1.02	1.02	0.91	0.91

Level Of Service Module:

Del/Veh:	90.3	30.2	76.8	71.2	56.5	11.8	67.6	63.4	73.1	156	44.7	59.5
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Del/Veh:	90.3	30.2	76.8	71.2	56.5	11.8	67.6	63.4	73.1	156	44.7	59.5
Counts:	9	15	3	5	23	2	5	21	13	3	13	6

CUMULATIVE + PROJECT TRAFFIC
 NORTH VILLAGE SPECIFIC PLAN
 CIRCULATION IMPROVEMENTS

Level Of Service Computation Report
 Circular 212 Planning Method

 * Future Volume Alternative *

 Section #54 OLD MAMMOTH AND MERIDIAN

Time (sec): 100 Critical Vol./Cap. (X): 1.46
 Delay Time (sec): 0 Average Delay (sec/vehicle): 220.3
 Signal Cycle: 100 Level Of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Left Phase			Left Phase			Left Phase			Left Phase		
Phase:	No			No			Aux			No		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Red:	1	0	1	1	0	1	1	0	1	1	0	1

Volume Module:

Initial Vol:	284	708	200	287	1030	325	139	159	251	229	244	85
Estimate:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	284	708	200	287	1030	325	139	159	251	229	244	85

Capacity Flow Module:

Capacity/Lane:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
Estimate:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.48	0.52
Final Sat.:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1735	605

Capacity Analysis Module:

Sat:	0.24	0.61	0.17	0.25	0.88	0.28	0.12	0.14	0.21	0.20	0.14	0.14
Moves:	****			****			****			****		
Del/Cycle:	0.17	0.55	0.55	0.22	0.61	0.61	0.10	0.09	0.26	0.13	0.12	0.12
Del/Cap:	1.46	1.10	0.31	1.10	1.46	0.46	1.14	1.46	0.82	1.46	1.14	1.14

Level Of Service Module:

Del/Veh:	412	82.1	9.5	111	397	8.7	159	442	38.2	422	139	181.6
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Del/Veh:	412	82.1	9.5	111	397	8.7	159	442	38.2	422	139	181.6
Level:	35	37	3	16	183	5	9	21	8	29	15	6

 (1) ACTUAL VOLUME = 309
 2102 REDUCTION

CUMULATIVE + PROJECT TRAFFIC
 NORTH VILLAGE SPECIFIC PLAN
 CIRCULATION IMPROVEMENTS

Level of Service Computation Report
 Circular 212 Planning Method

 * Future Volume Alternative *

 Section #55 OLD MAMMOTH AND MAIN

Delay (sec): 100 Critical Vol./Cap. (X): 1.00
 Delay Time (sec): 0 Average Delay (sec/vehicle): 40.7
 Signal Cycle: 100 Level of Service: F

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	No Left Phase			No Left Phase			Left Phase			Left Phase		
Signal:	No			Free			No			No		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Reds:	1	0	0	0	0	0	0	0	2	1	0	2

Volume Module:

Signal Vol:	808	0	80	0	0	0	0	272	300	108	323	0
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adjusted Vol.:	808	0	80	0	0	0	0	272	300	108	323	0

Duration Flow Module:

Lane:	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210	1210
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Reds:	1.00	0.00	1.00	0.00	0.00	0.00	0.00	2.00	1.00	1.00	2.00	0.00
Signal Sat.:	1210	0	1210	0	0	0	0	2420	1210	1210	2420	0

Capacity Analysis Module:

Signal Sat:	0.67	0.00	0.07	0.00	0.00	0.00	0.00	0.11	0.25	0.09	0.13	0.00
Red Moves:	****			****			****			****		
Reds/Cycle:	0.66	0.00	0.66	0.00	0.00	1.00	0.00	0.25	0.25	0.09	0.34	0.34
Reds/Cap:	1.00	0.00	0.10	0.00	0.00	0.00	0.00	0.46	1.00	1.00	0.40	0.00

Level of Service Module:

Delay/Veh:	38.6	0.0	4.6	0.0	0.0	0.0	0.0	25.0	70.4	103	19.8	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	38.6	0.0	4.6	0.0	0.0	0.0	0.0	25.0	70.4	103	19.8	0.0
Reds:	30	0	1	0	0	0	0	6	13	6	7	0

(1) ACTUAL VOLUME - 1102
 2700 REDUCED

CUMULATIVE + PROJECT TRAFFIC
 NORTH VILLAGE SPECIFIC PLAN
 CIRCULATION IMPROVEMENTS

Level Of Service Computation Report
 Circular 212 Planning Method

 * Future Volume Alternative *

 Intersection #71 LAKEVIEW AND LAKE MARY

Yellow (sec): 100 Critical Vol./Cap. (X): 0.97
 Red Time (sec): 0 Average Delay (sec/vehicle): 33.6
 Signal Cycle: 100 Level Of Service: E

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	No Left Phase Free			No Left Phase No			No Left Phase Free			No Left Phase Free		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Reds:	0	0	0	1	0	0	0	0	1	0	0	1

Volume Module:

Initial Vol:	0	0	0	365	0	69	69	389	0	0	334	234
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	2.22	1.00	1.00	2.59	1.00	1.00
Final Vol.:	0	0	0	365	0	69	154	389	0	0	334	234

Duration Flow Module:

Lane:	1275	1275	1275	1275	1275	1275	1275	1275	1275	1275	1275	1275
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Flow Rates:	0.00	0.00	0.00	1.00	0.00	1.00	0.28	0.72	0.00	0.00	1.00	1.00
Initial Sat.:	0	0	0	1275	0	1275	363	912	0	0	1275	1275

Capacity Analysis Module:

Initial Sat:	0.00	0.00	0.00	0.29	0.00	0.05	0.43	0.43	0.00	0.00	0.26	0.13
Queue Moves:	****			****			****			****		
Flow/Cycle:	0.00	0.00	1.00	0.29	0.00	0.29	0.44	0.71	1.00	0.00	0.27	1.00
Flow/Cap:	0.00	0.00	0.00	0.97	0.00	0.18	0.97	0.60	0.00	0.00	0.97	0.13

Level Of Service Module:

Delay/Veh:	0.0	0.0	0.0	56.4	0.0	20.3	68.6	7.0	0.0	0.0	58.9	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	56.4	0.0	20.3	68.6	7.0	0.0	0.0	58.9	0.0
Queue:	0	0	0	14	0	1	5	6	0	0	13	0

**CUMULATIVE + PROJECT CONDITIONS
(WITH MITIGATION MEASURES)**

CAPACITY AND LEVEL-OF-SERVICE

MOVEMENT	FLOW-RATE v (pcph)	POTENTIAL CAPACITY c (pcph) P	ACTUAL MOVEMENT CAPACITY c (pcph) M	SHARED CAPACITY c (pcph) SH	RESERVE CAPACITY c = c - v R SH	LOS
MINOR STREET						
SB LEFT	85	66	60	60	-25	F
RIGHT	14	490	490	490	476	A
MAJOR STREET						
EB LEFT	30	210	210	210	180	D

IDENTIFYING INFORMATION

NAME OF THE EAST/WEST STREET..... MAIN STREET
 NAME OF THE NORTH/SOUTH STREET..... SIERRA
 DATE AND TIME OF THE ANALYSIS..... 10-19-90 ; PM PEAK
 OTHER INFORMATION.... CUMULATIVE + PROJECT TRAF.- MITIGATION IMPROV.

CUMULATIVE + PROJECT TRAFFIC MITIGATION IMPROVEMENTS

Level Of Service Computation Report Circular 212 Planning Method

* Future Volume Alternative *

Intersection #1 MINARET AND FOREST TRAIL

Level (sec): 52 Critical Vol./Cap. (X): 0.80
Delay Time (sec): 0 Average Delay (sec/vehicle): 13.3
Signal Cycle: 95 Level Of Service: D

Table with 4 columns: Approach (North Bound, South Bound, East Bound, West Bound) and 3 rows: Movement (L-T-R), Control (Left Phase, No Left Phase), and Signal (Green, Red) with numerical values.

Time Module: Table with 4 columns (Approaches) and 3 rows (Signal, Sat, Volume) showing traffic volume and saturation data.

Proportion Flow Module: Table with 4 columns (Approaches) and 3 rows (Sat, Signal, Volume) showing saturation and signal timing data.

Capacity Analysis Module: Table with 4 columns (Approaches) and 3 rows (Sat, Signal, Volume) showing saturation and signal timing data.

Level Of Service Module: Table with 4 columns (Approaches) and 3 rows (Delay, Adj, Volume) showing delay and volume data.

(1) ACTUAL VOLUME = 352 RT. OVERLAP REDUCTION

CUMULATIVE + PROJECT TRAFFIC
MITIGATION IMPROVEMENTS

Level of Service Computation Report
Circular 212 Planning Method

* Future Volume Alternative *

Intersection #71 LAKEVIEW AND LAKE MARY

Yellow (sec): 100 Critical Vol./Cap. (X): 0.55
Time (sec): 0 Average Delay (sec/vehicle): 13.3
Signal Cycle: 32 Level of Service: A

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	No Left Phase Free			No Left Phase No			No Left Phase Free			No Left Phase Free		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Reds:	0	0	0	1	0	1	1	0	1	0	0	1

Volume Module:

Initial Vol:	0	0	0	365	0	69	69	389	0	0	334	234
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	2.22	1.00	1.00	2.59	1.00	1.00
Final Vol.:	0	0	0	365	0	69	154	389	0	0	334	234

Duration Flow Module:

Green Lane:	1275	1275	1275	1275	1275	1275	1275	1275	1275	1275	1275	1275
Adjustment:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Reds:	0.00	0.00	0.00	1.68	0.00	0.32	1.00	1.00	0.00	0.00	1.00	1.00
Initial Sat.:	0	0	0	2145	0	405	1275	1275	0	0	1275	1275

Capacity Analysis Module:

Initial Sat:	0.00	0.00	0.00	0.17	0.17	0.17	0.12	0.30	0.00	0.00	0.26	0.18
Control Moves:	****			****			****			****		
Green/Cycle:	0.00	0.00	1.00	0.31	0.31	0.31	0.22	0.69	1.00	0.00	0.47	1.00
Green/Sec/Cap:	0.00	0.00	0.00	0.55	0.55	0.55	0.55	0.44	0.00	0.00	0.55	0.18

Level of Service Module:

Delay/Veh:	0.0	0.0	0.0	23.0	0.0	26.1	28.5	5.5	0.0	0.0	15.3	0.0
Delay Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Delay/Veh:	0.0	0.0	0.0	23.0	0.0	26.1	28.5	5.5	0.0	0.0	15.3	0.0
Level:	0	0	0	9	0	2	2	5	0	0	7	0

CUMULATIVE + PROJECT TRAFFIC MITIGATION IMPROVEMENTS

Level Of Service Computation Report Circular 212 Planning Method

* Future Volume Alternative *

Section #3 MAIN AND MINARET

le (sec): 100 Critical Vol./Cap. (X): 1.01
Time (sec): 0 Average Delay (sec/vehicle): 39.4
al Cycle: 100 Level Of Service: F

Approach: North Bound South Bound East Bound West Bound

Segment: L - T - R L - T - R L - T - R L - T - R

Control: Left Phase Left Phase Left Phase Left Phase
No No No Aux

Green: 0 0 0 0 0 0 0 0 0 0 0 0
Red: 1 0 2 0 1 2 0 1 1 0 1 0 2 0 2 0 1

Time Module:

al Vol: 88 439 127 1045 632 150 66 574 115 316 453 587
Segment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
al Vol.: 88 439 127 1045 632 150 66 574 115 316 453 587

Station Flow Module:

Phase: 1170 1170 1170 1170 1170 1170 1170 1170 1170 1170 1170 1170
Segment: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
es: 1.00 2.00 1.00 2.00 1.62 0.38 1.00 2.00 1.00 2.00 2.00 1.00
al Sat.: 1170 2340 1170 2340 1890 450 1170 2340 1170 2340 2340 1170

Capacity Analysis Module:

Sat: 0.08 0.19 0.11 0.45 0.33 0.33 0.06 0.25 0.10 0.13 0.19 0.50
Moves: ****
en/Cycle: 0.12 0.18 0.18 0.44 0.51 0.51 0.08 0.24 0.24 0.13 0.29 0.73
ne/Cap: 0.66 1.01 0.59 1.01 0.66 0.66 0.67 1.01 0.41 1.01 0.67 0.69

Level Of Service Module:

/Veh: 39.9 68.7 31.6 46.9 15.0 18.4 44.6 62.2 25.1 76.8 25.8 7.2
ay Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Del/Veh: 39.9 68.7 31.6 46.9 15.0 18.4 44.6 62.2 25.1 76.8 25.8 7.2
e: 3 18 3 39 13 3 2 23 3 14 12 9

(1) RT OVERLAP

CUMULATIVE + PROJECT TRAFFIC
MITIGATION IMPROVEMENTS

Level of Service Computation Report
Circular 212 Planning Method

* Future Volume Alternative *

Intersection #29 MINARET AND MERIDIAN

Delay (sec): 100 Critical Vol./Cap. (X): 0.78
Start Time (sec): 0 Average Delay (sec/vehicle): 27.3
Signal Cycle: 100 Level of Service: C

Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Left Phase			Left Phase			Left Phase			Left Phase		
	No			No			No			No		
Green:	0	0	0	0	0	0	0	0	0	0	0	0
Reds:	1	0	1	1	0	1	1	0	2	1	0	1

Queue Module:

Initial Vol.:	192	503	52	114	562	94	130	501	108	42	378	148
Estimate:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Final Vol.:	192	503	52	114	562	94	130	501	108	42	378	148

Saturation Flow Module:

/Lane:	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170	1170
Estimate:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Loss:	1.00	1.81	0.19	1.00	1.71	0.29	1.00	2.00	1.00	1.00	1.44	0.56
Final Sat.:	1170	2121	219	1170	2004	336	1170	2340	1170	1170	1681	659

Capacity Analysis Module:

/Sat:	0.16	0.24	0.24	0.10	0.28	0.28	0.11	0.21	0.09	0.04	0.22	0.22
Moves:	****			****			****			****		
Len/Cycle:	0.21	0.40	0.40	0.17	0.36	0.36	0.14	0.37	0.37	0.06	0.29	0.29
Vol./Cap:	0.78	0.59	0.59	0.59	0.78	0.78	0.78	0.58	0.25	0.58	0.78	0.78

Level of Service Module:

Del/Veh:	38.7	18.7	24.8	33.0	25.8	39.8	45.8	20.3	17.0	42.9	30.7	37.6
Vol Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Del/Veh:	38.7	18.7	24.8	33.0	25.8	39.8	45.8	20.3	17.0	42.9	30.7	37.6
Queue:	6	11	1	3	15	3	4	11	2	1	11	5

(1) ACTUAL VOLUME = 300
2. OVER THE 1250 VOLUME

CUMULATIVE + PROJECT TRAFFIC
MITIGATION IMPROVEMENTS

Level Of Service Computation Report
Circular 212 Planning Method

* Future Volume Alternative *

Section #54 OLD MAMMOTH AND MERIDIAN

Delay (sec): 100 Critical Vol./Cap. (X): 1.01
Queue Time (sec): 0 Average Delay (sec/vehicle): 42.5
Signal Cycle: 100 Level Of Service: F

Approach: North Bound South Bound East Bound West Bound

Phase: L - T - R L - T - R L - T - R L - T - R

Control: Left Phase Left Phase Left Phase Left Phase
No No Aux No

Green: 0 0 0 0 0 0 0 0 0 0 0 0 0
Red: 1 0 2 0 1 1 0 2 0 1 1 0 1 1 0

Time Module:

Signal Vol: 284 708 200 287 1030 325 139 159 251 229 244 79
Sat: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Signal Vol.: 284 708 200 287 1030 325 139 159 251 229 244 79

Saturation Flow Module:

Flow Lane: 1170 1170 1170 1170 1170 1170 1170 1170 1170 1170 1170 1170
Sat: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Red: 1.00 2.00 1.00 1.00 2.00 1.00 1.00 1.00 1.00 1.00 1.51 0.49
Signal Sat.: 1170 2340 1170 1170 2340 1170 1170 1170 1170 1170 1768 572

Capacity Analysis Module:

Red Sat: 0.24 0.30 0.17 0.25 0.44 0.29 0.12 0.14 0.21 0.20 0.14 0.14
Moves: **** **** ****
Red/Cycle: 0.24 0.37 0.37 0.30 0.43 0.43 0.15 0.13 0.37 0.19 0.18 0.18
Red/Sec/Cap: 1.01 0.81 0.46 0.81 1.01 0.64 0.79 1.01 0.58 1.01 0.79 0.79

Level Of Service Module:

Red/Veh: 75.1 26.0 18.9 34.2 47.5 19.0 45.3 93.6 20.6 81.8 39.0 51.9
Red Adj: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00
Red/Del/Veh: 75.1 26.0 18.9 34.2 47.5 19.0 45.3 93.6 20.6 81.8 39.0 51.9
Red: 13 19 4 9 38 7 5 8 6 11 7 3

(1) ACTUAL VOLUME = 309
RTOR REDUCTION

CUMULATIVE + PROJECT TRAFFIC MITIGATION IMPROVEMENTS

Level of Service Computation Report Circular 212 Planning Method

* Future Volume Alternative *

Section #55 OLD MAMMOTH AND MAIN

Time (sec): 100 Critical Vol./Cap. (X): 0.57
Time (sec): 0 Average Delay (sec/vehicle): 12.5
Initial Cycle: 43 Level of Service: A

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Rows include Control (No Left Phase, Free, Left Phase) and Green/Red times.

Time Module: Table with 4 columns (North, South, East, West) and 3 rows (Initial Vol, Adjustment, Final Vol).

Saturation Flow Module: Table with 4 columns (North, South, East, West) and 4 rows (Lane, Adjustment, Sat, Final Sat).

Capacity Analysis Module: Table with 4 columns (North, South, East, West) and 4 rows (Sat, Moves, Delay/Cycle, Delay/Cap).

Level of Service Module: Table with 4 columns (North, South, East, West) and 4 rows (Delay/Veh, Delay Adj, Delay/Veh, Delay).

CUMULATIVE + PROJECT TRAFFIC MITIGATION IMPROVEMENTS

Level Of Service Computation Report Circular 212 Planning Method

***** * Future Volume Alternative *

Section #40 MINARET AND OLD MAMMOTH

Level (sec): 100 Critical Vol./Cap. (X): 0.84
Time (sec): 0 Average Delay (sec/vehicle): 30.0
Initial Cycle: 100 Level Of Service: 0

Table with 4 columns: North Bound, South Bound, East Bound, West Bound. Each column has sub-columns for L, T, R phases and Green, Yellow, Red times.

Volume Module: Table showing Total Vol., Adjustment, and Vol. for each phase across all four directions.

Saturation Flow Module: Table showing Sat., Adjustment, and Sat. for each phase across all four directions.

Capacity Analysis Module: Table showing Sat., Moves, and Delay/Cap. for each phase across all four directions.

Level Of Service Module: Table showing Delay/Veh., Delay Adj., and Delay/Veh. for each phase across all four directions.

(1) ACTUAL VOLUME = 492
27. OVERLAP REDUCTION

5.0 ANALYSIS OF FUTURE TRAFFIC IMPACTS

The preceding Section (4.0) described the process that was used to identify future traffic forecasts both with and without the development proposed by the North Village Specific Plan. The text that follows in this section summarizes the analysis and expected impacts associated with the future traffic conditions under both scenarios. Cumulative conditions (also referred to as the No Project Alternative) identifies how the key intersections and roadway segments would operate with traffic that can expect to be generated from all future development except the North Village Specific Plan. (The cumulative projects considered are described in Section 4.2) The Cumulative Plus Project scenario summarizes the future impacts attributable to the North Village Specific Plan.

5.1 Traffic Impact Measure of Significance

The Town of Mammoth Lakes has established a policy to maintain a circulation system that operates equivalent to the Transportation Research Board's⁶ definition of Level of Service (LOS) "C".

In order to highlight potentially significant impacts identified by this analysis, any segment or intersection that will operate at a Level of Service "D", "E" or "F" that is measurably impacted by the proposed Specific Plan has been identified. Mitigation measures have also been developed for each of these locations.

Criteria other than achieving LOS "C" may be more appropriate as a measure of "Significant Impact" for traffic conditions for the following two reasons. First, throughout the capacity analysis a conservative approach was used. The standard capacities used for the intersection peak hour and roadway daily traffic analyses are inherently conservative. The capacities were further reduced to stimulate the adverse effects of inclement weather typical of winter conditions in Mammoth. The resulting capacity used for the analysis is then expected to be somewhat lower than the actual capacity which will exist on the system. Second, the study analyzes both the peak hour and Average Daily Traffic associated with peak winter weekend Saturday conditions. As mentioned previously, these conditions are expected to occur only 10 to 20 days per year, or 3% to 6% of the time. Generally, circulation systems are

⁶ Transportation Research Circular No. 212 Interim Materials on Highway Capacity, Transportation Research Board, January 1980.

designed to accommodate traffic conditions as they occur on a typical, average day of the year. Achieving a desirable Level of Service under average conditions may be more appropriate than designing for the peak days, provided that the system does not totally fail during these peak days. Acceptance of the lower Level of Service for limited time periods each year is balanced by the significant reduction in the cost and secondary impacts (right-of-way etc.) associated with mitigating the worst-case traffic conditions. The expected benefit/cost ratio of mitigating "worst case" conditions would be very low, since the system would be under-utilized during the major portion of the time.

5.2 Cumulative (No Project) Conditions

The Cumulative traffic volumes were analyzed using the same Level of Service methodologies used to assess existing conditions. The programmed improvement plans by the Town of Mammoth Lakes (as described in Section 3.0) were assumed to be in place for the scenario. The roadway Level of Service analysis is summarized in Table 7. The resulting intersection Levels of Service are summarized in Table 8.

The results of the intersection analysis indicates that there would be a significant decline in the Level of Service at most of the intersections under the Cumulative conditions.

The roadway Level of Service analysis presented in Table 7 indicates that the following segments would operate at LOS "F" under cumulative conditions:

- o Main Street - Minaret Road to Sierra Boulevard
- o Minaret Road - Old Mammoth Road to Chateau Road
- o Minaret Road - Main Street to Forest Trail
- o Old Mammoth Road - Chateau Road to Meridian Boulevard
- o Old Mammoth Road - Meridian Boulevard to Main Street

The segment of Minaret Road from Chateau Road to Meridian Boulevard would operate at LOS "D". Lake Mary Road from Lakeview Road to Minaret Road and Minaret Road from Meridian Boulevard to Main Street would operate at LOS "E". All other roadway segments studied would operate at LOS "C" or better.

TABLE 7

CUMULATIVE BASE DAILY WINTER WEEKEND
ROADWAY LEVELS OF SERVICE

ROADWAY	SEGMENT	TRAVEL LANES	DAILY CAPACITY	Cumulative ADT	Base V/C	Conditions LOS
Lake Mary Road	Lakeview Rd. to Minaret Rd.	2-und	12,500	12,100	0.97	E
Main Street	Minaret Rd. to Sierra Blvd.	4-und	25,000	26,400	1.06	F
Main Street	Forest Trail to Old Mammoth Rd.	4-lt	30,000	23,500	0.78	C
Meridian Boulevard	Majestic Pines Dr. to Minaret Rd.	4-und	25,000	13,200	0.53	A
Meridian Boulevard	Minaret to Old Mammoth Rd.	4-und	25,000	16,000	0.64	B
Minaret Road	Old Mammoth Rd. to Chateau Rd.	2-und	12,500	13,200	1.06	F
Minaret Road	Chateau Rd. to Meridian Blvd.	2-und	12,500	10,700	0.86	D
Minaret Road	Meridian Blvd. to Main St.	2-und*	12,500	12,300	0.98	E
Minaret Road	Main St. to Forest Trail	2-und	12,500	15,900	1.27	F
Old Mammoth Road	Chateau Rd. to Meridian Blvd.	2-lt	17,500	19,600	1.12	F
Old Mammoth Road	Meridian Blvd. to Main St.	2-lt	17,500	18,500	1.06	F
Forest Trail Road	E/O Minaret Rd.	2-und	12,500	800	0.06	A
Forest Trail Road	W/O Minaret Rd.	2-und	12,500	1,150	0.09	A
Canyon Blvd.	W/O Minaret Rd.	2-und	12,500	6,000	0.48	A

Note:

- lt - Left-Turn channelization for all major segments.
- und - Undivided, little or no left turn channelization.
- * - Town of Mammoth Lakes Programmed Improvement.

The results presented in Table 8 indicate that the following intersections would operate at an unacceptable Level of Service:

- The unsignalized intersections of Minaret Road/Forest Trail and Sierra Boulevard/Main Street would operate at LOS "E";
- The unsignalized intersections of Minaret Road/Canyon Boulevard, Lakeview Road/Lake Mary Road, and Minaret Road/Old Mammoth Road would operate at LOS "F";
- The signalized intersections of Old Mammoth Road/Main Street and Minaret Road/Meridian Boulevard would operate at LOS "E";
- The signalized intersections of Minaret Road/Main Street and Old Mammoth Road/Meridian Boulevard would operate at LOS "F".

5.3 Cumulative Plus Project Conditions

The cumulative plus project scenario represents traffic conditions with full build-out of the North Village Specific Plan. The improvements identified in the North Village Specific Plan (presented in Section 3.0) were assumed to be implemented in addition to the Town of Mammoth Lakes "Programmed Improvements." The resulting roadway and intersection Levels of Service summaries are presented in Tables 9 and 10, respectively.

The Level of Service analysis for roadways indicated that the following segments would operate at LOS "F":

- Lake Mary Road - Lakeview Road to Minaret Road
- Main Street - Minaret Road to Sierra Boulevard
- Minaret Road - Old Mammoth Road to Chateau Road
- Minaret Road - Chateau Road to Meridian Boulevard
- Minaret Road - Meridian Boulevard to Main Street
- Old Mammoth Road - Chateau Road to Meridian Boulevard
- Old Mammoth Road - Meridian Boulevard to Main Street

Main Street from Forest Trail to Old Mammoth Road and Minaret Road from Main Street to Forest Trail would operate at LOS "D".

TABLE 8

CUMULATIVE PM PEAK HOUR LEVEL OF SERVICE SUMMARY
TOWN OF MAMMOTH LAKES PROGRAMMED IMPROVEMENT

<u>Unsignalized Intersections</u>	<u>Reserve Capacity^a</u>	<u>LOS^b</u>
Minaret Rd. & Forest Trail	+ 55	E
Minaret Rd. & Canyon Blvd.	+ 71	F
Kelley Rd. & Lake Mary Rd.	+459	A
Lakeview Rd. & Lake Mary Rd.	- 37	F
Sierra Blvd. & Main Street	+ 10	E
Minaret Rd. & Old Mammoth Rd.	-816	F
<u>Signalized Intersections</u>	<u>V/C Ratio^c</u>	<u>LOS^b</u>
Minaret Rd. & Main St.	1.12	F
Old Mammoth Rd & Main St.	0.91	E
Old Mammoth Rd. & Meridian Blvd.	1.41	F
Minaret Rd. & Meridian Blvd.	0.90	E

Notes:

^a Reserve Capacity - Available reserve capacity for the most constrained intersection movement.

^b LOS - Level of Service Description (See Appendix).

^c V/C - Volume to Capacity (percent of intersection capacity utilized).

A review of Table 10 reveals the following Level of Service deficiencies:

- o The unsignalized intersections of Sierra Boulevard/Main Street and Minaret Road/Old Mammoth Road would operate at LOS "F";
- o The signalized intersection of Lakeview Road/Lake Mary Road would operate at LOS "E";
- o The following signalized intersections would operate at LOS "F":
 - Minaret Road/Forest Trail
 - Minaret Road/Main Street
 - Minaret Road/Meridian Boulevard
 - Old Mammoth Road/Main Street
 - Old Mammoth Road/Meridian Boulevard

TABLE 9

**CUMULATIVE PLUS PROJECT DAILY WINTER WEEKEND
ROADWAY LEVELS OF SERVICE**

<u>ROADWAY</u>	<u>SEGMENT</u>	<u>TRAVEL LANES</u>	<u>DAILY CAPACITY</u>	<u>Cumulative Plus Project Conditions</u>		
				<u>ADT</u>	<u>V/C</u>	<u>LOS</u>
Lake Mary Road	Lakeview Rd. to Minaret Rd.	2-und	12,500	18,000	1.44	F
Main Street	Minaret Rd. to Sierra Blvd.	4-und	25,000	31,900	1.28	F
Main Street	Forest Trail Rd. to Old Mammoth Rd.	4-lt	30,000	27,500	0.92	D
Meridian Boulevard	Majestic Pines Dr. to Minaret Rd.	4-und	25,000	14,000	0.56	A
Meridian Boulevard	Minaret Rd. to Old Mammoth Rd.	4-und	25,000	16,700	0.67	B
Minaret Road	Old Mammoth Rd. to Chateau Rd.	2-und	12,500	18,800	1.50	F
Minaret Road	Chateau Rd. to Meridian Blvd.	2-und	12,500	16,300	1.30	F
Minaret Road	Meridian Blvd. to Main St.	2-und*	12,500	22,600	1.81	F
Minaret Road	Main St. to Forest Trail	4-lt	30,000	25,200	0.84	D
Old Mammoth Road	Chateau Rd. to Meridian Blvd.	2-lt	17,500	21,600	1.23	F
Old Mammoth Road	Meridian Blvd. to Main St.	2-lt	17,500	22,200	1.27	F
Forest Trail Road	E/O Minaret Rd.	2-und	12,500	4,200	0.34	A
Forest Trail Road	W/O Minaret Rd.	2-und	12,500	8,600	0.69	B

Note:

- lt - Left-Turn channelization for all major segments.
- und - Undivided, little or no left turn channelization.
- * - Town of Mammoth Lakes Programmed Improvement.
- ** - North Village Specific Plan Improvement.

TABLE 10

CUMULATIVE PLUS PROJECT
 PM PEAK HOUR LEVEL OF SERVICE SUMMARY
 NORTH VILLAGE SPECIFIC PLAN IMPROVEMENTS

<u>Unsignalized Intersections</u>	<u>Reserve Capacity^a</u>	<u>LOS^b</u>
Kelley Rd. & Lake Mary Rd.	+426	A
Sierra Blvd. & Main Street	- 39	F
Minaret Rd. & Old Mammoth Rd.	-991	F
<u>Signalized Intersections</u>	<u>V/C Ratio^c</u>	<u>LOS^b</u>
Minaret Rd. & Forest Trail	1.33	F
Lakeview Rd. & Lake Mary Rd.	.93	E
Minaret Rd. & Main St.	1.20	F
Minaret Rd. & Meridian Blvd.	1.07	F
Old Mammoth Rd. & Main St.	1.02	F
Old Mammoth Rd. & Meridian Blvd.	1.47	F

Notes:

^a Reserve Capacity - Available reserve capacity for the most constrained intersection movement.

^b LOS - Level of Service Description (See Appendix).

^c V/C - Volume to Capacity (percent of intersection capacity utilized).

6.0 MITIGATION MEASURES

The previous traffic impact analysis determined that unacceptable levels of service would be experienced on various roadway segments and intersections.

A series of street system improvements have been developed and are presented in this section in an effort to achieve acceptable operating conditions on the roadway system and intersection with projected future traffic volumes. These mitigation measures can be grouped into two general categories; physical improvements to increase capacity and transportation management measures to decrease traffic demand. The physical mitigation improvements are described below and are illustrated in Appendix A. The mitigations developed for the most part conform to the roadway designation goals and policies contained in the Circulation Element of the Mammoth Lakes General Plan. The improvements presented below would be in addition to the roadway improvements either currently programmed by the Town of Mammoth Lakes or those proposed as part of the North Village Specific Plan.

6.1 Roadway Improvements

- o Minaret Road (Main Street/Lake Mary Road to south of Old Mammoth Road) - Widen Minaret Road from Main Street/Lake Mary Road to south of Old Mammoth Road to provide four through travel lanes. This improvement would be consistent with the Town of Mammoth Lakes General Plan, which designates Minaret Road as an arterial.
- o Old Mammoth Road (Main Street to south of Chateau Road) - Widen or restripe Old Mammoth Road from Main Street to south of Chateau Road to provide four travel lanes while maintaining the existing continuous left-turn lane.
- o Lake Mary Road (Main Street to Lakeview Road) - Widen Lake Mary Road between Main Street and Lakeview Road to provide four travel lanes. The westbound through lane in this road segment would become an exclusive right-turn lane at the intersection with Lakeview Road.
- o Main Street (Sierra Boulevard to Minaret Road) - Provide a two-way continuous left-turn lane in the median by widening Main Street between Sierra Boulevard and Minaret Road. This would be consistent with the existing two-way continuous left-turn lane east of Sierra Boulevard.

6.2 Intersection Improvements

The following intersection improvements recommended to mitigate cumulative plus project conditions are in conjunction with the roadway improvements described above.

Minaret Road/Forest Trail - These improvements would be in addition to the improvements proposed as part of the North Village Specific Plan circulation plan. Widen Minaret Road just north of Forest Trail to provide two southbound lanes, resulting in one left-turn lane, one through lane and a through/right-turn lane on the southbound Minaret approach to Forest Trail. Provide north-south protected/permissive left-turn phasing. Restripe the eastbound approach to provide a right turn lane and provide a right-turn overlap phase. Restripe the westbound approach (widened as part of the North Village Specific Plan improvements) for a left-turn lane and a through/right-turn lane.

Lakeview Road/Lake Mary Road - Restripe the eastbound Lake Mary Road approach to provide one left-turn lane and one through lane (which would be the second eastbound through lane recommended as part of the Lake Mary Road widening east of Lakeview Road); widen the westbound Lake Mary Road approach to provide one through lane and one right-turn lane (which would be the second westbound through lane recommended as part of the Lake Mary Road widening east of Lakeview Road) and restripe the southbound Lakeview Road approach to provide one left-turn lane and one shared left/right-turn lane. These improvements would be in addition to the installation of a traffic signal, widening and grade reductions proposed in the North Village Specific Plan Circulation Plan.

Minaret Road/Main Street/Lake Mary Road - Widen the northbound Minaret Road approach to provide a right-turn lane. Widen the southbound approach to provide the following configuration: two left-turn lanes, one through lane, and one through/right-turn lane. Restripe the westbound approach to provide a second left-turn lane. Provide eight-phase signal operation by modifying the northbound and southbound from split phasing to protected left-turn phasing.

Sierra Boulevard/Main Street - Restripe Main Street to provide a left-turn lane on the eastbound approach (in conjunction with the recommended widening of Main Street to provide a two-way continuous left-turn lane). This would remove turning vehicles from the through traffic lanes and thus improve the overall operation of the intersection. Also, restripe the southbound approach to provide a left-turn lane and

a right-turn lane. This would reduce the delay to right turning traffic caused by vehicles waiting to turn left from a single approach lane. The intersection comes very close to meeting signal warrants with the projected traffic and should be monitored periodically to determine if the actual future volumes or accident incidence warrant the installation of a signal.

Old Mammoth Road/Main Street - Restripe the northbound approach to provide one left-turn lane and one shared left/right-turn lane. The two-lane southbound departure should be modified to provide for a continuous eastbound to southbound movement. Traffic turning left from the westbound approach would be able to turn into the other southbound departure lane.

Minaret Road/Meridian Boulevard - Widen both the northbound and southbound Minaret Road approaches to provide one left-turn lane, one through lane, and one through/right-turn lane on each approach. Widen the eastbound approach to provide a right-turn lane with a right turn overlap. Provide left-turn lanes on the eastbound and westbound Meridian approaches.

Old Mammoth Road/Meridian Boulevard - Widen the northbound and southbound Old Mammoth approaches to provide one left-turn lane, two through lanes, and one right turn lane.

Minaret Road/Old Mammoth Road - This intersection will satisfy traffic signal warrants under cumulative conditions. Install an eight-phase traffic signal, with protected left-turns on all approaches. Widen the northbound and southbound Minaret approaches to provide one left-turn lane. Two through lanes and one right-turn lane. Widen the westbound approach to provide two left-turn lanes, one through lane and one right-turn lane; widen the eastbound approach and departure to provide one left-turn through lane, one through lane, and one right-turn lane. The additional eastbound through lane should be extended approximately 300 feet past the intersection and the two through lanes could then transition back into one lane.

6.3 Transportation Demand Management

Transportation Demand Management programs are aimed at reducing the automobile trips on a circulation system, particularly during the peak hours of the day. In a resort setting such as Mammoth Lakes, the goal is best accomplished by

increasing the use of alternative transportation modes such as transit and tour bus and pedestrian transportation.

The North Village project will provide an on-site shuttle service along Minaret road to connect the southern project boundary and the bus loop on Forest Trail. In addition, the Mammoth Area Transit will connect North Village and the Warming Hut II ski area. The overhead lifts connecting North Village to MMSA 2 and Lodestar to MMSA 7 will also decrease the automobile trips from the lodging to the ski areas.

The Town of Mammoth Lakes General Plan identifies the development of an integrated transit and non-motored (e.g. pedestrian, bicycles, cross country skiing) system as a major transportation goal. Such a system should not only link lodging and skiing areas, but should also link the lodging and residential areas of the Town with the resort commercial areas. Linking the major commercial and lodging developments together (such as North Village, Lodestar, Snowcreek) and to the existing commercial areas in the Town with an effective transit system would measurably decrease the traffic levels on the roadways.

A comprehensive transit system of this nature can be expected to decrease non-ski traffic demand by 5% - 10% on a daily basis and 10% - 15% during the peak hours. This decrease in non-ski traffic levels would improve the operation of the circulation system. The ski-related automobile trips would also be reduced since the overhead lifts would become more accessible to the other lodging centers.

The measures outlined below are aimed at realizing the maximum benefit from Transportation Demand Management. These same measures are also presented in detail in Section 8.0 where the Circulation Plan for North Village is discussed.

- All access points from adjacent land uses to Minaret Road, Lake Mary Road and Main Street within the Specific Plan shall be evaluated by a qualified Traffic Engineer and approved by the Town of Mammoth Lakes Public Works Department.
- A system of pedestrian walkways shall be developed in substantial conformance to the Pedestrian Circulation Plan contained in the approved Specific Plan.

- Evidence of binding agreements for transit services substantially in conformance with the Specific Plan shall be provided prior to approval of more than one half of the lodging units allowed for the plan.

6.4 Effect of Mitigation Measures

The mitigation improvement measures presented in Section 6.1 and 6.2 would substantially improve the operation of the circulation system. The Level of Service for cumulative plus project traffic with the recommended mitigation improvements is summarized in Table 11 for roadways and Table 12 for intersections. However, the analysis indicated that a selected number of intersections would continue to operate at LOS "D", "E, or "F":

- The signalized intersections of Minaret Road/Main Street and Old Mammoth Road/Meridian Boulevard would continue to operate at LOS "F";
- The signalized intersections of Minaret Road/ with Forest Trail, Meridian Boulevard and Old Mammoth Road would operate at LOS "D";
- The unsignalized intersection of Sierra Road/Main Street would experience Level of Service "F" for the minor street traffic. The through traffic on Main Street would not be affected, and would continue to operate at free flow conditions.

The roadway Level of Service analysis indicated the following conditions:

- Main Street between Minaret Road and Sierra Boulevard would operate at LOS "F";
- Main Street from Forest Trail to Old Mammoth would operate at LOS "E";
- Minaret Road from Meridian Boulevard to Forest Trail would operate at LOS "D".

TABLE 11

**CUMULATIVE PLUS PROJECT DAILY WINTER WEEKEND
ROADWAY LEVELS OF SERVICE WITH MITIGATION MEASURES**

<u>ROADWAY</u>	<u>SEGMENT</u>	<u>TRAVEL LANES</u>	<u>DAILY CAPACITY</u>	<u>Cumulative Plus Project Conditions</u>		
				<u>ADT</u>	<u>V/C</u>	<u>LOS</u>
Lake Mary Road	Lakeview Rd. to Minaret Rd.	4-und	25,000	18,000	0.72	C
Main Street	Minaret Rd. to Sierra Blvd.	4-und	30,000	31,900	1.06	F
Main Street	Forest Trail Rd. to Old Mammoth Rd.	4-lt	30,000	27,500	0.92	E
Meridian Boulevard	Majestic Pines Dr. to Minaret Rd.	4-und	25,000	14,000	0.56	A
Meridian Boulevard	Minaret Rd. to Old Mammoth Rd.	4-und	25,000	16,700	0.67	B
Minaret Road	Old Mammoth Rd. to Chateau Rd.	4-und	25,000	18,800	0.75	C
Minaret Road	Chateau Rd. to Meridian Blvd.	4-und	25,000	16,300	0.65	B
Minaret Road	Meridian Blvd. to Main St.	4-und	25,000	22,600	0.90	D
Minaret Road	Main St. to Forest Trail Rd.	4-lt**	30,000	25,200	0.84	D
Old Mammoth Road	Chateau Rd. to Meridian Blvd.	4-lt	30,000	21,600	0.72	C
Old Mammoth Road	Meridian Blvd. to Main St.	4-lt	30,000	22,200	0.74	C
Forest Trail Road	E/O Minaret Rd.	2-und	12,500	4,200	0.34	A
Forest Trail Road	W/O Minaret Rd.	2-und	12,500	8,600	0.69	B

Note:

- lt - Left-Turn channelization for all major segments.
- und - Undivided, little or no left turn channelization.
- * - Town of Mammoth Lakes Programmed Improvement.
- ** - North Village Specific Plan Improvement.

TABLE 12

CUMULATIVE PLUS PROJECT
 PM PEAK HOUR LEVEL OF SERVICE SUMMARY
 MITIGATION IMPROVEMENTS

<u>Unsignalized Intersections</u>	<u>Reserve Capacity^a</u>	<u>LOS^b</u>
Kelley Rd. & Lake Mary Rd.	+426 ^d	A
Sierra Blvd. & Main Street	- 30	F
<u>Signalized Intersections</u>	<u>V/C Ratio^c</u>	<u>LOS^b</u>
Minaret Rd. & Forest Trail Rd.	0.83	D
Lakeview Rd. & Lake Mary Rd.	0.50	A
Minaret Rd. & Main St.	1.05	F
Minaret Rd. & Meridian Blvd.	0.81	D
Minaret Rd. & Old Mammoth Rd.	0.85	D
Old Mammoth Rd & Main St.	0.57	A
Old Mammoth Rd. & Meridian Blvd.	1.02	F

Notes:

^a Reserve Capacity - Available reserve capacity for the most constrained intersection movement.

^b LOS - Level of Service Description (See Appendix).

^c V/C - Volume to Capacity (percent of intersection capacity utilized).

^d No Mitigation Required.

Substantial additional physical improvements (such as widening Main Street to provide six through lanes or widening the Old Mammoth/Meridian Boulevard intersection into adjacent commercial parcels) would be needed to completely mitigate cumulative plus project conditions. These further measures necessary to fully mitigate these conditions would have significant secondary impacts due to right-of-way constraints. They would also not be consistent with the Town's Circulation Element. The implementation of comprehensive transportation demand management alternatives can be expected to improve the intersection Level of Service to more acceptable standards.

It should be emphasized again that these Level of Service projections are based on a "worst-case" scenario. This scenario combines reduced capacities due to adverse weather conditions and peak winter weekend traffic volumes which are expected to occur from 3% - 6% of the time. This scenario also includes fully planned expansion of the ski facilities and build-out of the future developments as currently proposed.

6.5 Project Contribution

The mitigation measures described in the previous section are recommended to mitigate traffic conditions resulting from cumulative and plus project traffic. A review of Tables 7 and 8 indicates that the roadway intersections would require a number of the mitigation measures with the cumulative traffic alone. Only a portion of the cumulative mitigation measures can be directly attributable to development of North Village. The percent of future traffic which is contributed by the North Village project was determined for each roadway and intersection in order to equitably assess project mitigations.

The percent contribution on the roadway segments is presented in Table 13. Table 14 presents the percent contribution of the project at the study intersections. The percent contribution was determined both for total future traffic and for cumulative traffic growth.

TABLE 13

PERCENT CONTRIBUTION OF PROJECT TRAFFIC TO CUMULATIVE DAILY TRAFFIC

<u>ROADWAY</u>	<u>SEGMENT</u>	Percent of Total ^a Cumulative Traffic			Percent of Cumulative ^b Traffic Growth	
		North Village	Other Projects	Existing	North Village	Other Projects
Lake Mary Road	Lakeview Rd. to Minaret Rd.	33%	15%	52%	69%	31%
Main Street	Minaret Rd. to Sierra Blvd.	17%	22%	61%	44%	56%
Main Street	Forest Trail to Old Mammoth Rd.	15%	13%	72%	51%	49%
Meridian Boulevard	Majestic Pines Dr. to Minaret Rd.	13%	50%	37%	20%	80%
Meridian Boulevard	Minaret Road to Old Mammoth Rd.	4%	52%	44%	8%	92%
Minaret Road	Old Mammoth Rd. to Chateau Rd.	30%	41%	29%	42%	58%
Minaret Road	Chateau Rd. to Meridian Blvd.	34%	56%	10%	38%	62%
Minaret Road	Meridian Blvd. to Main St.	N/A	N/A	N/A	N/A	N/A
Minaret Road	Main St. to Forest Trail	37%	9%	54%	79%	21%
Old Mammoth Road	Chateau Rd. to Meridian Blvd.	9%	41%	50%	19%	81%
Old Mammoth Road	Meridian Blvd. to Main St.	15%	8%	77%	64%	36%

Notes:

- a. Consists of existing, cumulative and project traffic.
 - b. Incremental increase in traffic, not including existing traffic.
- N/A - Not applicable (no existing segment)

TABLE 14

PERCENT CONTRIBUTION OF PROJECT TRAFFIC TO
CUMULATIVE PM PEAK HOUR TRAFFIC

<u>Intersection</u>	<u>Total Future Traffic^a</u>			<u>Cumulative Traffic Growth^b</u>	
	<u>N. Village</u>	<u>Other Projects</u>	<u>Existing</u>	<u>N. Village</u>	<u>Other Projects</u>
Minaret Rd. & Forest Trail	18%	33%	49%	35%	65%
Kelley Rd. & Lake Mary Rd.	10%	16%	74%	38%	62%
Lakeview Rd. & Lake Mary Rd.	6%	16%	76%	35%	65%
Minaret Rd. & Main St.	23%	31%	46%	42%	58%
Sierra Bl. & Main St.	13%	21%	66%	38%	62%
Old Mammoth Rd. & Main St.	10%	25%	65%	29%	71%
Minaret Rd. & Meridian Bl.	19%	58%	23%	24%	76%
Old Mammoth Rd. & Meridian Bl.	4%	36%	60%	9%	91%
Minaret Rd. & Old Mammoth Rd.	11%	64%	23%	14%	86%

Notes:

- a. Consists of existing cumulative and project traffic.
- b. Incremental increase in traffic, not including existing traffic.

7.0 EVALUATION OF THE PROPOSED SPECIFIC PLAN CIRCULATION SYSTEM AND SITE ACCESS

The North Village Specific Plan includes individual plans that address the areas of vehicular and pedestrian circulation and public transit. In addition, the primary points of vehicular access of major land uses are identified. This section of the traffic study analyzes and assesses the Specific Plan Circulation System and site access based on the Cumulative plus Project winter weekend traffic projections.

7.1 Overview of the Circulation Plan

One of the intents of the North Village Specific Plan is to promote pedestrian access and circulation to minimize additional impacts to vehicular traffic, while also providing for improvements to existing circulation conditions. The circulation plan consists of three components:

1. Improve and modify the existing street system (both within and outside the Specific Plan Area boundaries) to reduce the level of skier traffic passing through predominantly residential areas, while maintaining adequate levels of circulation in these areas for residents and emergency vehicles.
2. Increase in mass transit/public transportation service to reduce the numbers of visitor vehicles on the roads.
3. Provide a pedestrian circulation system, including trails, walkways, and a pedestrian-oriented ski lift to reduce the need for visitor vehicle use.

7.2 Vehicular Circulation

Roadway System: The proposed vehicular circulation for the Specific Plan is illustrated in Figure 3. This roadway network includes improvements to the existing roadway system which are depicted in Figure 4. They include:

1. Abandon lower Canyon Boulevard east of Hillside Drive and eliminate the Canyon Boulevard and Minaret Road intersection.

2. Reroute skier traffic from Warming Hut II to Lake Mary Road to relieve congestion at the Forest Trail-Minaret Road intersection and enable traffic from MMSA Main Lodge and Warming Hut II to meet at controlled conditions at the Lake Mary Road/Main Street-Minaret Road intersection.
3. Physically improve Lakeview Road, Lakeview Boulevard, Lake Mary Road, Millers Siding Road, and Minaret Road to safely accommodate projected traffic flows and winter conditions. The improvements include reducing roadway grades and street widenings.
4. Closure of the westerly portion of Berner Street and elimination of the Berner Street-Minaret Road intersection; rerouting of Berner Street to connect with Forest Trail to reduce traffic flow on Berner Street.

While the previously described improvements include eliminating one of the existing roadway connections to Minaret Road from the Warming Hut II area, the overall circulation for the area in the vicinity can expect to be improved by the proposed roadway network. There will continue to be two primary points of access to the Warming Hut II area and both will be able to accommodate higher levels of traffic in a safer, more efficient manner than current roadway and operational conditions allow. Increased roadway capacity, reduced grades and traffic signals at the key intersections (Lakeview Road at Lake Mary Road and Forest Trail at Minaret Road) will provide the level of traffic control and efficient operation needed to accommodate the traffic rerouted from the intersection of Canyon Boulevard\Minaret Road and future traffic generated by the Specific Plan. As previously discussed in the mitigations section, Forest Trail and Minaret Road will operate at a LOS "C" under "worst case" conditions with the recommended improvements. These conditions include the Canyon Boulevard realignment and cumulative plus project traffic levels. Lakeview Road and Lake Mary Road will operate at LOS "A" with the mitigations recommended.

The alternative of leaving the intersection of Canyon Boulevard and Minaret Road is from a traffic safety and operations standpoint, undesirable for a number of reasons. Without signalization this intersection would eventually become a liability from a safety standpoint due to existing and future traffic volumes. Current peak Saturday winter traffic levels show that the intersection has sufficient traffic to be a candidate for a traffic signal. Entering Minaret Road from Canyon Boulevard will become increasingly difficult because of the growth in traffic levels on Minaret Road.

However, three signalized intersections (Main Street/Lake Mary Road/Minaret Road, Minaret Road/Canyon Boulevard and Minaret Road/Forest Trail) in such close proximity would be undesirable from a traffic operations standpoint, particularly for moving traffic along Minaret Road. Traffic queues from each intersection would impact the adjacent location reducing the effective capacity of Minaret Road. This would all but eliminate the benefits of the signals in assigning right-of-way. Traffic queues would also restrict the vehicular access points to the project along Minaret Road.

Roadway Design Considerations: One of the key factors to consider in the Canyon Road realignment are the design elements (design speed and curve radii) for the sections of roadway that will be modified. Caltrans design criteria⁷ indicate that the appropriate design speed for a local collector roadway such as the realigned Canyon Road would be 30 mph. This in turn would dictate minimum curve radii of 300 feet. The Caltrans criteria (or similar criteria recognized by the Town of Mammoth Public Works Department) should be incorporated into the Canyon Road realignment design.

In relationship to closure and realigning Berner Street there is also a significant design element that will have to be addressed. Berner Street is proposed to intersect Forest Trail just west of an existing horizontal curve. This intersection location could result in limited site distance looking east along Forest Trail from Berner Street. The design will need to meet the applicable sight distance criteria for movements at this intersection. The design should conform to the Caltrans Design Manual, AASHTO or other criteria that approximates these requirements as required by the Town of Mammoth Lakes Public Works Department.

Access Considerations: The overall circulation plan includes a series of Local Collector Streets that will provide circulation to and from the primary arterial and collector roadways serving the Specific Plan area. These local collectors in turn will provide access to the parking facilities in North Village via strategically placed entry/exit plazas. This system is effective and will be more than adequate for a number of reasons:

⁷ Caltrans Highway Design Manual, 4th Edition, State of California Department of Transportation.

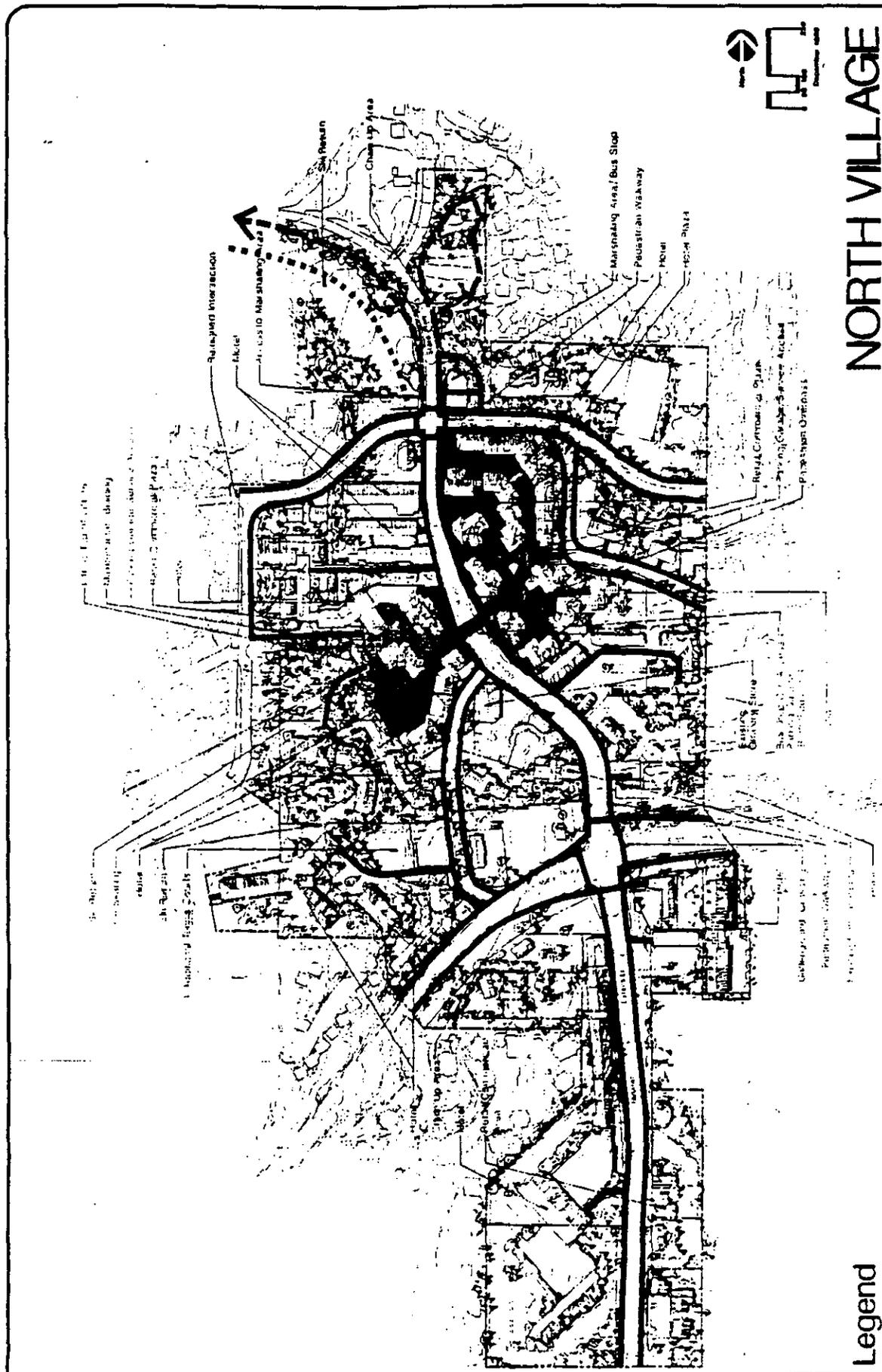
- 1) The number of conflicting points along the arterial roadways will be minimized.
- 2) Typically low speed maneuvers to and from parking areas will be provided from the lower volume local collector streets instead of from arterials with higher volumes and speeds. Based on the very conceptual layout and distribution of land uses provided in the Specific Plan each of the local collectors will have adequate capacity.

However, the specifics of the access and internal circulation of the individual projects that will be developed in the Specific Plan should be subject to review and approval by a qualified Traffic Engineer during the final approval process. During this subsequent review *minimizing the number of driveways, aligning access points on the opposite side of the street and controlled access (limiting movements at specific points of access)* should be evaluated for any proposed ingress/egress to Minaret Road and Lake Mary Road/Main Street.

7.3 Pedestrian Circulation and Public Transit

An integral part of the North Village circulation plan is oriented toward pedestrian and transit modes. (See Figures 10 and 11). Major features of the pedestrian circulation system includes three miles of walkways. Also included within the confines of the main plaza is the base of a planned ski lift facility which will transport skiers from the North Village Area to MMSAs base facilities. The lift is proposed to be a high-speed enclosed gondola with a design capacity of 2,500 skiers per hour. No day-use skier parking will be provided at the ski lift. The lift will be oriented toward those skiers staying in accommodations in North Village or other facilities within walking distance and those accessing the facility via public transit shuttle.

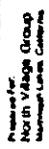
A ski-back trail will be provided to enable skiers from MMSA to return to the lodging facilities or meeting places in North Village without use of private or public vehicles. The majority of the ski-back trail will be located outside of the Specific Plan Area, between MMSA and North Village. The trail will end at the northwest corner of State Route 203 (Minaret Road) and Forest Trail Road. Access from the ski-back to the marshalling area/bus stop on the northeastern corner of the intersection will be provided via a pedestrian undercrossing.



NORTH VILLAGE

MAMMOTH LAKES, CALIFORNIA

Prepared for:
North Village Group
Mammoth Lakes, California



Pedestrian Circulation

Legend

-  PEDESTRIAN WALKWAYS
-  PEDESTRIAN PLAZA
-  SKIING ACCESS
-  PEDESTRIAN TRAIL

TOWN OF MAMMOTH LAKES

transtech

PEDESTRIAN CIRCULATION

FIGURE 10

Controlled pedestrian access across Forest Trail linking the skier marshalling area with North Village, and pedestrian access across Minaret Road to connect the westerly and easterly portions of the plaza, would be accommodated by the traffic signal proposed for the intersection of Minaret Road and Forest Trail.

Public transit enhancements are proposed to be provided through the MMSA operated shuttle. These enhancements will include additional stops, increased trip frequency extended operating hours, and better service to other areas in the Town.

While difficult to quantify, the integrated pedestrian and transit element of the circulation plan could reduce non-ski related trips by as much as 15%.

7.4 Specific Plan Circulation and Site Access Mitigation Measures

The mitigation measures that follow are not directed toward eliminating any specific deficiencies identified in Specific Plan's Circulation and Access element. They are intended to complement the mitigation measures outlined for the roadway system found in Section 6.0. The overall goal is to provide a safe, efficient roadway system and to reduce travel demand so that the "worst case" traffic projection presented by this analysis are not realized.

- The final design of the Canyon Road and Berner Street realignments shall be in conformance with recognized standards for roadway design as required by the Town of Mammoth Department of Public Works.
- All access points from adjacent land uses to Minaret Road, Lake Mary Road and Main Street within the Specific Plan shall be evaluated by a qualified Traffic Engineer and approved by the Town of Mammoth Lakes Public Works Department.
- A system of pedestrian walkways shall be developed in substantial conformance to the Pedestrian Circulation Plan contained in the approved Specific Plan.

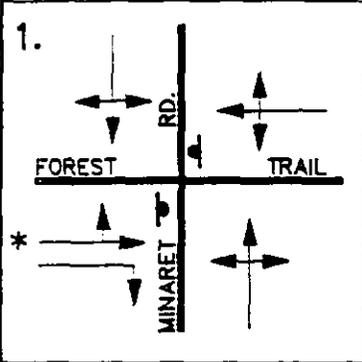
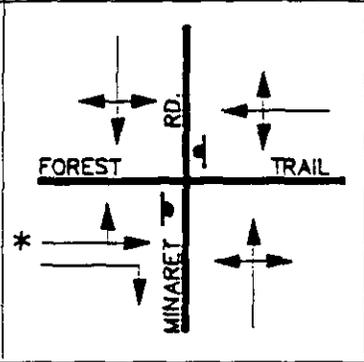
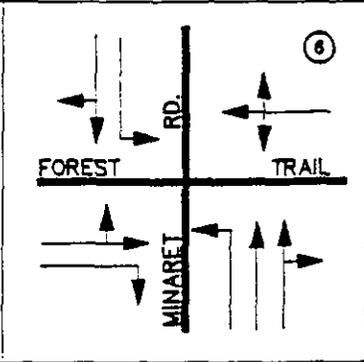
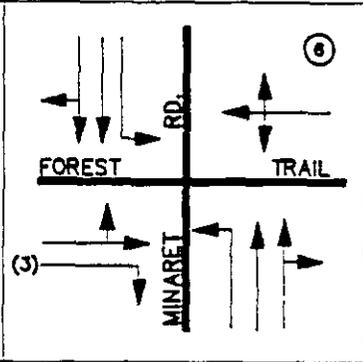
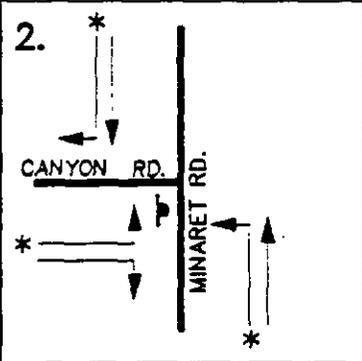
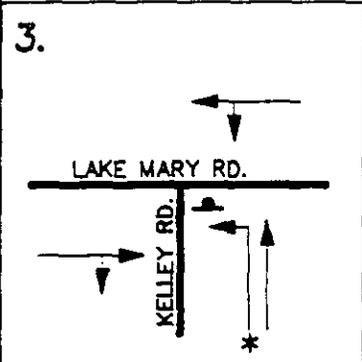
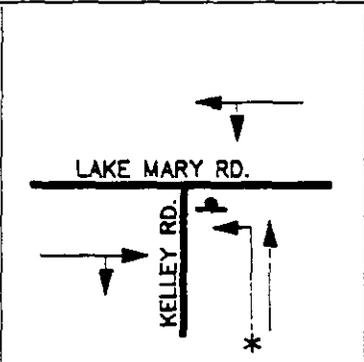
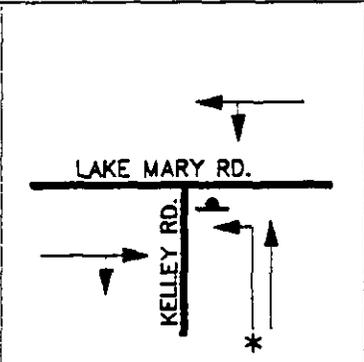
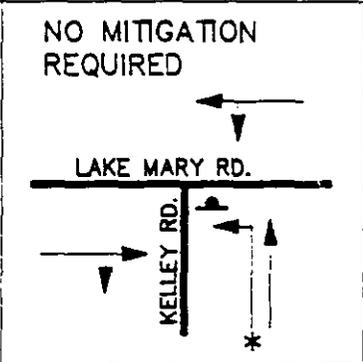
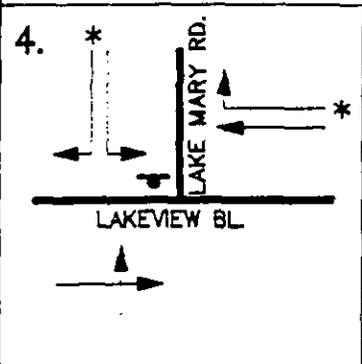
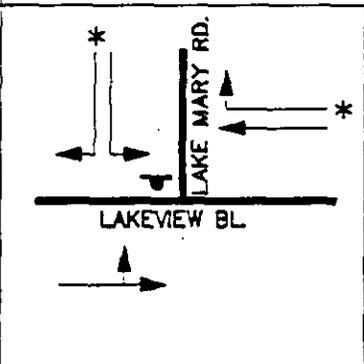
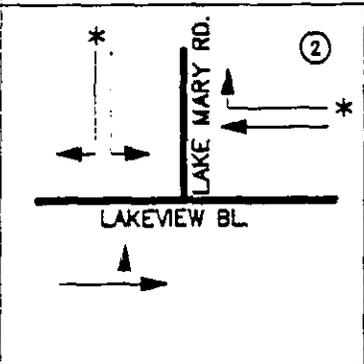
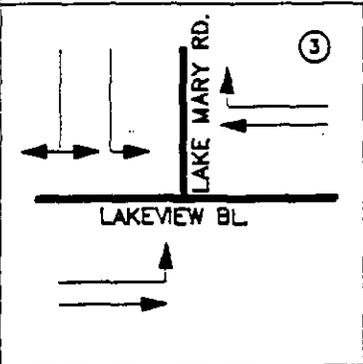
TECHNICAL APPENDIX

Intersection Configurations
(Existing; with Programmed Improvements, with North Village Circulation
Improvements and with Ultimate Mitigations)

Level of Service Descriptions (Signalized Intersections)

Level of Service Definitions (Two-Way Stop Controlled Intersection)

Trip Generation Methodology Town of Mammoth Lakes

EXISTING	CUMULATIVE BASE PROGRAMMED IMPROVEMENTS ⁽¹⁾	CUMULATIVE + PROJECT NVSP IMPROVEMENTS ⁽²⁾	CUMULATIVE + PROJECT MITIGATION IMPROVEMENTS
1. 			
2. 	CANYON BLVD. TO BE VACATED PER NORTH VILLAGE SPECIFIC PLAN.	CANYON BLVD. TO BE VACATED PER NORTH VILLAGE SPECIFIC PLAN.	CANYON BLVD. TO BE VACATED PER NORTH VILLAGE SPECIFIC PLAN.
3. 			NO MITIGATION REQUIRED 
4. 			

LEGEND

- ② NUMBER OF SIGNAL PHASES.
- ⊥ STOP SIGN
- * FUNCTIONS AS A SEPARATE TURN LANE, ALTHOUGH NOT STRIPED.

- (1) TOWN OF MAMMOTH LAKES
- (2) NVSP—NORTH VILLAGE SPECIFIC PLAN
- (3) RIGHT TURN OVERLAP

TOWN OF MAMMOTH LAKES

transtech

INTERSECTION CONFIGURATIONS

EXISTING	CUMULATIVE BASE PROGRAMMED IMPROVEMENTS⁽¹⁾	CUMULATIVE + PROJECT NVSP IMPROVEMENTS⁽²⁾	CUMULATIVE + PROJECT MITIGATION IMPROVEMENTS
<p>5.</p>	<p>⑥</p>	<p>⑥</p>	<p>⑥</p>
<p>6.</p>	<p>⑥</p>	<p>⑥</p>	<p>⑥</p>
<p>7.</p>	<p>③</p>	<p>③</p>	<p>③</p>
<p>8.</p>	<p>⑥</p>	<p>⑥</p>	<p>⑥</p>

LEGEND

③ NUMBER OF SIGNAL PHASES.

▮ STOP SIGN

* FUNCTIONS AS A SEPARATE TURN LANE, ALTHOUGH NOT STRIPED.

(1) TOWN OF MAMMOTH LAKES

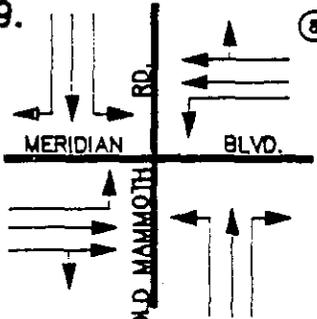
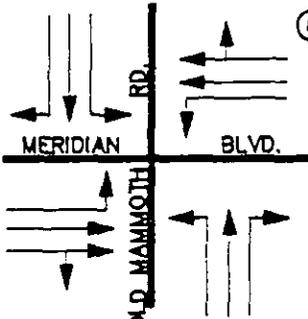
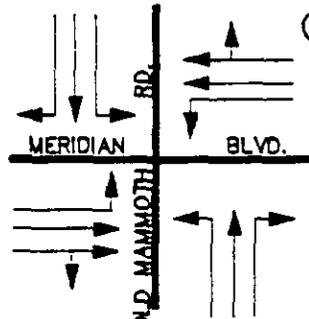
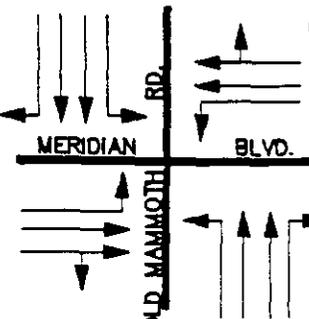
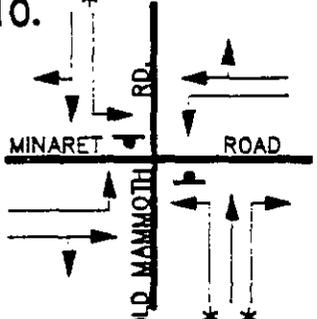
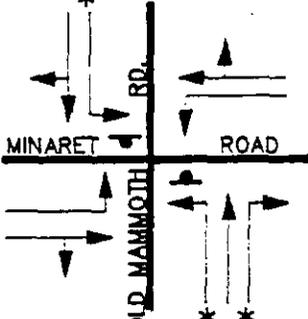
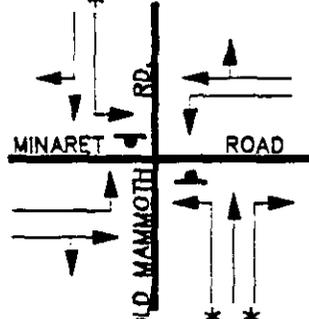
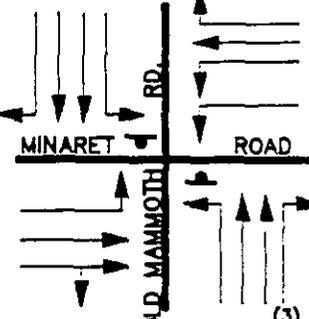
(2) NVSP-NORTH VILLAGE SPECIFIC PLAN

(3) RIGHT TURN OVERLAP

TOWN OF MAMMOTH LAKES

transit

INTERSECTION CONFIGURATIONS

EXISTING	CUMULATIVE BASE PROGRAMMED IMPROVEMENTS ⁽¹⁾	CUMULATIVE + PROJECT NVSP IMPROVEMENTS ⁽²⁾	CUMULATIVE + PROJECT MITIGATION IMPROVEMENTS
9. 			
10. * 			

LEGEND

- ② NUMBER OF SIGNAL PHASES.
- ▬ STOP SIGN
- * FUNCTIONS AS A SEPARATE TURN LANE, ALTHOUGH NOT STRIPED.

- (1) TOWN OF MAMMOTH LAKES
- (2) NVSP—NORTH VILLAGE SPECIFIC PLAN
- (3) RIGHT TURN OVERLAP

TOWN OF MAMMOTH LAKES

transtech

INTERSECTION CONFIGURATIONS

LEVEL OF SERVICE DESCRIPTION

Level of Service	Traffic Quality	Nominal Range of ICU (a)
A	Low Volumes; high speed not restricted by other vehicles; all signal cycles clear with no vehicles waiting through more than one signal cycle.	0.00 - 0.60
B	Operating speeds beginning to be affected by other traffic; between one and ten percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods.	0.61 - 0.70
C	Operating speeds and maneuverability closely controlled by other traffic; between 11 and 30 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods; recommend ideal design standard.	0.71 - 0.80
D	Tolerable operating speeds; 31 to 70 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods; often used as design standard in urban areas.	0.81 - 0.90
E	Capacity; the maximum traffic volume an intersection can accommodate; restricted speeds; 71 to 100 percent of the signal cycles have one or more vehicles which wait through more than one signal cycle during peak traffic periods.	0.91 - 1.00
F	Long queues of traffic; unstable flow; stop pages of long duration; traffic volume and traffic speed can drop to zero; traffic volume will be less than the volume which occurs at Level of Service E.	Not Meaningful

(a) ICU (Intersection Capacity Utilization) at various level of service versus level of Service E for urban arterial streets.

Source: Highway Capacity Manual, Highway Research Board Special report 87, National Academy of Sciences, Washington D.C., 1965, page 320.

**LEVEL OF SERVICE DEFINITIONS FOR
TWO-WAY STOP-CONTROLLED INTERSECTIONS¹**

<u>Available Reserve Capacity</u>	<u>Level of Service</u>	<u>Expected Delay to Minor Street Traffic</u>
400 or more	A	Little or no delay.
300 to 399	B	Short traffic delays.
200 to 299	C	Average traffic delays.
100 to 199	D	Long traffic delays.
0 to 99	E	Very long traffic delays.
Less than 0	F	Extreme delays with queuing ²

¹ Transportation Research Board, Highway Capacity Manual, Special Report 209, 1985.

² Applies to one or more movements from the minor street even though the non-controlled approaches may be free flow.

Trip Generation Methodology for Town of Mammoth Lakes ¹

The methodology consisted of the following basic steps:

- o For Proposed Visitor Lodging (Hotel Rooms and Condominium Units)
 1. Calculate total trips for proposed visitor lodging, using standard trip generation rates for the resort hotel rooms and a trip generation rate developed specifically for the resort condominium units.
 2. Separate visitor lodging trip generation into two parts: trips to/from ski areas; and trips not associated with ski areas.
 3. Reduce visitor lodging to/from ski area portion of trips due to non-automobile modes (walk-ins, transit bus, tour bus). The mode splits for ski-related trips were estimated as part of the ski area PAOT allocation process described below.
 4. Distribute remaining visitor lodging to/from ski area vehicular trips to the various ski base facilities (MMSA and Sherwin Ski Area).
 5. Distribute visitor lodging non-ski trips to commercial areas, including any internal commercial uses proposed within the cumulative projects.

- o For Proposed Single-Family Residential Units and Employee Housing Units
 1. Generate total trips using standard trip generation rates.
 2. Distribute trips based on geographic distribution of commercial areas and employment centers throughout the Town.

- o For Proposed Resort-Related Commercial Development
 1. Generate total vehicle trips using standard trip generation factors.
 2. Reduce vehicular trip generation by 50% to account for internal overlap between the commercial development and on-site visitor lodging and for potential diversions from traffic already on adjacent streets.

¹ Draft Traffic Study for the Lodestar Master Plan EIR, Kaku Associates, September 1990.

3. Distribute net remaining commercial-generated trips primarily to residential areas throughout the Town.

o For Proposed MMSA Expansion and Sherwin Ski Area

1. Determine portion of projected ultimate persons-at-one-time (PAOT) at each MMSA base and Sherwin Ski Area which would be walk-ins from a one-quarter mile ring surrounding the base facility. For MMSA Bases 2 and 7, the amount which would arrive via the proposed overhead lifts from North Village and Lodestar, respectively, was also determined.
2. The remaining PAOT (non-walk-in) was allocated to automobile, drop-off, tour bus and transit bus modes. The automobile allocation was derived based on the proposed ultimate parking supply to be provided at the MMSA base facilities and Sherwin Ski Area (it should be noted that no new parking spaces are proposed to be provided as part of the MMSA expansion plan). Drop-off allocations were estimated assuming that drop-offs represent seven percent of the total PAOT. Tour bus allocations were determined based on projections obtained from previous studies of 100 tour buses at MMSA Base 1 and 30 at Sherwin. All other PAOT was assumed to utilize the public transit system. Table 7 summarizes the estimated allocation of ultimate PAOT to travel mode for each of the ski base facilities.
3. Vehicle trip generation was determined for each base facility from the PAOT allocation based on assumed vehicle occupancy factors.
4. The overall net increase in future vehicular trip generation of the MMSA base facilities and Sherwin Ski Area was compared to the estimated aggregate net increase in ski-related trip generation of the proposed future lodging facilities. It should be recognized that these trip types are in fact two ends of the same visitor lodging to ski area trips. As a result, the future growth in ski area-generated traffic was assigned from the proposed future visitor lodging facilities. The trips were not assigned again from the ski area end, as this would have resulted in a double-count of the lodging to ski area trips. (It is of interest to note that the estimated aggregate net increase in ski-related trip generation of the proposed future lodging facilities, as projected using the above methodology, is slightly higher than the projected overall net increase in vehicular trip generation of the MMSA expansion and Sherwin Ski Area. As such, assigning these trips from the lodging end, rather than from the ski area end, results in a conservative analysis.)

The following factors were assumed in this process:

- o Average condominium visitor occupancy of 4.15 persons per unit, with 100% of units occupied.
- o Average hotel/motel visitor occupancy of 2.65 persons per room, with 100% of rooms occupied.
- o 75% of all visitors to the Town on a winter Saturday actually ski.
- o Non-skier to skier ratio of 0.07 at the slopes, yielding a ratio of 1.07 PAOT per SAOT.
- o 75% of skiers staying in lodging within a one-quarter mile radius of a base facility (MMSA or Sherwin) or overhead lift (North Village or Lodestar) would walk to the nearby base facility/lift. The remaining 25% would travel via automobile or bus to another base facility (MMSA or Sherwin).
- o All skiers staying in lodging outside of a one-quarter mile radius of a base facility or overhead lift would travel via automobile or bus to a base facility (MMSA or Sherwin).
- o Average automobile occupancy for skiers travelling to and from the ski area by private automobile of 3.2 skiers per automobile.
- o Average peak period transit bus occupancy of 40 passengers per bus.
- o Average peak period tour bus occupancy of 40 passengers per bus.
- o 7% of all SAOT would be dropped-off and picked-up via private automobile at the ski area.
- o 52% of the daily SAOT would be in transit during the PM peak hour, outbound from the base facility (MMSA or Sherwin).

The above factors were utilized in combination with an assessment of the walk-in potential for each base facility and overhead lift (determined from an evaluation of the amount of existing and potential future lodging within one-quarter mile of each facility), as indicated on Table A, to develop two sets of mode split factors for visitor lodging to ski area trips: one for trips between the ski areas and visitor lodging located within the one-quarter mile walk-in zone; and one for trips between the ski areas and visitor lodging located outside of the one-quarter mile walk-in zone, as follows:

Mode	Mode Split	
	Lodging Within Walk-In Zone	Lodging Outside Walk-In Zone
Walk-In	75%	0%
Transit Bus	5%	18%
Tour Bus	6%	26%
Drop-Off	3%	11%
Automobile	11%	45%
Total	100%	100%

These mode split estimates were applied to the base trip generation rates for the resort hotel and resort condominium uses to derive effective trip generation rates for visitor lodging located within the one-quarter mile walk-in zone.

TABLE A

ESTIMATED ALLOCATION OF ULTIMATE SKI AREA PAOT BY TRAVEL MODE¹

Ski Base	Total Ultimate SAOT	Total Ultimate PAOT	Estimated Ultimate PAOT by Travel Mode						# of Parking Spaces
			Walk-ins	Overhead Lift	Transit	Tour Bus	Drop-Off	Auto- mobile	
MMSA 1	7,500	8,025	1,800	n/a	205	4,000	550	1,470	460
MMSA 2	6,500	6,955	1,760	3,065	695	*	475	960	300
MMSA 4	2,100	2,245	*	n/a	205	*	155	1,890	590
MMSA 7	7,900	8,455	3,230	1,110	2,000	*	575	1,535	480
MMSA Subtotal	24,000	25,680	6,790	4,175	3,105	4,000	1,755	5,855	1,830
Sherwin Ski Area	8,000	8,560	2,975	n/a	600	1,200	585	3,200	1,000
Total	32,000	34,240	9,765	4,175	3,705	5,200	2,340	9,055	2,830

Notes: All estimates rounded to the nearest five PAOT.
 SAOT= Skiers at one time.
 PAOT=Persons at one time.

**TRAFFIC
APPENDIX - A**

NORTH VILLAGE SPECIFIC PLAN EIR

TRAFFIC STUDY

-Intersection Capacity Calculations

Prepared By:

***TRANSTECH*
TRANSPORTATION ENGINEERS**