

**DRAFT  
ENVIRONMENTAL IMPACT REPORT**

**UPDATED MASTER PLAN  
for  
SNOWCREEK AT MAMMOTH**

**April, 1981**

**Dempsey Construction Corporation  
P.O. Box 657  
Mammoth Lakes, California**

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for the proposed  
UPDATED MASTER PLAN  
for  
SNOWCREEK at MAMMOTH

April, 1981

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## INTRODUCTION

The primary purpose of an environmental impact report is to provide a public information document which assesses the potential singular and cumulative impacts of a particular project or course of action. The following Environmental Impact Report has been prepared to provide basic information regarding amendments required to update the Master Plan for the Snowcreek resort-residential development, which was originally adopted in 1975. In conjunction with the original EIR document, this report is intended to be in conformance with the State Guidelines for Implementation of the California Environmental Quality Act of 1970 (as amended) and Resolution No. 75-42 of the Board of Supervisors of Mono County adopting "Amended Objectives, Criteria, and Procedures for Environmental Evaluation of Projects". Legal requirements for environmental impact considerations are established by the National Environmental Policy Act of 1969 and the California Administrative Code, Title 14, Division 6.

This report was prepared by Triad Engineering, Inc. for Dempsey Construction Corporation, Mammoth Lakes, California. Specific comments and inquiries regarding the contents of this report or any of the information presented herein may be directed to:

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This report was prepared as a supplemental report to be used in conjunction with the following environmental documents:

Monoplan for Mammoth, Master plan for Mammoth Lakes Community, 1974

Final EIR, Monoplan for Mammoth, SWA Associates, 1975

Final EIR, Snowcreek at Mammoth, Urbanomics Research Associates, 1974

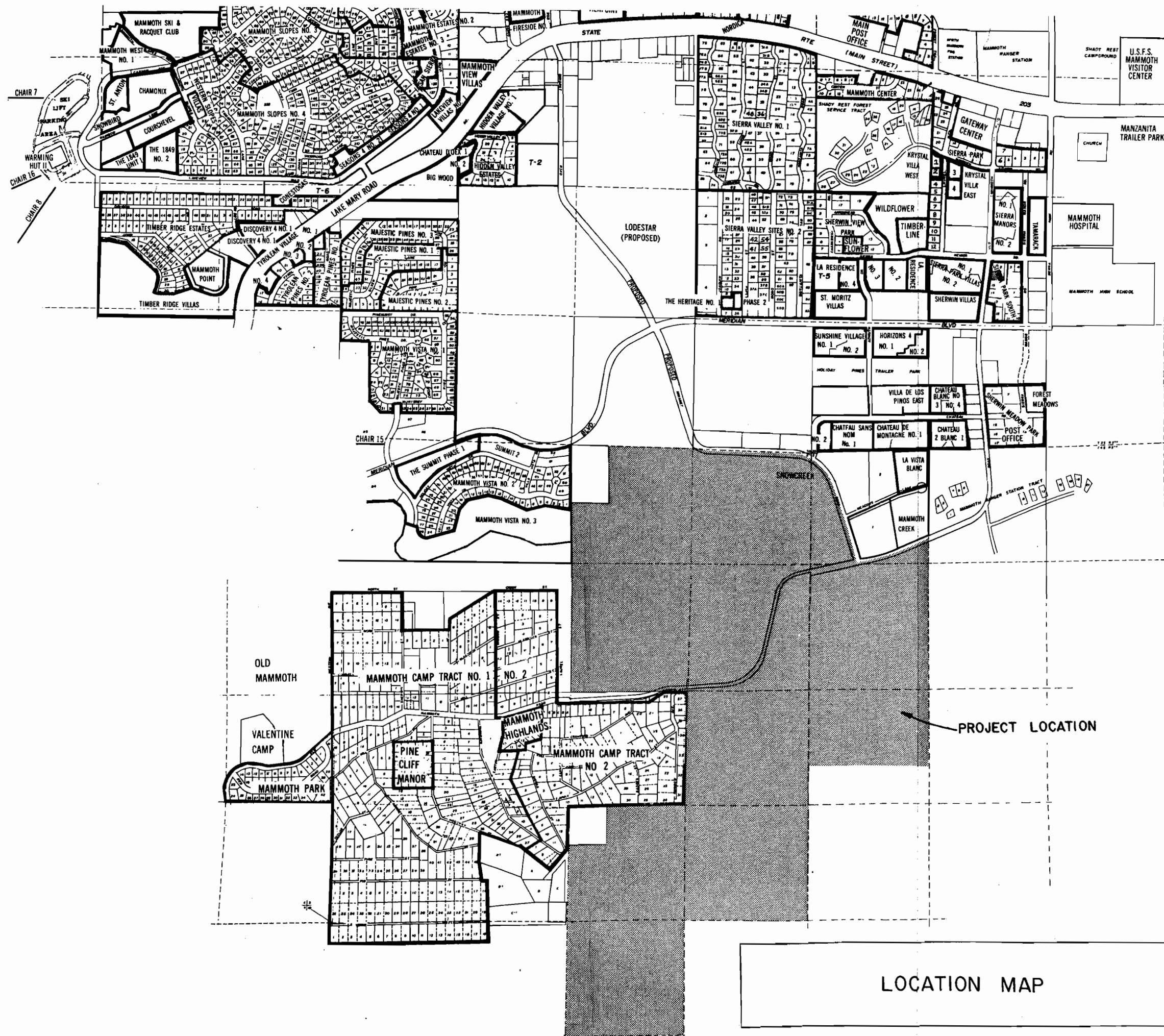
## PROJECT DESCRIPTION

### Background

In 1974, the Snowcreek resort-residential development was proposed for a 355-acre parcel situated in the southeastern portion of the community of Mammoth Lakes in Mono County, California (See Location Map, Figure 1). Following extensive and detailed environmental assessments and analyses of the project, an overall master plan for the Snowcreek development was subsequently adopted by Mono County. The adopted Final EIR and Master Plan incorporated numerous planning and engineering concepts designed to mitigate the potential impacts of the proposed development. The effectiveness of the adopted concepts can be readily assessed since three development phases have been completed to date, representing approximately 17% of the total residential units planned for the project. Existing development for the Snowcreek project is characterized by moderate building densities, extensive uses of landscaping and revegetation measures, and a general compatibility with the natural scenic and "open" ambience of the area.

It has been over six years since the adoption of the original Snowcreek Master Plan and, quite naturally, important changes have occurred within the community which have had significant effects on the project. Major changes include a shift in the goals and priorities of the residents of Mammoth Lakes toward solving community social needs, including:

1. The need for land for public purposes, such as schools, parks, and transportation.





2. The need for a comprehensive traffic and transportation plan to relieve congestion and improve circulation.
3. The need for affordable employee housing within the community.

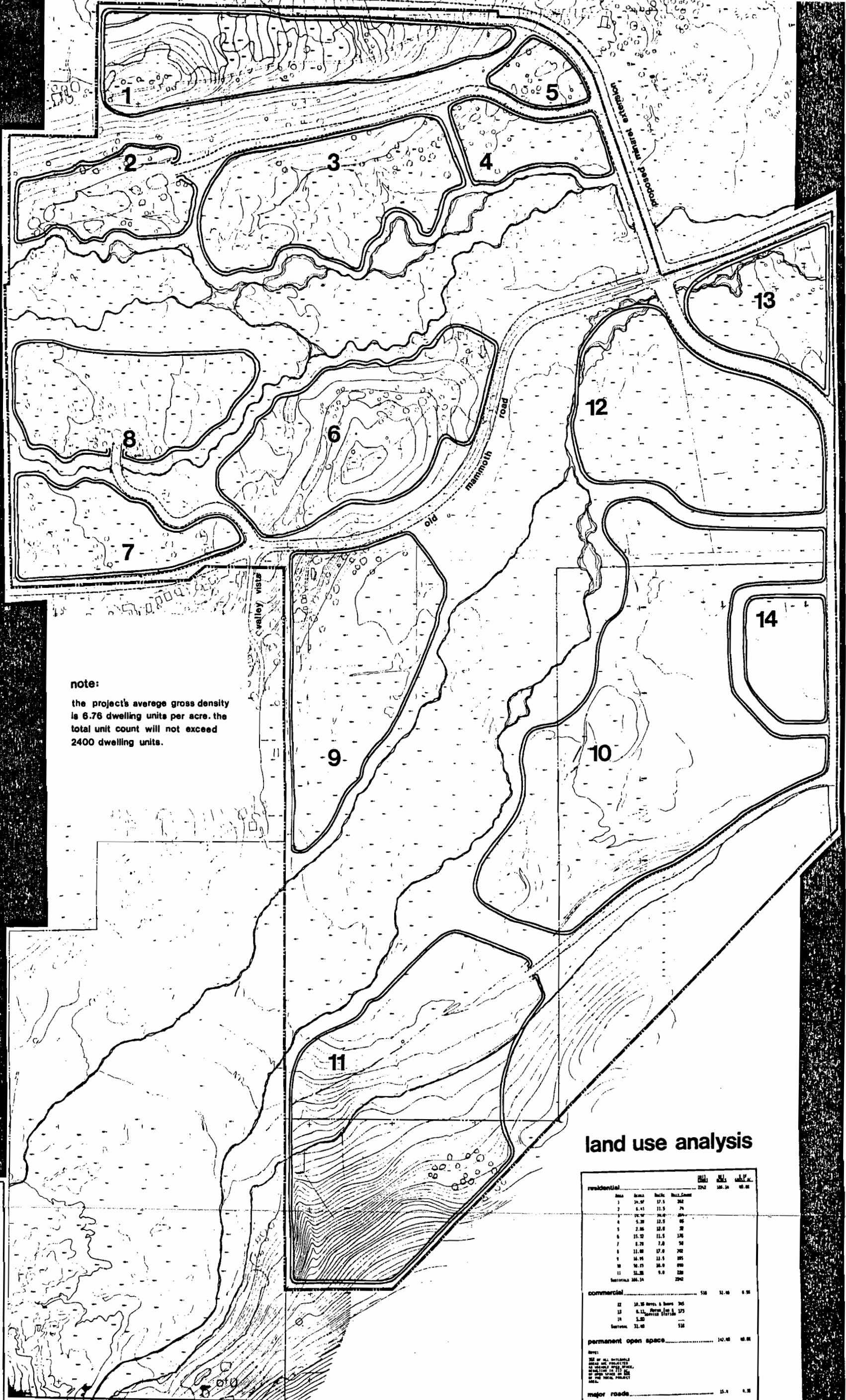
In addition, the general plan for the community (Monoplan) has been revised and refined. One particularly significant issue has been the reassessment of the location of future ski area expansion, which has recently favored the San Joaquin Ridge over the Sherwin Bowl area. Other factors specifically affecting the Snowcreek development include a reduction in the overall size of the project due to revisions in the actual location and extent of properties originally earmarked for exchange with the Inyo National Forest.

Considering the above factors and the time period involved since the adoption of the Snowcreek Master Plan, the need for an updated plan is readily evident.

#### Project Description

A detailed description of the development concept and specific features of the Snowcreek project are presented in Section IV of the Final EIR for Snowcreek at Mammoth (1974). The original master development plan presented therein is summarized in Figure 2. The revisions and amendments which have been proposed to update the Snowcreek Master Plan are itemized below:

1. Designation of a specific 40-acre USFS exchange parcel (NW $\frac{1}{4}$  E $\frac{1}{2}$  Section 10) at the southwestern extremity of the Snowcreek parcel. The completion of the exchange



note:  
 the project's average gross density  
 is 6.76 dwelling units per acre. the  
 total unit count will not exceed  
 2400 dwelling units.

land use analysis

residential	Area	Density	Units	Notes
1	24.50	17.5	428	
2	6.41	11.9	76	
3	10.00	10.0	100	
4	5.20	12.5	65	
5	2.86	10.0	29	
6	15.72	11.5	181	
7	8.20	7.0	57	
8	11.00	17.0	187	
9	14.95	11.5	171	
10	16.75	10.0	168	
11	11.25	9.0	101	
<b>Subtotal</b>	<b>146.34</b>		<b>2262</b>	
<b>commercial</b>			<b>510</b>	<b>11.40</b>
12	14.25 Acres, 4 Units	30	135	
13	6.11 Acres, 1 Unit	175	107	
14	1.20		12	
<b>Subtotal</b>	<b>21.56</b>		<b>354</b>	
<b>permanent open space</b>			<b>10.40</b>	<b>48.88</b>
<b>major roads</b>			<b>15.4</b>	<b>4.18</b>
30' Ave x 1000 L.F.		3.7		
60' Ave x 2000 L.F.		3.7		
30' Ave x 1000 L.F.		2.4		
<b>Subtotal</b>	<b>15.4</b>			
<b>total</b>			<b>2766</b>	<b>105.88</b>

land use plan

SNOWCREEK AT MAMMOTH

SNOWCREEK MASTER PLAN (1974)

FIGURE

involving this parcel with the Forest Service is almost a certainty.

2. Deletion of areas lying southerly of Section 10 (deletes southern portion of original Area 11) due to lack of progress in obtaining exchange lands.
3. Deletion of areas lying southerly of the designated 30-acre Dempsey exchange parcel ( $N\frac{1}{2}$   $NW\frac{1}{4}$   $SW\frac{1}{4}$  &  $N\frac{1}{2}$   $S\frac{1}{4}$   $NW\frac{1}{4}$   $SW\frac{1}{4}$ , Section 2), for the same reason as above.
4. Deletion of 10 acres of total parcel area to accommodate the above boundary revisions. Total allowable unit count is correspondingly reduced to 2332 dwelling units.
5. Revision of size and extent of Area 10 to accommodate the deletion described in Item 3, above.
6. Revision in size and extent of Area 11 to accommodate above boundary adjustments per Items 2 and 3, above.
7. Addition of Area 15 to compensate for development areas lost through Items 2 and 3.
8. Revision of Area 9 to provide public lands for an employee residential area and a church site. Also, addition of roadway area for access to new development Area 15.
9. Realignment of Old Mammoth Road (in the vicinity of the easterly boundary of Area 6) to alleviate hazardous driving conditions. Realignment consists of the replacement of the existing 300-foot radius curve with a 600-foot radius curve.
10. Assignment of active uses (golf course) to designated open space areas lying southerly of Old Mammoth Road.

Features of the updated Snowcreek Master Plan are summarized in Figure 3. Although the updated master plan is the "project" discussed in the remainder of this report, it is important to note the following similarities with the original plan:

1. Average development density of the project has been maintained at 6.76 dwelling units per acre. Total unit count has been reduced to 2332 dwelling units to reflect the 10-acre area reduction.
2. Development areas lying northerly of Old Mammoth Road have not been altered in consideration of the environmentally sensitive meadow-lands which border Mammoth Creek.
3. The general pattern of development and traffic circulation remains unchanged.
4. All mitigation measures adopted in the Final EIR for Snowcreek at Mammoth (1974) to reduce the potential environmental impacts of the project are assumed to apply to the updated Snowcreek Master Plan.

#### Project Objectives

The primary objective of the proposed project is to revise the Snowcreek Master Plan to insure that the plan reflects existing boundary constraints and current community social and planning goals. This intent is consistent with the first objective listed in the 1974 Final EIR for the Snowcreek project (Section IV, Page 8) which states:

- "1. Coordinate all planning criteria with regard to density, land use, open space and environmental protection with the Monoplan, local master plan, and community desires."

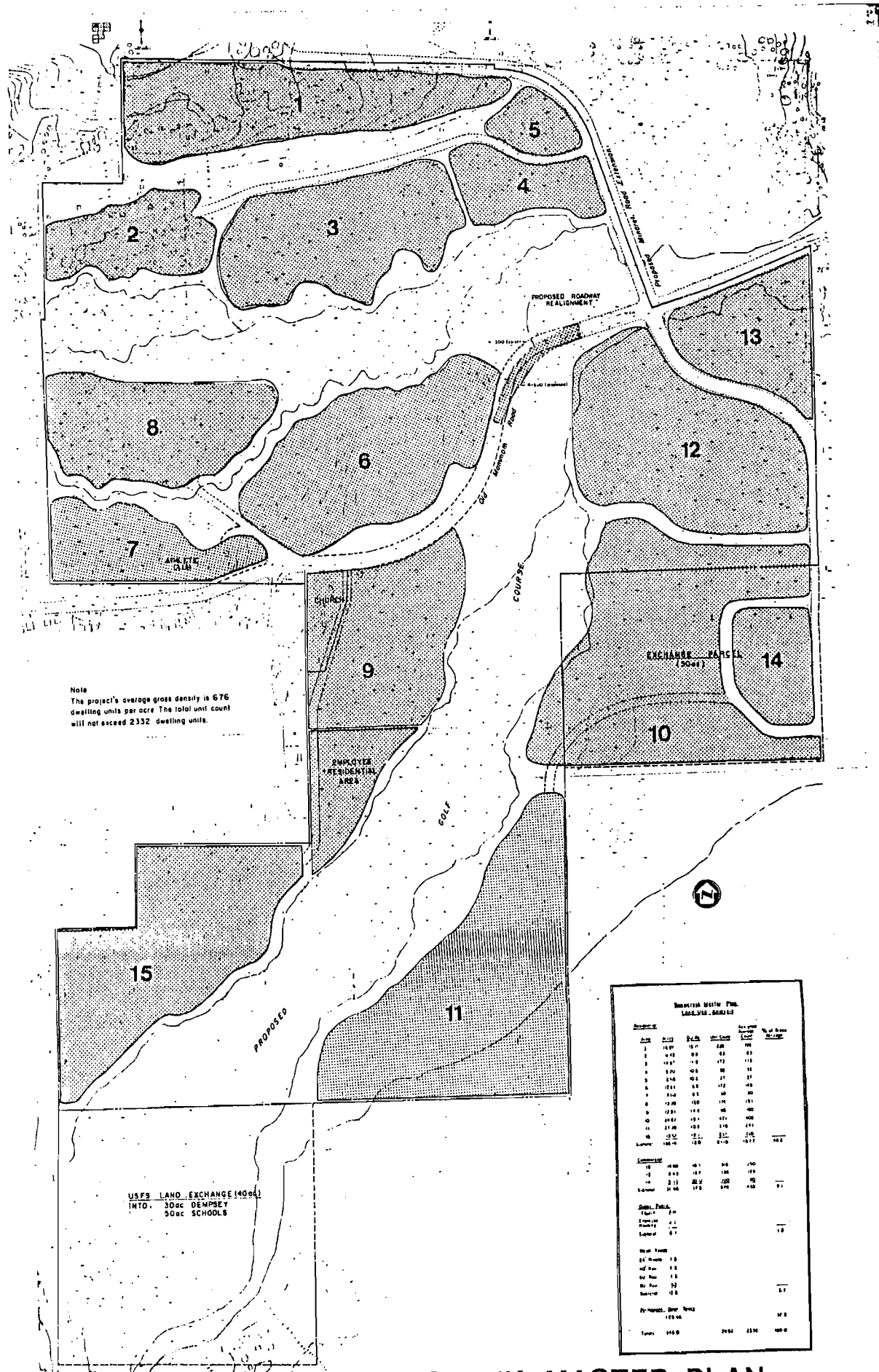
The remaining 18 overall development objectives initially assigned to the entire Snowcreek project are considered to apply to the updated master plan.

### Project Characteristics

The proposed character of development for the Snowcreek project is identical in concept to that presented in the original development plan with the exception of the quasi-public areas proposed in the updated master plan. Significant specific features of the revised plan are summarized below:

Land Use: A summary land-use analysis for the updated master plan is presented in Figure 4. Comparison of the proposed plan with the original plan indicates that the relative percentages of residential/commercial/open space areas correlate very closely. A small reduction in open space area is mostly attributable to the assignment of quasi-public land uses and also to the overall reduction of parcel area.

Access and Roadways: The proposed updated master plan requires the addition of a 24-foot wide access roadway for development area 15. This roadway traverses area 9 and connects with Old Mammoth in the vicinity of the proposed church site. The updated master plan also includes provisions for the realignment of Old Mammoth Road at a particularly sharp and hazardous curve.



Note:  
The project's average gross density is 676 dwelling units per acre. The total unit count will not exceed 2332 dwelling units.

USFS LAND EXCHANGE (400ac)  
INTO: 30ac DEMPSEY  
50ac SCHOOLS

Summary Table					
Lot No.	Acres	Units	Density	% of Total	% of Area
1	10.00	100	10.00	4.3	1.0
2	10.00	100	10.00	4.3	1.0
3	10.00	100	10.00	4.3	1.0
4	10.00	100	10.00	4.3	1.0
5	10.00	100	10.00	4.3	1.0
6	10.00	100	10.00	4.3	1.0
7	10.00	100	10.00	4.3	1.0
8	10.00	100	10.00	4.3	1.0
9	10.00	100	10.00	4.3	1.0
10	10.00	100	10.00	4.3	1.0
11	10.00	100	10.00	4.3	1.0
12	10.00	100	10.00	4.3	1.0
13	10.00	100	10.00	4.3	1.0
14	30.00	300	10.00	12.9	3.0
15	10.00	100	10.00	4.3	1.0
<b>Total</b>	<b>150.00</b>	<b>1500</b>	<b>10.00</b>	<b>100.0</b>	<b>100.0</b>

SNOWCREEK MASTER PLAN

LAND USE ANALYSIS

<u>Area</u>	<u>Acres</u>	<u>DU/Ac.</u>	<u>Unit Count</u>	<u>Assigned Average Count</u>	<u>% of Gross Acreage</u>
<u>RESIDENTIAL</u>					
1	14.97	15.0	225	195	
2	6.43	9.8	63	63	
3	14.57	11.9	173	173	
4	5.20	10.6	55	55	
5	2.66	10.2	27	27	
6	17.51	9.8	172	149	
7	7.03	8.3	58	50	
8	13.39	13.0	174	151	
9	12.81	14.4	185	160	
10	24.67	19.1	471	408	
11	27.38	10.2	278	241	
15	<u>19.52</u>	<u>12.1</u>	<u>237</u>	<u>205</u>	
Subtotal:	166.14	12.0	2118	1877	48.2
<u>COMMERCIAL</u>					
12	19.68	16.1	316	250	
13	8.43	18.7	158	125	
14	<u>5.11</u>	<u>20.0</u>	<u>100</u>	<u>80</u>	
Subtotal:	31.46	17.3	574	455	9.1
<u>QUASI - PUBLIC</u>					
Church	2.0				
Affordable	<u>4.1</u>				
Subtotal:	6.1				1.8
<u>MAJOR ROADS</u>					
24' Private	1.5				
40' ROW	4.6				
60' ROW	1.5				
80' ROW	<u>5.2</u>				
Subtotal:	12.8				3.7
<u>PERMANENT OPEN SPACE</u>					
	128.48				37.2
TOTALS	345.0	6.76	2692	2332	100.0

FIGURE 4

Public Land Uses: The USFS land exchanges indicated on the revised development plan will result in the transfer of 50 acres of land to the Mammoth Unified School District. Utilizing a complex formula of "equivalent value" lands, the 10 acres deleted from the Snowcreek parcel will be utilized by the school district to obtain school sites in the Mammoth Lakes and Long Valley areas totaling 50 acres.

Quasi-Public Lands: The revised master plan provides approximately 6.1 acres of land for quasi-public land uses. These uses include 4.1 acres designated for employee housing and 2.0 acres for a church site. The original development plan did not provide any lands for affordable housing nor any other quasi-public use.

Open Space Uses: The proposed updated master plan provides for active uses of the open space areas lying southerly of Old Mammoth Road. A proposed golf course will occupy the "green belt" which bisects the major development areas of the southerly portion of the Snowcreek parcel.

Traffic and Transportation: Creation of development Area 15 results in a change in the distribution and volume of traffic in the vicinity of the westerly end of Old Mammoth Road. Also, the original traffic analyses conducted for the project assumed that the development of additional ski area facilities in the Sherwin Bowl area would parallel the development of the project. Since this seems unlikely to the present time, the analyses of traffic patterns in the vicinity of the project must be reanalyzed and the role played by Minaret Road northerly of Old Mammoth Road is more significant.



## ENVIRONMENTAL SETTING

Descriptions of the physical, biotic, and human environment of the project area and its general vicinity have been presented in the Final EIR for Snowcreek at Mammoth (1974). The locations in the text of the original EIR relating to specific environmental features of the area are listed in the following paragraphs. Whenever features are of particular significance to the updated master plan, information relating to the existing setting has been repeated herein for convenient reference.

Archaeological Resources: See Section V of the 1974 Final EIR. The location of general archaeological features of the Snowcreek site is shown on Figure 5 herein.

Water Resources: See Section VI of the original EIR.

Climatology: See Section VII of the 1974 Final EIR.

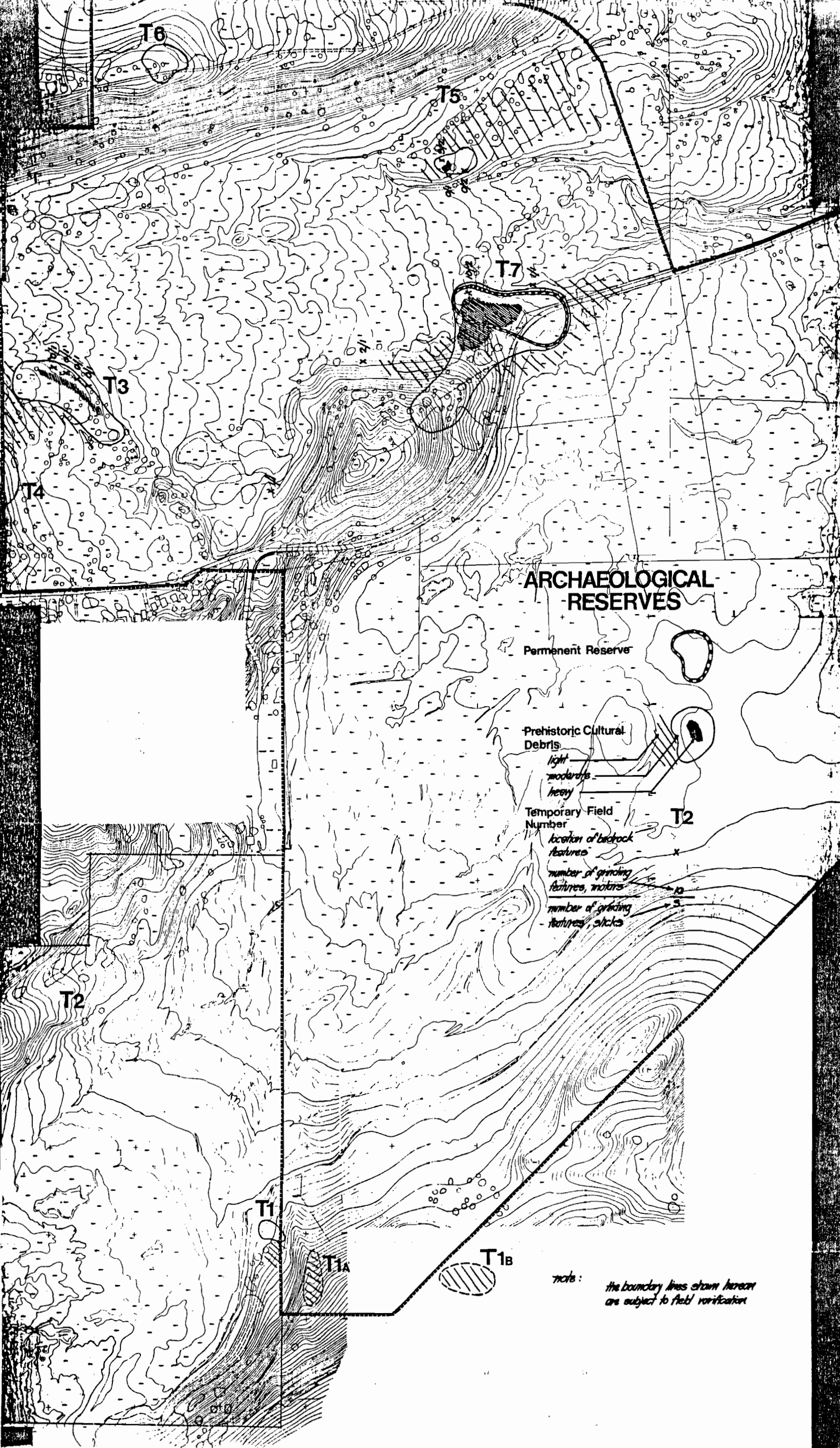
Biological Resources: See Section VIII of the 1974 Final EIR. The location and extent of the biotic communities existing at the Snowcreek site before development are presented in Figure 6 herein.

Geological Resources: See Section IX of original Final EIR.

Soil Characteristics: See Section X of 1974 Final EIR. Also see Appendix A, soils report by J.M. Kleinfelder and Associates which contains additional soils information pertaining to the areas southerly of Old Mammoth Road.

Population Characteristics: See Section III, Page 1 of 1974 Final EIR.

Economic Characteristics: See Section III, Page 5 of 1974 Final EIR.



**ARCHAEOLOGICAL RESERVES**

- Permanent Reserve
- Prehistoric Cultural Debris
  - light
  - moderate
  - heavy
- Temporary Field Number
- location of bedrock features
- number of grinding features, notches
- number of grinding features, sticks

*note: the boundary lines shown hereon are subject to field verification*

ARCHAEOLOGICAL RESOURCES

**SNOWCREEK AT MAMMOTH**

Social Characteristics: See Section XXI, Pages 1 through 8 of 1974 Final EIR.

Land Use and Planning: See Monoplan for Mammoth (1974) and Final EIR, Monoplan for Mammoth (1975).

Significant Community Issues: The adoption of the Monoplan in 1975 represented the first comprehensive land use plan for the Mammoth Lakes Community. Its basic purpose was to prepare and analyze alternative development plans for the village so that public agencies and the community-at-large could select overall goals and adopt cohesive and consistent policies leading towards achievement of those goals. The entire Monoplan review process was the subject of much local interest and debate and, in many ways, one of the most positive contributions of the plan was the development of an increased public awareness of the necessity for coordinated planning policies. General goals established for the community included major expansions of the Mammoth Mountain Ski Area involving significant growth and additional development within the village itself.

Many of the potential problems associated with significant growth of the Mammoth Lakes Community which were identified in the Monoplan have actually come to fruition at the present date. As such, they have become significant public issues for governmental agencies and residents of the community. These issues include:

1. Development of a comprehensive transportation plan to alleviate traffic and congestion within the community area, particularly during peak winter visitor periods.

2. The acquisition and development of lands set aside strictly for public purposes, such as schools, parks, transportation centers, fire stations, and community service facilities.

3. The adoption of policies designed to encourage the development of affordable employee housing within the Mammoth Lakes area. Rapidly escalating land costs as well as the general inflation rate have made it very difficult for persons in the personal service and support industries to afford living costs in resort communities.

Although there has been considerable public debate and concerted efforts by public agencies to resolve these issues, progress has only been realized on the first two problems. A comprehensive traffic and transportation plan has been adopted by Mono County and recently approved land acquisitions from the Inyo National Forest will provide the first real community "public" lands within the Mammoth Lakes town-site. Partially due to its controversial nature, the community has been unable to resolve the issue of providing affordable, or employee housing, at the present time.

## ENVIRONMENTAL IMPACT ASSESSMENT

The following discussions consider the potential environmental impacts associated with specific features of the updated Snowcreek Master Plan. Where appropriate, the relationship between the initial impacts of project activities and potential secondary impacts associated with long-term actions are presented. Whenever potential impacts are of special significance to a particular area, these areas are noted. For convenience, the mitigation measures which could, or already do, minimize potentially adverse impacts have been included at the end of each section rather than presented in a separate chapter.

### Archaeological Resources

Impacts: The updated Snowcreek Master Plan provides for a new development area (Area 15) in the southwestern portion of the Snowcreek property. Grading and construction operations could disturb or destroy existing archaeological sites. In the long-term, the additions of permanent residential populations in the area will increase the possibility of vandalism and the removal of artifacts by collectors from any sites which may exist.

Mitigation Measures: A complete and extensive archaeological survey was conducted for the 1974 Final EIR for Snowcreek. As shown previously in Figure 5, the archaeological sites identified in the survey are generally concentrated northerly of Old Mammoth Road. Since the only changes made in the location of development areas were those areas situated south of Old Mammoth Road, the impact of the updated master plan is no greater than that previously identified in the 1974 EIR. The elimination of development areas lying southerly

of Section 10 actually averts the disturbance of one of the identified sites (T-1a) and therefore the overall impact of the revised Snowcreek Master Plan is somewhat less than the original development plan.

### Water Resources

Impacts: Development of the Snowcreek project could have an impact on the domestic water supplies of the Mammoth County Water District because it is the largest project of its kind yet proposed for Mammoth Lakes area. Water demands originating from the project could reduce system pressures, increase the need for emergency water storage volumes, and also cause the District to divert water for domestic use in excess of its present water rights.

The use of the green belt areas southerly of Old Mammoth for active recreational purposes could have an impact on the quality and quantity of water resources in the vicinity. At the present time these resources consist of man-made irrigation ditches which have been used historically to saturate the area, primarily to encourage the growth of pasture grasses for stock grazing.

Mitigation: Anticipating the potential impact of its proposals on the domestic water supplies of the Mammoth Lakes community, the developer of the Snowcreek project entered into negotiations with the MCWD for the donation of water rights to the District. These rights were held by the original owner/ranchers of the property for diversions of water for pasture irrigation and totalled over 4,500,000 gallons per day (7cfs). As a result of the negotiations, over three-fourths of this diversion right was donated to the District resulting in a substantial increase in the amount of water rights controlled by the District. The donated rights not only provided adequate capacity for the Snowcreek project itself but also provided sufficient water

rights for growth of the Mammoth Lakes community as projected in the Monoplan. In addition, as a part of the initial phases of construction, a 12-inch ductile iron water main was installed by the developer through the center of the project area.

The only water resources affected specifically by the updated Master Plan consist of man-made pasture irrigation ditches. Historically, these ditches were utilized cyclically and were periodically allowed to run dry. The proposed use of green belt open space for a golf course will require the use of water resources for landscape irrigation. In order to avoid burdening domestic water supplies with irrigation demands, the developer reserved 1 cfs. (646,000 gpd) of its original water rights entitlement for these purposes. The landscape irrigation system installed by the developer is completely isolated from the District's domestic water distribution system and has its source of supply within the boundaries of the Snowcreek development.

In view of the above circumstances, the impact of the updated Snowcreek Master Plan is considerably less than the impacts possibly associated with the original development plan.

### Engineering

Impacts and Mitigation: The proposed updated master plan involves identical engineering impacts and mitigation measures as originally presented in the Final EIR for Snowcreek at Mammoth (See Section XIV).

### Biotic Resources

Impacts: The primary impacts involved with the updated master

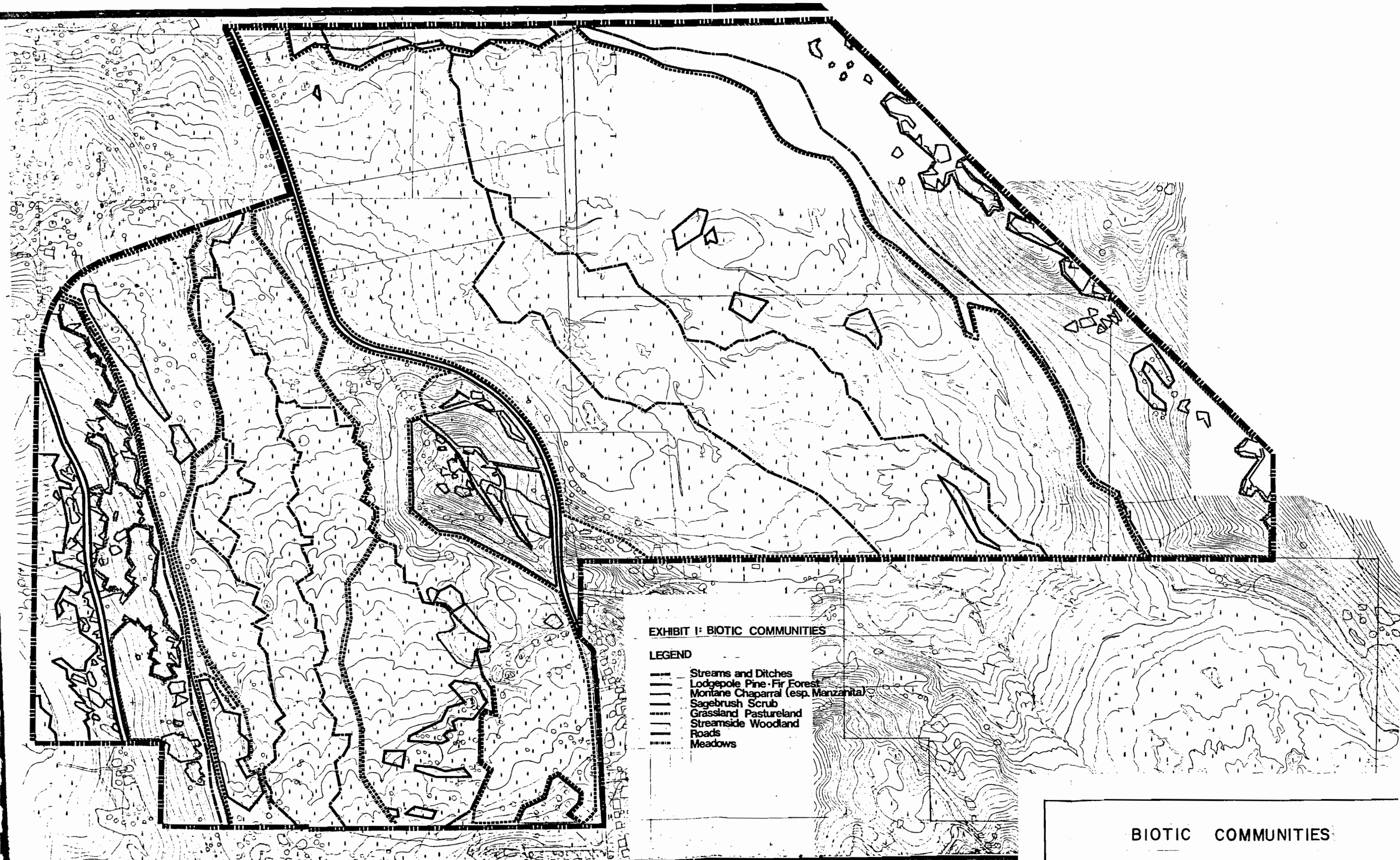


EXHIBIT I: BIOTIC COMMUNITIES

LEGEND

- Streams and Ditches
- ==== Lodgepole Pine-Fir Forest
- Montane Chaparral (esp. Manzanita)
- ==== Sagebrush Scrub
- Grassland Pastureland
- Streamside Woodland
- ==== Roads
- Meadows

BIOTIC COMMUNITIES



plan, in contrast to the original plan, involve the disturbance of existing vegetation in the area of the proposed golf course green belt. Since the total area to be developed for residential purposes is identical for both plans, it is assumed that general impacts on the biotic community will be as previously discussed in Section XV of the 1974 Final EIR. The area to be disturbed by the proposed green belt is essentially classified as grassland, although it is actually a man-made pasture which requires numerous diversions and irrigation ditches to be maintained. Its primary value to resident animal and bird populations is as open-space habitat.

Mitigation: An analysis of ecological sensitivity for the entire Snowcreek project site was conducted for the original 1974 Final EIR. This analysis is summarized in Figure 7. As shown on the figure, the areas southerly of Old Mammoth Road are designated as Zone 4 in terms of biotic sensitivity, which represent the lowest sensitivity to alteration. This is consistent with the previous identification of low grade pasture grasses and the need for man-made irrigation features to maintain the pasture. Although the proposed golf course green belt represents a definite change in the character of the existing vegetation, the significance of the change is probably not great. Without man's prior intervention, the area of concern would generally be dominated by the sagebrush-scrub plant community and low-grade natural grasses. The green belt area will only continue to reflect man's alteration of the plant communities in the vicinity.

In terms of the potential effects on the animals and birds which presently habituate the golf course area, the impact of the proposed change is minimal. Most of the displaced animal populations are migratory or semi-migratory and will simply move to other areas farther from man's activities. Since the area will be retained as open space, those birds and animals which utilize the land as predatory territory

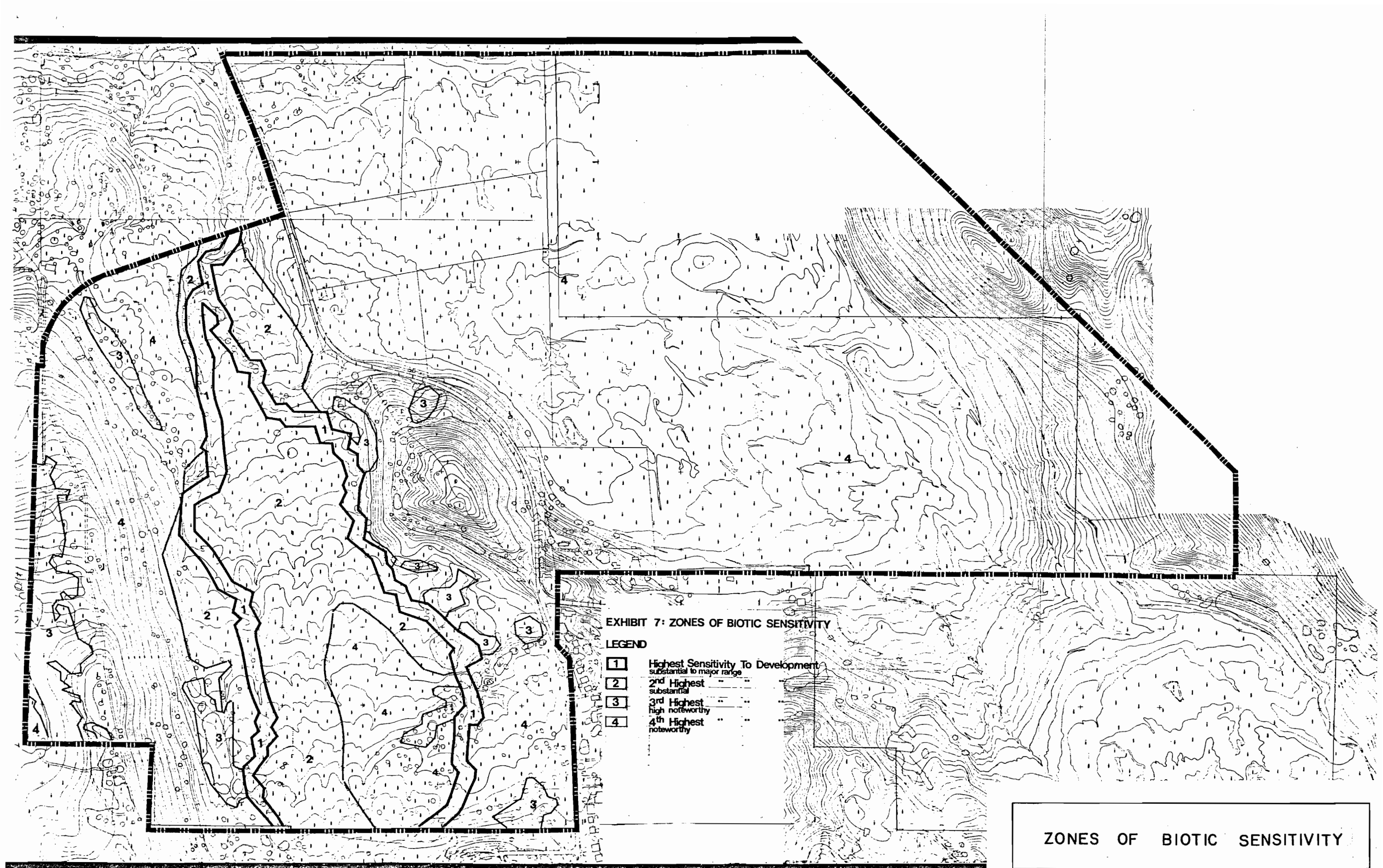


EXHIBIT 7: ZONES OF BIOTIC SENSITIVITY

LEGEND

- 1 Highest Sensitivity To Development  
substantial to major range
- 2 2nd Highest substantial
- 3 3rd Highest high noteworthy
- 4 4th Highest noteworthy

ZONES OF BIOTIC SENSITIVITY

FIGURE 7

will actually be affected very little. In practice, however, these animals prefer territories remote from man's activities and since the area has been used by man for many years it is doubtful there are any significant populations which are totally dependent on the property.

### Planning

Impacts: The proposed revised Snowcreek Master Plan represents an effort to coordinate and update a planning concept originally outlined over seven years ago. The plan revisions include not only changes necessary to reflect the actual boundaries of the project as they now exist, but also changes necessary to reflect updated community needs and goals. The updated concept includes employee housing areas, community church facilities, an athletic facility, the off-site provision of lands for public schools through USFS exchanges, and the use of green belt open space for active recreational purposes. In terms of response to the present needs of the community and the overall planning strategy for the Mammoth Lakes resort area, the updated Snowcreek Master Plan is seen to represent potentially positive, rather than negative, impacts.

The revised master plan does require, however, the adjustment of the original zoning designations for the project area. Major adjustments are primarily required to reflect the USFS/Dempsey land exchanges and most of the remaining revisions are quite minor.

Mitigation: As noted above, the basic purpose of the updated master plan and most of its significant features are considered positive planning and land use impacts. Even though zoning adjustments are required by the new plan it is important to reiterate that the overall project density of 6.76 dwelling units per acre established by the initial plan has not been exceeded. Accounting for a 10-acre

reduction in area arising from the USFS land exchange, the maximum total number of dwelling units planned for the Snowcreek development is 2332 units, which is less than the total of 2400 units originally approved for the site. In addition, the proposed plan violates none of the planning constraints originally established for the project.

#### Landscaping and Erosion Control

Impacts and Mitigation: Potential impacts of the updated Master Plan of the Snowcreek project are essentially identical to those identified in Section XVII of the 1974 Final EIR. An extensive list of comprehensive landscaping mitigation measures is presented in that report, beginning on page XVII-6. All of the measures recommended therein will be assumed to apply to the updated Snowcreek Master Plan development concept.

#### Geology and Soils

Impacts and Mitigation Measures: The general method of site development and building construction is intended to be the same as originally proposed. The potential impacts and recommended mitigation measures discussed in Section XVIII of the 1974 Final EIR are therefore identical under either plan.

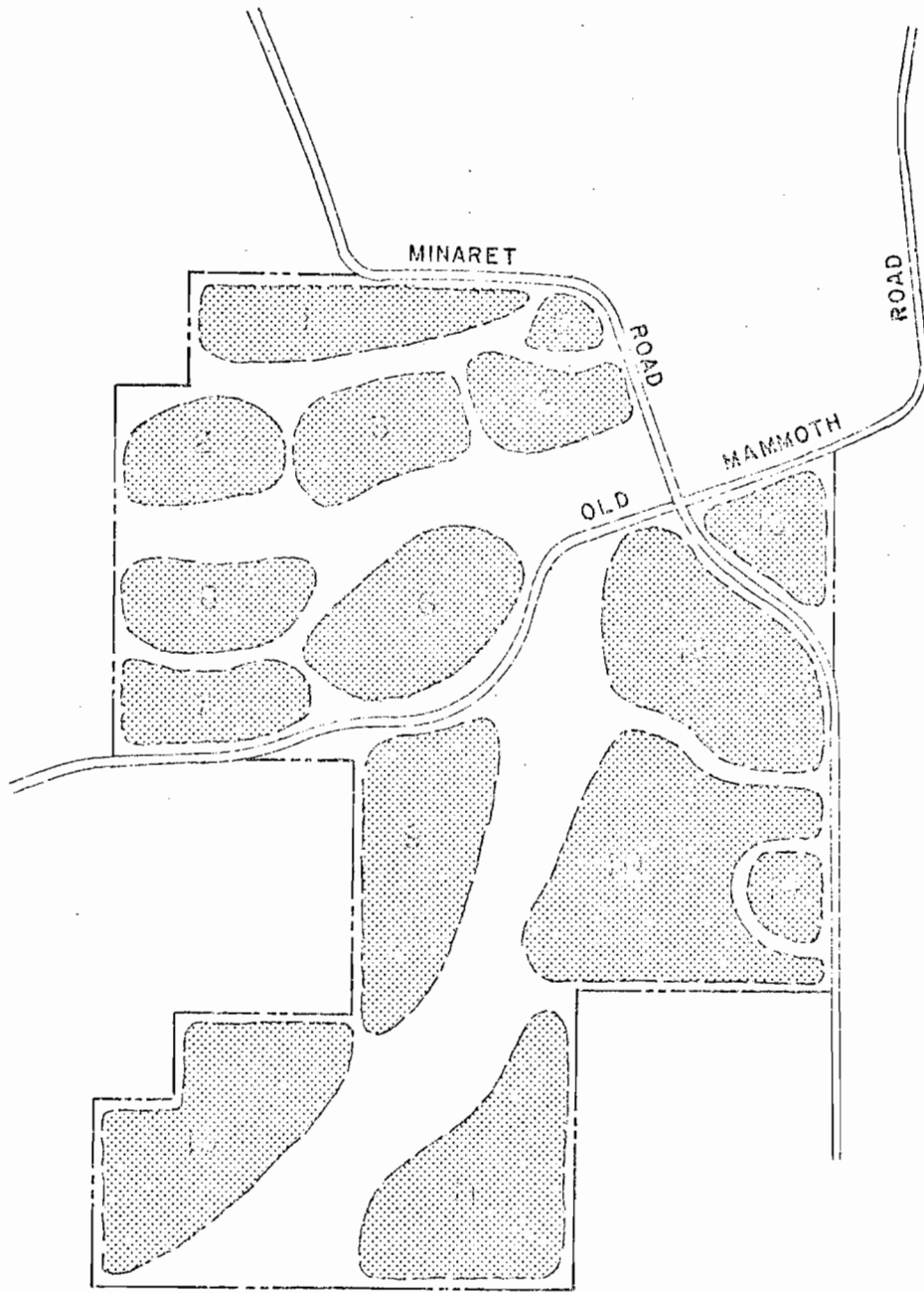
#### Traffic and Transportation

Impacts: The proposed updated Snowcreek Master Plan requires a reanalysis of the traffic volumes and patterns in the immediate vicinity of the development. An extensive engineering review and traffic study of the entire Mammoth Village area was presented in

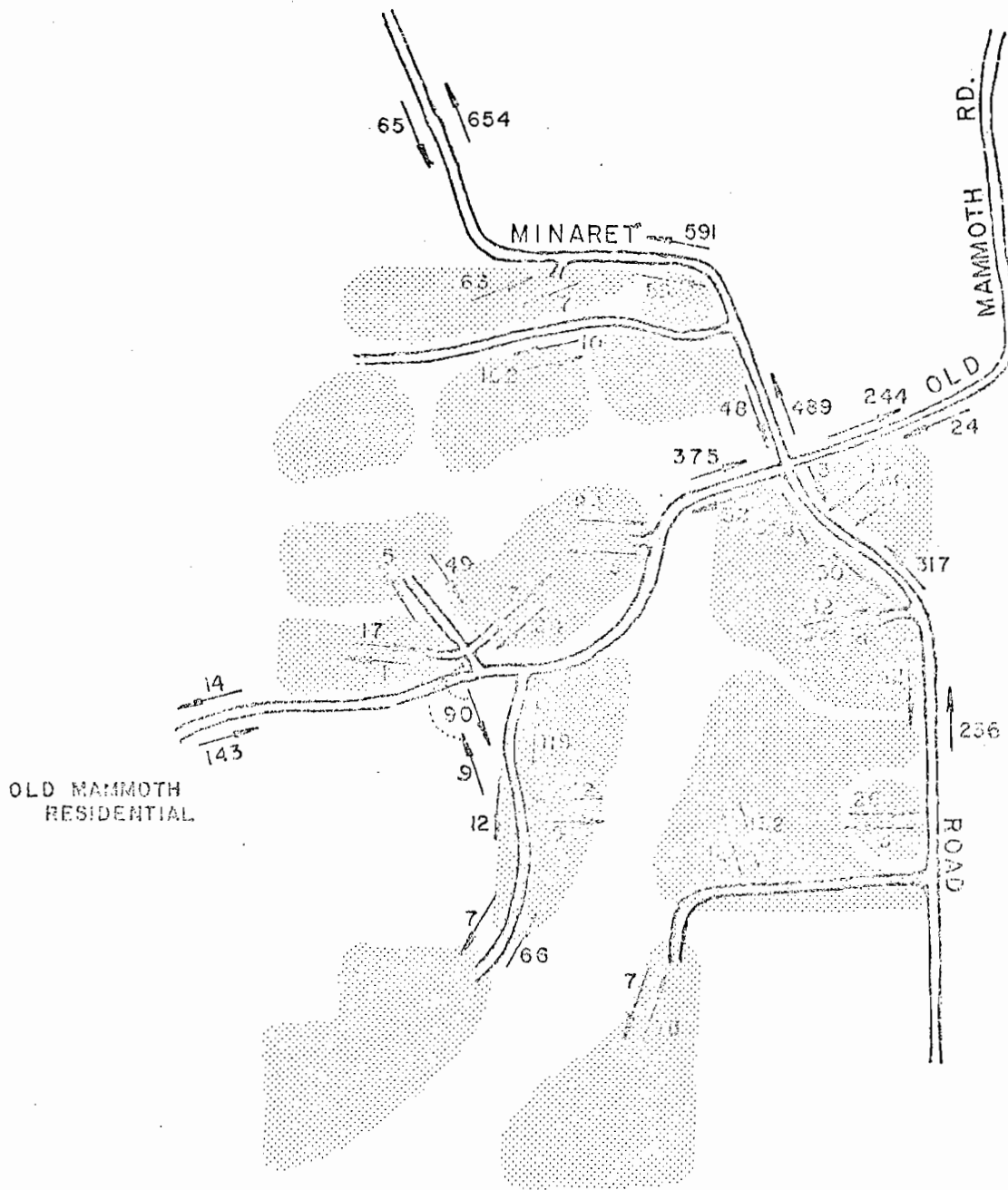
the 1974 Final EIR (See Section XIX and Appendix XXVIII) primarily because so little data was then available regarding future transportation needs. Since the original EIR was completed, the community has developed and adopted an overall traffic and transportation plan. The assessment of the general impact of the Snowcreek development on traffic patterns within the community is consistent, however, between the 1974 Final EIR and the recommended Mammoth Lakes Traffic and Transportation Plan. Since the updated master plan proposes no increase in density or type of development, the original assessment of regional traffic impacts is assumed to apply.

However, changes in the physical location of certain development areas (notably Area 15) and community re-evaluation of the development of the Sherwin Bowl ski area will significantly modify the analysis of traffic volumes in the immediate vicinity of the Snowcreek site. The following paragraphs update the analysis of Snowcreek traffic patterns which began on page XIX of the 1974 Final EIR.

A schematic layout of the fifteen development areas proposed for the Snowcreek project and the relationship of major roads in the vicinity are presented in Figure 8. Utilizing the same assumptions adopted in the previous analysis and the development densities presented in Figure 3, traffic volumes and patterns were calculated assuming that the Sherwin Bowl ski area was not developed. The A.M. and P.M. traffic flows are presented schematically in Figures 9 and 10, respectively. The A.M. pattern indicates that the peak hour traffic volume on Minaret Road will be approximately 654 vehicles. Assuming an ultimate build-out of the Old Mammoth residential area at 444 residential units, the easterly traffic volume west of Snowcreek will be 143 vehicles. The total volume easterly of Snowcreek (inbound to Mammoth Lakes Village) will be 244 vehicles.



*Snowcreek at Mammoth*  
DEVELOPMENT  
AREAS



*Snowcreek at Mammoth*

A.M. PEAK HOUR  
TRAFFIC VOLUMES

FIGURE 8

Estimated (P.M.) traffic volumes presented in Figure 10 show that maximum peak hour volumes occur in the evening and approach 800 vehicles on Minaret Road. This figure would occur in the winter reflecting skiers returning from the Mammoth Mountain Ski Area as well as local residents returning from work. Peak volumes on Old Mammoth Road are expected to approach 300 vehicles per hour during the evening, of which 164 vehicles are attributable to the Old Mammoth residential area.

Mitigation Measures: The recommended roadway cross-sections and intersection designs presented in Section XIX of the 1974 Final EIR more than adequately provide for the traffic volumes calculated for the updated master plan. For convenience, the design criteria for each major roadway considered is summarized below:

Minaret Road - North of Old Mammoth Road

Design traffic volume = 120 vehicles per hour. Recommended cross-section provides for two 12-foot traffic lanes in each direction with a 12-foot median strip and improved shoulders.

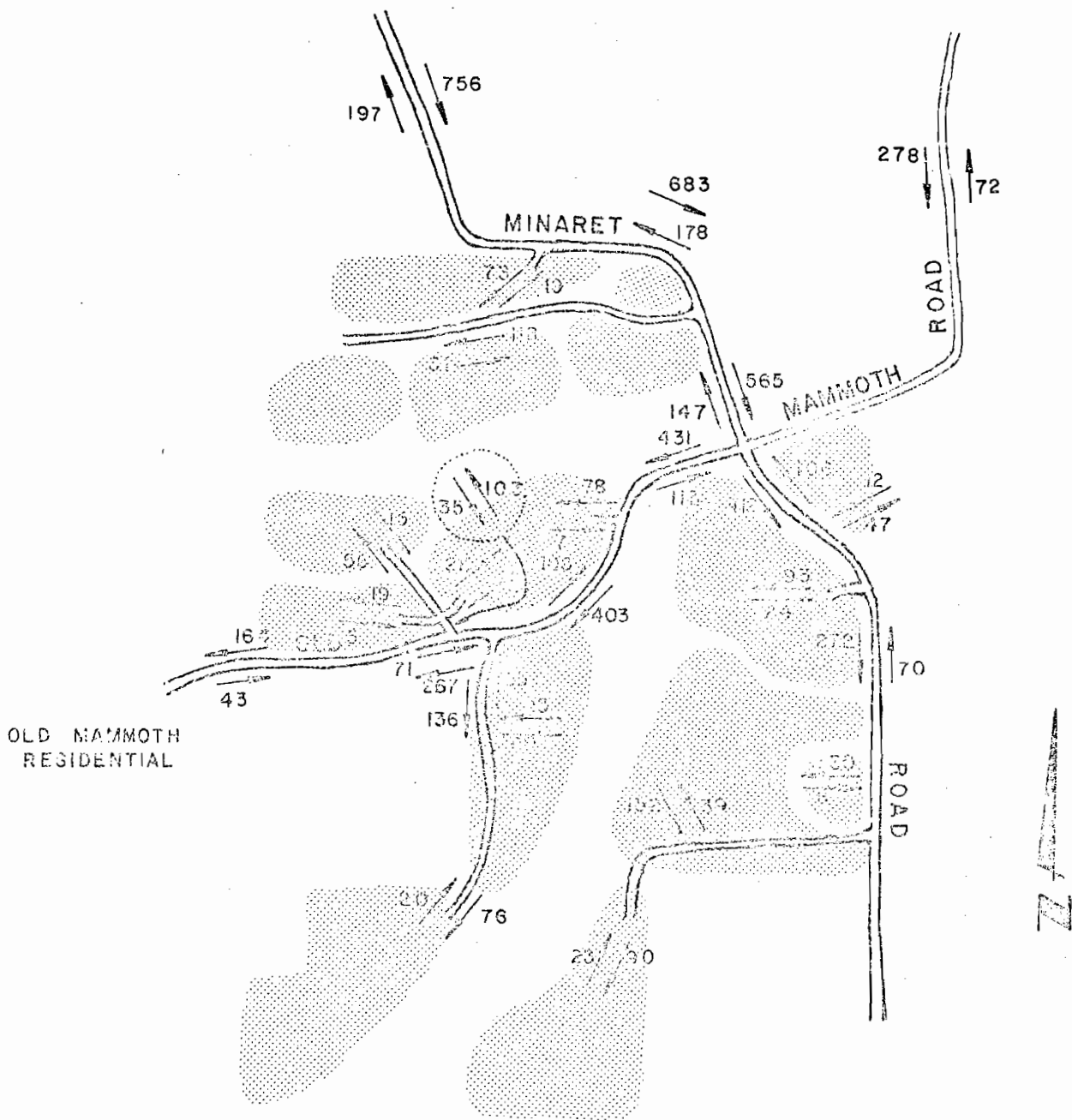
Old Mammoth Road - Minaret to Rainbow

Design traffic volume = 450 vehicles per hour. Recommended cross-section provides for one 12-foot traffic lane in each direction with improved shoulders.

Old Mammoth Road - Minaret Road Intersection

The potential traffic volume in this area can vary significantly, depending on the timing of in-bound or out-bound traffic at the intersection. The design traffic volume has therefore been conservatively set at 1200 vehicles per hour to match Minaret Road. Recommended





*Snowcreek at Mammoth*

P.M. PEAK HOUR

TRAFFIC VOLUMES

cross-section from 600 west of the Minaret Road intersection to the easterly boundary of the Snowcreek site is therefore two 12-foot lanes in each direction with a 12-foot median and improved shoulders.

#### Old Mammoth Road - East of Minaret

Traffic volume along this stretch of roadway basically reflects out-bound (from Mammoth Lakes) traffic on weekends and shopping/commuting traffic during week days. In addition, on peak skier days, a small percentage of traffic will divert to this more circuitous route to patronize restaurants, rentals, and commercial shops located along State Highway 203. Design volume in this stretch is only 300 vehicles per hour and the recommended cross-section is one 12-foot lane in each direction with improved shoulder.

#### Minaret Road - South of Old Mammoth Road

The design traffic volume is obviously heavily dependent on whether or not there is any significant flow southerly of the Snowcreek project to Sherwin Bowl. Considering the uncertainty involved with this particular area, the recommended section is two 12-foot traffic lanes in each direction with improved shoulders up to the easterly boundary of the Snowcreek project. Thereafter, only one 12-foot traffic lane in each direction with improved shoulders is recommended.

#### Interior Streets

Maximum design traffic volume for any street within the Snowcreek development is less than 200 vehicles per hour.

The recommended section is two 12-foot lanes without shoulders.

The realignment of Old Mammoth Road from a radius of 300 feet to a curve with at least a 600-foot radius will have a beneficial impact on traffic safety. This particular curve has been the site of numerous accidents and collisions, partially because of its short radius and partially due to the frequent occurrence of blowing snow and poor visibilities at this location. Flattening the curve and providing for super-elevation of the roadway will at least improve the present poor driving situation to the extent that motorists can concentrate on any adverse weather conditions.

#### Air and Noise Pollution

Impacts and Mitigation: The updated Snowcreek Master Plan will involve identical impacts and mitigation measures to those discussed in Section XX of the 1974 Final EIR.

#### Social Impact

Impacts: The general social implications and impacts associated with development of the Snowcreek project are presented in Section XXI of the 1974 Final EIR. As previously discussed in the "Planning" paragraphs of this section, the social impacts of the updated Snowcreek Master Plan are considered to be more beneficial than those associated with the original plan. Those issues and community needs considered to be affected positively by the updated master plan are:

1. The provision of over 50 acres of land for public schools in both the Mammoth Lakes and Crowley Lake areas by means of the USFS/Dempsey land exchange.

This land trade will result in the loss of 10 acres of development (equivalent to 60 dwelling units) to the Snowcreek project.

The exchange, which is now in its final stages calls for Dempsey Construction Corporation to deed 10 acres in the southern portion of its Snowcreek project to the U.S. Forest Service. In turn, the USFS will deed three sites to Dempsey Construction: a 20-acre site covering the present Mammoth High School site, a 10 acre site at Minaret Road and Meridian Road for a grammar school site, and finally a 20-acre site in the Crowley Lake area for another grammar school. Dempsey will subsequently deed the above sites to the Mammoth Unified School District at no cost to complete the complex exchange of lands.

2. The provision of an employee residential area will help relieve the present and future lack of affordable housing within the community. By assuming responsibility for at least those employees associated with the development, the developer has recognized the problem and, in the long-term avoided aggravating the present housing situation.
3. By assuming the responsibility for major portions of those off-site roadway improvements affected by the Snowcreek project, the development will not only significantly improve traffic and circulation in the immediate vicinity but will substantially defray the potential cost to the taxpayers of the community.

ADVERSE ENVIRONMENTAL EFFECTS WHICH  
CANNOT BE AVOIDED

Although adequate enforcement of the mitigation measures proposed in this text and in the 1974 Final EIR for the Snowcreek Master Plan will reduce most potentially adverse environmental effects of the project to insignificant or reasonable levels, certain impacts associated primarily with construction activities, land transformations, community services and traffic cannot be completely avoided. It is important to note that the updated Snowcreek Master Plan is not considered to have any unavoidable environmental impacts which were not considered in the original Master Plan proposal. In the interests of public disclosure, however, these adverse effects are reproduced herein for convenience.

The following paragraphs have been excerpted verbatim from the Final Environmental Impact Report for Snowcreek at Mammoth, Urbanomics Research Associates, 1974:

By far the predominant share of the environmental impacts to be generated by the Snowcreek project will occur during the period of active construction of the project. It is during this phase of the development program that the open space now comprising the site of Snowcreek will be converted to urban uses. In a general form, the types of impacts inherent during the construction phase of the Snowcreek project are listed below:

1. The selective land clearing and grading necessary to prepare the site for the roads, residential units, and other elements of Snowcreek will itself entail several different types of environmental impacts. On the one hand, some disruption of the native plant communities and the pattern

of vegetative cover is unavoidable. This disruption translates, in turn, into an alteration of the natural wildlife habitat currently provided by the site. Some relatively insignificant archaeological sites located on the project area will be disturbed during the ground clearing phase.

2. The grading that is unavoidable in the construction of roads, trails, and recreation facilities as well as residential homesites, and any resultant land changes will have some effect on the natural drainage flows and water runoff patterns of the site. The minimum earth moving approach proposed for the Snowcreek development, however, will ensure that the natural topography of the site will remain relatively undisturbed.
3. There will be some noise level and air quality impacts associated with the construction equipment used during this phase of the development plan.
4. The socio-economic impacts during the construction stages of the project will take the form of enhanced employment opportunities in the Mammoth Lakes area. The added employment associated with the Snowcreek project will, in turn, translate into higher family income levels, increased retail spending, etc., in the community and in Mono County generally.
5. The environmental and community impacts growing out of the Snowcreek project during the construction phases will be affected at varying intervals and intensities over the course of the nine-year development program.

Based upon current plans, by the end of 1984\* all construction on the Snowcreek development will have been completed. Since Snowcreek will be built in stages, some portions of the development will be completed and operational very early in the developmental

time-frame. Consequently, some of the environmental impacts attendant upon the operational phase of the project will be felt as Snowcreek proceeds to completion. The development in its entirety, however, will not be fully operational until sometime in 1984\*. It should be noted that the environmental impacts on the natural character of the project site will have run their course once the development is fully operational. The general nature of the environmental impacts associated with the operational phase of the development are summarized below:

1. The permanent population of and resort visitors to Snowcreek will result in increases in the number of persons living in or visiting the Mammoth Lakes area. This, in turn, translates into more motor vehicles, potentially increased congestion with possible air quality ramifications. The population living in Snowcreek will increase the level of water consumption in Mammoth and increase the utilization of the sewage treatment facilities of the Mammoth County Water District.
2. The project entails direct and indirect positive economic impacts on the economic environment of the Mammoth area and Mono County in general. These impacts will take the form of increments to the employment base of the community attributable to the Snowcreek commercial village, the hotel and convention center, and the motor inn. In addition, the development will draw new spending for retail goods and services for the community. These spending impacts will be generated by the residents of

Snowcreek and seasonal visitors to the resort facilities. The commercial sector of the Snowcreek development along with other commercial outlets in the Mammoth area will benefit from this spending as will the County from increased sales tax revenues. In addition, the assessed valuation of the development will result in substantial additions to the tax revenue flowing to Mono County and to other public entities in the Mammoth area.

\*Note: This date seems optimistic at the present time. It appears that development of the Snowcreek Master Plan will continue until at least 1994.



## ALTERNATIVES TO THE PROPOSED PROJECT

Potential alternatives for the development of the Snowcreek parcel were originally considered in the 1974 Final EIR. These alternatives remain unchanged for the updated Snowcreek Master Plan and are presented verbatim in the following paragraphs for convenience. The following material is excerpted from the Final Environmental Impact Report for Snowcreek at Mammoth, Urbanomics Research Associates, 1974.

### Alternative A - No Project

In terms of ultimate environmental impacts the alternative of "no project" would be most advantageous to the environment of the project area. Among others, retention of the project area in its existing state would eliminate or minimize the following types of negative environmental impacts: (1) there would be no population growth in the impact area, thereby eliminating the need for new water, sewer, energy and other urban systems; (2) the environmental impact of the automobile would be minimized; (3) there would be no visual impact upon the existing skyline of the project area; (4) absent the proposed project, environmental impacts upon the flora and fauna of the area would be mitigated; (5) with no development, the existing streams and water courses would remain in their natural state; (6) the alternative of "no project" would perpetuate the existing topography and surface characteristics of the project area.

The "no project" alternative, on the other hand, carries several interesting implications to the future life style and urban form of the Community of Mammoth Lakes. First of all, the Dempsey Construction Corporation concept of development will provide the community an opportunity

for solving certain problems which currently exist. By way of example, the alternative of "no project" may obstruct the implementation of certain planning objectives of Mono County by undermining the development of a more efficient transportation network for the community. A significant portion of Minaret Road will be contributed and developed by the applicant.

Secondly, by establishing a new residential-commercial activity area, existing land use and traffic congestion pressures on other geographic sectors of the community will be greatly relieved. The proposed development will provide Mammoth Lakes the opportunity to develop a new identity, and guarantee high quality development on a valuable parcel of privately-owned land. Moreover, it is likely that existing seasonal patterns of visitation and living will be moderated by the proposed development.

In short, it is reasonable to believe that the demand for the Mammoth area's skiing facilities will increase during the next several decades. The development of Snowcreek will provide a basis for accommodating the future growth pressures in an orderly manner.

#### Alternative B - Immediate Development Under Existing Zoning Provisions

Development of the project area under existing allowable zoning provisions would translate into the ultimate construction of 7,200 new housing units and the development of 100 acres of commercial uses. This concept of development would triple the number of housing units, people, and automobiles to be accommodated within the project area over and above the 2,400 housing units proposed for Snowcreek. Clearly, the negative environmental impacts of development under existing zoning provisions would be considerably greater than those generated by the proposed Snowcreek project.

#### Alternative C - Piecemeal Development by Several Independently Operating Builders

The Snowcreek proposal reflects a comprehensive plan of

use for the project area, with actual construction to be phased at a pace defined by the market absorption capabilities of the Mammoth Lakes area. Alternatively, the land area in question could be developed on a piecemeal, fragmented and leapfrog basis by a variety of builders who develop, say, 10 or 20 acres at a time without regard for balanced commercial development, the implementation of a complete road system, and at the inherent risk of overbuilding beyond the absorption capabilities of the local housing market.

It should be noted that the "no project" alternative will not in any way eliminate pressures for further residential and commercial development in the Mammoth Lakes area. The Snowcreek project actually eliminates the risks and costs of piecemeal and fragmented development on the 355<sup>xx</sup> acres in question. This assures the community comprehensive planning, high quality development, balanced land usage over time, and a concept design reflecting genuine environmental awareness. Deferring the implementation of the Snowcreek development might only serve to stimulate further unplanned growth in the community. The proposed concept of development assures the community of high quality new residential and commercial areas. As indicated, this will serve to reduce many of the existing traffic, land use, and population pressures on other geographic sectors of the community. Moreover, the actual pace of construction will be closely linked to demonstrated market needs.

Alternative D - Purchase of the Project Area by Federal, State or Local Government for Retention as Open Space

A fourth alternative would involve purchase of the project acreage by government for retention as open space. In the age of environmentalism there is no such thing as "free" open space. Insofar as the lands in question are privately owned, certain economic property rights are inherent in the lands as such. Should the decision-making process of government ultimately designate the properties as permanent open space it is reasonable to assume that the owners would

be adequately reimbursed for the value of the private property to be devoted to public open space use.

Several factors militate against permanent retention in open space: First, the Community of Mammoth Lakes occupies an island of 2,000 acres within 2.0 million acres of publicly-owned lands; second, under existing governmental resource management policies it is reasonable to assume that the 2.0 million acres of open space public land surrounding Mammoth Lakes will be managed with a high degree of environmental awareness; third, the Snowcreek project area represents about one-half of the remaining available privately-owned lands within the general market area; fourth, the Monoplan calls for urbanization of the project area acreage; fifth, past federal land management policies have worked toward the blocking out of the pattern of ownership of public and private lands. The proposed project area is now blocked out in private ownership, and the Snowcreek concept of development assures the community of a high quality development with the pace of construction tied directly to market demand factors.

\* This figure is reduced to 2332 units in the updated Snowcreek Master Plan.

xx Reduced to 345 acres under updated Master Plan.

## LOCAL SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

With only 21% of Mono County under private land ownership, it is improbable that the proposed development will have any significant or permanent effects on regional productivity or natural resources. The potential local short-term benefits of increased employment and construction activity associated with the project will lead to long-term social benefits arising from the availability of a resort-residential lifestyle unique to the Eastern Sierras. The local short-term benefits of the project are therefore considered to be consistent with the long-term environmental and social goals of the area. (Note: additional discussions of the relationship between short-term uses of the environment and long-term productivity are presented in Section XXIII of the 1974 Final EIR.

## IRREVERSIBLE ENVIRONMENTAL CHANGES

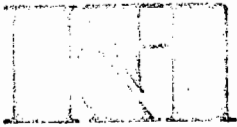
The material resources expended for construction of the residential development and the energy required to install the improvements represent commitments of resources which are essentially irreversible. Development of the property for residential purposes also represents an essentially irreversible transformation of these lands from their present state, since removal or abandonment of the improvements would be unlikely. It should be noted that the property has already been impacted by man's activities and is presently in a semi-natural state. The area impacted by the proposed project, although large in comparison with the private land comprising the Mammoth Community is actually quite small in terms of open space available in the Mammoth Basin/Long Valley area. The land transformation is therefore not considered significant in terms of overall environmental impact.

## GROWTH INDUCING IMPACTS

The proposed project might promote increased development and drastic population growth in the Mammoth Lakes were it not for several important restraining factors. Firstly, the proposed Snowcreek Master Plan is consistent with existing zoning regulations, regional planning goals, and population growth projections for the Mammoth Lakes area. The forecasted development of the project results in densities which are compatible with the existing character of the community. Secondly, the project involves a lengthy period of phased development during which the actual growth impacts can be ascertained and dealt with as required. The project is essentially land-locked by other private properties and public land holdings and therefore expansion beyond the boundaries designated in the updated master plan is highly unlikely. In any event, expansion of the project into surrounding properties would require re-evaluations of community planning goals and would require additional environmental impact analyses at both regional and local levels.

Lastly, the potential ultimate development of the Mammoth Lakes community is limited by the vast public land holdings surrounding the village and established County and Federal policies of open space, agricultural, and scenic preservation. The private property available for development is therefore essentially confined to the present lands of the community. In summary, the restraining factors indicated above are considered to substantially mitigate the potential growth inducing impacts associated with the project. (Note: Additional discussion of the growth inducing impact of the Snowcreek development is contained in Section XXIV of the 1974 Final EIR.)

APPENDIX A



# J. H. KLEINFELDER & ASSOCIATES

GEOTECHNICAL CONSULTANTS — MATERIALS TESTING

3189 Mill Street / Reno, Nevada 89502 / (702) 323-7162

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September 13, 1980

File: R-1173-8

Dempsey Construction Co.  
P. O. Box 657  
Mammoth Lakes, CA 93546

Attention: Mr. Gail Frampton

Subject: Preliminary Geotechnical Investigation of South  
Meadow Area, Snowcreek Development, Mammoth Lakes,  
California

Gentlemen:

The attached report presents the results of our preliminary geotechnical investigation for the project. We appreciate the opportunity to submit this report and ask that if you have any questions concerning our work to please contact this office.

Very truly yours,

J. H. KLEINFELDER & ASSOCIATES

Edward J. Porter  
Project Geologist, C.E.G.

Robert D. Howell, C.E.  
Principal - Reno Office

EJP:RDH:efk



PRELIMINARY GEOTECHNICAL INVESTIGATION OF SOUTH  
MEADOWS AREA, SNOWCREEK DEVELOPMENT  
MAMMOTH LAKES, CALIFORNIA

INTRODUCTION

This report presents the results of our preliminary geotechnical investigation for the subject property. The site is located in the meadow to the south of Old Mammoth Lakes Road. The area investigated lies in the Meadow Area between two large irrigation ditches which are located on the northwest and southeast side of the meadow. The purpose of our study was to investigate the soil, geologic and near-surface hydrologic conditions on the site. This report includes a copy of the field data collected for this investigation along with our interpretation of the soil, geologic and hydrologic conditions present on the site.

Our field investigation consisted of the excavation of 14 test pits dug to a maximum depth of approximately 10 feet below the ground surface. The test pits were excavated with a John Deere 410 backhoe. The test pits were logged by a field geologist who also obtained representative soil samples for classification needed for future reports. The subsurface conditions encountered in the test pits are shown on the Test Pit Logs, Plates 2 through 8. A Key to the Unified Soil Classification System used to classify the site soils is presented on Plate 9.



SITE CONDITIONSGeology

The site area is located in a glacated valley. The glacier which occupied this valley retreated some 25,000 years ago and left behind large volumes of glacial debris. These glacial debris consist of lateral and recessional moraine and glacial till. Since the retreat of the glacier, the valley has interfilled with alluvial deposits left behind in the valley floor. For the purpose of this investigation we have divided the glacial deposits into separately mapped units based on their composition and depositional environment.

The most widely distributed glacial deposit consists of glacial moraine, shown as (Qm) on the geologic map, Plate 1. Glacial moraine underlies the rolling hills along the northwest and southeast margins of the meadow. An arcuate shaped glacial moraine deposit stretches across the upper portion of the meadow. Several smaller isolated outcroppings of glacial moraine are found along the southeast portion of the meadow and appear to divide the marshy area. Glacial moraine deposits consist of a poorly sorted mixture of boulders & gravel in a nonstratified silty sand matrix. These sediments are medium dense to dense and have high allowable bearing capacity for building foundations. The ground surface in areas mapped as glacial moraine has large rounded isolated boulders.



Glacial till (Qt) has been mapped in the lower portion of the valley where it stretches between the lateral moraine to the northwest and the smaller outliers of glacial moraine mapped along the southeast side of the valley. The glacial till is a subglacial deposit which consists of gravelly clayey sands and silts typical of the rock flour type debris which underlies glaciers. These sediments are stiff and medium dense and have moderate bearing capacity for building foundations. These sediments contain clay and silt which may be compressible and subject to settlement. The surface of areas underlain by glacial till has irregular drainage patterns and hummocky topography, several topographic depressions are present in the meadow.

It is our opinion that the glacial till deposits formed a low wide natural dam in the lower portion of the valley. It appears that a lake approximately 10 feet deep was once contained by this dam. The prehistoric lake was subsequently filled with fine grain lake deposits mapped as (Q1) on the geologic map. Lake deposits now occupy the central portion of the meadow just upstream from the glacial till. These deposits range from 4 to over 10 feet deep and consist of finer grained stratified clayey sands and silts which are overlain by organic rich peaty soils. These sediments are generally loose and contain large quantities of compressible organic material. These soils are not generally suitable for support of building foundations.

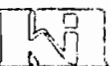
Alluvial soils mapped as (Qal) on the geologic map underlie much of the upper and lower portions of the meadow. These soils

consist of sediments which have been transported by stream action. For the most part alluvial sediments contained relatively clean sand, gravel and cobble deposits. Some of these deposits contain volcanic ash and welded tufaceous sands and gravels. These sediments are medium dense and have a moderately high allowable bearing capacity for support of building foundations.

### Hydrology

The depth to static groundwater level varied at the time of this investigation from  $1\frac{1}{2}$  feet in the upper portion of the meadow to  $9\frac{1}{2}$  feet in the lower portion of the meadow. The highest groundwater level was found just downslope from the ditch which passes along the southeast side of the meadow. The ditch has diverted water from streams higher on the hill into the meadow and was flowing at the time of our investigation. Ditches located along both sides of the meadow have apparently contributed to the higher groundwater tables observed adjacent to the ditches. The site plan and geologic map shows the static groundwater levels observed during the field exploration phase of this report. We anticipate that the static groundwater level will vary due to seasonal variations, fluctuations in precipitation and runoff. The static groundwater level shown in the report field data from Braun, Skaggs & Kevorkian & Simons report dated November 1973, is generally about six feet lower than the level we observed.

It is our opinion that there are at least three sources of water contributing to the marshy condition which exists in the meadow. The sources are surface water, seepage from irrigation ditches and subsurface water. In order to improve site drainage



all three sources of water must be diverted. Surface water such as sheet flow has been observed on the site during the spring months. This water can be diverted away from the meadow area by locating lined surface drainage ditches across the upper portion of the meadow. We believe the best area for locating such a drain would be across the glacial moraine deposit which crosses the upper portion of the meadow. Another source of water comes from seepage of water from the two ditches located along each side of the meadow. At the time of our investigation the highest groundwater tables were located adjacent to these ditches. In order to prevent seepage, the ditches should be lined. A third source of water and perhaps the most difficult to control is the large amount of subsurface water observed in the clean sands and gravel which appear to underlie the entire meadow area at a depth of 2 to 7½ feet. It is our opinion that the groundwater level can be lowered by the use of underground subdrains. The exact depth and location of these drains should be established once development plans are known.

#### Structural Foundation Conditions

Test pit data indicates that soil foundation conditions in the meadow area vary considerably. Table I shows a summary of the soil conditions encountered in each of the test pits. The surface layer of organic and peaty topsoil appears to overlie the entire site area to a depth of 1½ to 3 feet. These soils provide inadequate bearing capacity for structural foundations. In addition to the organic top soils found on this site a layer of compressible clayey soils is located in the central portion



of the meadow. These soils vary in thickness from 1 to 4 feet and are located at depths between  $1\frac{1}{2}$  and  $6\frac{1}{2}$  feet. Due to their compressible nature, substantial settlements could occur if foundations were to be founded on these soils.

A medium dense to dense layer of clean gravel, cobbles and sand was encountered in all test pits excavated. The gravels vary in depth from  $7\frac{1}{2}$  feet below the ground surface at the lower portion of the meadow to 2 feet in the upper portion of the meadow. These soils appear to provide firm support for structural foundations.

#### Excavation Conditions

Some difficulty in excavation of dense or cemented soils of boulder gravel can be expected. The high groundwater table in the meadow area could make site grading difficult. It appears that the meadow area can be drained to facilitate grading. Excavations encountering clean sands and gravels below the groundwater may experience considerable sluffing.

#### SUMMARY

Based on the results of our field exploration and data available from the Braun, Skaggs, Kervorkian & Simons report performed earlier for this site, we believe that the site can be developed as proposed. Site soil and hydrological conditions, particularly in the meadow area will require consideration in project design and construction. Low strength and compressible near-surface soils and high groundwater levels on portions of the site will require consideration in design and construction of structures, roadways and other improvements. Surface and subsurface drainage will probably be required for construction purposes and for permanent design of improvements in the meadow areas of the site.



TABLE I - SUMMARY OF SOIL CONDITIONS

Test Pit #	Thickness of Organic/ Peaty Topsoil (feet)	Depth to Medium Dense to Dense Clean Gravels & Cobbles & Sand (feet)	Depth of Compressible Clayey Soils (feet)	Geologic Unit	Depth to Static Groundwater Level (feet)
1	3½	5½	None Present	Glacial Till	9
2	2½	6½	None Present	Glacial Till	7½
3	1½	6½	None Present	Glacial Till	4½
4	1½	7½	1½ - 4	Lakebed Deposits	4
5	2	5½	2-4	Lakebed Deposits	4½
6	1½	6½	1½ - 6½	Lakebed Deposits	2
7	3	Loose Gravels @6½	3-6½	Lakebed Deposits	3½
8	3	6½	3-4	Lakebed Deposits	4
9	3	3	None Present	Alluvium	3
10	2	2	None Present	Alluvium	4½
11	1½	1½	None Present	Alluvium	5½
12a	2	2	None Present	Glacial Moraine	1½
12b	2	2	None Present	Glacial Moraine	4
13	2	2	None Present	Alluvium (near contact with glacial moraine)	4



Areas mapped in the Geologic Map, Plate 1 as glacial moraine have better soil foundation properties and are best suited for structures and roadways.

We recommend that a more detailed soil and geologic investigation be performed for this site once specific development plans are known. The additional investigation should include additional subsurface information in the upper meadow area and in specific areas designated for development.

#### LIMITATIONS

The recommendations contained in this report are based on our field explorations and our understanding of the proposed construction. The soils data used in the preparation of this report was obtained from the test pits made for this investigation and earlier reports. It is possible that variations of the soils could exist between the points explored.



MOISTURE CONTENT  
% OF DRY WT.

DRY DENSITY  
(PCF)

DEPTH (Ft.)

SAMPLE LOCATION

LOG OF

TEST PIT #1

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

LIGHT GREY SILTY VERY FINE SAND (SM) roots to 1' loose to medium dense at 1 1/2' deep.

YELLOW BROWN CLAYEY VERY FINE SAND (SC) medium dense, damp.

LIGHT GREY GRAVELLY SLIGHTLY SILTY SAND (SP) medium dense, moist to saturated (caves below water table).

LOG OF

TEST PIT #2

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

GREY SILTY VERY FINE SAND (SM) roots to 6" very loose to 1 1/2', loose to medium dense below, slightly moist.

LIGHT GREY CLAYEY SILT (ML) with some scattered organics medium dense, moist.

YELLOW CLAYEY SAND (SC) medium dense, moist.

GREY COARSE SANDY FINE GRAVEL (GP) medium dense, moist to saturated.

Hole caved in below 8'.

J.H. KLEINFELDER & ASSOCIATES  
GEOTECHNICAL CONSULTANTS • TESTING LABORATORIES

LOGS OF TEST PITS #1 & #2

PLATE

FILE NO: R-1173-8 DRAWN BY: DIP

MAMMOTH LAKES PROPERTIES  
MAMMOTH LAKES, CALIFORNIA

DATE: 11-3-80 CHKD. BY: *EP*

2

LOG OF TEST PIT #3

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

MOISTURE CONTENT  
% OF DRY WT.

DRY DENSITY  
(PCF)

DEPTH (ft.)

SAMPLE LOCATION

GREY SILTY ORGANIC SAND (SM) roots to 1', very loose, moist.  
LIGHT GREY & YELLOW GRAVELLY CLAYEY SAND (SC) stiff, moist to saturated.

slow seepage at 4½'.

GREY SANDY GRAVEL (GP) medium dense, saturated.

Caving in at 8½'.

LOG OF TEST PIT #4

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

GREY CLAYEY FINE SAND (SC) with organics loose, moist.  
LIGHT GREY TO BLACK CLAYEY SILT (ML) medium dense, moist to saturated.

YELLOW CLAYEY GRAVELLY SAND (SC) medium dense, saturated.

GREY COARSE COHESIONLESS SAND (SP) loose, saturated.

holes caved in below 8'.

J.M. KLEINFELDER & ASSOCIATES  
GEOTECHNICAL CONSULTANTS • TESTING LABORATORIES

LOGS OF TEST PITS #3 & #4

PLATE

FILE NO: R-1173-8 DRAWN BY: DIP

MAMMOTH LAKES PROPERTIES  
MAMMOTH LAKES, CALIFORNIA

DATE: 11-3-80 CHECKED BY: EP

3

MOISTURE CONTENT  
% OF DRY WT.

DRY DENSITY  
(PCF)

DEPTH (FT.)

SAMPLE LOCATION

LOG OF

TEST PIT #5

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

				5	
				10	
				15	

GREY BLACK SANDY ORGANIC (PEAT) CLAY (CL) very loose, roots to 1½'.  
 GREY CLAYEY SILT (ML) loose to very moist.  
 YELLOW CLAYEY SAND (SC) medium dense.  
 GREY GRAVELLY COARSE SAND (SP) loose, saturated.  
 GREY SANDY FINE GRAVELS (GP) medium dense, saturated.

LOG OF

TEST PIT #6

EQUIPMENT: John Deere 410 Backhoe

DATE 9-17-80 ELEV.:

				5	
				10	
				15	

BLACK PEAT (CH) very soft, very moist.  
 GREY BLACK ORGANIC CLAY (CL) soft, moist to saturated, water seepage at 2'.  
 GREY CLAYEY SAND (SC) loose, saturated.  
 YELLOW SANDY GRAVEL (GP) medium dense, saturated.  
 Coarse gravel & some cobbles at 8½'.

J.M. KLEINSLDER & ASSOCIATES  
 GEOTECHNICAL CONSULTANTS • TESTING LABORATORIES

LOGS OF TEST PITS #5 & #6

PLATE

FILE NO: R-1173-8 DRAWN BY: DIP

MAMMOTH LAKES PROPERTIES  
 MAMMOTH LAKES, CALIFORNIA

DATE: 11-3-80 CHKD. BY: *EP*

4

LOG OF TEST PIT #7

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

MOISTURE CONTENT  
% OF DRY WT.

DRY DENSITY  
(PCF)

DEPTH (ft.)

SAMPLE LOCATION

BLACK PEAT (CH)  
GREY BLACK ORGANIC CLAY ROOTS TO 2½' (CL)  
soft, very moist.

YELLOW CLAYEY GRAVELLY SAND (SC) loose to  
saturated, trench wall caving.

GREY COARSE SANDY GRAVEL (GP) loose, saturat-  
ed with occasional boulders to 2' diameter,  
trench walls caving.

LOG OF TEST PIT #8

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

GREY BLACK SILTY ORGANIC SAND (SM) very loose  
moist to saturated.

LIGHT GREY CLAYEY SILT (ML) loose, very moist  
GREY SILTY SANDY GRAVEL (GM) loose to medium  
dense, saturated.

J.H. KLEINFELDER & ASSOCIATES  
GEOTECHNICAL CONSULTANTS • TESTING LABORATORIES

LOGS OF TEST PITS #7 & #8

PLATE

FILE NO: R-1173-8 DRAWN BY: DIP

MAMMOTH LAKES PROPERTIES  
MAMMOTH LAKES, CALIFORNIA

DATE: 11-3-80 CHKD. BY: EP

5

LOG OF

TEST PIT #9

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

MOISTURE CONTENT  
% OF DRY WT.

DRY DENSITY  
(PCF)

DEPTH (FL.)

SAMPLE LOCATION

BROWN SILTY ORGANIC SAND (SM) with roots to 2½', loose, moist to saturated.

LIGHT BROWN SANDY GRAVEL (GP) with occasional large boulders to 2' diameter

Coarse below 6½'.

LOG OF

TEST PIT #10

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

BROWN SILTY GRAVELLY SAND (SM) with roots to 3½', loose, moist.

YELLOW SLIGHTLY SILTY SANDY GRAVELS (GP-GM) loose to medium dense.

seepage at 4½'

Large 3' diameter boulder exposed in trench wall.

J.H. KLEINFELDER & ASSOCIATES  
GEOTECHNICAL CONSULTANTS • TESTING LABORATORIES

LOGS OF TEST PITS #9 & #10

PLATE

FILE NO: R-1173-8 DRAWN BY: DIP

MAMMOTH LAKES PROPERTIES  
MAMMOTH LAKES, CALIFORNIA

6

DATE: 11-3-80 CHD. BY: EP

LOG OF TEST PIT #11

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

MOISTURE CONTENT  
% OF DRY WT.

DRY DENSITY  
(PCF)

DEPTH (FT)

SAMPLE LOCATION

BROWN GRAVELLY SILTY SAND (SM) with abundant roots, loose, damp.  
YELLOW TO GREY SLIGHTLY SILTY SANDY GRAVELS AND COBBLES (GM-GP) medium dense, damp to saturated.

Backhoe near refusal in large cobbles and boulders at 7½'.

LOG OF TEST PIT #12a

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

BROWN GRAVELLY SILTY ORGANIC SAND (SM) roots to 3', very loose, moist to saturated. Water seepage at 2½'.  
LIGHT BROWN SANDY SLIGHTLY SILTY GRAVELS AND COBBLES (GP-GM) medium dense, saturated. Several boulders to 3' diameter.

Very difficult to excavate in large boulders below 7½'.

W. KLEINFELDER & ASSOCIATES  
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LOGS OF TEST PITS #11 & #12a

PLATE

FILE NO: R-1173-8 DRAWN BY: DIP

MANMOUTH LAKES PROPERTIES  
MANMOUTH LAKES, CALIFORNIA

DATE: 11-3-80 CKD BY: *EL*

7

LOG OF

TEST PIT #12b

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

MOISTURE CONTENT  
% OF DRY WT.

DRY DENSITY  
(PCF)

DEPTH (Ft.)

SAMPLE LOCATION

BROWN GRAVELLY SILTY ORGANIC SAND (SM) loose, slightly moist.  
LIGHT GREYISH BROWN SANDY SLIGHTLY SILTY GRAVELS AND COBBLES (GP-GM) medium dense, slightly moist to saturated.



5

10

15

LOG OF

TEST PIT #13

EQUIPMENT: John Deere 410 Backhoe

DATE: 9-17-80 ELEV.:

BROWN GRAVELLY SILTY ORGANIC SAND (SM) roots, very loose.  
YELLOW BROWN SILTY SANDY ANGULAR GRAVELS AND COBBLES (GP-GM) loose, moist to saturated.



5

10

15

Near refusal on very large cobbles and boulders.

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GEOTECHNICAL CONSULTANTS • TESTING LABORATORIES

LOGS OF TEST PIT #12b & #13

PLATE

FILE NO: R-1173-8 DRAWN BY: DLP

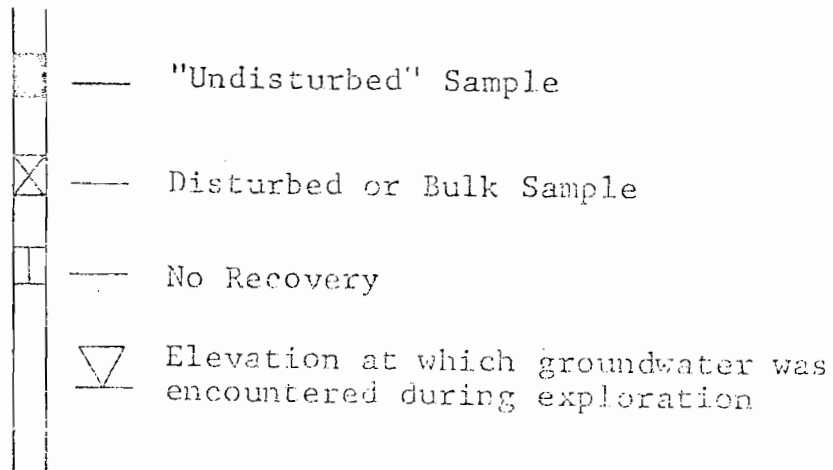
MAMMOTH LAKES PROPERTIES  
MAMMOTH LAKES, CALIFORNIA



DATE: 11-3-80 CK'D BY: *ep*

DESIGNATION		TYPICAL EXAMPLES			
COARSE GRAINED SOILS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 20 SIEVE	GRAVELS	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS, GRAVEL - SAND MIXTURES	
			GP	POORLY GRADED GRAVELS, GRAVEL - SAND MIXTURES	
		GRAVELS WITH OVER 12% FINES	GM	SILTY GRAVELS, POORLY GRADED GRAVEL - SAND - SILT MIXTURES	
			GC	CLAYEY GRAVELS, POORLY GRADED GRAVEL - SAND - CLAY MIXTURES	
	SANDS	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS	
			SP	POORLY GRADED SANDS, GRAVELLY SANDS	
		SANDS WITH OVER 12% FINES	SM	SILTY SANDS, POORLY GRADED SAND - SILT MIXTURES	
			SC	CLAYEY SANDS, POORLY GRADED SAND - CLAY MIXTURES	
		FINE GRAINED SOILS MORE THAN HALF IS SMALLER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRANULAR CLAYS, SANDY CLAYS, SILTY CLAYS, LEAM CLAYS
SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50	OL		ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY		
	MH		INORGANIC SILTS, MICROFINE OR DIAPHRAGMATIC FINE SANDS OR SILTY SOILS, CLAYEY SILTS		
	CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS			
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
HIGHLY ORGANIC SOILS		PT	PEAT AND OTHER HIGHLY ORGANIC SOILS		
FILL MATERIAL		AS DESCRIBED ON LOG			

UNIFIED SOIL CLASSIFICATION SYSTEM



J.H. KLEINFELDER & ASSOCIATES

GEOTECHNICAL CONSULTANTS & TESTING LABORATORIES

FILE NO: R-1173-8 DRAWN BY: \_\_\_\_\_

DATE: \_\_\_\_\_ CH (D) BY: \_\_\_\_\_

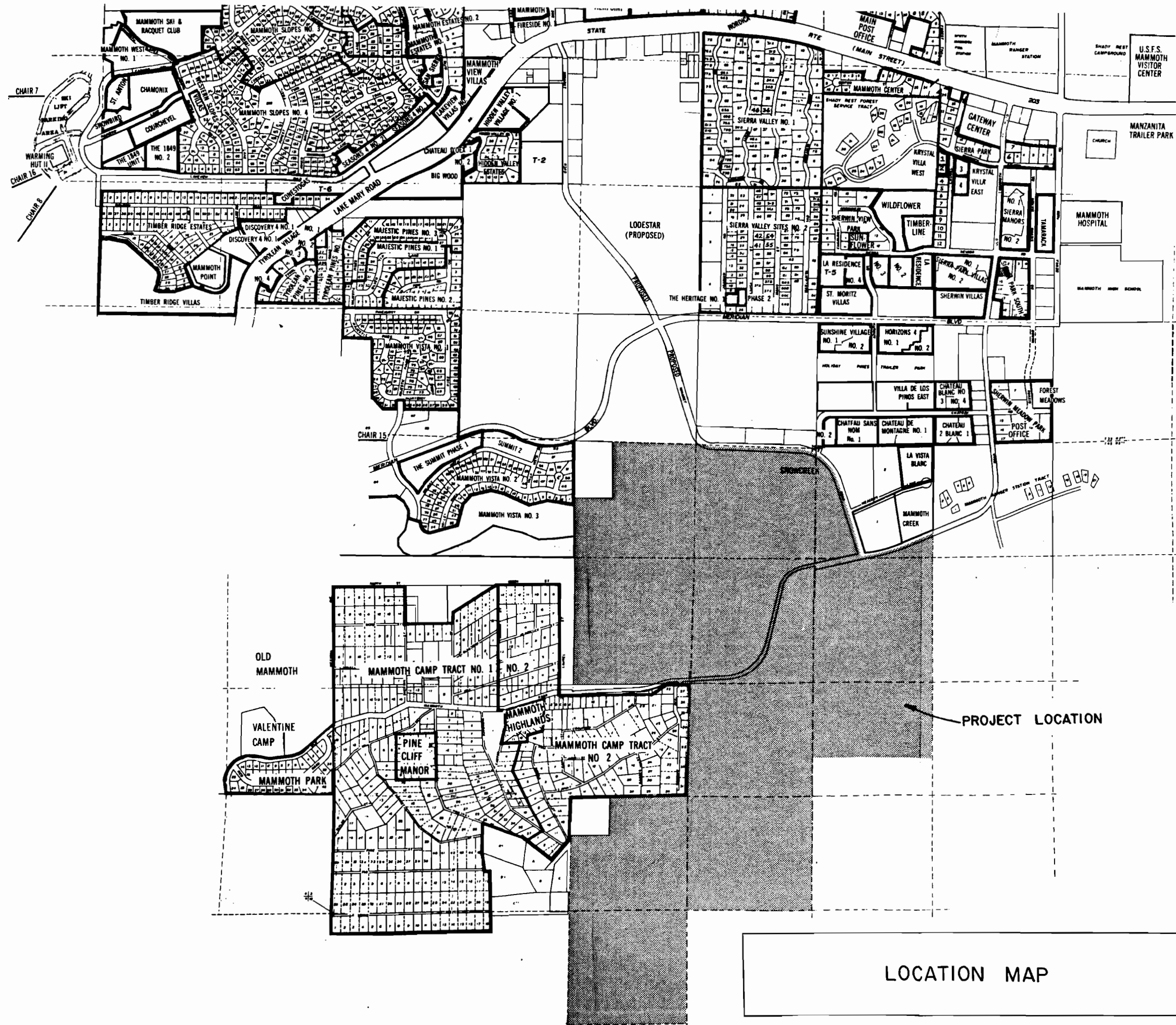
KEY TO BORING LOGS

MAMMOTH LAKES PROPERTIES  
MAMMOTH LAKES, CALIFORNIA

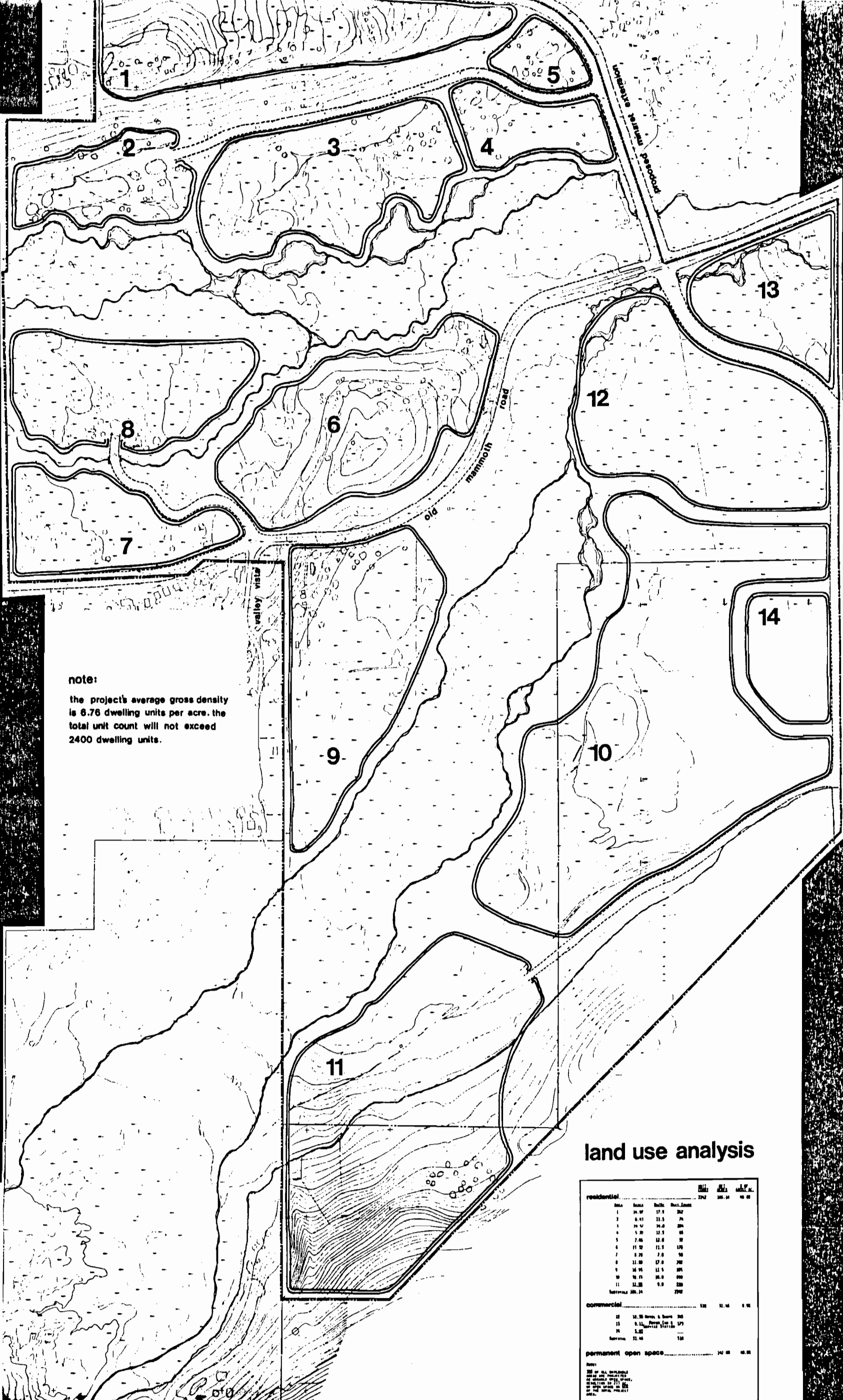
PLATE







LOCATION MAP



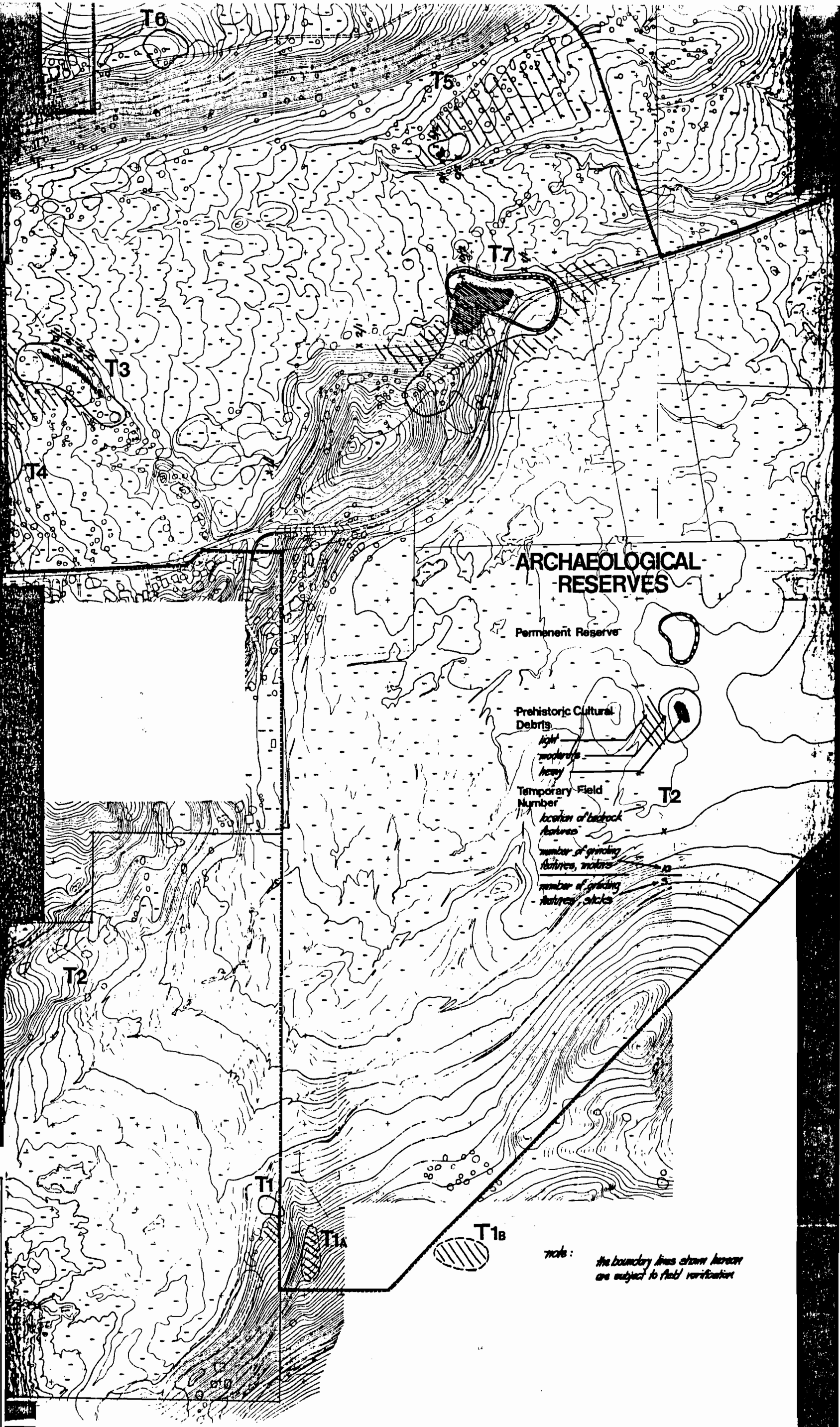
note:  
 the project's average gross density  
 is 6.76 dwelling units per acre. the  
 total unit count will not exceed  
 2400 dwelling units.

land use analysis

residential	Area	Density	Units	Notes
1	14.07	17.5	246	
2	6.41	11.5	74	
3	14.17	14.2	201	
4	5.20	12.7	66	
5	7.46	12.8	96	
6	11.12	11.1	123	
7	6.28	7.8	50	
8	11.08	17.8	197	
9	14.95	11.5	171	
10	16.15	14.5	234	
11	12.18	9.8	119	
Subtotal	106.14		1707	
commercial			150	11.46 6.16
12	13.35	8.2	110	
13	6.11	24.5	150	
14	5.00			
Subtotal	24.46		260	
permanent open space			440	14.00 14.00
major roads			13.4	1.16
15	1000 L.F.	1.1		
16	2000 L.F.	1.1		
17	1000 L.F.	1.1		
Subtotal	3000 L.F.		3.3	
<b>total</b>			<b>2497</b>	<b>2400</b>

land use plan

SNOWCREEK AT MAMMOTH



# SNOWCREEK AT MAMMOTH

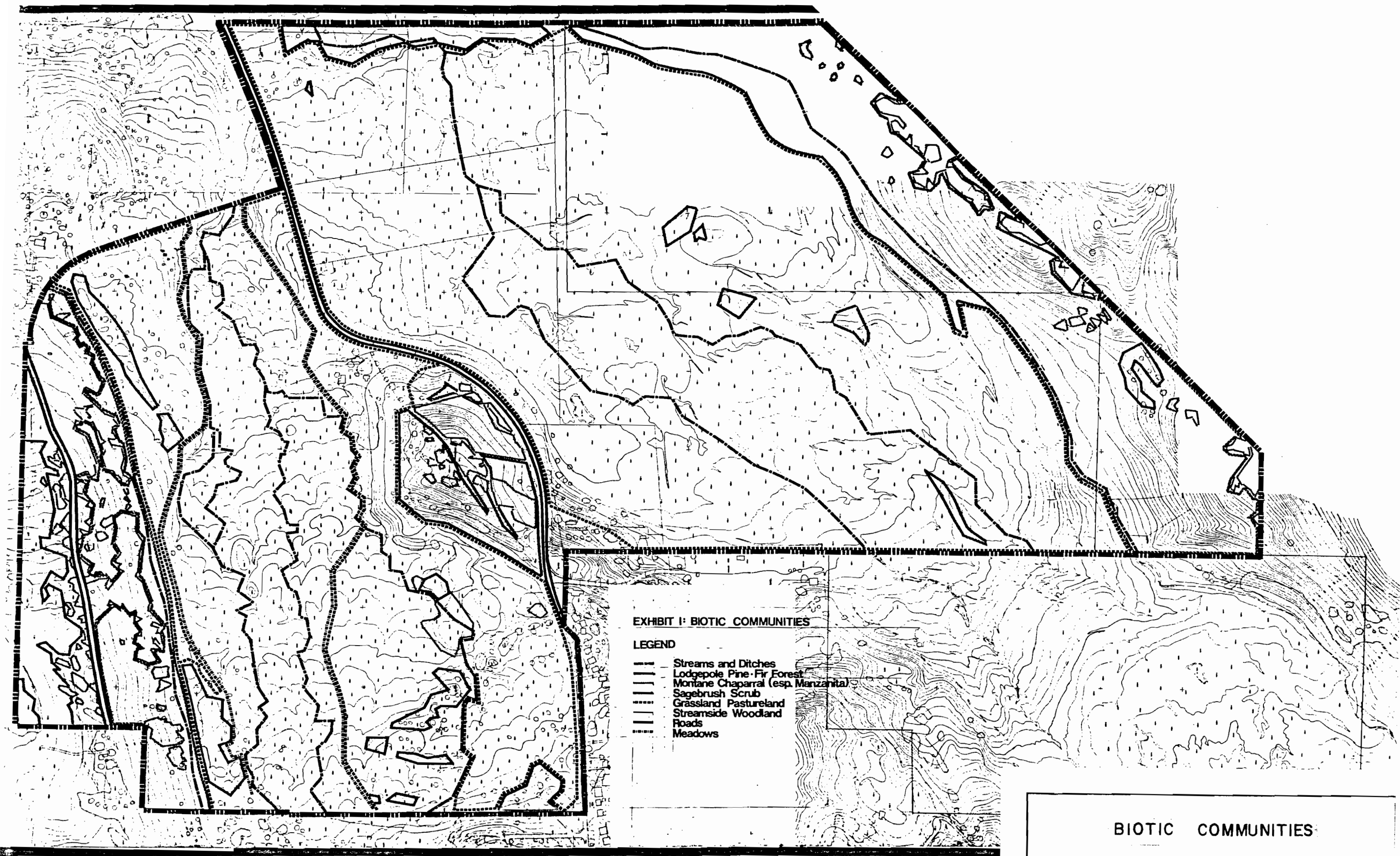
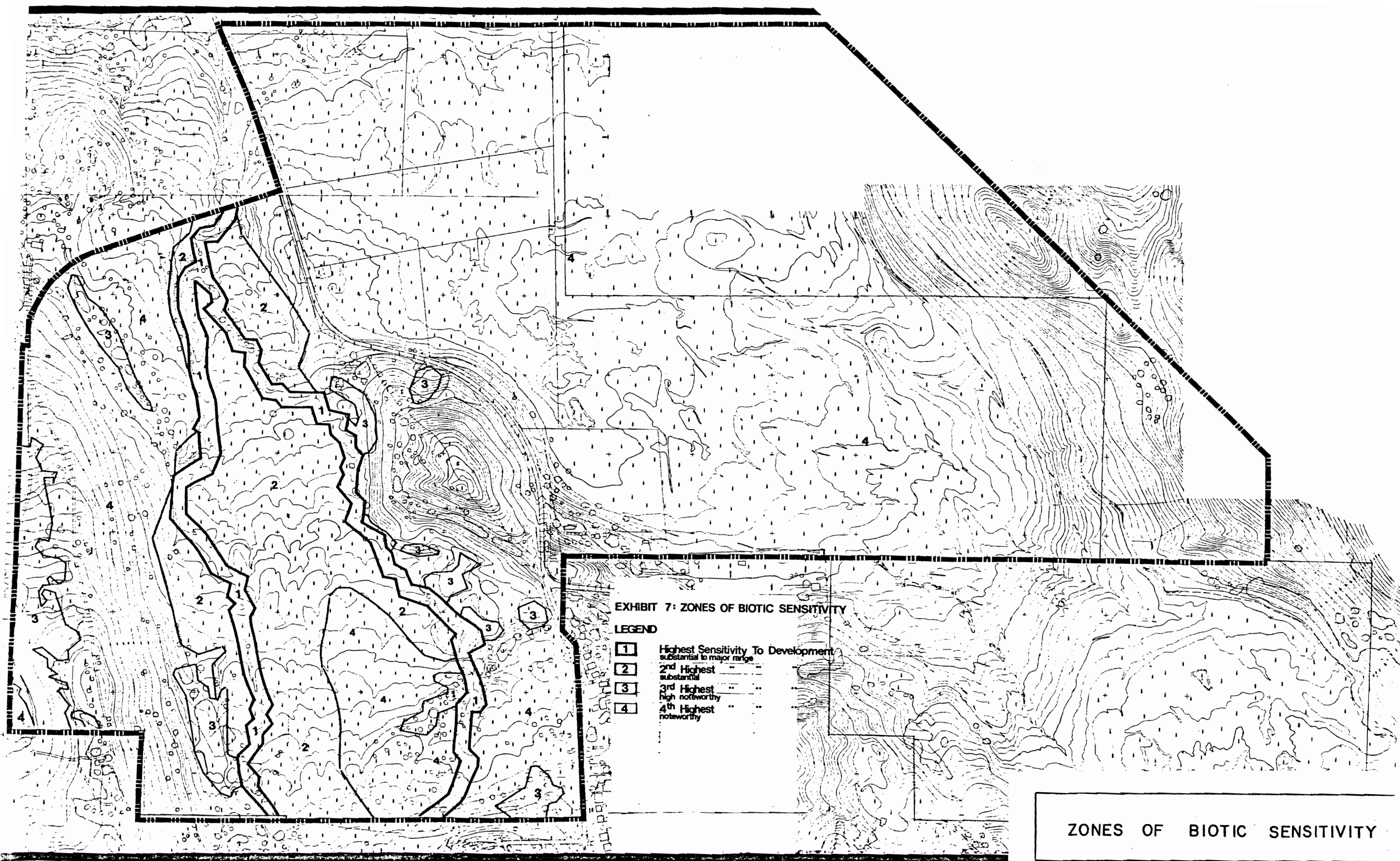


EXHIBIT I: BIOTIC COMMUNITIES

LEGEND

- Streams and Ditches
- Lodgepole Pine-Fir Forest
- Montane Chaparral (esp. Manzanita)
- Sagebrush Scrub
- Grassland Pastureland
- Streamside Woodland
- Roads
- Meadows

BIOTIC COMMUNITIES



**EXHIBIT 7: ZONES OF BIOTIC SENSITIVITY**

**LEGEND**

- 1** Highest Sensitivity To Development  
substantial to major range
- 2** 2nd Highest  
substantial
- 3** 3rd Highest  
high noteworthy
- 4** 4th Highest  
noteworthy

**ZONES OF BIOTIC SENSITIVITY**